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Managing Language Diversity in Global Virtual Teams : The Role of Trust and Team Cohesion

Danielle Taylor

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THÈSE

Pour obtenir le grade de

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École doctorale : EDSG- Sciences de gestion

Spécialité : Sciences de Gestion

Unité de recherche : Centre d'Etudes et de Recherches appliquées à la gestion

**Le management de la diversité linguistique dans les
équipes virtuelles internationales :
le rôle de la confiance et de la cohésion d'équipe**

Managing Language Diversity in Global Virtual Teams:
The Role of Trust and Team Cohesion

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Abstract

Managing language diversity in global virtual teams represents a growing challenge for today's organizations, but the advantages of such teams can far outweigh their difficulties. While language diversity has mostly been seen as a barrier to communication in the international management literature, it has also been proposed to be a source of competitive advantage. This requires the proper management of team language diversity in international organizations and especially for virtual teams who must communicate efficiently and effectively across languages, cultures and geographic and temporal distances by using various technologies.

This dissertation analyzes how language diversity influences team processes related to tasks and emotions within the virtual context. After an exploratory study based on interviews with 20 individuals experienced in participating in multilingual virtual teams, a mixed-methods design with quantitative and qualitative methodologies is mobilized. The quantitative phase is based on a novel experimental methodology using a serious game that was developed within this dissertation. 311 international participants were confronted with a two-hour scenario simulating multilingual virtual teamwork in order to observe their communication behaviors and to evaluate their perception of the team's processes and outcomes. The qualitative methodology consists of an 18-month organizational ethnography of a team within a European University Alliance that includes higher education institutions in seven countries, with interviews and participant observations.

The key findings of this dissertation demonstrate that high-performing multilingual virtual teams are those where trust and team cohesion have been established by successfully managing communication processes. This thesis contributes theoretically to language-sensitive research in international business by examining language diversity in global virtual teams through the lens of team processes. In addition, this research proposes a novel methodology with potential for simulating social interaction and experimentally comparing behaviors. The developed serious game is also used as a tool for training in multilingual communication and teamwork. The managerial recommendations resulting from these findings concern the importance of understanding team language diversity, and of choosing appropriate communication behaviors and channels to develop strong trust and team cohesion for high-performing global virtual teams.

Keywords: ethnography, global virtual team (GVT), language diversity, serious game, team cohesion, trust

Résumé (court)

La gestion de la diversité linguistique dans les équipes virtuelles internationales représente un défi croissant pour les organisations. Cependant, les avantages de ces équipes dépassent largement les difficultés. Si la diversité linguistique a surtout été considérée dans la littérature en management international comme un obstacle à la communication, elle a également été proposée comme une source d'avantages concurrentiels. Toutefois, il est nécessaire, dans les organisations internationales, de gérer correctement la diversité linguistique au sein des équipes et notamment des équipes virtuelles qui doivent communiquer de manière efficace par-delà les langues, cultures et distances géographique et temporelle, en utilisant diverses technologies.

Cette thèse analyse la façon dont la diversité linguistique influence les processus d'équipe relatifs aux tâches et aux émotions, dans le contexte virtuel. Après une étude exploratoire basée sur des entretiens avec 20 membres et responsables d'équipes virtuelles multilingues, nous avons développé un design de recherche mixte combinant méthodologies quantitative et qualitative. La phase quantitative est basée sur une méthodologie expérimentale innovante qui utilise un jeu sérieux développé dans le cadre de cette thèse. 311 participants internationaux ont été confrontés à un scénario d'une durée deux heures qui simule le travail en équipe virtuelle multilingue, afin d'évaluer les comportements de communication et la perception des processus et des résultats de l'équipe. La méthodologie qualitative consiste en une ethnographie organisationnelle de 18 mois d'une équipe faisant partie d'une alliance universitaire européenne composée d'établissements de sept pays, avec des entretiens et des observations participantes.

Les principaux résultats de cette thèse montrent qu'une gestion réussie des processus de communication dans les équipes virtuelles multilingues permet d'établir la confiance et la cohésion de l'équipe, ce qui augmente sa performance. Sur le plan théorique, cette thèse contribue à la recherche sur l'importance du langage en management international, en examinant la diversité linguistique dans les équipes virtuelles internationales à travers le prisme des processus d'équipe. En outre, cette recherche propose une méthodologie innovante permettant de simuler des interactions sociales et de comparer les comportements de manière expérimentale. Le jeu sérieux développé est également utilisé comme outil de formation à la communication multilingue et au travail en équipe. Les recommandations managériales qui découlent de la thèse concernent l'importance de comprendre la diversité linguistique de l'équipe, et de choisir les comportements et les canaux de communication appropriés pour développer la confiance et la cohésion d'équipe.

Mots clés : cohésion d'équipe, confiance, diversité linguistique, équipe virtuelle internationale, ethnographie, jeu sérieux

Table of Contents

Acknowledgements.....	3
Abstract.....	4
Résumé (court).....	5
Résumé (étendu)	9
INTRODUCTION	25
The topic	26
Essential literature.....	28
Research Question	32
Research design and methodology (overview)	33
A note on the research scope	36
Key findings and contributions.....	37
Organization of this dissertation	39
PART 1: LANGUAGE DIVERSITY, THE VIRTUAL CONTEXT AND TEAM PROCESSES: A LITERATURE REVIEW	41
Introduction to the literature review	42
Chapter 1: Language diversity and management in teams	45
1.1 Language diversity.....	45
1.2 Language management in organizations.....	52
1.3 The advantages of language diversity in teams	66
Chapter 2: Global Virtual Teams (GVTs)	68
2.1 Setting the scene: The Global Virtual Team (GVT).....	68
2.2 Characteristics of Global Virtual Teams (GVTs).....	69
2.3 Communication processes and choice of communication channel.....	73
2.4 Language diversity and GVTs	80

Chapter 3: Socio-emotional team processes	83
3.1 Team processes	83
3.2 Trust in multilingual GVTs.....	89
3.3 Team cohesion in multilingual GVTs.....	92
Conclusion to Part 1.....	95
PART 2: PARADIGMATIC FRAMEWORK & METHODOLOGICAL OVERVIEW.....	97
Chapter 4: Paradigmatic Framework	98
4.1 Relationship between ontology, epistemology and methodology	98
4.2 Paradigms in language-sensitive research in IB: A summary	100
4.3 Adopting the interpretivist paradigm	102
4.4 Language considerations during the research process	107
Chapter 5: Mixed Methods Research Design	109
5.1 An overview of mixed methods research design	109
5.2 This thesis' research design: An overview	110
Conclusion to Part 2.....	115
PART 3: THREE COMPLEMENTARY STUDIES.....	117
Introduction to Part 3	118
Chapter 6.....	119
Study 1: An Exploratory Study of Multilingual Virtual Teams	119
6.1 Methodology: Exploratory Interviews.....	120
6.2 Exploratory findings of multilingual virtual teams.....	127
6.3 Discussion and perspectives for further research.....	137
Chapter 7.....	142
Study 2: Coordinating a multilingual virtual team in an online serious game.....	142
7.1 Serious games for experimental research in IB	144
7.2 ELITE The Serious Game: An Online Game about Communication & Leadership in a Global Virtual Team	149

7.3 Elaboration of the game questions, measures and variables	159
7.4 Data collection and sample	181
7.5 Findings from the experimental serious game	186
7.6 Discussion on language diversity, communication behaviors and trust	230
Chapter 8.....	237
Study 3: An Organizational Ethnography in a European University Alliance	237
8.1 Methodology: Organizational ethnography	238
8.2 Findings on team cohesion in a European University alliance	250
8.3 Discussion on language diversity and team cohesion.....	256
Conclusion to Part 3.....	261
CONCLUSION.....	263
General Discussion	264
Distinguishing surface-level and deep-level implications of language diversity	264
Extending theory on the choice of communication channel	268
Contributions, Implications & Future Research	273
Theoretical Contributions	273
Methodological Contribution.....	273
Managerial Implications	273
Limits, Learning and Looking Forward: Propositions for Future Research.....	275
BIBLIOGRAPHY.....	278
LIST OF TABLES.....	297
LIST OF FIGURES	299
LIST OF APPENDICES.....	300

Résumé (étendu)

(This is an extended abstract in French. The thesis follows in English on page 25.)

Les organisations du monde entier ont été contraintes de basculer leurs équipes en ligne presque du jour au lendemain lorsque le COVID-19 s'est répandu dans le monde entier en mars 2020. Cela s'est produit cinq mois après le début de ce projet de recherche, et c'est un phénomène qui s'est poursuivi de façon intermittente depuis. Alors même que cette thèse a été finalisée en octobre 2022, une nouvelle « vague » du virus a eu un impact sur la vie quotidienne et continue de rendre nécessaire la collaboration en ligne au jour le jour. Bien que le sujet de cette thèse ait été choisi avant toute allusion à la COVID-19, la pandémie a renforcé l'importance du travail virtuel et l'a établie à une plus grande échelle. Des ouvrages tels que *Remote Work Revolution* de Tsedal Neeley sont arrivés à un moment où les organisations et les employés ont commencé à s'intéresser aux particularités du travail à distance. Bien que l'on se demande si la tendance au travail à distance va se poursuivre, des articles de sources telles que Forbes confirment que « le travail à distance est là pour rester et [qu'il] va se développer jusqu'en 2023 » (Robinson, 2022).

Une particularité de cette forme de travail est l'opportunité de collaborations internationales. Ces collaborations internationales entre et au sein des équipes nécessitent des compétences spécifiques. Le Forum économique mondial insiste sur le fait qu'au fur et à mesure que les organisations saisissent ces opportunités, rendues possibles grâce au travail à distance, le besoin de compétences en communication interculturelle devient plus crucial, aux côtés de la maîtrise de l'anglais et de l'expertise numérique (Reuil, 2022). Les équipes doivent naviguer sur de nouvelles frontières linguistiques et culturelles dans l'environnement virtuel. Dans cette optique, cette recherche sur l'influence de la diversité linguistique sur les processus de travail virtuels est devenue encore plus importante qu'à ses débuts. Sachant que l'environnement de travail d'aujourd'hui a changé, cette thèse a pour but d'aider les personnes qui transitionnent vers le travail à distance à le faire mieux et plus efficacement les uns avec les autres et à aider les managers à diriger plus efficacement ces équipes.

Le sujet

Les équipes virtuelles internationales

Ce que l'on a appelé jusqu'à présent des équipes travaillant à distance ou en ligne pourrait plus précisément être appelé des équipes virtuelles internationales. Les équipes virtuelles internationales sont définies comme des équipes dispersées géographiquement et dans le temps, qui dépendent de la technologie pour communiquer et qui sont naturellement diverses. Les équipes virtuelles internationales ont souvent un objectif international et sont de nature temporaire (Chudoba et al., 2005 ; Jawadi & Boukef Charki, 2011 ; Maznevski & Chudoba, 2000).

Les équipes virtuelles internationales présentent un certain nombre d'avantages pour les organisations. Par exemple, elles ont été spécifiquement proposées comme un moyen de rendre compte des tendances organisationnelles du 21^e siècle, où les organisations deviennent plus petites, moins hiérarchisées, plus flexibles et plus orientées vers la technologie, l'apprentissage et l'innovation (Mockaitis et al., 2018). Par conséquent, les équipes virtuelles internationales représentent une opportunité évidente pour les organisations d'être en mesure de réagir rapidement pour atteindre leurs objectifs en mobilisant des équipes virtuellement.

En outre, la littérature sur les équipes virtuelles internationales a mis en évidence les avantages concurrentiels résultants des capacités des organisations à recruter des individus dotés de compétences clés qui peuvent être situés dans le monde entier (Chudoba, Wynn, Lu & Watson-Manheim, 2005 ; Jarvenpaa & Leidner, 1999 ; Zakaria, Amelinckx & Wilemon, 2004). En faisant appel à des individus à travers le monde et en organisant leur travail dans un cadre virtuel, le travail en équipe virtuelle a été cité comme un moyen d'exploiter la diversité afin d'encourager la créativité au sein d'une équipe (Gilson, Maynard, Jones Young, Vartiainen & Hakonen, 2015). En s'appuyant sur les avantages de l'environnement virtuel et sur la diversité, les organisations qui mettent en place des équipes virtuelles internationales peuvent répondre avec souplesse à des demandes en constante évolution (Mockaitis, Zander & De Cieri, 2018).

Malgré ces nombreux avantages, l'essor rapide des équipes virtuelles internationales a entraîné un certain nombre de défis. Avant d'aborder les défis liés à la communication et au travail d'équipe, nous aborderons d'abord la question de la diversité linguistique, qui est une caractéristique déterminante des équipes virtuelles internationales.

La diversité linguistique

La diversité linguistique est une caractéristique déterminante des équipes virtuelles internationales (Chen, Geluykens & Choi, 2006). La diversité linguistique se manifeste par la variété des langues nationales parlées par les membres de l'équipe, par leurs différents niveaux de maîtrise de la langue commune et par les luttes de pouvoir et les sous-groupes qui résultent de ces différences. En tant que telle, la dynamique de la langue et de la communication est considérée comme « la force motrice du commerce mondial » (Charles, 2007).

La diversité linguistique est définie comme la variété des langues, nationales ou autres, qui se manifeste dans les groupes en fonction de l'implication de locuteurs de plusieurs langues et des langues parlées dans l'organisation, ce qui peut provoquer une séparation ou disparité entre les individus. Cette définition s'inspire de l'étude de Church-Morel et Bartel-Radic (2016) sur la nature multiforme de la diversité linguistique qui mobilise la typologie de la diversité de Harrison et Klein (2007).

Dans la littérature sur l'importance du langage en management international, la diversité linguistique a surtout été considérée comme une barrière à la communication. Des barrières apparaissent lorsque par exemple les membres d'une équipe communiquent dans des langues que les autres ne comprennent pas ou lorsque les membres de l'équipe ont des difficultés à communiquer en raison d'un manque de maîtrise de la langue commune. Les barrières linguistiques peuvent être des difficultés évidentes liées à la maîtrise de la langue ou des difficultés plus cachées résultant de différences dans le style d'expression qui nuisent à la compréhension et perturbent le partage des connaissances (Tenzer et al., 2021). Afin de surmonter les obstacles liés à la langue, un certain nombre de solutions de gestion linguistique ont été proposées, telles que la mise en œuvre de l'anglais en tant que langue d'entreprise ou langue fonctionnelle, des sessions de formation linguistique visant à améliorer les compétences linguistiques, communicationnelles et interculturelles et le recrutement d'actifs linguistiques qui peuvent aider les autres membres de l'équipe à surmonter les obstacles linguistiques, par exemple (Bordia & Bordia, 2015 ; Feely & Harzing, 2003 ; Harzing et al., 2011).

À l'inverse, la diversité linguistique a également été proposée comme une richesse qui peut ajouter aux capacités de l'équipe. Cette vision plus positive suit les pratiques du management interculturel constructif et positif (Barmeyer et al., 2021 ; Stahl & Tung, 2015), dans lequel se situe également cette thèse. La mise en évidence des avantages de la diversité

linguistique nécessite sa bonne gestion dans les organisations internationales et notamment pour les équipes virtuelles internationales qui doivent communiquer de manière efficace et effective à travers les langues, les cultures et les distances géographiques et temporelles en utilisant diverses technologies.

Les processus d'équipe

Bien que l'on sache que la diversité linguistique est à la fois une barrière et une richesse pour les équipes virtuelles internationales, on manque de connaissances sur la façon dont la diversité linguistique influence les équipes dans l'environnement virtuel. La communication en face à face étant limitée ou inexistante, les effets de la diversité linguistique sont amplifiés (Chudoba et al., 2005). Par conséquent, les difficultés résultantes des différences linguistiques ou d'un manque de compétences linguistiques ne peuvent être évitées. Reconnaisant l'importance du contexte virtuel pour la diversité linguistique, cette thèse suit Klitmøller et Luring (2016) et Tenzer et Pudelko (2020) qui considèrent que lier la recherche sur l'importance du langage en management international et le travail en équipe virtuelle est prometteur. Plus précisément, les processus d'équipe qui sont influencés par la diversité linguistique sont essentiels à explorer pour mieux comprendre le travail en équipe virtuelle internationale et ses résultats. En effet, les équipes virtuelles internationales subissent des processus différents de ceux des équipes localisées, en raison de leur restriction à l'environnement en ligne.

Les processus d'équipe sont « les actes interdépendants des membres qui convertissent les entrées en résultats par le biais d'activités cognitives, verbales et comportementales visant à organiser le travail pour atteindre des objectifs collectifs » (Marks et al., 2001, p. 357). Les processus d'équipe peuvent être divisés en processus relatifs aux tâches et en processus socio-émotionnels (Powell et al., 2004). Les processus relatifs aux tâches sont définis comme des « processus d'équipe qui se produisent lorsque les membres de l'équipe travaillent ensemble pour accomplir une tâche ou un objectif » (Powell et al., 2004, p. 11). Les processus socio-émotionnels, également appelés processus interpersonnels, sont des processus d'équipe liés à l'interaction sociale et au développement de relations (Powell et al., 2004).

Littérature de référence

En combinant les trois thèmes de la diversité linguistique, des équipes virtuelles internationales et des processus d'équipe, cette recherche se concentre sur l'influence de la diversité linguistique sur les processus d'équipe dans le contexte virtuel. Elle se situe au carrefour de plusieurs champs en Sciences de gestion et du management, notamment le management international, les systèmes d'information et le management des ressources humaines. Le tableau 1 résume les trois principaux concepts abordés dans cette thèse.

Tableau 1: Les concepts essentiels

Concept	Définition	Source
Diversité linguistique	La variété des langues, nationales ou autres, qui se manifeste dans les groupes en fonction de l'implication de locuteurs de plusieurs langues et des langues parlées dans l'organisation, ce qui peut provoquer une séparation ou disparité entre les individus.	Church-Morel & Bartel-Radic (2016) Harrison & Klein (2007)
Équipe virtuelle internationale	Une équipe dispersée géographiquement et dans le temps, qui dépend de la technologie pour communiquer et qui est naturellement diverse. Les équipes virtuelles internationales ont souvent un objectif international et sont de nature temporaire.	Chudoba et al., 2005 Jawadi & Boukef Charki, 2011 Maznevski & Chudoba, 2000
Processus d'équipe	« Les actes interdépendants des membres qui convertissent les entrées en résultats par le biais d'activités cognitives, verbales et comportementales visant à organiser le travail pour atteindre des objectifs collectifs »	Marks, Mathieu & Zaccaro (2001, p. 357)

La langue est désormais considérée comme une question « au cœur des activités du management international » (Brannen et al., 2014, p. 495). Cela s'explique par le fait que l'essence du travail s'exprime à travers la langue (Zarifian, 2009). La recherche sur la langue dans le management international s'est particulièrement attachée à fournir des moyens de surmonter les barrières linguistiques. Ces solutions existent à tous les niveaux d'une organisation et comprennent, par exemple, l'offre d'une formation linguistique, la désignation d'une langue d'entreprise ou la promotion de normes de communication (Feely & Harzing, 2003 ; Harzing et al., 2011). Tout en considérant la diversité linguistique comme un obstacle,

certaines recherches ont abordé la diversité linguistique en termes de ressources ou de sources de pouvoir (Piekkari et al., 2005).

En outre, l'influence de la langue sur une série de situations a été prise en compte. Par conséquent, les chercheurs ont établi un lien entre la langue et son influence sur le travail en équipe (Kassis-Henderson, 2005), l'efficacité de la communication (Charles & Marschan-Piekkari, 2002 ; Kim, Roberson, Russo & Briganti, 2019), les relations et les émotions des membres de l'équipe (Charles, 2007 ; Cohen & Kassis-Henderson, 2012 ; Hinds et al, 2014 ; Tenzer & Pudelko, 2015) et l'utilisation de différents médias pour la communication en équipe (Fleischmann, Aritz & Cardon, 2020 ; Klitmøller & Luring, 2013 ; Tenzer & Pudelko, 2016).

Afin d'améliorer encore la compréhension de la diversité linguistique, nous suivons le conseil d'Angouri et Piekkari (2018, p. 21) qui appellent à une recherche sur la langue dans le domaine du management international qui « fait un zoom sur les pratiques des employés autour de processus spécifiques et un zoom arrière sur le contexte plus large » comme moyen de réunir la théorie et la pratique.

Le point de vue de la pratique sociale de la langue (voir Karhunen, Kankaanranta, Louhiala-Salminen, & Piekkari, 2018) démontre l'importance d'observer la diversité linguistique dans le contexte des équipes virtuelles internationales. La vision de la pratique sociale de la langue s'inscrit dans la lignée des études sociolinguistiques. Elle décrit comment la langue crée une « lentille linguistique » et affirme que la langue n'existe pas en soi, mais qu'elle est un produit de l'action sociale et qu'elle est intégrée dans de multiples couches de contexte (Karhunen et al., 2018). Comme le disent Miles et Huberman (1994), « le sens est toujours dans le contexte et les contextes incorporent le sens » (p. 102). Une des couches de contexte est l'équipe virtuelle internationale, où les individus sont physiquement dispersés et où ils viennent de différents horizons linguistiques, parlant tous la langue commune à leur manière.

Jusqu'à présent, les études précédentes ont négligé les aspects linguistiques de la collaboration au sein des équipes virtuelles (Lockwood & Song, 2020). Pourtant, étant donné que la diversité linguistique est une caractéristique essentielle des équipes virtuelles internationales, comme le montre sa définition qui stipule que ces équipes sont « naturellement diversifiées », elle mérite une plus grande attention. Lorsque les aspects linguistiques ont été pris en compte dans la littérature, ils sont souvent réduits aux défis de ces équipes. Par exemple,

l'étude de Karjalainen et Soparnot (2010) a révélé que les principaux défis des équipes virtuelles internationales sont la communication, la confiance et la compréhension interculturelle. Afin de mieux comprendre la diversité linguistique dans les contextes professionnels et virtuels, les chercheurs appellent à une enquête sur l'influence des technologies sur le partage des connaissances et la compréhension mutuelle dans les rencontres interlinguistiques, ainsi qu'à une plus grande attention autour des effets de la langue sur la dynamique et la performance des équipes (Karhunen et al., 2018 ; Li, Yuan, Bazarova, & Bell, 2018).

Suite à une première revue de la littérature croisant la recherche relative aux langues dans le management international et les équipes virtuelles internationales, un certain nombre de processus relatif aux tâches et de processus socio-émotionnels influencés par la diversité linguistique se fait jour. Les pratiques linguistiques peuvent être fluides et hybrides et, en tant que telles, sont étroitement liées aux processus d'équipe (Angouri & Piekkari, 2018). Ainsi, nous cherchons à comprendre la diversité linguistique comme un processus. En effet, Janssens et Steyaert (2014) ont mis en évidence les éléments fluides et fixes de la langue.

Plus précisément, sur la base d'une revue de la littérature et renforcée par notre étude exploratoire sur la diversité linguistique dans les équipes virtuelles, les comportements de communication, la confiance et la cohésion d'équipe sont identifiés pour une future étude sur la diversité linguistique dans les équipes virtuelles internationales. Ces trois aspects sont liés à différents types de processus d'équipe, les comportements de communication représentant principalement des processus relatifs aux tâches, tandis que la confiance et la cohésion d'équipe représentent des processus socio-émotionnels.

En ce qui concerne la communication relative aux tâches, cette recherche revient sur les stratégies qui avaient été décrites dans la littérature comme un moyen de surmonter les barrières linguistiques. Cependant, si ces stratégies donnent une indication sur la manière de communiquer dans une équipe multilingue, elles méritent d'être précisées dans le contexte des équipes virtuelles internationales. En outre, elles peuvent être mieux définies en ce qui concerne les personnes qui utilisent réellement ces stratégies et dans quelles situations. Grâce à cette compréhension, les managers seraient mieux à même de cibler leurs efforts là où ces comportements de communication devraient être mis en œuvre.

Concernant les processus socio-émotionnels, d'une part, Powell et ses collègues (2004) soulignent l'importance et la difficulté de développer la confiance dans les équipes virtuelles internationales. Leur appel à la recherche sur la confiance dans ces équipes suggère d'identifier les activités de socialisation qui pourraient favoriser une confiance rapide et durable (Powell et al., 2004). Nous pensons que la diversité linguistique mérite une attention particulière dans le cadre de cette question, car les activités de socialisation peuvent être modérées par les langues. D'autre part, Tenzer, Pudelko et Harzing (2014) poursuivent l'étude de la confiance dans des équipes virtuelles multilingues et montrent comment la compétence linguistique a joué un rôle clé dans l'établissement de la confiance. Cependant, bien qu'ils explorent les équipes virtuelles, la manière exacte dont ce contexte modère la confiance fait défaut.

Concernant un autre processus socio-émotionnel, de nombreux auteurs appellent à la recherche sur la cohésion d'équipe (Powell et al., 2004 ; Tenzer & Pudelko, 2020). La cohésion d'équipe, comme la confiance, émerge et évolue à travers l'interaction sociale et est un indicateur d'une équipe forte. En comprenant comment la diversité linguistique influence le développement de ces processus basés sur les émotions, les managers seraient mieux équipés pour renforcer la confiance et la cohésion d'équipe dans les équipes virtuelles internationales multilingues. Powell et ses collègues (2004) tentent de rapprocher la cohésion d'équipe et la diversité en posant la question suivante : « Les chefs d'équipe peuvent-ils minimiser la diversité de niveau profond pour améliorer la cohésion ? » (Powell et al., 2004). Bien que cette question soit intéressante, nous optons pour une vision constructive et positive du management interculturel (Barmeyer et al., 2021 ; Stahl & Tung, 2015), ajoutant ainsi la question suivante : La diversité linguistique peut-elle améliorer la cohésion ? De même, Tenzer et Pudelko (2020) proposent de s'appuyer sur les études relatives à la confiance afin de comprendre comment la diversité linguistique influence les émotions au sein des équipes. L'un de ces exemples d'émotions qui mérite une attention particulière est la cohésion (Tenzer & Pudelko, 2020).

En combinant ces perspectives et ces appels à la recherche sur les processus relatifs aux tâches et les processus socio-émotionnels, qui traversent les frontières des domaines de recherche sur l'importance du langage en management international et des équipes virtuelles internationales, cette recherche souligne l'importance de développer la compréhension des comportements de communication, de la confiance et de la cohésion d'équipe dans les équipes virtuelles internationales multilingues.

Question de recherche

La question principale de recherche de cette dissertation est la suivante :

Comment la diversité linguistique influence-t-elle
les processus d'équipe dans le contexte virtuel ?

Cette question est d'abord examinée dans le cadre d'une étude exploratoire comprenant des entretiens avec 20 membres et responsables d'équipes virtuelles multilingues. En considérant cette question dans le contexte de l'équipe virtuelle, notre exploration se limite à la communication en ligne, ainsi qu'aux contraintes et possibilités qui en découlent pour les équipes et le travail en équipe. Les résultats soulignent l'importance de considérer une double lentille de processus relatifs aux tâches et aux processus socio-émotionnels pour comprendre l'influence de la diversité linguistique sur les équipes virtuelles internationales. En plus des comportements de communication, la confiance et la cohésion de l'équipe sont mises en évidence comme étant particulièrement importantes pour les équipes virtuelles multilingues. Sur la base de ces résultats, nous nous concentrons sur les comportements de communication, la confiance et la cohésion d'équipe avec trois questions de recherche subséquentes, comme indiqué dans l'encadré suivant.

Question principale de recherche :

Comment la diversité linguistique influence-t-elle les processus d'équipe dans le contexte virtuel ?

Questions de recherche secondaires :

- a. Comment la diversité linguistique influence-t-elle les comportements de communication relatifs aux tâches dans une équipe virtuelle multilingue ?
- b. Comment la diversité linguistique influence-t-elle la confiance dans une équipe virtuelle multilingue ?
- c. Comment la diversité linguistique influence-t-elle le développement de la cohésion de l'équipe dans une équipe virtuelle multilingue ?

On peut noter que la recherche peut largement être abordée de quatre manières en fonction des objectifs du chercheur (description, explication, compréhension ou transformation, Livian & Mitev, 2019). Cette thèse privilégie la troisième, la compréhension, car notre objectif principal « est de comprendre pourquoi les acteurs pensent ou se comportent de cette manière » (Livian & Mitev, 2019). Nous intégrons également des éléments d'explication en testant des relations causales. En explorant des exemples spécifiques de processus d'équipe (par exemple, la communication, la confiance et la cohésion d'équipe, nous sommes en mesure de comprendre et d'expliquer comment la diversité linguistique influence les processus d'équipe.

Design de recherche et méthodologie (vue d'ensemble)

Cette recherche est informée par le paradigme interprétativiste qui vise à comprendre les processus d'interprétation, de création de sens et de communication, tout en considérant la façon dont les individus voient le monde (Gavard-Perret et al., 2012). Si la tradition interprétativiste privilégie généralement les études de cas, les entretiens et l'ethnographie (Piekkari et al., 2022), la recherche interprétativiste est également connue pour intégrer des méthodes quantitatives en sciences sociales (Babones, 2016). Cette thèse propose une intégration des méthodes qualitatives et quantitatives dans un design de méthodes mixtes qui comprend différentes phases de recherche inductive et déductive. Les résultats des différentes phases sont fusionnés et triangulés dans une phase finale d'analyse et d'interprétation.

La conception de recherche à méthodes mixtes de cette étude est déployée en trois études. Pour commencer, une étude exploratoire basée sur des entretiens semi-dirigés avec 20 membres et managers d'équipes virtuelles multilingues est menée. L'objectif des entretiens est de comprendre les expériences des membres et des managers de l'équipe et les mécanismes de communication et de fonctionnement de leurs équipes. Les questions couvrent quatre thèmes : la vision et les actions de l'organisation pour prendre en compte la diversité linguistique, le parcours et les caractéristiques de l'individu, le mode de fonctionnement de l'équipe et les normes générales de communication, et enfin, si et comment la diversité linguistique a influencé l'efficacité de l'équipe.

Les résultats de l'étude exploratoire montrent comment et dans quelles situations un certain nombre de stratégies de gestion linguistique sont les mieux utilisées. En effet, cette étude permet de mieux comprendre les stratégies qui avaient été proposées précédemment dans la littérature sur la gestion des langues dans le management international. En outre, les résultats soulèvent d'autres questions quant à savoir quand et par qui ces stratégies de communication sont utilisées à plus grande échelle. Les résultats soulèvent également des questions sur les liens entre la diversité linguistique, la confiance et la cohésion d'équipe. En effet, alors que ces deux processus socio-émotionnels ont été identifiés dans la littérature scientifique comme essentiels pour les équipes linguistiquement diversifiées, ou les équipes virtuelles internationales, la manière dont elles se développent et dont elles sont influencées par les doubles caractéristiques de l'équipe que sont la diversité linguistique et la virtualité reste peu claire.

Ainsi, afin d'aborder les complexités de la façon dont la diversité linguistique influence la communication, la confiance et la cohésion d'équipe dans les équipes virtuelles internationales, la phase suivante de ce plan de recherche implique une approche de méthodes mixtes. Ainsi, nous sommes en mesure d'acquérir une compréhension plus complète du problème de recherche avec des méthodes visant à la fois à comprendre les relations entre les variables et à « retourner de nouvelles pierres ». Les études quantitatives et qualitatives ont été menées simultanément.

L'étude quantitative est basée sur une méthodologie expérimentale inédite utilisant un jeu sérieux qui a été développé dans le cadre de cette thèse. D'un point de vue méthodologique, les méthodes mixtes et les modèles de recherche expérimentale ont été cités comme prometteurs pour mieux comprendre les comportements dans le domaine de la recherche relative aux langues dans le management international (Tenzer et al., 2017). Cela s'avère intéressant car les processus d'équipe sont à la fois influencés par et composés des comportements individuels des membres de l'équipe. En utilisant le jeu sérieux, 311 participants internationaux sont confrontés à un scénario de deux heures simulant un travail d'équipe virtuel multilingue. Sur la base des choix effectués par les participants au cours de la simulation, nous mesurons les comportements de communication liés aux tâches (question secondaire a) et évaluons la perception de la confiance au sein de l'équipe par les participants (question secondaire b). L'analyse est menée en deux phases, en commençant par une analyse de variance et de régression pour comparer les relations directes entre les variables. Cette

analyse est suivie d'une modélisation par équation structurelle afin de fournir une vue d'ensemble de toutes les variables incluses dans le jeu sérieux. Même en considérant la relation entre les variables prédéfinies, le chercheur maintient une position de réflexivité tout au long du processus de recherche, ce qui est caractéristique de l'interprétativisme (Alvesson & Sköldbberg, 2009 dans Babones, 2016).

En parallèle, l'étude qualitative plonge plus profondément dans l'exploration d'un autre processus socio-émotionnel de l'équipe étroitement lié : la cohésion de l'équipe (sous-question de recherche c). Pour ce faire, une ethnographie organisationnelle d'une équipe au sein d'une alliance universitaire européenne est réalisée. L'alliance comprend des établissements d'enseignement supérieur de sept pays, mais ses équipes sont encore plus diverses, avec des membres originaires du monde entier. L'étude ethnographique se concentre sur une équipe au sein de l'alliance qui est chargée de renforcer le multilinguisme et le multiculturalisme. Les observations des participants se déroulent sur dix-huit mois, et des entretiens sont menés avec 14 membres de l'équipe et 11 autres membres de l'alliance en dehors de l'équipe principale. Il existe trois schémas d'analyse des données : un codage thématique inspiré d'une approche émergente (Gioia, Corley, & Hamilton, 2013), puis un codage plus déductif intégrant les dimensions de la cohésion d'équipe de Salas, Grossman, Hughes et Coultas (2015), et un dernier schéma se concentrant sur les aspects temporels du travail d'équipe.

Bien que chacune de ces études soit précieuse et contribue individuellement à la recherche sur l'importance du langage en management international, la contribution la plus significative de cette thèse se trouve dans la phase d'analyse finale, au cours de laquelle les données des trois études sont intégrées et analysées ensemble dans une dernière étape, triangulant ainsi les résultats des trois études.

Tableau 2: Les sous-questions de recherche et les méthodologies associées

Étude	Question de recherche	Méthodologie	Raisonnement de la méthodologie choisie
Étude 1	Comment la diversité linguistique influence-t-elle les processus d'équipe dans le contexte virtuel ? (<i>Question principale de la recherche</i>)	Qualitative Entretiens exploratoires semi-structurés	Explorer des processus complexes et découvrir de nouveaux éléments qui n'avaient pas été identifiés auparavant dans la littérature.
Étude 2	a. Comment la diversité linguistique influence-t-elle les comportements de communication liés à la tâche dans une équipe virtuelle multilingue ? b. Comment la diversité linguistique influence-t-elle la confiance dans une équipe virtuelle multilingue ?	Quantitative Jeu sérieux expérimental en ligne	Expliquer les relations entre les variables
Étude 3	c. Comment la diversité linguistique influence-t-elle le développement de la cohésion d'équipe dans une équipe virtuelle multilingue ?	Qualitative Ethnographie organisationnelle	Découvrir des éléments tout en se concentrant sur une explication contextuelle des perceptions et des sentiments.

Le périmètre de la recherche

L'objectif de cette recherche est de comprendre comment la diversité linguistique influence les processus dans différents types d'équipes virtuelles internationales afin de fournir une compréhension plus holistique de la question de recherche. Ainsi, le champ de recherche est celui des équipes virtuelles internationales dans les organisations internationales, qu'il s'agisse d'entreprises privées ou d'organisations à but non lucratif comme les établissements d'enseignement supérieur). En effet, au cours de la recherche, l'opportunité de travailler avec une Alliance Universitaire Européenne composée de sept institutions d'enseignement supérieur à travers l'Europe s'est présentée. Bien que les objectifs de l'Alliance Universitaire Européenne ne puissent être qualifiés de semblables à ceux des sociétés multinationales, l'équipe étudiée est une équipe virtuelle internationale.

Le champ linguistique de cette recherche se limite aux moyens quotidiens, parlés et écrits, de la communication humaine (Welch & Welch, 2018, 2019). Cette conceptualisation est principalement basée sur les langues nationales, mais inclut également le « team speak » ou les langues spécifiques utilisées par les équipes de travail. Par conséquent, le champ linguistique n'inclut pas le langage gestuel tel que la langue des signes ou le langage corporel comme objet d'étude.

En ce qui concerne le niveau d'étude, l'accent est mis sur les caractéristiques (par exemple, la diversité linguistique et la virtualité de l'équipe) et les processus au niveau de l'équipe. Cependant, afin de parvenir à des caractéristiques au niveau de l'équipe, les caractéristiques et les comportements individuels sont observés. En effet, les caractéristiques et les comportements individuels contribuent directement à la construction des processus d'équipe. Les caractéristiques individuelles comprennent des aspects liés aux compétences linguistiques, aux expériences internationales et aux sentiments concernant l'utilisation des technologies de l'information, par exemple. Nous pensons que cette approche multi-niveau est nécessaire car la collaboration et la synergie d'équipe sont créées en joignant les forces et les qualités des individus dans un résultat qui est plus grand que la somme de ses parties (Katzenbach & Smith 1993 dans Tenzer et al., 2017). La recherche multiniveau a été citée comme particulièrement prometteuse pour étudier les collaborations multilingues (Tenzer et al., 2017), bien qu'elle doive être abordée avec prudence en raison de sa nature complexe.

Découvertes et contributions clefs

Les principaux résultats de cette thèse démontrent que les équipes virtuelles multilingues les plus performantes sont celles où la confiance et la cohésion de l'équipe ont été établies par une gestion réussie des processus de communication.

Cette thèse contribue théoriquement à la recherche sur la sensibilité aux langues dans le management international en examinant la diversité linguistique dans les équipes virtuelles internationales à travers le prisme des processus d'équipe. La diversité linguistique influence à la fois les processus relatifs aux tâches et les processus socio-émotionnels. En se concentrant sur les tâches, la compétence linguistique relative a des implications plus profondes que la compétence linguistique absolue dans la langue commune. Il en va de même pour la confiance

et la cohésion de l'équipe, qui sont largement informées par les émotions résultant des caractéristiques linguistiques relatives. Par conséquent, nous encourageons les conceptualisations avec une vision à double niveau de la diversité linguistique à deux égards : les caractéristiques de surface et de profondeur de la diversité linguistique elle-même et ses implications de surface et de profondeur sur les processus d'équipe.

En outre, dans le domaine des systèmes d'information, nous constatons qu'une limite majeure des théories sur le choix du canal de communication est le manque de prise en compte des facteurs contextuels (Pallud, 2018). Autrement dit, le choix du canal de communication n'est pas complètement rationnel et simple, mais est affecté par plusieurs contextes. Cette thèse propose donc une reconceptualisation des théories liées au choix du canal de communication. En partant du point de vue de la pratique sociale de la langue dans laquelle le contexte est essentiel, nous proposons l'intégration de quatre facteurs contextuels, notamment les facteurs individuels, techniques, sociaux et émotionnels, afin de mieux comprendre comment sélectionner les canaux les mieux adaptés pour communiquer dans une équipe virtuelle multilingue.

Cette recherche propose une nouvelle méthodologie basée sur un jeu sérieux expérimental, qui a été créé dans le cadre de cette recherche. Cette méthodologie présente un grand potentiel pour la simulation d'interactions sociales et la comparaison expérimentale de comportements. Le développement ultérieur de l'outil de recherche s'avère prometteur pour la recherche comportementale à venir dans le domaine du management international et de la gestion. Le jeu sérieux développé est également utilisé comme outil de formation à la communication multilingue et au travail en équipe.

Au niveau managérial, les avantages de la mise en relation de la dynamique des langues, des canaux de communication et des aspects sociaux peuvent « poser les bases d'une gestion virtuelle efficace dans les multinationales » (Klitmøller et al., 2015, p. 270). Les recommandations managériales découlant de ces résultats concernent le choix de comportements et de canaux de communication appropriés pour développer une confiance solide et une cohésion d'équipe pour des équipes virtuelles internationales performantes, ainsi que la compréhension de la manière de renforcer les aspects positifs de la diversité linguistique. En tant que telle, cette recherche se prête à la compréhension de la gestion de la diversité et à la mise en œuvre de pratiques inclusives.

En outre, le jeu sérieux développé est un outil précieux pour les professionnels des ressources humaines qui souhaitent mettre en œuvre une formation sur la communication multilingue et le travail en équipe. En plus de son potentiel pour la recherche, ce jeu a un aspect pédagogique qui propose une formation expérientielle aux managers et employés pour mieux communiquer et gérer des équipes diverses et à distances. Ce jeu a été testé par des professionnels et des étudiants qui ont affirmé l'utilité du jeu digital pour la formation : *“Playing the game is a great experience: it is so fun and informative. I learned a lot about international team leadership, intercultural communication and myself along the way!”* (enseignante d'anglais à l'Université Grenoble Alpes). En proposant également des discussions et des *debriefs* autour du jeu, cet outil peut être intégré plus largement dans une initiative qui souligne la diversité, l'équité et l'inclusion.

Enfin, cette thèse a bénéficié d'interactions et de discussions avec la communauté scientifique et a déjà donné lieu à une publication dans *Management international - Mi*, une revue à comité de lecture de rang A (classement HCERES 2020), ainsi qu'à des chapitres de livres dans des ouvrages collectifs intitulés *Méthodes de recherche innovantes et alternatives en économie et gestion / Innovative and alternative research methods in economics and Business Administration et Internationalisation : la mobilisation des ressources immatérielles*.

Comme l'a établi cette thèse, les opportunités sont nombreuses pour développer davantage la recherche qui traverse la frontière entre la diversité linguistique et les équipes virtuelles internationales. Ayant proposé que les équipes virtuelles multilingues performantes sont celles où la confiance et la cohésion de l'équipe ont été établies par une gestion réussie des processus de communication, nous encourageons la poursuite des recherches visant à aider les managers et les équipes à se préparer au travail en ligne. Ce travail en ligne n'est pas nouveau, mais il évolue rapidement. Les organisations feraient bien de profiter des avantages intrinsèquement présents, mais parfois difficiles à gérer, des équipes virtuelles multilingues.

INTRODUCTION

Organizations worldwide were forced to move their teams online almost overnight when COVID-19 spread across the globe in March 2020. This occurred five months after this research project began, and is a phenomenon which has continued on and off since. Even as this dissertation is finalized in October 2022, there is a new “wave” of the virus that is impacting daily life and continues the necessity of online collaboration on a day-to-day basis. While the topic of this dissertation was selected before any hint of COVID-19, the pandemic reinforced the importance of virtual work and established it at a much larger scale. Books such as *Remote Work Revolution* by Tsedal Neeley came at a time when organizations and employees increasingly began navigating the particularities of remote work. While there has been some debate if the remote work trend will continue, articles from sources such as Forbes confirm that “remote work is here to stay and will increase into 2023” (Robinson, 2022).

A particularity of this form of work is the opportunity for international collaborations. These international collaborations between and within teams require specific skills. The World Economic Forum insists that as organizations take on these international opportunities that have been made possible because of remote work, the need for intercultural communication skills is becoming more critical, alongside English proficiency and digital expertise (Reuil, 2022). Teams must navigate new linguistic and cultural boundaries within the virtual environment. With this in mind, this research on the influence of language diversity on virtual work processes has become even more important than when it began. Knowing that today’s work environment has changed, this dissertation aims to help those transitioning online to better and more effectively work with each other and to help managers more effectively lead these teams.

The topic

Global Virtual Teams (GVTs)

What has so far been referred to as teams doing remote or online work could more precisely be called global virtual teams (GVTs). Global virtual teams (GVTs) are defined as teams that are temporally and geographically dispersed, that depend on technology to communicate and that are naturally diverse. In addition, GVTs often have an international objective and are temporary in nature (Chudoba, Wynn, Lu & Watson-Manheim, 2005; Jawadi & Boukef Charki, 2011; Maznevski & Chudoba, 2000).

GVTs represent a number of advantages for organizations. For example, they have specifically been proposed as a means to account for organizational tendencies in the 21st century where organizations are becoming smaller, flatter, more flexible and more orientated towards technology, learning and innovation (Mockaitis, Zander & De Cieri, 2018). Therefore, GVTs represent a clear opportunity for organizations to be able to react quickly to achieve their objectives through mobilizing teams virtually.

In addition, the literature on GVTs has highlighted the competitive advantages resulting from organizations' abilities to recruit individuals with key competences who may be located throughout the world (Chudoba, Wynn, Lu & Watson-Manheim, 2005; Jarvenpaa & Leidner, 1999; Zakaria, Amelinckx & Wilemon, 2004). By calling on individuals across the world and organizing their work in the virtual settings, virtual teamwork has been cited as a means to harness diversity in order to encourage creativity within a team (Gilson, Maynard, Jones Young, Vartiainen & Hakonen, 2015). By leaning in on the advantages of the virtual environment and of diversity, organizations that establish GVTs can respond flexibly to ever-changing demands (Mockaitis, Zander & De Cieri, 2018).

Despite the numerous advantages, the rapid rise of GVTs has brought a number of challenges. Before addressing challenges related to communication and teamwork, we next turn to a discussion of language diversity, which is a defining characteristic of GVTs.

Language diversity

Language diversity is a defining characteristic of global virtual teams (Chen, Geluykens & Choi, 2006). Language diversity can be seen in the variety of national languages spoken by

team members, in their varying levels of proficiency in the common language and in the power struggles and subgroups that result from such differences. As such, language and communication dynamics have been reported to be “the driving force in global business” (Charles, 2007).

Language diversity is defined as the variety of languages, national or other, that manifests in groups based on the involvement of speakers from multiple languages and the languages spoken in the organization, which may cause separation and disparity between individuals. This definition is inspired by Church-Morel and Bartel-Radic’s (2016) study on the multifaceted nature of language diversity which mobilizes Harrison and Klein’s (2007) diversity typology.

Within the language-sensitive literature in international business (IB), language diversity has mostly been regarded to be a barrier to communication. Barriers occur when team members communicate in languages that others do not understand or when team members have difficulty communicating due to lack of language proficiency in the common language, for example. Language barriers can both be evident difficulties related to language proficiency or more hidden difficulties resulting from differences in speaking style that impair sense making and disrupt knowledge sharing (Tenzer, Pudelko & Zellmer-Bruhn, 2021). In order to overcome language-related barriers, a number of language management solutions have been proposed, such as the implementation of English as a corporate or functional language, language training sessions aimed at improving language, communication and intercultural skills and the recruitment of language-based assets which can help other team members overcome language barriers, for example (Bordia & Bordia, 2015; Feely & Harzing, 2003; Harzing, Köster & Magner, 2011).

Conversely, language diversity has also been proposed to be a richness than can add to the team’s capabilities. This more positive view follows the practices of constructive and positive intercultural management (Barmeyer, Bausch & Mayrhofer, 2021; Stahl & Tung, 2015), which is also where this dissertation is situated. Highlighting the advantages of language diversity requires its proper management in international organizations and especially for GVTs who must communicate efficiently and effectively across languages, cultures and geographic and temporal distances by using various technologies.

Team processes

Despite knowing that language diversity is both a barrier and a richness for GVTs, knowledge of how language diversity influences teams in the virtual environment is lacking. Because face-to-face communication is limited or inexistent, the effects of language diversity are amplified (Chudoba et al., 2005). Therefore, difficulties resulting from language differences or a lack of language skills cannot be avoided. Recognizing the importance of the virtual context for language diversity, this dissertation follows Klitmøller and Luring (2016) and Tenzer and Pudelko (2020) who view connecting language-sensitive research and virtual teamwork as promising. Specifically, team processes that are influenced by language diversity are critical to explore for better understanding global virtual teamwork and outcomes. This is because global virtual teams undergo processes in a different manner than collocated teams based on their restriction to the online environment.

Team processes are “members’ interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals” (Marks, Mathieu & Zaccaro, 2001, p. 357). Team processes can be further divided into task-based processes and socio-emotional processes (Powell, Piccoli & Ives, 2004). Task-based processes are defined as team “processes that occur as team members work together to accomplish a task or goal” (Powell et al., 2004, p. 11). Socio-emotional processes, also known as interpersonal processes, are team processes related to social interaction and development of relationships (Powell et al., 2004).

Essential literature

Combining the three topics of language diversity, global virtual teams and team processes, this research will investigate the influence of language diversity on team processes in the virtual context. This subject sits at the crossroads of three fields of management research including international management, information systems and human resource management. Table 3 summarizes the three main concepts addressed in this dissertation.

Table 3: Essential concepts

Concept	Definition	Source
Language diversity	The variety of languages, national or other, that manifests in groups based on the involvement of speakers from multiple languages and the languages spoken in the organization, which may cause separation and disparity between individuals.	Church-Morel & Bartel-Radic (2016) Harrison & Klein (2007)
Global virtual team	A team that is temporally and geographically dispersed, that depends on technology to communicate and that is naturally diverse. GVTs often have an international objective and are temporary in nature.	Chudoba et al., 2005 Jawadi & Boukef Charki, 2011 Maznevski & Chudoba, 2000
Team process	“Members’ interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals”	Marks, Mathieu & Zaccaro (2001, p. 357)

Language is now considered an issue “at the heart of international business (IB) activities” (Brannen, Piekkari & Tietze, 2014, p. 495). This is because the essence of work is expressed through language (Zarifian, 2009). Language-sensitive research in IB has especially focused on providing means to overcome language barriers. These solutions exist at every level of an organization and include providing language training, designating a corporate language, or encouraging communication norms, for example (Feely & Harzing, 2003; Harzing et al., 2011). At the same time as viewing language diversity as a barrier, some research has discussed language diversity in terms of resources or sources of power (Piekkari, Vaara, Tienari & Säntti, 2005).

Additionally, the influence of language on a range of situations has been considered. Therefore, scholars have linked language and its influence on teamwork (Kassis-Henderson, 2005), communication effectiveness (Charles & Marschan-Piekkari, 2002; Kim, Roberson, Russo & Briganti, 2019), team member relationships and emotions (Charles, 2007; Cohen & Kassis-Henderson, 2012; Hinds, Neeley & Cramton, 2014; Tenzer & Pudelko, 2015) and the

use of different media for team communication (Fleischmann, Aritz & Cardon, 2020; Klitmøller & Lauring, 2013; Tenzer & Pudelko, 2016).

In order to further increase understanding of language diversity, we follow the advice of Angouri and Piekkari (2018, p. 21) who call for research on language in the field of IB that “zoom[s] in the practices of employees around specific processes and zoom[s] out on the wider context” as a means to bring together theory and practice.

The social practice view of language (see Karhunen, Kankaanranta, Louhiala-Salminen & Piekkari et al., 2018) demonstrates the importance of observing language diversity within the context of global virtual teams. The social practice view of language is in line with sociolinguistic scholarship. It describes how language creates a “linguistic lens” and affirms that language does not exist in itself, but it is a product of social action and is embedded in multiple layers of context (Karhunen et al., 2018). As Miles and Huberman (1994) say, “meaning is always within the context and contexts incorporate meaning” (p. 102). One layer of context is the global virtual team, where individuals are physically dispersed and where they come from different language backgrounds, all speaking the common language in their own way.

So far, previous studies have overlooked the linguistic aspects of virtual team collaboration (Lockwood & Song, 2020). Yet, since language diversity is an essential characteristic of global virtual teams as shown in its definition which states that GVTs are “naturally diverse,” it warrants further attention. When linguistic aspects have been considered in the literature, they are often reduced to challenges of such teams. For example, Karjalainen and Soparnot’s (2010) study found that the main challenges of GVTs are communication, trust and intercultural understanding. In order to further understand language diversity in professional, virtual contexts, researchers call for an investigation of the influence of technologies on knowledge sharing and mutual understanding in cross-language encounters, as well as a greater attention around the effects of language on team dynamics and performance (Karhunen et al., 2018; Li, Yuan, Bazarova, & Bell, 2018).

Following an initial review of literature crossing language-sensitive research in international business and global virtual teams, a number of task-related and socio-emotional processes influenced by language diversity comes to light. Language practices may be fluid and hybrid, and as such, are closely intertwined with team processes (Angouri & Piekkari,

2018). Thereby, we aim to understand language diversity as a process. Indeed, Janssens and Steyaert (2014) have pointed to the fluid and fixed elements of language.

Specifically, based on a review of the literature and reinforced by our exploratory study on language diversity in virtual teams, communication behaviors, trust and team cohesion are identified for future study in language diversity in GVTs. These three aspects relate to different kinds of team processes with communication behaviors representing primarily task-related processes and trust and team cohesion representing socio-emotional processes.

Regarding task-based communication, this research returns to the strategies that had been outlined in the literature as a means to overcoming language barriers. However, while these strategies provide an indication of how to communicate in a multilingual team, they deserve precision in the GVT context. In addition, they can be better defined in regards to who is actually using these strategies and in what situations. With this understanding, managers would better be able to target their efforts where these communication behaviors should be implemented.

Regarding socio-emotional processes, on one hand, Powell and colleagues (2004) point out the importance and difficulty of developing trust in GVTs. Their call for research on trust in GVTs suggests identifying socialization activities that could foster swift and long-lasting trust (Powell et al., 2004). We believe language diversity warrants attention within this question because socialization activities can be moderated by languages. On the other hand, Tenzer, Pudelko and Harzing (2014) pursue the study of trust in multilingual virtual teams and show how language proficiency played a key role in the establishment of trust. However, while they explore virtual teams, exactly how this context moderates trust is lacking.

Regarding another socio-emotional processes, multiple authors call for research on team cohesion (Powell et al., 2004; Tenzer & Pudelko, 2020). Team cohesion, like trust, emerges and evolves through social interaction and is an indicator of a strong team. By understanding how language diversity influences the development of these emotion-based processes, managers would be better equipped to reinforce trust and team cohesion in multilingual GVTs. Powell and colleagues (2004) attempt to bring together team cohesion and diversity by asking, “Can team leaders minimize deep-level diversity to improve cohesion?” (Powell et al., 2004). While this question is interesting, we opt for a constructive and positive view of intercultural management (Barmeyer et al., 2021; Stahl & Tung, 2015), thereby adding the question: Can language diversity improve cohesion? Likewise, Tenzer and Pudelko (2020)

propose building upon studies of trust in order to understand how language diversity influences emotions in teams. One such example of emotions that merits further attention is cohesiveness (Tenzer & Pudelko, 2020).

By combining these perspectives and calls for research on task-based and socio-emotional processes, which traverse the boundaries of the fields of language-sensitive research in IB and GVTs, this research highlights the importance of developing understanding of communication behaviors, trust and team cohesion in multilingual GVTs.

Research Question

The main research question of this dissertation is the following:

How does language diversity influence team processes in the virtual context?

This question is first considered in an exploratory study involving interviews with 20 team members and managers of multilingual virtual teams. By considering this question in the virtual team context, our exploration is confined to online communication, and the subsequent constraints and possibilities that offers for teams and teamwork. The results highlight the importance of considering a dual lens of task-related and socio-emotional processes to understand the influence of language diversity on global virtual teams. In addition to communication behaviors, trust and team cohesion are highlighted as particularly important for multilingual virtual teams. Based on these results, we hone in on communication behaviors, trust and team cohesion with three subsequent research questions.

Main research question:

How does language diversity influence team processes in the virtual context?

Sub-research questions:

- a. How does language diversity influence task-related communication behaviors in a multilingual virtual team?
- b. How does language diversity influence trust in a multilingual virtual team?
- c. How does language diversity influence the development of team cohesion in a multilingual virtual team?

It can be noted that research can largely be approached in four ways depending on the aims of the researcher (description, explanation, understanding or transformation, Livian & Mitev, 2019). This dissertation privileges the third, understanding, as our main goal “is to understand why actors think or behave in this way” (Livian & Mitev, 2019). We also integrate elements of explanation by testing causal relationships. By exploring specific examples of team processes (e.g. communication, trust and team cohesion), we are able to understand and explain how language diversity influences team processes.

Research design and methodology (overview)

This research is informed by the interpretivist paradigm which aims to understand processes of interpretation, sense-making, and communication, while considering how individuals see the world (Gavard-Perret, Gotteland, Haon & Jolibert, 2012). While interpretivist tradition generally privileges case studies, interviews and ethnography (Piekkari, Gaibrois & Johansson, 2022), interpretivist research has also been known to incorporate quantitative methods in the social sciences (Babones, 2016). This dissertation proposes an integration of both qualitative and quantitative methods in a mixed methods design that includes different phases of inductive and deductive research. The results of the various phases are merged and triangulated in a final phase of analysis and interpretation.

The mixed methods research design of this study is deployed in three studies. To begin, an exploratory study based on semi-structured interviews with 20 members and managers of multilingual virtual teams is conducted. The focus of the interviews is to gain understanding of team members’ and managers’ team experiences and mechanics of how their teams communicate and function. Questions cover four themes: the organization’s view and actions to account for language diversity, the individual’s background and characteristics, the team’s mode of functioning and general communication norms, and finally, if and how language diversity influenced the team’s effectiveness.

The exploratory study findings show how and in what situations a number of language management strategies are best employed. Indeed, this view brings finer understanding of the strategies that had been previously proposed in language-sensitive literature in IB. In addition, the findings raise further questions concerning when and by whom these communication

strategies are used on a larger scale. The results also raise questions about the connections between language diversity, trust and team cohesion. Indeed, while these two socio-emotional processes were identified in the scientific literature as essential for linguistically-diverse teams or GVTs, how they develop and how they are influenced by the team's dual characteristics of language diversity and virtuality remain unclear.

Thus, in order to address the complexities of how language diversity influences communication, trust and team cohesion in global virtual teams, the subsequent phase of this research design involves a mixed-methods approach. Thereby, we are able to gain a more complete understanding of the research problem with methods aiming both to understand relationships between variables and to “overturn new rocks.” The quantitative and qualitative studies were conducted simultaneously.

The quantitative study is based on a novel experimental methodology using a serious game that was developed within this dissertation. Methodologically, mixed methods and experimental research designs have been cited as promising for better understanding behaviors in the field of language-sensitive research in IB (Tenzer, Terjesen & Harzing, 2017). This proves interesting because team processes are both influenced by and composed of individual team member behaviors. By using the serious game, 311 international participants are confronted with a two-hour scenario simulating multilingual virtual teamwork. Based on participant choices made during the simulation, we measure task-related communication behaviors (*sub-research question a*) and evaluate the participants' perception of trust within the team (*sub-research question b*). Analysis is conducted in two phases starting with variance and regression analysis to compare direct relationships between variables. This is followed by structural equation modeling to provide a view of the larger picture of all of the variables included in the serious game. Even while considering relationships between pre-defined variables, the researcher maintains a stance of reflexivity throughout the research process, which is characteristic of interpretivism (Alvesson & Sköldbberg, 2009 in Babones, 2016).

In parallel, the qualitative study dives deeper into an exploration of another closely-related team socio-emotional process: team cohesion (*sub-research question c*). To do so, an organizational ethnography of a team within a European University Alliance is realized. The alliance includes higher education institutions in seven countries, but its teams are even more diverse with members originating from across the globe. The focus of the ethnographic study

is on one team within the alliance that is tasked with reinforcing multilingualism and multiculturalism. Participant observations occur over eighteen months, and interviews with 14 team members and 11 other alliance members outside of the primary team are conducted. There are three schemes for data analysis: thematic coding inspired by an emergent approach (Gioia, Corley, & Hamilton, 2013), then a more deductive coding incorporating Salas, Grossman, Hughes and Coultas' (2015) dimensions of team cohesion, and a last scheme focusing on the temporal aspects of the teamwork.

While each of the studies is valuable and contributes individually to language-sensitive research in IB, the most significant contribution of this dissertation is found in the final analysis phase, during which the data from the three studies is integrated and analyzed together in a final step, thereby triangulating the findings from the three studies.

Table 4: The sub-research questions and associated methodologies

Study	Research Question	Methodology	Reasoning for chosen methodology
Study 1	How does language diversity influence team processes in the virtual context? (<i>general research question</i>)	Qualitative Exploratory semi-structured interviews	To explore complex processes and discover new elements that were not previously identified in the literature
Study 2	a. How does language diversity influence task-related communication behaviors in a multilingual virtual team? b. How does language diversity influence trust in a multilingual virtual team?	Quantitative Experimental online serious game	To explain relationships between variables
Study 3	c. How does language diversity influence the development of team cohesion in a multilingual virtual team?	Qualitative Organizational ethnography	To uncover elements while focusing on a contextual explanation of perceptions and feelings

A note on the research scope

The goal of this research is to understand how language diversity influences processes in different types of GVTs to provide a more holistic understanding of the research question. Hence, the field of research is global virtual teams in international organizations, be they private companies or non-profit organizations, such as higher education institutions. Indeed, during the course of the research, the opportunity to work with a European University Alliance composed of seven higher institutions throughout Europe arose. While the goals of the European University Alliance cannot be characterized as like those of multinational corporations (MNCs), the team under study is a GVT.

The language scope of this research is limited to the everyday spoken and written means of human communication (Welch & Welch, 2018, 2019). This conceptualization is mainly based on national languages, but also includes “team speak” or the specific languages used by work teams. Therefore, the language scope does not include gestural language such as sign language or body language as the object of study.

Concerning the level of study, the main focus is on team-level characteristics (e.g. team language diversity and virtuality) and processes. However, in order to arrive at team-level characteristics, individual characteristics and behaviors are observed. This is because individual characteristics and behaviors contribute directly to building team processes. Individual characteristics include aspects related to language skills, international experiences and feelings about using information technologies, for example. We believe that this multi-level approach is necessary because collaboration and team synergy is created through joining the strengths and qualities of individuals into an outcome that is greater than the sum of its parts (Katzenbach & Smith 1993 in Tenzer et al., 2017). Multi-level research has been cited as particularly promising for studying multilingual collaborations (Tenzer et al., 2017), though it should be approached with caution due to its complex nature.

Key findings and contributions

The key findings of this dissertation demonstrate that high-performing multilingual virtual teams are those where trust and team cohesion have been established by successfully managing communication processes.

This dissertation contributes theoretically to language-sensitive research in international business by examining language diversity in global virtual teams through the lens of team processes. Language diversity influences both task-related processes and socio-emotional processes. Focusing on tasks, relative language proficiency has deeper implications than absolute language proficiency in the common language. The same remains true for trust and team cohesion, which are largely informed by emotions which result from relative language characteristics. Therefore, we encourage conceptualizations with a dual level view of language diversity in two ways: the surface and deep-level characteristics of language diversity itself and its surface and deep-level implications on team processes.

Furthermore, in the field of information systems, we find that a major limitation of communication channel choice theories is the lack of consideration of contextual factors (Pallud, 2018). In other words, communication channel choice is not completely rational and straightforward, but is affected by multiple contexts. Therefore, this dissertation proposes a reconceptualization of theories related to the choice of communication channel. Stemming from the social practice view of language in which context is key, we propose the integration of four contextual factors, including individual, technical, social and emotional factors, in order to better understand how to select the most suitable channels for communicating in a multilingual GVT.

This research proposes a new methodology based on an experimental serious game, which was created within the framework of this research. This methodology has great potential for simulating social interaction and experimentally comparing behaviors. Further development of the research tool proves promising for future behavioral research in international business and management.

At the managerial level, the benefits of linking language dynamics, communication channels and social aspects can “lay the foundation for effective virtual management in MNCs” (Klitmøller, Schneider & Jonsen, 2015, p. 270). The managerial recommendations resulting from these findings concern choosing appropriate communication behaviors and channels to

develop strong trust and team cohesion for high-performing global virtual teams as well as understanding how to reinforce the positive aspects of language diversity. As such, this research lends itself to understanding diversity management and the implementation of inclusive practices.

Furthermore, the serious game developed within this research is a valuable tool for human resource professionals who wish to implement training on multilingual communication and teamwork. In addition to its potential for research, this game has an educational aspect that provides experiential training for managers and employees to better communicate and manage diverse and remote teams. This game has been tested by professionals and students who have affirmed the usefulness of the digital game for training. One player reported, "Playing the game is a great experience: it is so fun and informative. I learned a lot about international team leadership, intercultural communication and myself along the way!" (English teacher at Université Grenoble Alpes). By also proposing discussions and debriefs around the game, this tool can be integrated into larger diversity, equity and inclusion initiatives.

Finally, this dissertation has benefited from interaction and discussions with the scientific community and has already resulted in one publication in *Management internationale – Mi*, an A-ranked (HCERES 2020 ranking) peer-reviewed journal, as well as book chapters in collected works entitled *Méthodes de recherche innovantes et alternatives en économie et gestion / Innovative and alternative research methods in economics and Business Administration* and *Internationalisation : la mobilisation des ressources immatérielles*. A selection of the publications, book chapters and communications in academic conferences that are associated with this doctoral dissertation are listed in Appendix 1.

Organization of this dissertation

INTRO- DUCTION		The topic Essential literature Research question Research design and methodology (overview) Key findings and contributions
PART 1: LITERATURE REVIEW	Chapter 1: Language diversity and management in teams	1.1 Language diversity 1.2 Language management in organizations 1.3 Highlighting the advantages of language diversity in teams
	Chapter 2: Global Virtual Teams (GVTs)	2.1 Setting the scene: The Global Virtual Team (GVT) 2.2 Characteristics of GVTs 2.3 Communication processes and choice of communication channel 2.4 Language diversity and GVTs
	Chapter 3: Socio-emotional team processes	3.1 Team processes 3.2 Trust in multilingual GVTs 3.3 Team cohesion in multilingual GVTs
PART 2: PARADIGMATIC FRAMEWORK & METHODOLOGY	Chapter 4: Paradigmatic Framework	4.1 Relationship between ontology, epistemology and methodology 4.2 Paradigms in language-sensitive research in IB 4.3 Adopting the interpretivist paradigm 4.4 Language considerations during the research process
	Chapter 5: Mixed Methods Research Design	5.1 An overview of mixed methods research design 5.2 This thesis' research design: An overview
PART 3: THREE COMPLEMENTARY STUDIES	Chapter 6 / Study 1: An Exploratory Study of Multilingual Virtual Teams	6.1 Study 1 Methodology: Exploratory interviews 6.2 Exploratory findings of multilingual virtual teams 6.3 Discussion and perspectives for further research
	Chapter 7 / Study 2: Coordinating a multilingual virtual team in an online serious game	7.1 Serious games for experimental research in IB 7.2 ELITE The Serious Game: An online game about communication and leadership in a GVT 7.3 Elaboration of the game questions, measures and variables 7.4 Data collection and sample 7.5 Findings from the experimental serious game 7.6 Discussion on language diversity, communication behaviors and trust
	Chapter 8 / Study 3: An Organizational Ethnography in a European University Alliance	8.1 Study 3 Methodology: Organizational ethnography 8.2 Findings on team cohesion in a European University Alliance 8.3 Discussion on language diversity and team cohesion
CONCLUSION	General Discussion	Distinguishing surface-level and deep-level implications of language diversity Extending theory on the choice of communication channel
	Contributions, Implications and Future Research	Theoretical contributions Methodological contributions Managerial implications Limits, learning and looking forward

PART 1:

LANGUAGE DIVERSITY, THE VIRTUAL CONTEXT AND
TEAM PROCESSES: A LITERATURE REVIEW

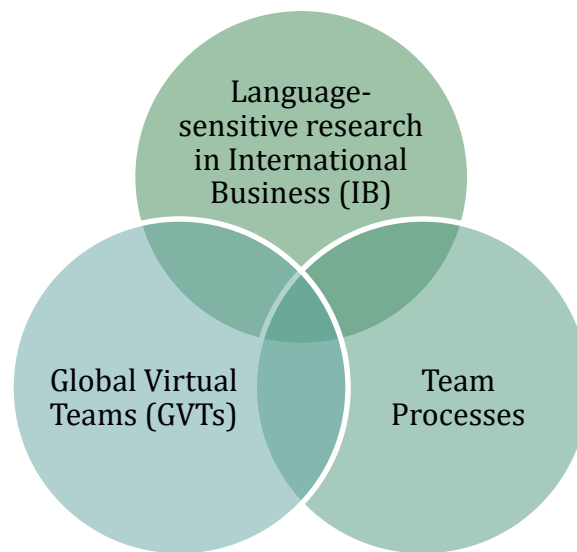
Introduction to the literature review

Since Marschan-Piekkari, Welch and Welch (1997) first brought language to the attention of international management research, language-sensitive research has grown to be a distinct stream of research in the fields of IB and management (Brannen et al., 2014; Karhunen et al., 2018; Piekkari et al., 2022). For the last two decades, language-sensitive research in IB has been particularly triumphed by teachers and researchers in international management, by foreign language instructors within business schools and by the academic community of the *Groupe d'Études en Management & Langage* (GEM&L) in France (Chanlat, 2022).

As research in the subfield has grown, it has come to cover a range of topics including language proficiency (e.g. Li et al., 2018; Lockwood & Song, 2020), communication (Charles, 2007; Louhiala-Salminen & Kankaanranta, 2012; Piekkari & Zander, 2005) and power relations (Hinds et al., 2014; Neeley, 2013), to name a few. The focus on language follows the tradition of the field of IB, which has traditionally integrated non-business disciplines such as economics, psychology and linguistics (Tenzer et al., 2017). Thus, research in the subfield of language-sensitive research can generally be characterized as interdisciplinary and phenomena-driven. This results in difficulty in identifying the limits of the subfield (Piekkari et al., 2022), but that also contributes to its richness with the integration of interdisciplinary research. In general, the subfield has significantly focused on how language diversity influences organizations (Piekkari et al., 2022). Yet, few studies linked language-sensitive research with virtual teams, an organizational form that steadily gained ground over the last 30 years, with a dramatic increase in 2020 as a result of the global health pandemic (Neeley, 2021).

As such, while focusing on an established topic in language-sensitive research in IB (language diversity in teams and organizations), we also integrate a multi-field approach for exploring our research question as a means to account for the research context. Specifically, this research is at the crossroads of three fields of literature: language-sensitive research in IB, global virtual teams (GVTs) and team processes.

Figure 1: Research at the crossroads of three fields of literature in (international) management



We arrived at this crossroads upon analyzing the intersection of language-sensitive research in IB and GVTs. Themes that emerged related especially to communication processes, how communication was felt by team members and how it influenced other socio-emotional processes such as trust and cohesion. Resulting from this realization, we decided to also identify literature on team processes affected by language diversity and the virtual environment to complete the literature review. While research on languages in IB is now considered to have reached “mainstream legitimacy” with regular publications in top-ranked journals in international business and management since around 2012 (Tenzer et al., 2017), it is continually growing and evolving. This also applies to this literature review, which has grown significantly during the course of the PhD with the publication of articles, books and theses covering these topics during the past three years.

This traditional literature review was built through key word searches, consultation of reviews in language-sensitive research and global virtual teams and the snowball method. First, in 2019, a keyword search involving “language diversity” and “global virtual team” and related terms was carried out on Ebsco and Google Scholar. However, we found the literature that explicitly traversed the boundary between language diversity and GVTs to be extremely sparse. In order to overcome this, we returned to the language-sensitive literature in IB and analyzed where GVTs were addressed in subtler ways. We also consulted reviews of language-sensitive research in IB and global virtual teams which have been conducted during the past five years (see Appendix 2 for an overview of published language-sensitive research reviews in IB).

Finally, further publications were identified in the bibliographies of pertinent articles and reviews, which, along with other suggest literature by conference attendees and fellow researchers, allowed us to build upon this literature review with a so-called snowball effect (Noy, 2008).

Overall, this literature review is divided into three parts which correspond to three chapters. Each of the chapters explores one of the fields of research consulted in this thesis including language diversity and management in teams (**Chapter 1**), global virtual teams (GVTs) (**Chapter 2**) and team processes (**Chapter 3**). The chapters are not meant to separate the three topics, but instead to gradually introduce components related to each of the topics as was done during the literature review process and to reflect upon the relationships between the three fields.

Chapter 1: Language diversity and management in teams

“A different language is a different vision of life.”

Federico Fellini

1.1 Language diversity

1.1.1 Language as a multilevel construct

Language, at its core, can be considered the everyday spoken and written means of human communication (Welch & Welch, 2018, 2019). More specifically, it can be defined as “generally agreed-on, learned systems of signification or meaning, which are central to the process of constructing organizational, social, and global realities” (Lauring & Klitmøller, 2015; see also Van den Born & Peltokorpi, 2010). In the field of international business (IB), language is often defined in terms of national language, so differentiating between languages often means differentiating between national languages. A national language is spoken within a specific country or national culture. This conceptualization is based on languages as separate units, and in this regard, multilingualism can represent the sum of (national) languages (Angouri & Piekkari, 2018). Yet, language can also be recognized at other levels, depending on the social, professional or technical contexts (Welch et al., 2005). For example, regional languages that are influenced by regional culture have especially been studied in a French-Swiss multinational context (see Davoine et al., 2014). At another level, “company speak” is an example of the emergence of language in the professional context (Welch et al., 2005). Because of this complexity of language, in international business and research, language has been described as “a multifaceted, multilevel construct” (Brannen et al., 2014, p. 496).

1.1.2 Language diversity through the lens of the diversity typology

As mentioned in the introduction, and taking inspiration from scholars in the field (Church-Morel & Bartel-Radic, 2014; Lauring & Selmer, 2010; Welch et al., 2005), we adopt the following definition for language diversity: The variety of languages, national or other, that

manifests in groups based on the involvement of speakers from multiple languages and the languages spoken in the organization, which may cause separation and disparity between individuals. In order to better understand this definition, we next provide a definition of diversity and examples of how language diversity fits into Harrison and Klein's (2007) diversity typology as outlined by Church-Morel and Bartel-Radic (2014).

Diversity is defined as "the distribution of differences among the members of a unit with respect to a common attribute, X, such as tenure, ethnicity, conscientiousness, task attitude, or pay" (Harrison & Klein, 2007, p. 1200). As a multilevel construct, diversity exists within a unit, such as a group or organization, and it is attribute specific, such that diversity can only be observed in respect to the specific features of the unit's members (Harrison & Klein, 2007). It can be observed or studied in different ways, for example by observing surface-level and deep-level diversity where surface-level diversity is based on demographic differences and where deep-level diversity is based on differences in attitudes and beliefs (Harrison et al., 1998).

Another way to look at diversity is through Harrison and Klein's (2007) typology of diversity that shows three distinct, but interrelated, types: variety, separation, and disparity. See Table 5 for a representation of the three diversity typologies with a description of language diversity across the three typologies. **Variety** reflects the composition of differences among unit members (Harrison & Klein, 2007). Members that have different content expertise, background and experiences will be seen as unique or distinctive. Minimum variety represents homogeneity between unit members, and maximum variety implies that no member is the same.

Regarding language variety, we could observe the plurality of native and learned languages or the variety of proficiency levels of different team members (Church-Morel & Bartel-Radic, 2016). Different organizational or team-specific languages could also be considered when observing the different groups (Lauring & Selmer, 2010). It should be noted that language diversity does not only depend on the languages being spoken, but also on the understanding and interpretation of the interlocutor because people "tend to use different interpretive mechanisms due to their diverse backgrounds" (Kassis-Henderson, 2005). In sum, because language diversity is so often viewed in terms of differences in language backgrounds, experiences, skills and understandings, it is most often viewed as a variety construct.

Variety is generally meant to expand the “cognitive and behavioral repertoire of the unit” (Harrison & Klein, 2007, p. 1204). It has been positively described as “sociocognitive horsepower” because variety expands the team’s knowledge and skills (Carpenter, 2002, p. 280 in Harrison & Klein, 2007). Significant variety is predicted to increase creativity, innovation and unit flexibility, but also task conflict (Harrison & Klein, 2007). Besides the mostly positive implications of maximum variety, where each unit member is different and therefore members are overall quite open and receptive to each other’s views, moderate variety is thought to lead to problems related to knowledge sharing, or more specifically the lack thereof (Harrison & Klein, 2007). In other words, there may be a lack of shared information among the entire unit, and some unit members may be lacking essential information.

Another type of diversity, **separation**, is demonstrated in disagreements or oppositions between unit members, especially those related to values, beliefs or attitudes (Harrison & Klein, 2007). When separation is at its greatest, two groups within the unit of equal size will be at either end of the spectrum, meaning that they will have entirely opposing views, especially regarding beliefs, values and attitudes surrounding team goals and processes (Harrison & Klein, 2007).

Language separation results from different values, beliefs or attitudes about language use, such as those related to choice of language or language practices (Church-Morel & Bartel-Radic, 2016). For example, the debate surrounding “which language and when?” can lead to separation. Simply, language has the power to unite people and organizations, especially when there is close linguistic and cultural affinity, it also has the power to divide them when significant linguistic and cultural effort is required for sharing knowledge (Charles, 2007).

A minimum degree of separation is thought to be psychologically comforting because everyone’s position about the subject is the same and there is no disagreement on the fundamentals of their collaboration. Theories related to social identity or self-categorization (Ashforth & Mael, 1989; Tajfel & Turner, 1986) highlight how low separation leads to higher levels of cohesion, trust and the like. Subgroups may form, and extreme separation is predicted to reduce team cohesiveness and task performance, while increasing interpersonal conflict and task performance (Harrison & Klein, 2007).

Finally, **disparity**, also known as inequality, depends on the composition of vertical power differences which are related to socially-valued assets or resources (Harrison & Klein,

2007). With maximum disparity, there will be a single person who outranks the rest when it comes to attributes such as income, prestige, status, decision-making power or other social power (Harrison & Klein, 2007). Thus, disparity is asymmetric and dependent on who holds the power compared to who does not.

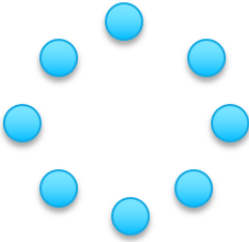
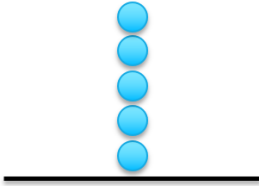
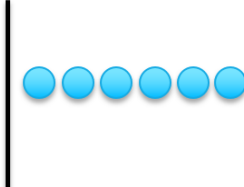
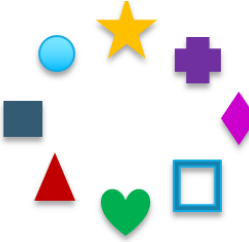

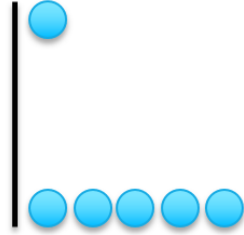
Language disparity reflects power differences between individuals or groups based on their language skills. Disparity has been shown in language-sensitive research regarding power struggles, such as on the privileging effects of English proficiency (Gaibrois & Nentwich, 2020; Neeley, 2013). As long as the team members have different proficiency levels in the common language, they will be on unequal footing (Tenzer & Pudelko, 2017, 2020). Likewise, language has been recognized to be a “power-wielding instrument in organizations” (Charles, 2007, p. 272). Language disparity means that some members of the group will be favored because they have the right profile or language skills necessary for the organization or team. Power struggles surrounding language have been shown to act as a trigger for creating subgroups along geographic-, nationality- and language-based faultlines (Hinds et al., 2014) and so “may act as a driver of perceptions of status inequality and identity politics between different groups of employees” (Kroon et al., 2015). Faultlines and subgroups based on power struggles demonstrates that separation and disparity can be closely linked.

Maximum disparity is predicted to lead to more within-unit competition, overall reduced member input and withdrawal of certain members (Harrison & Klein, 2007). Researchers from the field of psychology also help us understand power dynamics in teams: “High-power individuals talk more, interrupt more, are more likely to speak out of turn, and are more directive of others’ verbal contributions than are lower-power individuals” (Keltner et al., 2003, p. 277).

While language diversity can be classified as any of the three types of diversity, we propose the following definition of language diversity for this thesis: *The variety of languages, national or other, that manifests in groups based on the involvement of speakers from multiple languages and the languages spoken in the organization, which may cause separation and disparity between individuals.* Our definition admittedly places variety before separation and disparity, which is our means of avoiding confusion regarding the implications of diversity typology on research design (Harrison & Klein, 2007). By focusing first on variety, then

considering separation and disparity as secondary outcomes, we can better structure this research.

Table 5: Language diversity: Definition and typology

Language diversity			
<i>The variety of languages, national or other, that manifests in groups based on the involvement of speakers from multiple languages and the languages spoken in the organization, which may cause separation and disparity between individuals.</i>			
	Language variety	Language separation	Language disparity
Representation of minimum diversity <i>(adapted from Harrison & Klein, 2007)</i>			
Representation of maximum diversity <i>(adapted from Harrison & Klein, 2007)</i>			
Examples pertaining to language diversity	<ul style="list-style-type: none"> • Multiple native and learned languages • Multiple proficiency levels in the common language 	<ul style="list-style-type: none"> • Different values, beliefs or attitudes about language use, such as those related to choice of language or language practices 	<ul style="list-style-type: none"> • The privileging effects of English proficiency

It should be noted that not all scholars use the term “language diversity.” Instead, others may use “language differences” (Welch et al., 2005), “multilingual” (Tenzer & Pudelko, 2016)

or “plurilingual” (Coste et al., 2009) in reference to these teams. Church-Morel and Bartel-Radic (2014) propose that this may be because “diversity” implicitly references a much more significant body of literature in diverse fields. In this thesis, these terms are seen as interchangeable, meaning that a team that is linguistically diverse is also multilingual. Following Tenzer and Pudelko’s (2016) understanding, multilingual teams are those whose members represent at least two (though likely more) different mother tongues.

1.1.3 The relationship between language diversity and cultural diversity

While the focus of this research is on language diversity, it is important here to briefly address its relationship with cultural diversity. The relationship between language and culture has been widely discussed across different disciplines. Some scholars view language as inherently tied to culture, while others have successfully separated the concepts, demonstrating how they affect teams differently. This section briefly discusses those different views before stating how the relationship is regarded in this research.

On one hand, some scholars find that language and culture are inseparable, either because language results from culture, because it informs culture, or because it is at the heart of culture (Tenzer et al., 2017). Therefore, the view of language is culturally embedded. To explain, language results from culture because it is an individual trait that is influenced by the user’s culture and history. Thereby, people view and interpret the world differently based on their background and experiences (Kassis-Henderson, 2005). Language informs culture due to the fact that language creates a framework for understanding and viewing the world (Bordia & Bordia, 2015). This relates to the theory of linguistic relativism that describes how language influences thinking and thus creates frameworks for sensemaking (Whorf, 1940). Another view that sees language and culture as inseparable places language at the very heart of culture. O’Hair, Friedrich, Wiemann and Wiemann (1997) define culture as “the shared beliefs, values, and practices of a group of people. A group’s culture includes the language or languages used by group members as well as the norms and rules about how behavior can appropriately be displayed and how it should be understood” (p. 9, in Ulijn et al., 2000). Across these multiple views, language and culture are deeply intertwined and inseparable.

On the other hand, some scholars separate language and culture. Welch and colleagues (2005) believe this separation is important because it allows language effects to be studied in

more depth, specifically “beyond the surface implications for cross-cultural communication” (p. 24). By separating these concepts, scholars have shown how language asymmetries are more “salient and explosive” than nationality or national cultural differences on a day-to-day basis (Dow & Karunaratna, 2006; Hinds et al., 2014). In this way, language differences may be even more important to teams since they are so visible. For example, Barner-Rasmussen and colleagues (2014) found that both cultural and language skills were necessary for effective boundary spanners, but that language skills were more important for the more demanding boundary spanning functions, which include facilitating cross-border interactions and intervening in situations to create positive outcomes. Even Chudoba and colleagues (2005) who classified language as a cultural characteristic recognized that language is especially relevant for the virtual environment due to the mediation of communication technologies.

In this thesis, language diversity is approached as separate, but complementary, to cultural diversity. Language is approached as a social construct emerging from different layers of context, one of which is culture (Karhunen et al., 2018). Because language is socially constituted, context both affects and is affected by language (Karhunen et al., 2018). Therefore, language can be influenced by culture and it also acts as a carrier of culture (Karhunen et al., 2018). In this way, it is not surprising that some of the individuals interviewed within this research tended to speak of language and cultural diversity as interchangeable concepts. Yet, culture is not the only social construct influencing language in the social practice view of language (Karhunen et al., 2018). Therefore, there is value in focusing on language as separate but complementary to culture, as is the trend in the field of language-sensitive research in international business. As such, it is possible to take culture into account by maintaining a “culturally-sensitive perspective.” In this way, Tenzer, Pudelko and Zellmer-Bruhn (2021) encourage a socially- and culturally-sensitive perspective of language as complementary to the more common instrumental view of language “for a comprehensive understanding of communication processes in multilingual teams” (p. 12). The instrumental view by itself, which views language as an easily managed and neutral tool, has become obsolete (Tenzer & Pudelko, 2015). Therefore, by taking on the social practice view of language (Karhunen et al., 2018), this research considers how language is influenced by its actors, based on culture for example, but also how its actors influence language.

1.2 Language management in organizations

1.2.1 Language viewed as a barrier in the IB literature

The language barrier and its consequences

In language-sensitive research in IB, language has been approached as a barrier to organizational, team and individual performance. By definition, language barriers are “obstacles to effective communication, which arise if interlocutors speak different mother tongues and lack a shared language in which they all have native proficiency” (Tenzer et al., 2014). There are both evident barriers related to lexical and syntactical proficiency and hidden language barriers where team members are influenced by the communication convention and patterns of their native language while speaking in the common language (Tenzer et al., 2021). Likewise, hidden language barriers can occur due to both lack of linguistic equivalencies between languages and differences in interpretation of values (Barmeyer & Davoine, 2013). This multi-dimensional view may explain why senior managers have found language challenges surprisingly prevalent and difficult to overcome, even in teams with English designated as the common language (Zander et al., 2012). As such, barriers happen for both native and non-native speakers of the common language (see Kim et al., 2019).

Language barriers can result in multiple negative effects. Evident language barriers may reduce the frequency of participation, whereas hidden barriers may have more serious consequences, such as impaired sensemaking (Tenzer et al., 2021). This further results in negative effects on both basic knowledge processing activities (“knowledge as something teams can process mathematically, store and retrieve like data on a computer”) and more sophisticated knowledge processing activities (“complex cognitive and communicative processes such as uncovering implicit assumptions and negotiating meaning”) (Tenzer et al., 2021).

In addition, language barriers can raise costs and create inefficiencies, act as a barrier to market entry, to local operations and general coordination within multinational companies and across subsidiaries (Barmeyer & Davoine, 2013; Brannen, 2004; Harzing et al., 2011). Thus, language can be costly for the organization. It is for this reason that transaction cost theory is sometimes referred to in the language management literature. According to transaction cost theory, languages and language diversity increase the transaction costs of

understanding the country of location and in the exchange of information between customers, suppliers, competitors and regulators (Luo & Shenkar, 2006).

Along with the transaction costs for the organization, the language barrier creates other difficulties internally. One aspect is the creation of subgroups, especially resulting from emotional divisions. Language differences in teams and the resulting practices of inclusion and exclusion can lead to the creation of subgroups and power inequalities (Gilson et al., 2015; Vigier & Spencer-Oatey, 2018). This relates more closely to separation in the diversity typology (Harrison & Klein, 2007). Hinds and colleagues (2014) propose the metaphor that language drives subgroups and functions as a “lightning rod” for intense emotion. Language draws out tensions from team members and reinforces emotions that then fortify the subgroup dynamic. In another view of this phenomenon, according to Turner and colleagues’ (1983) social identity theory, individuals will assume and defend the values and interests of the group, and they will attribute negative intentions to others outside of the group (Cohen & Kassis-Henderson, 2012; Turner et al., 1983). These subgroups and other forms of discrimination resulting from perceptions of lack of fluency (Vigier & Spencer-Oatey, 2018), uncertainty, mistrust and polarization of perspectives, perceptions and cognitions (Feely & Harzing, 2003) can harm team cohesiveness and the effectiveness of individuals, the team and the organization as a whole (Gilson et al., 2015; Klitmøller & Lauring, 2013; Kim et al., 2019).

Language management

As a means of addressing these barriers, scholars have turned to language management. Language management is the “strategic awareness and/or intervention as to the use of language(s) within an organization” (Church-Morel & Bartel-Radic, 2014, p. 14). By understanding the importance of the influence of language and then implementing an appropriate strategy, multinational corporates (MNCs) hope to gain competitive advantage (Kim, 2016).

Before choosing language management strategies in an organization, it is useful to conduct a linguistic audit to understand the languages available in order to enhance horizontal communication (Charles & Marschan-Piekkari, 2002; Welch et al., 2005). In addition to the specific language being employed in an organization, Feely and Harzing (2003) and Harzing

and colleagues (2011) further propose language barrier solutions at different organizational levels as summarized in Table 6.

Table 6: Language barrier solutions (adapted from Harzing et al., 2011 and Church-Morel & Bartel-Radic, 2014)

Informal day-to-day solutions	Build redundancy into communication	By encouraging repetition, checks, reformulations, illustrative examples and frequent summaries
	Adjust mode of communication	By choosing an appropriate mode of communication (email, video call, screenshare...) based on the interlocutor, message and context
	Code-switching	By allowing team members to revert to their native language or the native language of their interlocutor to clarify information or for efficiency.
	Functional multilingualism	By using a “cocktail of languages” and switching as needed based on the language that is most appropriate for the situation and interlocutors
Structural solutions at the organizational level	Corporate language(s)	By officially adopting a common language for the organization with a top-down enforcement of the language in organizational communication
	Machine translation	By using technology to establish basic understanding of mainly written material
	External translators/ interpreters	By employees individuals with language skills to help with written or oral understanding
	Language training	By offering opportunities to improve language and communication skills through organizational sponsored training sessions
Bridge individuals	Bilingual employees (language nodes)	By employing individuals who speak two or more languages who take on an important role in mediating conversation within a team or the organization
	Expatriation	By employing expatriates for headquarters to work in subsidiaries
	Inpatriation	By employees inpatriates from subsidiaries to work at headquarters
	Non-native locals	By employing individuals locally who are originally from another country (often because they have insider knowledge or skills associated with either the headquarters, subsidiary or both)
	Parallel information networks	By establishing communication channels based on the language skills of an interlocutor, rather than their official job title

The literature on language management solutions in organizations is well documented (Church-Morel & Bartel-Radic, 2014; Feely & Harzing, 2003; Harzing et al., 2011). On the following pages, we explore language management solutions that can highlight the benefits of team language diversity as a strategic resource, not just as an exterior barrier or handicap (Kim, 2016). We start by discussing how corporate languages are chosen. Then we look at English-only versus multilingual workplaces, while also considering code-switching as multilingual processes. Then we turn to the role of individual “language nodes,” who can increase understanding and knowledge transfer. One of the above informal day-to-day solutions, adjusting the mode of communication, will be further considered in Chapter 2 on Global Virtual Teams, since that is a particularity of such teams.

1.2.2 Language choice and use: One language or many?

Organizations can explicitly or implicitly designate an official company language, often called a corporate language. A corporate language policy is simply the explicit and strategic management of languages in the organization, but it is often conceived as a top-down initiative of management coming from an MNC’s focal unit (headquarters or overseas subunit) (Church-Morel & Bartel-Radic, 2014; Luo & Shenkar, 2006). These corporate languages are meant to help facilitate coordination, increase value creation, and reduce misunderstandings within the organization (Fredriksson et al., 2006). They therefore have implications for team and organizational control, strategy, and performance (Luo & Shenkar, 2006).

Designing a corporate language is a formal step involving the recognition of the place of language and the effects of multilingualism (Welch & Welch, 2019). Yet, at present day, few MNCs seem to actually implement formal language policies or strategies (Welch & Welch, 2019). It should be noted that because few organizations specify a corporate language, language choice may also emerge from the team itself. Welch and Welch (2018) found that language policies evolved in an *ad hoc* manner “more as a reaction to multilingualism than as a deliberate strategy” (p. 863). For this reason, we may also refer to a “functional language” or simply “common language” as a bottom-up approach to language use. That is, language emerges from teamwork and processes and depends on the competencies of individual team members.

For those that do choose to address languages through formal policies, it is important that the policies align with organization strategic orientations, HRM practices and national culture. Concerning the strategy, Luo and Shenkar (2006) differentiate the choice of corporate language(s) among three main multinational strategies: a global, multidomestic or hybrid strategy. Those with a global strategy often prefer to maintain a single, common language, such as English. Those with a multidomestic strategy usually use several corporate languages. Lastly, those with a hybrid strategy will choose either one or a few languages, from which the subsidiaries can choose the ones that suit them best. In a hybrid strategy, language choice will minimize integration and localization conflicts of subsidiaries and give them more autonomy (Luo & Shenkar, 2006).

The language policy should also align with HRM practices. Organizations can consider different approaches for their language management strategy based on how they want to address and recognize the diversity of languages present. Chevrier (2013) proposes different language strategies, similar to the aforementioned strategies linked to organizational strategic orientation: use of a single *lingua franca*, use of multilingualism, or finally, a heavy reliance on translation. Van Den Born and Peltokorpi (2010) proposed flexible language policies that aligned with HRM practices as a means to reduce negative effects of language diversity. This proposal advocates for multilingualism, which requires employees to possess multiple language skills or a willingness to develop those skills (Van den Born & Peltokorpi, 2010).

There are also some general trends concerning the number of corporate languages in relation to national culture. Multinationals based in English-speaking countries usually implement the use of a single language, which is usually English, whereas Japan, China and Korea often have two languages, and bigger European countries (e.g. France, Germany and Spain) have about 2.5 languages on average (Harzing & Pudelko, 2013).

Overall, the choice of language has an impact on the functioning of the organization. For example, it influences the flow of information, presentations, and interpretation, which in turn allows headquarters to control the overall organization and coordination between units (Luo & Shenkar, 2006). Even if organizations choose corporate languages, it does not solve all language-related difficulties (Charles, 2007; Marschan-Piekkari et al., 1999). These difficulties arising from common language mandates can lead to serious consequences for the team such as inefficiencies and loss of productivity (Neeley et al., 2012). Likewise, organizations should

take note that while a corporate language may facilitate communication, “[it] will not render the firm multilingual” (Fredriksson et al., 2006). The organization must go further to reinforce its multilingualism and the acceptance of a multilingual workforce. In this way, a common language should be regarded more as an “anchor point” from which the organization can begin addressing multilingual complexity (Steyaert et al., 2011).

In this section, we have explained the strategic implications of adopting formal language policies, specifically through a common corporate language. In the next sub-sections, we expand upon what these policies can actually look like in practice. As English is one of the most common *lingua franca* and for many the “language of global business,” we start by exploring the concepts of (Business) English as a *lingua franca*, which are then compared to a multilingua franca.

(Business) English as a lingua franca

The choice of a single common language for communication, called a *lingua franca*, allows the entire organization to communicate in one language for any exchange, whether written or oral, formal or informal. As defined by Janssens and Steyaert (2014), a *lingua franca* is based on the idea of fundamental language neutrality to convey ideas and emphasizes uniformity and cohesion. In this way, a *lingua franca* is meant to establish a “global community” (Janssens & Steyaert, 2014).

Because of its prominent role in international business, English is often the language required in international teams belonging to large multinational companies with employees and teams located across the world (Kankaanranta & Planket, 2010). In some instances, English has simply been equated to global work, and is therefore considered necessary to accomplish anything (Kankaanranta & Planken, 2010). In addition, GVT members have emphasized the importance of (English) language proficiency over other differences when discussing challenges related to their work (Klitmøller et al., 2015). Numerous studies have cited the negative effects of low proficiency in the common language, such as Neeley (2013) who found a loss of employee status for those who did not master the corporate language in mergers.

For organizations that have selected English as the corporate or functional language, there are two approaches to consider: English as a *lingua franca* (ELF) and Business English as a *lingua franca* (BELF). These approaches are detailed in the following paragraphs.

English as a *lingua franca* (ELF) was designed to facilitate communication by choosing English (e.g. American English or British English) for all formal communication in an organization. This approach is based on the premise that one language fits all and that everyone will speak and communicate in one language: English. This language is considered neutral as it is a means to convey ideas (Janssens & Steyaert, 2014). In this approach, consistency and cohesion are valued (Janssens & Steyaert, 2014), and the speaker tries to imitate the way of speaking of a native speaker, who therefore serves as an ideal reference (Charles, 2007). In research, this approach has been referenced by many authors such as Klitmøller and colleagues (2015) who found that English fluency was more important than cultural symmetries for effective collaboration because people can adapt to working in an international environment, but language skills are more difficult to acquire.

Despite good intentions and the desire to strengthen organizational and team unity with a common language, scholars have found negative consequences because the choice of ELF can create inequalities within the company. This approach arguably promotes a global English that avoids political and identity considerations (Ives, 2010). Likewise, when employees try to emulate someone from another culture, but can never truly be like them, it creates an “us” versus “them” effect, which more or less separates native and non-native speakers of English. This can lead to linguistic ethnocentrism where one way of speaking is seen as preferable to another (Charles, 2007). Klitmøller and colleagues (2015), for example, find this phenomenon in virtual teams, demonstrating how ELF has created fault lines between groups. In addition, in their study of a Finnish multinational, they share the opinion of a Danish manager: when someone is not proficient in a language, they appear less intelligent, while in reality the person may be ten times more intelligent in their native language, but the interlocutor does not know it (Klitmøller et al., 2015). In other words, a person may have a bad reputation, simply because they lack confidence or flexibility in using English or have difficulty understanding fast-tempoed speech or certain accents (Kankaanranta & Planken, 2010).

In order to overcome the limits of ELF, Business English as a *Lingua Franca* (BELF) was proposed in 2005 by Louhiala-Salminen, Charles and Kankaanranta (2005). BELF differs from ELF because it is designated for business and its frame of reference comes from the global business community (Charles, 2007). Interlocutors privilege this form of English in business situations, but not really in their private lives. As Kankaanranta and Planken’s (2010) interviewee says, BELF is “more purposeful, task-oriented and persuasive [than general

English],” which is not taught in normal language courses. With BELF, situations are considered successful with language appropriate to the demands of the event (Charles, 2007). The speaker's goal is simple: to get their message across and be understood by the other person, or as Charles (2007) puts it, “get the job done.” Because of its international focus, BELF has been referred to as “an international English” (Kassis-Henderson, 2005) or a “creole language” (Kankaanranta & Planken, 2010), without which international teams cannot do their work. If BELF is used well, Louhiala-Salminen and Kankaanranta (2012) find that multilingual teams appreciate this language policy because no one is more important than the other, and equality and trust develop.

To identify the BELF style, those who speak BELF will use simplified sentences and highly specialized vocabulary adapted to the situation, event or profession, but discourse practices originating from the speaker's mother tongue(s) will still be visible (Kankaanranta & Planken, 2010). Communication is simple and effective. Speakers will therefore avoid abbreviations and slang and pay attention to humor and jokes (Kassis-Henderson, 2005). The goal is not to speak like a native English speaker. In fact, Louhiala-Salminen and Kankaanranta (2012) found that communication between people of non-English native languages is, in general, considered easier and fairer than with native English speakers.

In addition, syntactic and lexical anomalies are common, but they do not necessarily result from contextual misunderstandings (Charles, 2007; Cohen & Kassis-Henderson, 2012). The non-native English speaker is not seen as less intelligent because of these anomalies; they understand the situation and can communicate their needs and contributions to the team. It is not expected that individuals “erase” their culture, but cultural phenomena can be observed in “the proportion of issue versus relational talk, directness versus indirectness (or explicit vs. implicit talk) and politeness-related phenomena” (Kankaanranta & Planken, 2010).

As seen with ELF, the choice of English as the priority language generates inequalities, but the goal of BELF is to avoid these inequalities with a pragmatic view of language and the celebration of other cultures. From the team's point of view, BELF enables knowledge sharing while avoiding disparity (Louhiala-Salminen & Kankaanranta, 2012). Thus, this style is not “culture-free” but leaves room for others to communicate while maintaining their own culture (Charles, 2007). Speakers maintain, to some extent, the particularities of their native language discourse, such as mechanisms of expression and interpretation (Kankaanranta & Planken,

2010; Kassis-Henderson, 2005). In this view, language has both fluid and fixed elements and intertwines with identity and social relationships (Janssens & Steyaert, 2014). For this reason, Kassis-Henderson (2005) called English-speaking teams “simultaneously both multilingual and monolingual” (p. 74).

BELF still has a number of limitations. It is important to realize that even with a visible, common language, there are always hidden peculiarities between people of different mother tongues. For example, speakers do not always have the same context or interpretation of a situation, the same connotation related to a certain expression, or the same norms or practices (Kassis-Henderson, 2005). Individuals may be wrongly confident that they share the same understanding without realizing that they are not so close culturally (Kassis-Henderson, 2005). Karjalainen and Soparnot (2010) go further to argue that misunderstandings related to language issues are more common than true conflicts in virtual teams. These misunderstandings occur because the actors in the situation “believe that everyone's behavior in these situations reflects the individual's personality rather than their cultural background” (Karjalainen & Soparnot, 2010). In this way, research on BELF could aim to understand if and how individuals with different native languages mobilize BELF in specific situations. Furthermore, while previous studies have highlighted the importance of BELF for both native and non-native English speakers, research is lacking on how English proficiency levels could affect BELF.

Another means to adjust to a BELF setting is to increase communication redundancy. Redundancy refers to repetitions, reformulations and verifications (Church-Morel & Bartel-Radic, 2014; Harzing et al., 2011). This has been known to facilitate communication, especially for linguistically-diverse teams (Harzing et al., 2011) and in GVTs (Lockwood & Song, 2020). Taking the concept further, Tenzer and Pudelko (2016) view redundancy from the perspective of multiple communication channels, which are used either sequentially or simultaneously. One question that remains to be explored in more depth is how is redundancy influenced by one's language background and level in comparison to another's, and how does this in turn influence the team's performance and dynamics such as trust?

Views on multilingualism in the workplace

Multilingualism refers either to the parallel existence or mixing of language systems. In multilingualism, language is not neutral, but a multiplicity of local languages is recognized through an inclusive policy (Janssens & Steyaert, 2014). When multilingualism is presented as a valuable addition, it signals organizational acceptance of language diversity and fosters language adoption (Bordia & Bordia, 2015). Multilingualism tends to be more about the sensitivity and awareness surrounding language use. As Blommaert (2010, in Janssens & Steyaert, 2014) argues, “we need to develop an awareness that it is not necessarily the language you speak, but how you speak it, when you can speak it, and to whom it matters. It is a matter of voice, not of language” (p. 196).

In the following paragraphs, two approaches to multilingualism in the workplace are described: a monological multilingualism, where several corporate languages are defined, and a *multilingua franca*, where the specific language, expression or even word most suited to the situation is chosen by the employee in real time. Code-switching, or changing from one language to the next within a conversation, is also considered.

In order to demonstrate a monological multilingualism, we share the example of a company organized in a matrix structure where the head office and the product department co-manage different sites (Luo & Shenkar, 2006). The importance and authority of the subsidiary may lead to the product department choosing a different corporate language to use within the department compared to the head office. This implies the implementation of a multilingual strategy. But this approach is only a multilingualism that reflects a monological understanding. This means that even if several languages are defined, one language will be chosen at a time based on who is contacted. Several problems can occur in this context. Louhiala-Salminen and Kankaanranta (2012), for example, reveal difficulties encountered by organizations that adopt this approach because employees in the company employing a monological multilingual strategy were not satisfied compared to those in the company with a BELF strategy. In particular, they cite a lack of guidance on when, how and why to use each of the designated four corporate languages. They also explain that despite the fact that the four languages were initially presented as equal, English quickly gained a more important status than the others. In addition, another difficulty with this monological multilingualism approach is the idea that employees will have to speak more than one language if they intend to change work groups or

levels. Those who speak only one of the corporate languages do not benefit from all the interlanguage dynamics that characterize and facilitate interactions (Kassis-Henderson, 2005).

In contrast to the monological multilingualism approach is a *multilingua franca* where languages are so intertwined and merged that the boundary between these languages is fluid and difficult to define (Makoni & Pennycook, 2012). Feely and Harzing (2003) refer to this phenomenon as a “language cocktail.” They report that 16% of international transactions are already directed in this “cocktail.” A particularity of this approach is that it is both global and local. It is global in the fact that people understand each other through a mix of languages and in its objective, but this globality cannot be considered without the local context that belongs to each language and culture (Janssens & Steyaert, 2014). A consequence of this approach is a certain fluidity between language, culture, and identity. Janssens and Steyaert (2014) believe that this multilinguistic approach implies a reconsideration of the relationship between a language and a national identity, even a disconnection because language transcends national cultural identity and brings the world’s people together. While a monolingual, often “English only,” approach is the most common in international teams, a *multilingua franca* may actually be a more ideal solution for highly multilingual teams so that they can use their language skills to their advantage. However, a *multilingua franca* is arguably the most difficult language strategy to put into practice (Chevrier, 2013). That is because it is the team that must determine when, how, and with whom they mix languages. It is a team process, so a bottom-up initiative is necessary to implement it.

Although this approach is difficult for organizations to implement, it can be argued that a multilingual franca already exists, at least to some extent, in multilingual teams without necessarily being implemented officially. Kassis-Henderson (2005) and Cohen and Kassis Henderson (2012) argue that there is already an interaction of different languages in multilingual teams, even those with a corporate language. These languages are often used flexibly in practice with individuals choosing which language(s) to use, with whom, when and for what purpose. Furthermore, Kankaanranta and Planken's (2010) study on the borderline of BELF and a *multilingua franca* implicitly refers to a *multilingua franca* when the interviewees share that sometimes they use a mixture of languages: sometimes non-native English speakers use English expressions or words to better express themselves if there is no equivalent in their native language such as technical jargon. In this way, language can be conceptualized as a social activity, which Janssens and Steyaert (2014) argue “import[s] at its heart diversity that

truly goes beyond any kind of monolingualism” (p. 637). Languages are therefore non-exclusive, and the speaker uses the words and expressions that facilitate communication according to the situation and the receiver of the message, even when crossing the border between several languages.

Code-switching could also be considered within the context of multilingualism. The term code-switching comes from sociocultural linguistics and refers to “the use of more than one language in the course of a single communicative episode” (Heller, 1988, p. 1). It occurs when individuals switch between languages within a conversation. Often, they will code-switch from the functional language to another common language between the interlocutors to explain or clarify what was said in the functional language. Tenzer and Pudelko (2015) classify code-switching as “language-induced coping behavior.” In the language-sensitive research in IB, code-switching is mainly viewed under a monological multilingual approach such that one language is used at a time for clarification. While code-switching can increase understanding and efficiency especially for individuals who speak the same native language (that is not the common language), it also has the potential to cause intense emotion, tensions and reduced benevolence-based trustworthiness between team members when used too much (Hinds et al., 2014; Tenzer et al., 2014). For this reason, Tenzer and Pudelko (2020) state that managers should limit code-switching (in group settings) and should practice guiding code-switchers back to the shared language. Yet, this does not cover the use of greetings or common expressions aimed to build relationships.

Yet, previous studies have failed to view code-switching through the lens of a *multilingua franca*. This could demonstrate a greater flexibility towards and acceptance of code-switching. Another aspect that has not been treated in the literature related not only to the native languages spoken by the interlocutors, but also learned languages and common-language proficiency. Therefore, we intend to further explore code-switching to understand if and when code-switching could be acceptable and who actually mobilizes code-switching and when in a multilingual virtual team.

1.2.3 Skills management and language nodes in multilingual GVTs

Beyond recognizing the languages spoken by the team members and choosing a common language for team activities, language management involves understanding the distinction

between language skills and communicative competence and how these skills can be centralized in individuals known as “language nodes.”

Language skills versus communicative competence

Language and communication are often seen as interchangeable, but it is important to note their unique implications. Language skills relate to the ability to construct language through the use of appropriate linguistic and semantic signals of a given language, thereby conveying meaning in that language (Brannen, 2004). Language skills are measurable in that there are specific sounds, grammatical structures and conventions that are attributed as correct within a language (Klitmøller & Luring, 2013). An example of a measure of language skills is the Common European Framework that measures reading, writing, listening and speaking on levels from A1 (complete beginner) to C2 (mastery).

Language skills belong to individuals (Angouri & Piekkari, 2018), but they influence how teams relate. So, it could be said that “language consequences are tied up with the management of people” (Welch et al., 2005). An example of language skills necessary for teamwork is proficiency in a specific language, which enables an individual to communicate and share knowledge and a team to function. For this reason, some scholars have explored common language proficiency which refers to the level of (generally non-native) language skills which are held by individuals that are using that language to communicate (Klitmøller et al., 2015). Others have studied how individuals who are fluent in several languages may act as “bridges” and facilitate exchanges, linkages and interventions between groups (Barner-Rasmussen et al., 2014). These language skills, and particularly English language proficiency, has been shown to act as a baseline or gatekeeper to developing further communicative competence at the workplace (Lockwood & Song, 2020).

Proficiency in the organization’s language(s) is only one part of the puzzle for a well-functioning team. Communicative competence is also important because simply sharing a language does not guarantee shared meaning (Cohen & Kassis-Henderson, 2012, Karhunen et al., 2018). Communication is a process of intercomprehension that consists of “formulat[ing] agreements and understandings that are all the more profound and effective because they have been discussed” (Zarifian, 2009, p. 61, translated). This requires a mutual understanding of the reality of the problem or event in question and the meaning, a mutual employment of values

and the opportunity for individual expression, thereby allowing personal engagement in the whole process (Zarifian, 2009).

While language skills are individual, communication depends on both the sender and receiver of the message. As such, the ability to gauge another's language proficiency and adapt accordingly, understand the differing meanings of verbal and non-verbal language - both in person and online, and the ability to listen and ask questions in order to fully understand the other person's point of view are all examples of communication skills (Cohen & Kassis-Henderson, 2012). As a whole, communicative competence consists of linguistic resources (e.g. knowledge of words and grammar), sociolinguistic resources (e.g. the appropriate language in a particular social context), cultural or intercultural resources (e.g. knowledge about taboos in particular cultural contexts) and semiotic resources (e.g. gestures, signs, images and drawings) (Karhunen et al., 2018).

It can be noted that the concept of communicative competence can vary between cultures. Competence refers to what constitutes a good participant in a conversation or event, or what characterizes a good team leader. This differs widely between national cultures and therefore also between different language communities (Kassis-Henderson, 2005). Due to the strategic importance of these skills, it is therefore necessary to build on these competencies and experiences of diversity in order to make linguistic diversity a strength that supports the overall capabilities of the organization.

Language nodes

Individuals can serve as “language nodes” (Marschan-Piekkari et al., 1999) – also known as “bridge individuals” (Barner-Rasmussen et al., 2014) – within a group to facilitate communication. Language nodes serve functions similar to “boundary spanners” who help facilitate interactions between the team and other organizational units (Barner-Rasmussen et al., 2014; Zander et al., 2012). These intermediaries include bilingual employees, expatriation, inpatriation, non-native locals and parallel information networks (Harzing et al., 2011). For those that are acting as linguistic links between or within groups, their role depends on relevant language skills that are necessary within the team and organization (Barner-Rasmussen et al., 2014). Their skills cover four functions that reduce barriers: exchange, linkage, facilitation, and intervention (Barner-Rasmussen et al., 2014).

Language nodes and boundary spanners can have both positive and negative effects on the group. Marschan-Piekkari and colleagues (1999) found that language nodes were key in helping with communication flows, but also that such flows are quite vulnerable when they are so person-bound. Likewise, Piekkari and colleagues (2005) found that bilingual proficiency was a “double-edged sword” in that it extended responsibilities of the individual to incite them to help others, yet also that it extended personal communication relationships, improved access to information and enhanced career opportunities.

By highlighting the existence of language nodes, it raises the question of who team members approach for help to clarify information or even to represent the group. The concept of language nodes implies that these choices will depend on the existence of such language nodes who possess specific language skills such as both proficiency in the common language and in the native language of the team member approach them. This remains to be further understood.

1.3 The advantages of language diversity in teams

Even though the notion of "language barrier" is still strongly present in the scientific literature, some authors have taken a more positive view to affirm that linguistic diversity is not only a barrier or “troublemaker” (Charles, 2007) to be overcome, but a real strength to harness (Bordia & Bordia, 2015; Church-Morel & Bartel-Radic, 2014). These scholars recognize that people with specific language skills can be assets for the organization. Languages can be company resources and should be capitalized upon, and appropriate language strategies are therefore a source of competitive advantage (Kim, 2016). In this way, language is not only recognized as a barrier, but also as an “enabler” (Charles, 2007).

By shifting the focus from solving the language barrier to developing strategies and recognizing the benefits of language diversity, Cohen and Kassis-Henderson (2012) encourage establishing rapport between team members. Alvesson and Kärreman (2000) propose highlighting the creative capabilities of language alongside its functional capabilities and recognizing how language shapes organizational reality. Organizations should shift the focus to drawing upon the larger pool of knowledge, skills, experience and perspectives than homogeneous groups. Similarly, Angouri and Piekkari (2018) encourage scholars to focus on

language as a fluid practice by taking on a multilayered and multidisciplinary approach. This encourages focusing on the fluidity of practices and processes that are also related to the context – such as in global virtual teams (Angouri & Piekkari, 2018). Therefore, scholars are encouraged to “zoom... in the practices of employees around specific processes and zoom... out on the wider context within which this takes place” in order to bring together theory and practice (Angouri & Piekkari, 2018).

As Hackman and Katz (2010) explain, the question then becomes: how do we capture and use these resources? One response comes from Welch and Welch (2019) who describe that individuals rather than top management are often the initiators of such strategies. We would further like to propose the group or team as the instigator of change because it is through team processes that language diversity can either become a barrier or an advantage. In addition, Tietze (2018, in Chanlat, 2022) encourages reflexivity in multilingual contexts where English is the common language. This reflexivity allows scholars to go beyond the specific causes and effects of English language use to understand in more depth the intricacies of the multilingual situation.

As stated, in this research, language is approached not as a static or fixed entity, but as a social construct that emerges from multiple layers of context (Karhunen et al., 2018). That is, languages evolve and do not only influence the process of constructing what is real, but are also informed by those same processes. Languages are created and modified through specific situations and interactions between people (Karhunen et al., 2018), and are thus “a complex, contradictory, and dynamic concept” (Lecomte et al., 2018).

As such, languages in organizations go beyond national languages. For example, as presented in the previous chapter, language can also be based on the groups that employ them, such as an organizational language (also known as “company speak”) or a technical language (Welch et al., 2005). Due to the complex and context-specific nature of language, it is important to discuss the specific setting of this thesis: the global virtual team.

Chapter 2: Global Virtual Teams (GVTs)

“It’s the leader’s job to decide the desired communication culture and then choose the tools to achieve that for a remote workforce.”

Tsedal Neely (2021, p. 62)

2.1 Setting the scene: The Global Virtual Team (GVT)

Building to the concept of a global virtual team, we start with the conceptualization of a team in itself, which often evokes, in the most general of settings, ideas of cooperation, energy and collective work. A team is defined as a group of individuals who collectively work towards a common goal under the guidance of a leader (Devillard, 2005). To differentiate a team from a group, it is necessary to highlight the fact that team members collaborate together to achieve a goal for which they consider themselves collectively responsible (Devillard, 2005). Therefore, a work group is more focused on the individual while the work team is largely focused on the collective and the complementarity of the members. A team shows a comparatively high degree of investment in their cohesion, mobilization and building a community of action practices (Devillard, 2017).

Today’s teams tend to be remarkably flexible with fluid boundaries and evolving structures because they must address constantly changing external demands and ever-increasing flexibility (Hackman & Katz, 2010). In view of this flexibility and agility, we are convinced, as Devillard (2005) says, that the team is “a living entity” that responds to external needs and evolves over time. Nowadays, this often leads to a higher degree of virtuality, referring to the degree to which a team works online or in the virtual setting. In early 2020, 89% of employees said that working in a virtual team was critical to their productivity (RW3 LLC, 2020). Of course today’s participation in virtual and remote work has skyrocketed as a result of the COVID-19 health pandemic, and this is predicted to continue into the future (Marsh, 2021).

It is important to note that virtuality is not a categorical variable, with a team *either* being virtual or face-to-face. Rather, it is a dimensional attribute that is defined on a continuum. There is variation in the extent of face-to-face contact and use of information and communications technologies (ICTs) (Chudoba et al., 2005; Gibson & Gibbs, 2006; Griffith et al., 2003; Hertel et al., 2005; Marlow et al., 2017; Maznevski & Chudoba, 2000). Virtuality can also be described as a team characteristic alongside diversity (Hertel et al., 2005). In this way, virtual teams (i.e. *highly*-virtual teams or teams with a significant amount of online contact) are not qualitatively distinct from teams that mostly operate face-to-face (Hertel et al., 2005). Yet, Connaughton and Shuffler (2007) believe that doing a project within a global virtual team is more complex because of the need to communicate across cultures, collaborate virtually and work simultaneously and remotely.

In the literature, these teams have been called many different names, including virtual teams (Gibson & Gibbs, 2006; Gilson et al., 2015; Hertel et al., 2005), global virtual teams (Dai et al., 2018; Jarvenpaa & Leidner, 1999; Klitmøller & Luring, 2013; Maznevski & Chudoba, 2000; Zakaria et al., 2004), multicultural distributed team (Connaughton & Shuffler, 2007) and multilingual virtual teams (Tenzer & Pudelko, 2016) among others (for more, see Connaughton & Shuffler, 2007). For the purposes of this thesis, we use *global virtual team (GVT)* to underline the context in which this research takes place or *multilingual virtual team* to highlight the team's language diversity. GVTs are not simply comprised of native or advanced English speakers working remotely around the globe, but rather, there are people from different languages and backgrounds coming together to fulfill a goal as a team.

2.2 Characteristics of Global Virtual Teams (GVTs)

We define global virtual teams based on three essential characteristics. Virtuality is multidimensional, but the number of dimensions varies between different scholars (Gibson & Gibbs, 2006). For the purpose of this research, we have identified three main dimensions or characteristics for identifying GVTs: geographic and temporal dispersion, dependence on technology to communicate and cultural and linguistic diversity (Chudoba et al., 2005; Jawadi & Boukef Charki, 2011; Maznevski & Chudoba, 2000). Each of these characteristics is explained in the following sub-sections.

2.2.1 Geographic and temporal dispersion

First, virtual teams are dispersed in space and time. Geographic dispersion is a key component of these teams and is globally discussed by any researcher who deals with the topic of virtuality (Dai et al., 2018). However, there are several variations of geographic dispersion such as collaborating with people who work at different sites, collaborating with people purely at a distance, working from home, or traveling on business (Chudoba et al., 2005). To address team dispersion, one can study spatial and configurational geographic dispersion. Spatial dispersion refers to the physical distance between team members, and configurational dispersion refers to the number of locations where different team members are located (Hackman & Katz, 2010). For this research, we focus on the collaboration of people in multiple locations across the globe, thus a combination of spatial and configurational dispersion.

Temporal dispersion refers to collaboration across time zones (Chudoba et al., 2005). When working across time zones, it implies the need to adjust “normal” work schedules in order to communicate with others at a distance (Chudoba et al., 2005). In other words, one person must adjust to the other because of the inability of both parties to communicate during the same time frame. Besides simply calculating the time difference based on time zone, interlocutors may also want to consider perceptions of time to understand how time is organized, how punctuality is considered and other elements related to culture (for a discussion of culture and time, see: *GLOBE Project*, 2022; Hofstede, 1983, 2011). Temporal dispersion has recently been recognized as more important than geographic dispersion for remote work as a result of the combination of the covid-19 pandemic and current political and economic changes (Barth, 2022). While remote work does not necessarily equate to global virtual teams, both experience limitations and advantages resulting from online collaboration.

Beyond the challenges that geographic and temporal dispersion create, there are also clear advantages. Specifically, these teams are able to free themselves from the constraints of space and time (Jawadi & Boukef Charki, 2011). Therefore, they can access the right people with the right skills, no matter their location (Carmel, 1999 in Chudoba et al., 2005; Jawadi & Boukef Charki, 2011).

2.2.2 A dependence on technology to communicate

The second feature of virtual teams, which is also widely mentioned by scholars, is the reliance on technology to communicate remotely. In addition to the standard technologies used by any company such as email and phone calls, virtual teams supplement standard communication practices with video conferencing and social networks, among numerous other options. Chudoba and colleagues (2005) elaborate on the usefulness of technologies such as web-based conferencing applications, instant messaging and cell phone applications. The literature review by Gilson and colleagues (2015) considers many new and emerging technologies that can be used by virtual teams: collaboration tools (e.g. Huddle, Blackboard Collaborate), document sharing (e.g. Sharepoint, Dropbox), co-creation documents (e.g. Scribblar, Google Docs), meeting tools (e.g. GoToMeeting, Google Hangouts), project management tools (e.g. Microsoft Project, Basecamp), professional knowledge building tools (e.g. Yammer, Jive), tools that create 3D virtual environments, and social networks. One can imagine the emergence and usefulness of other new tools since the creation of this list, such as teamwork applications that mix team collaboration and organization and social networking like Slack and Discord. It is worth noting that the comfort of using new technologies may depend on generational aspects. Millennials (the majority of which grew up with computers) may be more comfortable with and have more distinct attitudes and habits for using technology than older generations (Dai et al., 2018).

A remote employee will use a combination of tools to perform a task together with their team. These communication tools allow employees to work wherever they want. They therefore serve to reduce the constraints of dispersion (Jawadi & Boukef Charki, 2011). Technology makes virtual team communication possible. But on the other hand, does technology really have such an effect that it both stimulates communication and performance? Gilson and colleagues (2015) demonstrate that most research during the past decade shows that technology either degrades or does not impact virtual team performance. Given the plethora of previous studies, it is no longer worthwhile to continue studies of the risks and benefits of using technology. Instead, Hackman and Katz (2010) recommend identifying the conditions that encourage their successful use. They also recommend identifying when face-to-face communication is most useful for good team functioning and dynamics. Of course, this reliance on technology and the specific technology chosen to communicate also contributes to a team's degree of virtuality (Connaughton & Shuffler, 2007; Martins et al., 2004).

2.2.3 Cultural and linguistic diversity

The third and final characteristic of global virtual teams is its inherent diversity. Because of the geographic dispersion and the fact that a company will look for the required skills among a global population, virtual teams are naturally multinational, multicultural, and multilingual. Regarding their diversity, team members differ in their national, cultural and linguistic attributes (Gibson & Gibbs, 2006; Zakaria et al., 2004), and some scholars highlight language diversity as a “distinguishing feature” (Chen et al., 2006, p. 670) of such teams (Tenzer & Pudelko, 2020). Referring to surface-level characteristics, language differences are easy to observe because the team cannot avoid communication, whether that is verbal or written (Cohen & Kassis-Henderson, 2012; Tenzer & Pudelko, 2020). As previously stated, this dissertation focuses on verbal and written communication over non-verbal communication such as gestures.

Diversity is said to lead to a global mindset where openness and sensitivity to differences reign, which in turn “is the foundation for creating and sustaining a knowledge-sharing culture” (Zakaria et al., 2004). Because of this, these teams are cited as often more diverse and collectively more knowledgeable than teams that work only face-to-face (Hackman & Katz, 2010).

However, diversity is not always seen as positive. For example, Maznevski and Chudoba (2000) found that cultural differences negatively impacted GVT coordination. Similarly, Kayworth and Leidner (2000) found similar negative effects on communication. Whether positive or negative, diversity plays a clear role in team functioning because cultural values filter perceptions and guide behaviors (Chudoba et al., 2005). Regarding language diversity in virtual teams, Chudoba et al. (2005) believe that language is particularly relevant in the virtual work environment precisely because most communication occurs through information and communication technologies (ICTs). For this reason, we believe that this third characteristic of global virtual teams, high language diversity, warrants further attention.

2.3 Communication processes and choice of communication channel

2.3.1 Communication as a team process

Communication can be defined as an integral team process “in which participants create and share information with one another in order to reach a mutual understanding” (Rogers, 1986, p. 199 in Dennis et al., 2008). It requires information exchange through message transmission by the sender and message processing by the receiver (Dennis et al., 2008). Therefore, intersubjective meanings are created through the interaction of multiple people (Miranda & Saunders, 2003).

While it is accepted that language influences teams, understanding surrounding exactly how and in what ways language and language diversity affect specific team processes surrounding communication is lacking, especially in the virtual setting. This is especially important because communication (alongside cultural differences, accents, motivation and the implication of members) has been identified as one of the major challenges of GVTs (RW3 LLC, 2016). Chudoba, Wynn, Lu, and Watson-Manheim, (2005) emphasize the importance of language by noting its relevance for virtual teams because work is done through information and communication technologies (ICT). These ICTs create a unique communication atmosphere because they have the potential to erase, minimize or delay the effects of cultural diversity because participants cannot always recognize a person's culture when the environment is 100% virtual (Jarvenpaa & Leidner, 1999). At the same time, studies on international management communication suggest that virtual communication is more difficult than face-to-face interaction (Maznevski & Chudoba, 2000), because in face-to-face interaction, the sender of the message can use facial expressions and gestures to supplement verbal communication. In order to explore language diversity in global virtual teams, we turn to descriptions of team communication processes and explore how choice of communication channels affect these processes.

Communication is the basis of task-based team processes, including coordination and negotiation, which have a direct effect on team performance (Marlow et al., 2017). This involves both formal and social communication at the organizational and team levels. Accordingly, communication processes include both interpersonal and cognitive aspects (Dennis et al., 2008). Social communication has especially been shown to dominate conversations in virtual teams and to contribute to their team performance (Jawadi & Boukef Charki, 2011).

When considering the implication of language variety in the virtual team context, the attention naturally turns to effective formal and social communication which occurs through the appropriate communication channels. Effective communication is a key teambuilding process because team members must correctly interpret messages and share knowledge in order to develop a cohesive strategy (Cohen & Kassis-Henderson, 2012). While face-to-face teams can use gestures, expressions and other body language, highly virtual teams cannot. They must instead rely on communication channels such as email, phone, video calls and instant messaging. While some studies have demonstrated that face-to-face communication is best (Daft & Lengel, 1986), others have demonstrated the opposite such that communication technology has the power to reduce negative outcomes while promoting positive interactions in global virtual teams (Klitmøller & Luring, 2016). The use of technology is discussed in the following section through the investigation of communication channels that are privileged by teams for certain tasks.

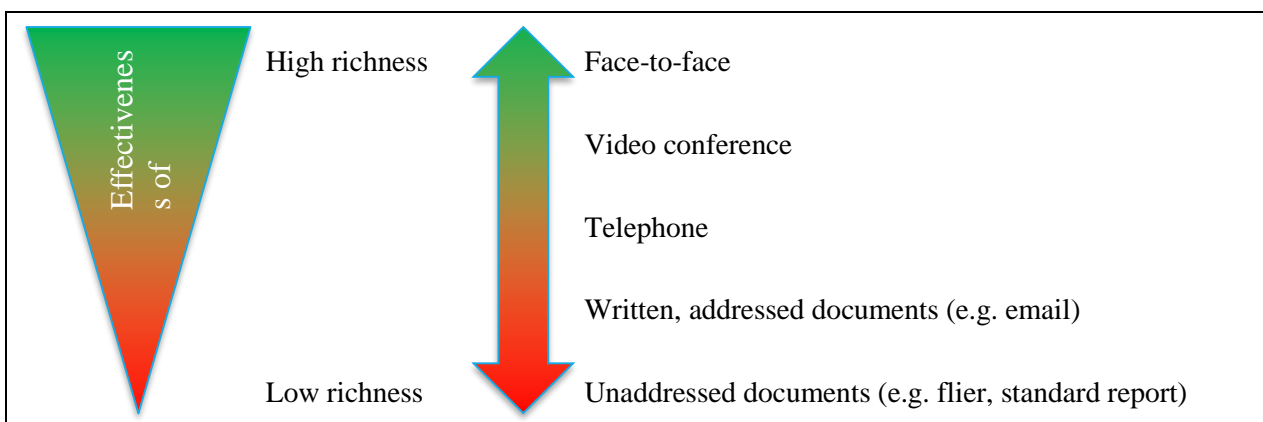
2.3.2 Theories on choice of communication channel

Because language and communication are closely related, the use of communication channels in global virtual teams may help show how language diversity influences global virtual teams. The options for communication channels are varied and numerous, and new technologies arrive on the market every day. Some communication channels are naturally better adapted for communication between certain individuals, in specific contexts or for more or less complex messages. The choice of communication channel can vary depending on the preference of the individual and the team, as well as the tools provided by the organization. In global virtual teams, individual and team preference can especially be influenced by English language proficiency (Klitmøller et al., 2015). As such, some communication channels may better facilitate communication, teamwork and relationships than others. Media richness theory (Daft & Lengel, 1986) and media synchronicity theory (Dennis, Fuller & Valacich, 2008; Marlow et al., 2017) can help to better identify which communication channels are the most helpful for team communication in a given situation and context. Each of these theories are explained below, which is then followed by a discussion of the limitations of such theories.

Media richness theory

Media richness theory describes that team members communicate to reduce the complexity of a task, and to do so, they choose a medium (i.e. a communication channel) that corresponds to this complexity (Daft & Lengel, 1986). Informational richness is “the extent to which virtual tools send or receive communication or data that are valuable for team effectiveness” (Kirkman & Mathieu, 2005, p. 703). The richest form of communication is face-to-face communication. In lieu of that, video conference calls, which are one of the closest communication channels to face-to-face, are also considered rich. On the other hand, the least rich form of communication (also known as lean or poor media) are simple, unaddressed documents such as a flier or standard report (Daft & Lengel, 1987). Email is also considered rather lean media. Lean media tend to reduce verbal, gestural and social presence cues (Klitmøller & Luring, 2013). Figure 2 demonstrates the continuum of media richness and the general view that higher richness leads to more effective communication as first proposed by Daft and Lengel (1987).

Figure 2: The continuum of media richness (adapted from Daft et al., 1987)



In order to classify a communication channel as rich or lean, its richness can be differentiated based on four criteria (Daft et al., 1987):

1. The immediacy of the feedback
2. The allowance for and number of social and non-verbal cues
3. The variety of natural language and numbers used, and
4. Personal focus, including feelings and emotions.

Richer media tend to provide more immediate feedback possibilities, higher allowance for social and non-verbal cues, a greater variety of language and a space to be able to better express one's orientations and preferences than media that are lower in richness (Fleischmann et al., 2020). The first point, the immediacy of the feedback, also crosses to media synchronicity theory which will be discussed in the following section.

The concept of richness implies that richer media enhances the quality of communication, and thereby performance (Kirkman & Mathieu, 2005). Yet, rich media are not necessary for every team communication. In order to select an appropriate communication channel, it should be considered that richer media are best adapted to complex information or messages, while leaner media are best for simple or explicit messages (Klitmøller & Luring, 2013; Maznevski & Chudoba, 2000). To explain this phenomenon, Maznevski and Chudoba (2000) show that "message complexity increased with the number of borders spanned by team members, and effective teams used richer media when crossing boundaries" (p. 486). The use of rich media and complex messages especially applies to dispersed teams with a high degree of cultural and professional difference (Klitmøller & Luring, 2013; Maznevski & Chudoba, 2000).

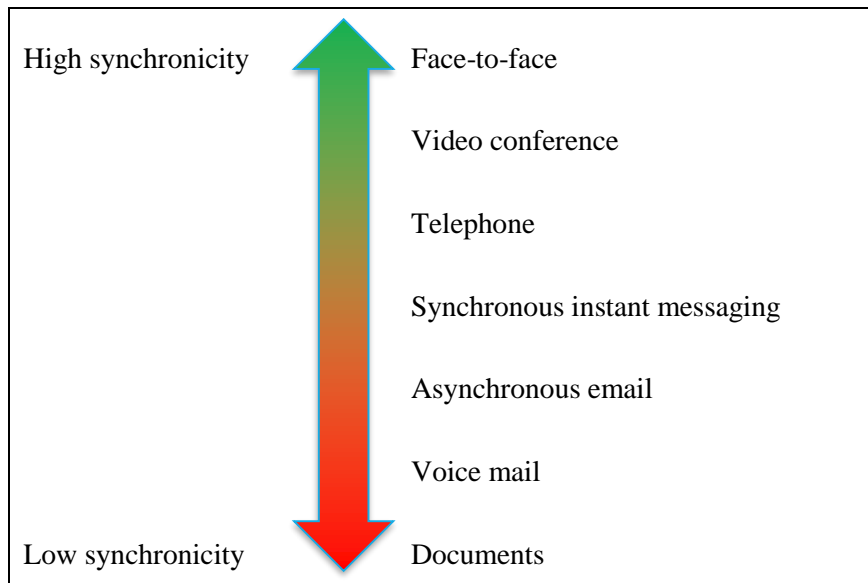
Media synchronicity theory

Likewise, media synchronicity theory (Dennis et al., 2008) considers the different cues and the immediacy of the required feedback when choosing a communication channel (Marlow et al., 2017). Media synchronicity is defined as "the extent to which the capabilities of a communication medium enable individuals to achieve synchronicity" (Dennis et al., 2008, p. 581). This refers to team members sharing patterns of behavior as they work together in real time (Dennis et al., 2008).

As in media richness theory, media is placed on a continuum in media synchronicity theory as shown in Figure 3. On one end of the spectrum is high synchronicity, which is possible with face-to face communication and video conference calls. High synchronicity is known to reduce the cognitive effort that is required to encode and decode messages (Dennis et al., 2008). Therefore, transmitting message is done rather quickly, and the receiver can even give immediate feedback (Dennis et al., 2008). On the other end of the spectrum is low

synchronicity, which is typical of simple documents, voice mails and asynchronous emails. With low synchronicity, individuals can take the time required to process complex information, to analyze message content, to develop meaning across messages and to craft messages taking the other's context into account (Dennis et al., 2008).

Figure 3: Typical synchronicity for selected media (adapted from Dennis et al., 2008)



Media synchronicity theory argues that the fit between communication processes and capabilities of media influence the use of the media and communication performance (Dennis et al., 2008). Media capabilities include both transmission and processing capabilities by the two interlocutors. Communication processes refer to conveyance and convergence. Conveyance is “the transmission of large amounts of raw information and subsequent retrospective analysis” (Dennis et al., 2008). Processing is not necessary. Convergence is related to “the transmission of higher level abstractions of information and negotiations of these abstractions to existing mental models” (Dennis et al., 2008). Processing is integral to develop a shared understanding. By matching transmission and processing capabilities to the conveyance or convergence needs of the task, team can choose the appropriate media for the task at hand, and thus communicate effectively.

As shown in Table 7, for conveyance processes, media supporting lower synchronicity result in better communication performance, and for convergence processes, media supporting higher synchronicity result in better communication processes (Dennis et al., 2008).

Table 7: Communication processes and information (adapted from Dennis et al., 2008)

Communication process	Characteristics of Information Transmission	Characteristics of Information Processing	Ideal Media Synchronicity	Examples of media
Conveyance (transmitting large amounts of raw data)	Higher quality Multiple formats Multiple sources	Retrospective Slower	Lower synchronicity to reduce cognitive load and support deliberation processes	Asynchronous email Voice mail Documents
Convergence (transmitting higher-level abstractions of information)	Lower quality Specific format Specific sources Faster	Verification Adjustment Negotiation Faster	Higher synchronicity to support interactive sensemaking strategies	Face-to-face Video conference Telephone

2.3.3 The limits of theories for choosing appropriate communication channels

Both media richness theory and media synchronicity theory are consulted within the framework of this research. Yet, while we find these theories useful for understanding how to choose an appropriate communication channel for teamwork in a GVT, it should be noted that for both theories what is really important is the features that the medium offers and how they are used (Dennis et al., 2008). Media richness or synchronicity are therefore not inherent properties of the media itself, but properties that emerge in interaction (Shachaf, 2008). Instant messaging is an interesting example. Instant messaging could be more or less rich and more or less

synchronous depending on the message content and availability and reactivity of the interlocutors.

It should also be noted that one medium is not inherently better than another, and there are some notable exceptions to the idea that complex messages should be shared in rich or synchronous media. The first exception relates to team members' relationships and familiarity. Virtual teams with stronger relationships and shared views tend to reduce the complexity of their messages (Maznevski & Chudoba, 2000). As team members become more familiar with their objective and how they intend to achieve it, with the others in the team and with the media that their team uses, highly synchronous media becomes less necessary (Dennis et al., 2008). Therefore, choosing a communication channel has a temporal aspect.

The second exception relates to the question of personal preference. Some team members may simply prefer a certain communication channel. Team member background and context, especially of the individual receiving the message, are often the root of preferences (and requirements) for choice of communication channel (Maznevski & Chudoba, 2000). There is also the consideration of user acceptance of information technology (Venkatesh et al., 2003), which is based on an individual's comfort for using technology and the benefits that they expect that the technology should deliver considering their performance.

Third, language diversity has been shown to diverge from the traditional principles of media richness theory (Klitmøller & Luring, 2013). For example, Klitmøller, Schneider, and Jonsen (2015) showed that oral communication, such as by phone, has the ability to incite group dynamics such as social categorization, where people classify themselves into distinct groups based on characteristics they share or have in common such as language characteristics. This can have a negative effect on team performance. In contrast, a similar effect is less likely if team members choose a written medium such as email (Klitmøller et al., 2015). Written interaction can reduce uncertainty through parallel use of tools such as dictionaries or translators and delayed feedback, thereby avoiding some challenges related to language differences (Klitmøller et al., 2015). Furthermore, regarding language diversity, written media eliminates accents and so may reduce language errors (Jarvenpaa & Leidner, 1999). The paradox showing a difference between teams with high language diversity versus teams with high cultural diversity will be further discussed in the following section which discusses where language-sensitive research in IB has crossed with literature on GVTs.

2.4 Language diversity and GVTs

2.4.1 How the GVT literature references language diversity

Two key reviews of global virtual team literature are discussed as a means to illustrate where and how language diversity has been implicitly referenced, but is still yet overlooked, in the GVT literature. The first from Connaughton and Shuffler (2007) reviewed literature that focused on the combination of how distribution and culture both influenced team processes and outcomes. They found three recurring themes including communication, conflict and temporality as important to consider for these teams. Language diversity can be seen implicitly through communication, but also through the study of cultural diversity. The second review is from Gilson and colleagues' (2015) whose review of GVTs identified ten themes of GVT research published between 2005 and 2015. These themes included team inputs (such as language and communication skills), trust and ways to enhance GVT success. They also identified ten opportunities for future research including different study settings, an exploration of generational impacts, methodological considerations, new and emerging technologies, member mobility, subgroups, team adaptation, transition processes and planning, creativity and team member well-being (Gilson et al., 2015). While language diversity was never explicitly addressed, it could be a factor influencing phenomena such as subgroups, adaptation and creativity especially in virtual teams. This supports the need to link language-sensitive research and GVTs.

2.4.2 The paradox of cultural diversity, language diversity and communication channel

A few essential studies (see Eisenberg et al., 2021; Klitmøller & Luring, 2013; Klitmøller, Schneider, & Jonsen, 2015; Li et al., 2018; Tenzer & Pudelko, 2016) have more directly explored the link between language diversity and virtual team communication. Most significantly, these few studies that cross the boundary between language-sensitive research in IB and global virtual teams have found important paradoxes in how highly linguistically-diverse teams communicate best in the virtual environment compared to culturally-diverse teams.

For example, to address high language diversity, Klitmøller and Luring (2013) suggest the reverse of traditional media richness theory: cultural differences are best addressed with

rich media, whereas language differences should be addressed with leaner media. This means that, while both culture and language play significant roles in virtual communication, they affect it in opposite ways (Klitmøller & Luring, 2013). Klitmøller and Luring (2013) demonstrate this by describing that members of teams with high language diversity are likely to shift to email if they encounter language-related problems on the telephone. To go further by also considering the type of message in these situations with a poor degree of language commonality (i.e. high language diversity), lean media are more effective for complex messages and rich media are more effective for sharing simple and explicit information (Klitmøller & Luring, 2013). For teams characterized by both significant cultural and linguistic differences, Klitmøller and Luring (2013) the authors suggest face-to-face communication as ideal and that language diversity is generally harmful for organizational communication (see also Charles & Marschan-Piekkari, 2002), yet they provide little insight for teams that cannot or only rarely meet in person.

Like media richness theory, the core idea of media synchronicity theory is also reversed in the multilingual context. Synchronous media tends to overwhelm multilingual GVT members who are less proficient in the common language, and asynchronous media allow linguistically diverse teams to arrive at a convergence of ideas without overwhelming the receiver of the message and with giving the receiver time to understand the message and to more carefully craft their response (Tenzer & Pudelko, 2016). This lets team members save cognitive resources for the more difficult work at hand (Tenzer & Pudelko, 2016). To summarize this phenomenon, Tenzer and Pudelko (2016) have identified foreign language-induced cognitive load as “a powerful antecedent to media choice in virtual teamwork.”

These paradoxes are due to the challenges created by language diversity and the affordances that lean media can make for those with varying language proficiency. Media synchronicity theory stands on the principle that back-and-forth exchanges are quick and efficient with synchronous media, yet language barriers can impede these exchanges (Tenzer & Pudelko, 2016). It can be extremely tiring and taxing to speak a foreign language, and even more so in situations where transmission velocity is high (Tenzer & Pudelko, 2016). Instead, lean media allows team members to take their time to respond, use spellcheck and other tools to aid their communication accuracy and avoid miscommunication resulting from accents or verbal, cultural signals (Shachaf, 2005). In other words, most written media, such as email, helps people to overcome differences in verbal style (Shachaf, 2005), and it removes the

implicit context background that could lead to “communication breakdown” (Klitmøller & Lauring, 2013). Furthermore, lean media reduces linguistic differences and avoids social categorizations resulting from different language proficiencies (Klitmøller et al., 2015; Klitmøller & Lauring, 2013). Likewise, asynchronous media creates space for flexibility where team members do not have to immediately and perfectly speak the team’s functional language (Tenzer & Pudelko, 2016).

Before concluding this section, we contemplate on a relatively new communication channel in the professional context: instant messaging. Tenzer and Pudelko’s (2016) considered instant messaging as “a middle ground between asynchronous e-mail and synchronous phone calls.” In their study, both monolingual and multilingual teams viewed instant messaging as useful because it allowed people to take a moment to understand and respond, but also to give feedback relatively quickly, thereby combining the advantages of both synchronous and asynchronous media (Tenzer & Pudelko, 2016). This could be promising for teams with great language variety. More recently, Eisenberg and colleagues (2021) also advanced knowledge on the impact of media choice and language diversity. They found that English language proficiency was an important mediator between the team members’ use of verbal or written and perceptions of proximity (Eisenberg et al., 2021). Specifically concerning synchronous, written communication (e.g. instant messaging), perceptions of proximity increase in teams where there is a great diversity of English language proficiency, but interestingly not where English language proficiency is rather similar among team members (Eisenberg et al., 2021).

In conclusion to this chapter on communication in global virtual teams, and in light of the paradoxes outlined above and with newer technologies that traverse the boundaries between lean/rich and synchronous/ asynchronous media, Tenzer and Pudelko (2016) and Tenzer, Terjesen and Harzing (2017) call for a further examination of theories on choice of communication channel and communication effectiveness in the multilingual GVT context. We believe that more precision can be gained by looking at how a combination of relative language proficiency, native language and specific team situations affect the optimal choice of communication channel. With this in mind, we put forth the first sub-research question of this dissertation: How does language diversity influence communication behaviors in a multilingual virtual team?

Chapter 3: Socio-emotional team processes

“The way a team plays as a whole determines its success. You may have the greatest bunch of individual stars in the world, but if they don’t play together, the club won’t be worth a dime.”

Babe Ruth

3.1 Team processes

3.1.2 Team processes and effectiveness

The final body of literature that is considered for this thesis concerns team processes. Team processes are defined as “members’ interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals” (Marks, Mathieu & Zaccaro, 2001, p. 357). This definition reflects a traditional Input-Process-Output (IPO) model (see Figure 4 for the basis of IPO models), where processes are influenced by inputs such as team characteristics (e.g. language diversity and virtuality), then they undergo changes and evolutions, which ultimately results in team outputs and effectiveness.

Figure 4: The Basis of Input-Process-Output (IPO) models



While our interest lies especially at the heart of the processes that are undergone during teamwork, it is important to note that the ultimate goal of the team is to be effective. All teams have tasks to accomplish and a goal to achieve, regardless of whether it is a physical product, service, decision or other performance measure (Hackman & Katz, 2010). Group effectiveness is measured through three criteria (Hackman, 1987). The first deals with production (i.e.

output), the second examines the state of the group as a successful collective (i.e. group capacity), and the third examines the impact of the group on individual experience (i.e. satisfaction and individual development). Output can be measured in a variety of ways such as the quality of the project, the quality of the decisions, the time given to the project, or the number of unique ideas produced (Gilson et al., 2015). In any case, production depends on the performance standards of those who receive or review the final product. Production is not effective if it does not meet the expectations of customers or managers. The second criteria, the state of the group, is considered because effective teams are those who undergo social processes that maintain or improve the capacity of the group as a whole. Noting the word “processes” indicates that group capacity is both a process and output of effective teams. Cohesion and trust are therefore considered both team processes and elements of group capacity and will be further explored in this thesis. Finally, the individual's experience will have to satisfy their personal needs such as individual job satisfaction or skills development. While good performance implies good outputs for all three of these criteria, it is true that there are often tradeoffs between them (Hackman & Katz, 2010).

Performance measures are already difficult to identify in traditional teams (Hackman & Katz, 2010), but virtual teams add another layer of complexity. Arguably, in order to understand the effectiveness of a global virtual team, a complete description of the process, structure, and technological and social systems, as well as the interaction between these dimensions over time, is required (Maznevski & Chudoba, 2000). Thus, virtual teams must create and understand their own processes and cannot follow an existing protocol (Dai et al., 2018). The challenge of virtual teams lies in cross-cultural communication, virtual collaboration, and remote working simultaneously (Dai et al., 2018). Because of these particularities, the performance of a virtual team depends even more than a traditional team on its processes and cannot be measured in a general way, from existing protocols.

Moving forward, we take a closer look at group processes. To organize team processes, we can divide them into task-related processes and socio-emotional processes as described in Table 8. Task-related processes are “processes that occur as team members work together to accomplish a task or goal” (Powell et al., 2004). These include processes associated with planning (such as mission analysis, goal setting and strategy formulation) and action (such as communication, participation, coordination, knowledge sharing and monitoring the group's progress; Martins, Gilson & Maynard, 2004). Socio-emotional processes pertain to social

interaction and developing relationships. For this reason, they are also known as interpersonal processes. They include positive aspects, such as building rapport, trust and cohesion, and negative aspects such as conflicts and frustration (Martins et al., 2004).

Socio-emotional processes are closely related to “rapport management” (Spencer-Oatey, 2008) and socialization processes (Kassis Henderson & Louhiala-Salminen, 2011). When considering language, these processes often refer to “the use of language—verbal and non-verbal strategies—to promote, maintain or threaten harmonious social relations” (Cohen & Kassis-Henderson, 2012, p. 193). Interpersonal processes have specifically been cited as important to consider in research on language diversity because of the way they can help or harm relationships within teams (Tenzer & Pudelko, 2020). To illustrate this, Feely and Harzing (2003) noted that the true cost of language barriers is damaged relationships.

While communication processes, as outlined in the previous chapter, are task-related processes according to Powell, Piccoli and Ives (2004) because they are the means by which actions take place, communication and language clearly exhibit a direct influence on socio-emotional processes because relationships, trust and the like are influenced by actions and feelings resulting from those actions. Likewise, there is a direct relationship between communication, trust and performance (Marlow et al., 2017). For these reasons, we explore relationships between language, task-related processes and socio-emotional processes in multilingual virtual teams.

Table 8: Task-related and socio-emotional processes in multilingual GVTs¹

Type of Process	Definition	Themes	Examples of research	Examples of research addressing both
Task-related Processes	<p>“Processes that occur as team members work together to accomplish a task or goal” (Powell, Piccoli & Ives, 2004)</p> <p>Includes planning and action processes</p>	<p>Mission analysis Goal setting Strategy formulation Communication Participation Coordination Knowledge sharing Task-technology-structure fit / media choice Monitoring of the group’s progress</p>	<p>Chudoba, Wynn, Lu & Watson-Manheim (2005) Klitmøller & Lauring (2013) Li, Yuan, Bazarova & Bell (2018) Lockwood & Song (2020) Shachaf (2005) Tenzer & Pudelko (2016) Tenzer, Pudelko & Zellmer-Bruhn (2020)</p>	<p>Fleischmann, Aritz & Cardon (2019) Gibson & Gibbs (2006) Jawadi & Boukef Charki (2011) Karjalainen & Soparnot (2010) Kassis-Henderson (2005) Klitmøller, Schneider & Jonsen (2015)</p>
Socio-emotional Processes	<p>Processes related to social interaction and development of relationships</p> <p>Also known as interpersonal processes</p>	<p>Relationship building Rapport establishment/building Team cohesion Trust Conflict Tone of interaction Social integration</p>	<p>Charles (2007) Cohen & Kassis-Henderson (2012) Hinds, Neeley & Cramton (2014) Jarvenpaa & Leidner (1999) Kim, Roberson, Russo & Briganti (2019) Tenzer & Pudelko (2015) Tenzer, Pudelko & Harzing (2014)</p>	<p>Marlow, Lacerenza & Salas (2017) Maznevski & Chudoba (2000) Zakaria, Amelinckx & Wilemon (2004)</p>

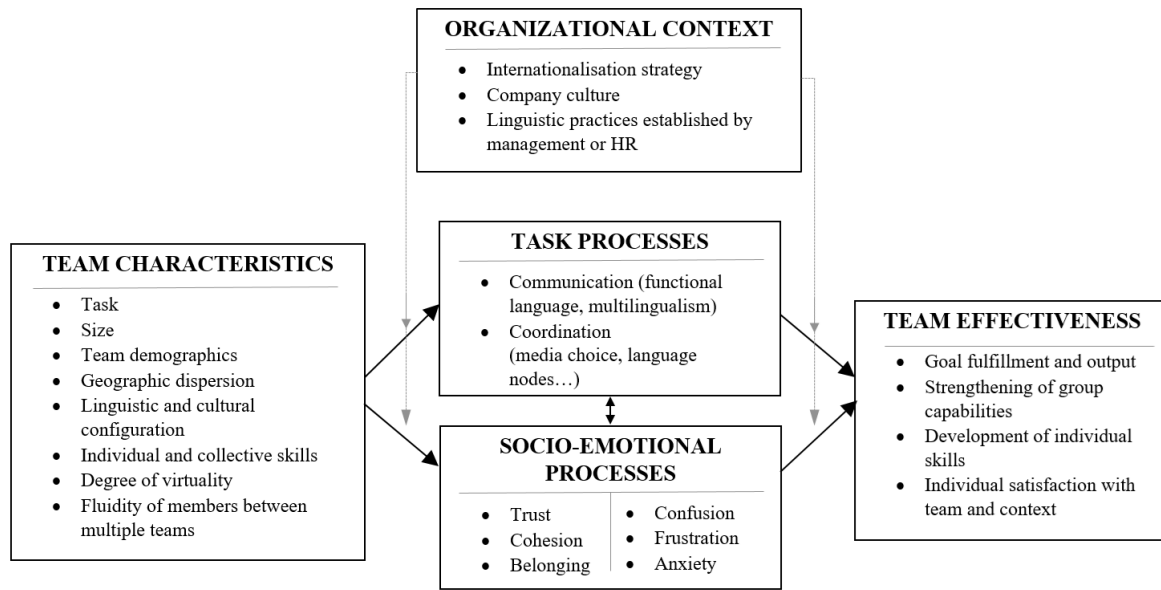
¹ Source: This table is included in the author’s published article in *Management international* (Taylor, 2021)

3.1.1 Our Framework for Multilingual Virtual Team Functioning

One of the most influential studies on the effects of diversity on group processes and outcomes looked specifically at race and gender diversity (Kochan et al., 2003). By using an Input-Process-Output (IPO) model as an analytic framework, Kochan and colleagues (2003) found that these types of diversity had little direct (positive or negative) effect on team performance and that training in leadership and group process skills was especially important for managers “who attempt to make diversity a resource for learning, change, and renewal” (p. 19). In addition, context is key when determining the nature of the impact of diversity on performance (Kochan et al., 2003). Later, building upon Kochan and colleagues’ (2003) work, Church-Morel and Bartel-Radic (2014) created a model of multilingual team functioning. This model integrates language management practices and ways of interacting specific within highly linguistically diverse teams.

Together, we believe that these models can be useful tools for analyzing the effects of language diversity in global virtual teams. Adapting to this view, we constructed an updated framework (see Figure 5) based upon the diversity models of Kochan and colleagues (2003) and Church-Morel and Bartel-Radic (2014), but updated to the virtual context, and accounting for task-related processes and socio-emotional processes as outlined in the previous section. Yet, Marks and colleagues (2001) believe it is important to not restrain the focus to the overall team life cycle. Instead, these models can be used as general analytical frameworks looking at both overall performance and different phases of task execution (Marks et al., 2001).

Figure 5: Model of multilingual virtual team functioning (elaborated by the author, inspired by Church-Morel & Bartel-Radic, 2014 and Kochan et al., 2003)



The previous chapter highlighted how language diversity has been shown to influence virtual teams and highlighted communication processes, which sit on the side of task-related processes according to Powell *et al.* (2004). This chapter dives into the other side of processes, specifically socio-emotional processes. As pointed out previously, in the field of language-sensitive research in IB, socio-emotional or interpersonal processes have specifically been noted as important to consider for future research (Tenzer & Pudelko, 2020).

Based upon the inductive, exploratory phase of this research, and by confronting those exploratory findings with the literature on team processes, we identified two socio-emotional processes of interest to multilingual virtual teams: team cohesion and trust. These processes have been identified within the literature in different capacities, but neither seems to have been sufficiently studied in the dual context of high language diversity and virtuality. Because context can have an important influence on the issue at hand, we believe it vital to apply this context to team processes in general and the two identified socio-emotional processes specifically. While each of the processes are different and should be conceptualized differently, they are strongly interrelated, so we believe there is merit in studying them both separately and ultimately as a whole.

3.2 Trust in multilingual GVTs

3.2.1 Trust in teams

Team trust is defined as “the shared willingness of the team members to be vulnerable to the actions of the other team members based on the shared expectation that the other team members will perform particular actions that are important to the team, irrespective of the ability to monitor or control the other team members” (Breuer et al., 2016, p. 1152). This is consistent with other scholars that include beliefs, feelings and actions as essential to trust. Expanding upon the above definition, we also consider Cummings and Bromiley (1996, p. 303) who say that team trust is “a common belief among a group of individuals that another individual or group (a) makes good-faith efforts to behave in accordance with any commitments both explicit or implicit, (b) is honest in whatever negotiations preceded such commitments, and (c) does not take excessive advantage of another even when the opportunity is available” (Cummings & Bromiley, 1996, p. 303). Trust is both cognitive and emotion based (Tenzer et al., 2014) between the “trustor” and the “trustee” (Rousseau, 1998 in Kassis Henderson & Louhiala-Salminen, 2011). It is also dependent on ability, benevolence and transparency at both the task and team levels, predictability for tasks and integrity regarding the team (Breuer et al., 2020).

As previously mentioned, trust can be considered a socio-emotional process or a team outcome. Because scholars see trust in various ways (a consequence of communication, a determinant of communication or simply enhancing communication quality), Tenzer and Pudelko (2020) interpret that trust and communication have an implied feedback loop. Communication quality and trust together positively affect virtual team performance (Chang et al., 2011), especially because having established trust encourages individuals to share their knowledge with each other (Cohen & Kassis-Henderson, 2012). When there is a lack of trust, serious consequences such as reduced creativity, knowledge transfer, coordination and strategic decision making can occur (Bordia & Bordia, 2015). Therefore, trust is the “glue of the global workplace” (O’Hara-Devereaux & Johansen, 1994).

3.2.2 Developing trust in the virtual context

A team’s degree of virtuality, duration of interaction and communication behaviors and norms are especially crucial for developing trust in the virtual context. The first, degree of virtuality, is considered a moderating condition of trust (Breuer et al., 2020), though it has raised opposing viewpoints in the management literature. On one hand, some scholars have reported that face-

to-face contact is necessary for developing trust (Handy, 1995). Furthermore, lack of regular contact, of repeated interactions and of relationships developed in the past and thought to continue into the future have a negative impact on trust (Handy, 1995). When relationships are fragile or hurt, face-to-face exchanges are generally considered irreplaceable (Jarvenpaa & Leidner, 1999). In contrast, according to other authors, there may be less of a relationship between virtuality and trust than assumed. Chudoba and colleagues (2005) found no relationship between a virtual team's distribution and mutual trust between team members. Breuer and colleagues (2020) found that categories for creating a taxonomy of trust were consistent across both traditional and global virtual teams.

Looking for a more nuanced understanding of trust in the virtual context, Jarvenpaa and Leidner (1999) differentiated between early or swift trust and long-term trust. Early in the teamwork, swift trust can develop when team members trust each other quickly and without question, until proven otherwise (Neeley, 2018). Jarvanpaa and Leidner (1999) found that swift trust is difficult to maintain because it is rather fragile. In contrast, those teams that are able to establish trust early in their teamwork and who were also able to maintain trust throughout their teamwork have been reported as being more capable insofar as managing the uncertainty, complexity and expectations that are inherent in the virtual environment compared to teams that have low trust levels at any point in their collaboration (Jarvenpaa & Leidner, 1999).

In order to develop and maintain trust, teams can establish communication behaviors and norms such as social communication, communication of enthusiasm, predictable communication and timely responses (Jarvenpaa & Leidner, 1999). Regarding social communication, this should complement task communication, rather than replace it as a means to strengthen trust (Jarvenpaa & Leidner, 1999). Other actions include individual tolerance, social similarity, socializing, caring talk, personal conversations, storytelling, humor and the need to create common cultures, procedures and rituals (Henttonen & Blomqvist, 2005).

3.2.3 Language diversity and trust in teams

It has been established that the virtual environment can affect trust (or the type of trust) in a team. Likewise, language diversity also affects trust. Following Kassis Henderson and Louhiala-Salminen's (2011) findings, language especially affects trust in global professional contexts in three ways:

- 1) A common language leads to a shared understanding,
- 2) Emotional bonding especially occurs between non-native speakers of the common language, and
- 3) Competencies in languages other than the common language helps create common ground and allows team members to interpret messages more ambiguously located “between the lines.”

These points especially indicate how language within the socialization process leads to trust (Kassis Henderson & Louhiala-Salminen, 2011). Furthermore, in complement to the above points, (B)ELF speakers seem to be at an advantage to more easily develop trust because they often have gained critical awareness in multilingual settings (Kassis Henderson & Louhiala-Salminen, 2011). While the above study seems quite promising for nonnative speakers, because pressure is placed instead on native speakers of the common language, an element that is not considered is the proficiency level of the nonnative speakers.

Tenzer and colleagues’ (2014) focus on disparity in language proficiency in global virtual teams addresses this gap. They also show that relative language proficiency influences trust building more than absolute language skill levels (Tenzer et al., 2014). However, their focus on disparity demonstrates that perceived low language proficiency causes team members to attribute low task competence and low dependability, both resulting in lower trustworthiness (Tenzer et al., 2014). This could also relate indirectly to linguistic identity, which when threatened, results in lower levels of trust (Bordia & Bordia, 2015). In addition to language proficiency, code-switching and language-based anxiety also negatively influenced trustworthiness (Tenzer et al., 2014).

While the aforementioned studies provide valuable results demonstrating the influence of language diversity on team processes in the virtual environment, it also raises further questions. For example, because it has been established that multilingual virtual teams communicate through various communication channels, is trust affected differently by different communication channels when there is the presence of high language diversity? Is there nuance to be found such that individuals with low language proficiency may easier trust another who also has low language proficiency? And how could multilingual competency be employed in teamwork to encourage the development of trust? More generally, we formulate our second sub-research question: How does language diversity influence trust in a multilingual virtual team?

3.3 Team cohesion in multilingual GVTs

3.3.1 Team cohesion: a team process and outcome

Team cohesion refers to the shared bonds or relationships between team members that makes them want to stay and work together (Salas et al., 2015). Language has been shown to influence the development of team cohesion because language is a vehicle for expressing and spreading emotions, and it informs individual understanding of the task (Van Swol & Kane, 2019). This demonstrates the interest to better understand team cohesion in light of how language is used and formed within the virtual team context.

In addition to the view of team cohesion as a socio-emotional process, team cohesion has also been identified as a goal of effective teams. Hackman (1987) believes that social processes in teams “should maintain or enhance the capability of members to work together on subsequent team tasks.” Scholars such as Neeley (2021) have translated this idea pertaining to group capacity as team cohesion. Therefore, team cohesion develops and evolves during team member interaction, but also is a result of such interaction and thus leads to high-performing teams.

In light of its role as both a process and outcome, it can be said that team cohesion develops through interaction over time, thus it has a temporal component (Salas et al., 2015). In studying team cohesion, it should not be considered at only one time, but throughout a team’s life. Therefore, methodologically, a longitudinal approach to studying team cohesion is best.

Certain similarities can be noted between the definitions of trust and team cohesion. This reflects Breuer and colleagues’ (2016) suggestion that trust and cohesion could in fact be the same construct which is measured in different ways. These different measures are reflected in research and are each mobilized in different ways. We proceed by integrating both concepts in this research, thereby approaching the topic from two different angles.

3.3.2 Team cohesion: a multidimensional and multilevel construct

This section further examines the components of team cohesion. When considering cohesion, multiple dimensions and levels should be considered. First, team cohesion is multidimensional. Most scholars agree that team cohesion involves both task cohesion and social cohesion (Salas et al., 2015). Task and social cohesion relate respectively to how committed the team is to reaching its goal and how team members feel about each other or their “interpersonal attraction” (Chiocchio & Essiembre, 2009). Yet some authors include additional dimensions

such as belongingness, group pride, and morale (Salas et al., 2015; see Table 9 for their review of the five most common dimensions). What we can take away from these propositions is that team cohesion depends on a multitude of team experiences including how team members perceive each other professionally and personally and how they experience the feeling of “us.”

Table 9: The five dimensions of team cohesion (adapted from Salas et al., 2015, p. 368)

Dimension of Team Cohesion	Definition
Task Cohesion	“An attraction or bonding between group members that is based on a shared commitment to achieving the group’s goals and objectives” <i>(see Carron et al., 1985)</i>
Social Cohesion	“A closeness and attraction within the group that is based on social relationships within the group” <i>(see Carron et al., 1985; Seashore, 1954)</i>
Belonging	“The degree to which members of a group are attracted to each other” <i>(see Shaw, 1981)</i>
Group Pride	“The extent to which group members exhibit liking for the status or the ideologies that the group supports or represents, or the shared importance of being a member of the group” <i>(see Beal, Cohen, Burke & McLendon, 2003)</i>
Morale	“Individuals’ high degree of loyalty to fellow group members and their willingness to endure frustration for the group” <i>(see Cartwright & Zander, 1960)</i>

Second, multilevel considerations demonstrate that cohesion may not only be a team-level construct because of the implication of individual components. Indeed, a sense of belonging is quite individual. Likewise, attitudes and impressions concerning team cohesion are individual. While cohesion may be “strongest” at the team level, Salas and colleagues (2015) encourage researchers to consider a multi-level view of cohesion to enable greater flexibility.

3.3.3 Language diversity and cohesion in virtual teams

Studies that have connected language diversity and team cohesion demonstrate that the effective management of language diversity improves team cohesion (Kassis Henderson, 2005). Likewise, the degree of shared common language and language proficiency level has been shown to influence not only team cohesiveness, but also team effectiveness and knowledge sharing (Klitmøller & Lauring, 2013; Lauring & Selmer, 2010).

While the link between language diversity and team cohesion has been established, an overview of the mechanisms that create this link is lacking, along with the consideration of context. In GVTs, where members are forced to communicate over technology and rarely or never meet in person, the stakes of team cohesion may be ever greater, even while its development is often considered as more difficult than in face-to-face teams. Therefore, a further exploration of the influence of language diversity on the development of team cohesion in the context of global virtual teams would help further understanding in the field of language-sensitive research in IB. With this in mind, we formulate our third and final sub-research question: How does language diversity influence the development of team cohesion in a multilingual virtual team?

Conclusion to Part 1

In this literature review, we crossed three fields of literature: language-sensitive research in IB, GVTs and team processes. The first section on language-sensitive research in IB focused on defining language diversity, on exploring language management practices used in international organizations and by highlighting how language diversity could be advantageous for teams.

Next, we opened the scope to include GVTs. The second section on GVTs focused on defining global virtual teams, on exploring the state of the literature concerning communication processes and communication channel theories in the virtual context and concluded with an exploration of the few studies that link language diversity and global virtual teams.

The first two sections collectively highlighted the role of individual communication behaviors and language proficiency for establishing team communication processes and norms that are essential for team effectiveness. Based on this part of the literature, we propose our first sub-research question: How does language diversity influence task-based communication behaviors in a multilingual virtual team? This question aims at a more holistic view of how individual characteristics related to language and based on the individual's relationship with other languages in the team influence communication behaviors.

The third section is on socio-emotional team processes. Here, we explored the difference between task-related and socio-emotional processes, and we looked at how two specific socio-emotional processes, trust and team cohesion, were influenced by language diversity and the virtual context. While trust and team cohesion were shown to be influenced by both language diversity and the virtual context, studies had not yet linked the fields of literature. We believe context is key. With this we arrive at our second and third sub-research questions: How does language diversity influence trust in a multilingual virtual team? And how does language diversity influence the development of team cohesion in a multilingual virtual team?

How each of these questions are approached and the overall research design will be discussed in Part 2.

PART 2:
PARADIGMATIC FRAMEWORK
&
METHODOLOGICAL OVERVIEW

Chapter 4: Paradigmatic Framework

*“On ne voit bien qu’avec le coeur.
L’essentiel est invisible pour les yeux.”
‘Le Petit Prince’, Antoine de Saint-Exupéry*

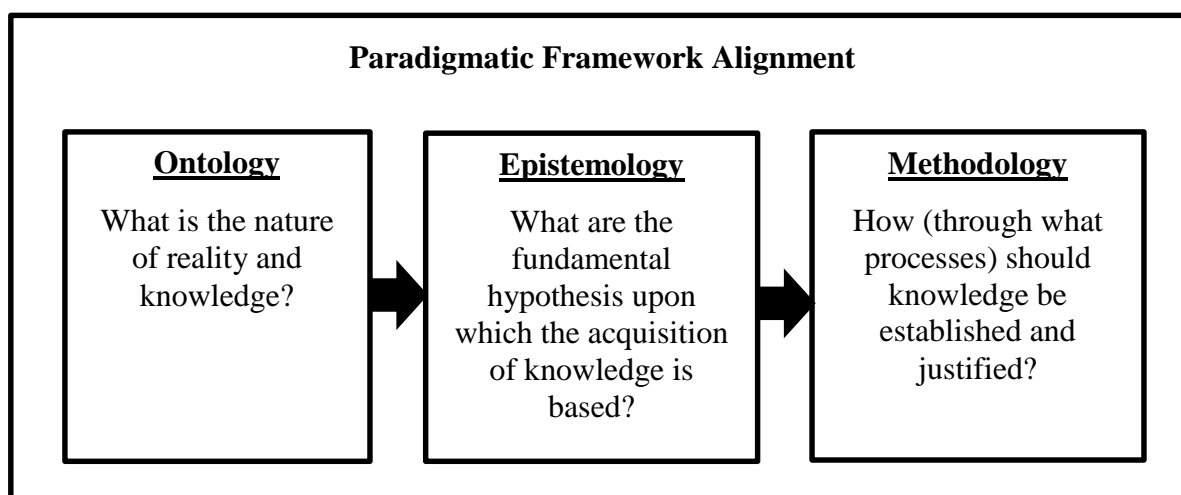
4.1 Relationship between ontology, epistemology and methodology

What knowledge is, how knowledge is acquired and what methods should be used to acquire that knowledge are philosophical questions informing how researchers should conduct studies and frame research questions. This refers to ontology, epistemology and methodology. Together, these structure a paradigmatic framework (Milliot & Freeman, 2015).

Concerning ontology, every research must first consider the question, “What is knowledge?” (Gavard-Perret et al., 2012), or “What is the nature of reality?” (Guba 1990, p. 18, in Milliot & Freeman, 2015). Ontological assumptions therefore are related to the nature of social reality and what kinds of social phenomena exist (Blaikie, 2010). For research, an ontological perspective relates to the identification of potential scientific belief systems’ representations (Milliot & Freeman, 2015).

Concerning epistemology, every researcher must then consider the question, “What are the fundamental hypotheses upon which the discovery of knowledge is based?” (Gavard-Perret et al., 2012). Epistemology recognizes that every researcher has a particular understanding of the nature of the world and assumptions for how information should be collected in order to study a research question (Creswell, 2015). Thus, epistemological considerations involve understanding the relationship between the researcher and the object of study (Guba 1990, p. 18, in Milliot & Freeman, 2015).

Figure 6: Paradigmatic Alignment (source: elaborated by the author, inspired by Milliot & Freeman, 2015)



The third question that should be considered is, “How should you justify knowledge that has been established?” (Gavard-Perret et al., 2012). This is the methodological protocol. It is the “inquiry process” (Milliot & Freeman, 2015). As shown in Figure 6, these questions are interrelated, thereby there should be coherence between the ontological, epistemological and methodological choices of the researcher.

As implied in the above figure, there should be “paradigmatic alignment” or coherence between ontological perspectives, the epistemological project and the methodological protocol (Milliot & Freeman, 2015). Epistemology conditions what research practices and justifications of the development of knowledge are considered acceptable (Gavard-Perret et al., 2012). This often results in certain methodologies being better suited to answering specific questions which are then linked to specific epistemologies. Yet, that does not imply that one positioning or methodology is better than another or that there is only one acceptable methodology. Rather, different paradigms can lead to significantly different representations of the same phenomena being studied (Gavard-Perret et al., 2012). Likewise, it does not imply there is only one way to answer a research question or one way to validate the knowledge that is acquired during the course of research. In this way, Blaikie (2010) views research paradigms as sources of ideas and assumptions, saying that “it is possible to choose a research paradigm for a particular research project just as it is possible to make choices between research strategies to answer research questions” (p. 97).

4.2 Paradigms in language-sensitive research in IB: A summary

In general, the variety of paradigms which are mobilized in language-sensitive research in IB is more diverse than in mainstream IB research (Piekkari, Gaibrois & Johansson, 2022). Considering paradigms under the variety typology of diversity, variety is positive because it ensures discussion, debate and innovation in the field (Piekkari et al., 2022).

According to Piekkari and colleagues' (2022) review of paradigms in language-sensitive research in IB and cooperated with Romani, Barmeyer, Primecz and Pilhofer's (2018) review of paradigms in international management, the three most common paradigms (by order of importance) are positivist, interpretivist and critical. It should be noted that Piekkari and colleagues' (2022) review upon which this section is structured is based on the researchers' interpretations of paradigms based on their understanding of the "ontological assumptions of the publication, the purpose of its knowledge production, the data collection methods and approaches to data analysis used, the positionality of the researcher, and the treatment of context in the publication" (Piekkari et al., 2022, p. 149). This method of reviewing publications does have potential limitations. For example, a number of articles that seemed to fit multiple paradigms were classified under a single paradigm depending on the publication's overarching goals. In addition, the authors admit that paradigms can be challenging to identify because very few authors explicitly state their stance in their published work (Piekkari et al., 2022). Despite certain reservations, the review of research paradigms employed in the field of language-sensitive research in IB clearly demonstrates the field's diversity. As such, each of the three paradigms and their relationship to the field being studied will next be summarized.

The positivist paradigm is the most dominant tradition in both the mainstream IB field (79% of empirical and non-empirical publications) and its sub-field of language-sensitive research in IB (57% of empirical and non-empirical publications) (Piekkari et al., 2022). Scholars within the positivist paradigm tend to refer to "cross-cultural" rather than "intercultural" management (Romani et al., 2018). In the positivist tradition, reality is observable and external to the researcher. The researcher is seen as neutral and objective, observing phenomena from the outside and not influencing what is being observed. Generalization, universality and objectivity are the main goals of the research. When authors cannot fully obtain generalizable, context-free and universal theory, they often adopt an "apologetic tone" while discussing the limitations of the study (Piekkari et al., 2022). In language-sensitive research in IB, methodologies most commonly used to reflect the positivist

paradigm include: 1) large-scale quantitative studies, 2) mixed methods studies and 3) qualitative multiple-case studies aimed at producing generalizable theory (Piekkari et al., 2022). The first, i.e. large-scale quantitative studies, is by far the most dominant methodology representing over half of all positivist studies (Piekkari et al., 2022).

The interpretivist paradigm is employed significantly more by researchers in language-sensitive research in IB (27% of empirical and non-empirical publications) compared to mainstream IB research (14% of empirical and non-empirical publications) (Piekkari et al., 2022). Interpretivist comes from hermeneutic tradition (e.g., Van Maanen, 2011), which focuses on subjectively constructed realities and interpretation of sensemaking. For interpretivists, “human activity is patterned” and meanings that are derived from situations are “considered as the objective reality of this situation” (Gavard-Perret et al., 2012). Within the interpretivist tradition, scholars tend to study the importance of meaning systems and how interpersonal interaction depends on interpretation of these systems (Romani et al., 2018). To do so, scholars use rich or “thick descriptions” (Geertz, 1973) that detail the lived experiences of the people or groups under study, thereby “seeing through the eyes of the observed” (Sall & Mitev, 2019, p. 195). In opposition to the positivist paradigm, considering the context is crucial in the interpretivist paradigm. Within language-sensitive research in IB, interpretive approaches tend to “view language as a vehicle for meaning-making and for creating and maintaining relationships” (Piekkari et al., 2022, p. 154). Ultimately, the goals of interpretivist scholars is to facilitate intercultural interactions and overcome misunderstandings (Romani et al., 2018). Methodologies commonly include ethnographic designs, single case studies, interviews and “naturally occurring talk” aimed to uncover lived experiences and inside knowledge (Piekkari et al., 2022, p. 154). In publications, interpretivist scholars do not aim at generalizable findings, but they are reflexive about their positionality in the research process.

The critical paradigm is also worth mentioning as a growing worldview in language-sensitive research in IB (16% of empirical and non-empirical publications), as compared to only 7% of mainstream IB empirical and non-empirical publications (Piekkari et al., 2022). The critical paradigm aims to provide alternative perspectives or otherwise address power struggles, social hierarchies, inequalities and conflicts that arise in the social world (Romani et al., 2014). Context, especially to do with a social, political and economic nature, is considered, which also lead to the researcher openly referencing their positionality to do with the research. Methodologically, critical studies are often qualitative with an abductive approach. In the field of language-sensitive research in IB, critical studies have sought to challenge linguistic

imperialism (Phillipson, 1992 in Piekkari et al., 2022). Language is not seen as a neutral medium for communication, as is the case in positivism, but the power and role of English in IB is questioned (Tietze et al., 2017 in Piekkari et al., 2022). Scholars in the critical paradigm tend to be reflexive about their role in knowledge production, but may also be writing to posit a political aim or otherwise criticize certain power structures.

It should be noted that while the aforementioned review of paradigms in language-sensitive research in IB relied heavily on the methodology chosen to distinguish between paradigms, we encourage more flexibility in the use of methodologies for different paradigms. Methodology is independent of epistemology, and the use of different methodologies can be used under multiple paradigms with the proper justification and reasoning.

4.3 Adopting the interpretivist paradigm

My research views align with the interpretive paradigm. As such, I aim to understand the process of interpretation, the construction of sense (i.e. sensemaking), communication and engagement in situations and the identification of frameworks of thought and ways of seeing the world (Gavard-Perret et al., 2012), or as in management studies, “to understand the practices of individuals in a given organization or community” (Sall & Mitev, 2019, p. 195).

To expand upon the principles of the interpretivist paradigm, it is possible to identify four fundamental hypotheses (Gavard-Perret et al., 2012):

1. Lived experiences constitute what is knowable.
2. The knowledge that emerges from a situation is inseparably linked to both the situation and the subject who experiences it.
3. Intention is a constitutive power in the experience of the world and thus in the construction of knowledge (Sandberg, 2005; Yanow, 2006).
4. There is an “intersubjective objective reality” where each participant in the same situation attributes a unique signification to the situation (Sandberg, 2005). We can relate this to the constructivist paradigm insofar as Le Moigne (1995, in Bartel-Radic, 2002) believes reality is constructed by the act of knowing. This means that the researcher attempts to understand the research object from the inside (Milliot & Freeman, 2015).

These hypotheses demonstrate the importance of experiencing situations within their context.

4.3.1 My experiences that inform my understanding of the topic under study

Interpretivism stands on the principle that the researcher is not neutral regarding the research objective, but rather they are influenced by their own lived experiences. It could be argued that, like in the constructivist paradigm, the researcher must experience what they are studying because it is only through experience that knowledge is created (Bartel-Radic, 2002). What matters is not that the researcher ignores these experiences, but rather that the researcher's relationship with the subject is clarified so that the reader can understand the researcher's proposed vision (Bartel-Radic, 2002). Within the next paragraphs, I present my relationship with the topic as a mean to clarify my standpoint and interpretations.

Indeed, I am very much at the heart of my research, interacting with, influencing and being influenced by the object of my study. My background and experiences inform the lens through which I make observations, and the very choice of research topic can be connected to my experiences. Considering my language background and academic experiences, I am a native speaker of U.S. English and was educated through the undergraduate level in the U.S. educational system. Since then, I have lived in France for nine years, where I have gone through great effort to become fluent in French and where I have continued my education at the master's and doctoral levels. I mention this because this combination of national culture, native language and adopted culture and language have all influenced my views about research. These experiences have led me to traverse two research traditions.

While at times I find my inclinations are towards the French tradition, my international background and *rencontres* with the international research community has led me to develop an approach straddling either tradition. Some significant differences have been noted between the Anglophone and Francophone research communities (Santistevan & Karjalainen, 2015). These differences reflect the beliefs about focus of research and underlying theoretical approaches and the subsequent consequences on the methodology and level of analysis as summarized in Table 10.

Table 10: A comparison of Anglophone and Francophone international management research (adapted from Santistevan & Karjalainen, 2015)

Research community	Focus of research	Theoretical approach	Method	Level of analysis
Anglophone	Performance and effectiveness	Relies more on literature from social psychology	Favors (quasi-) experimental studies more than the Francophone community	Organization, group and interaction levels
Francophone	Understanding processes	Relies more on literature from anthropology	Favors qualitative methods slightly more than the Anglophone community	Organization and group levels

While I would say that I mostly follow the French tradition most likely because education at universities and doctoral programs is more informative than national culture when it comes to research (Santistevan & Karjalainen, 2015), there are some important deviations. As shown, French studies have tended to view culture as a difficulty, rather than as an opportunity, for international team management (Santistevan & Karjalainen, 2015). I disagree as I believe that the field of language-sensitive research in IB is shifting to a more positive view. In this regard, I align myself with Anglophone authors who see multicultural and multilingual teams as a source of competitive advantage (Santistevan & Karjalainen, 2015).

Likewise, due to the fact that I write mostly in English and that the teams studied within the context of this research employ English as their functional language, Chanlat (2014) may interpret my work as contributing towards the dominance of English. However, I am following his recommendation to think and write in one’s native language (Chanlat, 2022). Even so, he (and I) encourages the French research community to write in French in order to think through problems in different ways, be interested in original experiences and “defend a way of living together that is a value in itself [translated]” (Chanlat, 2014). In the future, I aim to write both in English and French, in a way acting as a bridge individual in research (Tenzer et al., 2017).

Besides my academic tradition, my native language status surely influences my research as well. Being a native speaker of U.S. English gives me a specific status in the mix of largely non-native English speakers that I study. Some would point to the advantages I enjoy

in a world that is largely dominated by English. I do not deny the advantages this brings nor the possible biases that might arise when interviewing or interacting with people that see themselves as less proficient in English. Yet, I also have gone through great lengths to become proficient at communicating with non-native speakers, in a BELF way as it is. The fact that I speak another language fluently also informs how I interact with and how I understand others. For example, in interviews that took place in English with others that also spoke French, my understanding of the French language allowed me to better relate to the references, structures and sometimes even specific vocabulary being used.

To summarize the relationship between my research and my experiences, I must admit that language carries a lot of emotions for me. Some emotions are extremely positive, having resulted from rich and rewarding international experiences. Others are more negative, which quite interesting have mostly emerged during the times where going between traditions made me feel as if I didn't really belong to either one. As a consequence, these emotions and the value I find in language diversity surely carry over to my research. Being aware of these emotions allows me to be more pragmatic in the research process. Rather than simply being influenced by hidden emotions, I can more easily recognize where my emotions may be triggered and consider them apart from the situations present in my research.

4.3.2 Considering the interpretivist paradigm in the research design

Besides personal experiences, it is important to consider the researcher's worldview throughout all steps of a research project. Thus, I maintained a stance of reflexivity throughout the research project, where I examined my personal role in the research process (Alvesson & Sköldberg, 2009 in Babones, 2016). Here, I highlight how else the interpretivist paradigm has informed this research project on language diversity in global virtual teams.

First, I integrated concepts and language into the research objectives that aligned with learning about individual experiences and feelings. Theoretically, I specified that language is approached in this thesis as a social construct emerging from different layers of context (Karhunen et al., 2018). Context can relate to the different levels: from the society at large to individual interactions and experiences. In this way, language is a subjective experience that depends on individual experiences and feelings. The aim of this thesis, such as that of the interpretivist paradigm, is to understand subjectively constructed realities (about language use and experience) and interpretation of sensemaking (related to language diversity).

Next, in order to answer the research questions, I created a mixed-methods design (which will be further detailed in the next chapter). Too often, methodology is said to indicate the epistemological paradigm of research, such that quantitative methodologies are reserved for the positive paradigm, and qualitative studies are for the interpretivist paradigm. However, I design a mixed-methods research project that collected both qualitative and quantitative data and that focused on the individuals involved in the team processes being studied, partially by obtaining thick descriptions of their experiences and partially by seeking to understand how they would react in given experiences. This mixed-methods design and reasoning is further developed in Chapter 5.

In my view, qualitative and quantitative data are both subjective constructions of reality. For example, the quantitative data collected through the means of an online game can be influenced by the structure, wording and type of questions. In addition, throughout the research, I stayed open to “varied explanations and/ or understandings of the data” (Charmaz, 2008, p. 155), and I always paid heed to the contexts surrounding the study and participants. In quantitative interpretive research, variables are understood to contain emergent properties that go beyond the limits of the research, which is a means to address endogeneity or the misattribution of causality to correlation (Babones, 2016). Even within an experimental methodology, I recognize that I play a role in knowledge production because I am the source of the experimental design. Despite receiving validation on the possibility of the proposed scenario and questions, any other person would have designed an entirely different scenario, even if they were given the same research and methodological aims.

Finally, during the data analysis phase, I treated data as constructions of meaning. As Greiffenhagen and colleagues (2011, p. 103 in Babones, 2016) point out, “models do not build themselves any more than they interpret themselves.” Therefore, while I privileged a deductive approach with the experimental serious game, it was not purely a deductive process. The models that were created were a means to be able to share the story told by the data (Babones, 2016).

Interpretivism helped us merge and triangulate the results from the mixed-method research design. This follows Babones (2016) who demonstrated how a variety of methods can help researchers in the social sciences fully understand relationships among latent concepts. So, through the triangulation of results from both qualitative and quantitative data and a special attention to context, I was able to gain a more complete understanding of the research question.

4.4 Language considerations during the research process

In written research, language and translation decisions are often overlooked due to a lack of established conventions or norms, despite their presence throughout the research process in multilingual settings (Piekkari et al., 2020). This section aims to illuminate the main decisions taken regarding language throughout the research process.

Admittedly, English is the dominant language for this thesis. The majority of the research is conducted in English, whether that concerns (half of) the exploratory interviews, the ethnographic study of a team whose functional language is English or the online serious game which simulates an English-speaking global virtual team. The majority of the communications related to the research and the thesis itself are written in English, though some are also in French. As Chanlat (2022) points out, production is easier in one's native language for a multitude of reasons, including intellectual, social, cultural and affective reasons.

While English is dominant in this research, we strive to reinforce multilingualism and the recognition of languages other than English. To do so, interviewees were given the choice to interview in either English or French, which are the languages spoken and understood by the researcher. Interviewing in the interviewee's native language has been shown to improve rapport between the interviewer and interviewee and allow the interviewee to better express themselves (Welch & Piekkari, 2006). Interview guides in French were written by the interviewer and verified by another researcher. Half of the interviewees in the exploratory phase and only one interviewee in the ethnographic phase chose to interview in French. If interviewees had difficulty expressing themselves in English, they were encouraged to say a word or phrase in their own language during the interview process. In this way, some interviewees said words or phrases in German, Finnish and the like, which were kept as is in the transcriptions. It was also common for those interviewing in French to incorporate some English words when discussing specific processes in their (English-speaking) teams. Interviews that were conducted in French were subsequently transcribed and analyzed in French (alongside the English transcriptions) in order to avoid misrepresentation (see Bell & Bryman, 2007). Interviewee quotes were translated by the author at the end of the process when writing up the results section.

In addition to the interviews, the online serious game also contains instances of multilingualism. While the game itself, including the questions, answers and the majority of the content were in English, the player was given the option at times to switch languages to

one of the languages spoken by the in-game fictional team members (French, Thai or Portuguese). In addition, in the game, English is not approached as neutral, but rather as a global language that is influenced by the people who speak it. That means that the fictional characters who are non-native speakers of English, and who are played by actors from that specific native language, formulate their speech in different ways, being influenced by their native language. They also speak English with varying accents and proficiencies. Game players were also given the option to “justify” the multiple-choice responses by writing a comment in any language.

Lastly, it should be noted that thanks to the international nature of this project and of the individuals involved, language boundaries were crossed and manipulated throughout the research process. For example, French was mainly spoken between the author and her thesis supervisors who themselves have a mix of French, German and Irish backgrounds, but presentations within the research team were often carried out in English. Presentations at conferences were submitted in both French and English, with international researchers from numerous native languages providing valuable comments and pertinent questions. Of course, at times, languages were mixed (e.g. code-switching or “franglais,” signifying the mix of *français* and *anglais*). In discussing the use of languages throughout the research process, we aim to highlight the importance, but also naturalness, of multilingualism in research.

Chapter 5: Mixed Methods Research Design

“We have to face the fact that numbers and words are both needed if we are to understand the world”

Miles, Huberman and Saldaña, 2014, p. 42

5.1 An overview of mixed methods research design

We chose a mixed methods research design in order to explore the topic of language diversity in teams. Cresswell (2015, p. 2) describes mixed methods research as “an approach in which the investigator gathers both quantitative (closed-ended) and qualitative (open-ended) data, integrates the two, and draws interpretations based on the combined strengths of both sets of data to understand research problems.” To go further, according to Cresswell (2015), mixed methods is based on four principles:

1. Mixed methods is a research methodology.
2. Mixed methods involves collecting and analyzing both quantitative and qualitative data.
3. Mixed methods integrates the two data sources by combining, merging, connecting or embedding them.
4. Mixed methods incorporates the integration procedure into a research design, where the study is often framed by philosophical assumptions or theories.

One of the principle aims of mixed methods research is therefore to combine quantitative and qualitative data in order to overcome the limitations of only one type of research data, and thus to better understand a research problem more than if only one set of data is considered. Each method is seen to have its strengths and weakness. For instance, on one hand, qualitative research provides great detail, captures participant voices and experiences within their context, but it can be criticized for its limited generalizability and subjectiveness (Creswell, 2015). On the other hand, quantitative data is useful to investigate relationships within data, examine causes and effects and is viewed as a means to control bias, but it provides rather limited understanding of the actual participants’ experiences and contexts (Creswell, 2015). By combining research methods, the researcher can overcome certain limitations, such

as integrating more of the participant's experience into the research process or by bringing more subjectiveness to the overall results.

Two more advantages of mixed methods designs relate to the analysis phase. In addition to addressing the deficiencies of one method by compensating with the strengths of another, mixed methods can “provide analytic texture” to the work and help strengthen analytic findings through support, corroboration or contradiction of results (Miles et al., 2014, p. 43). Related to the interpretivist paradigm, qualitative data specifically can assist in validating, interpreting, clarifying and illustrating quantitative findings and strengthening or revising theory (Miles et al., 2014).

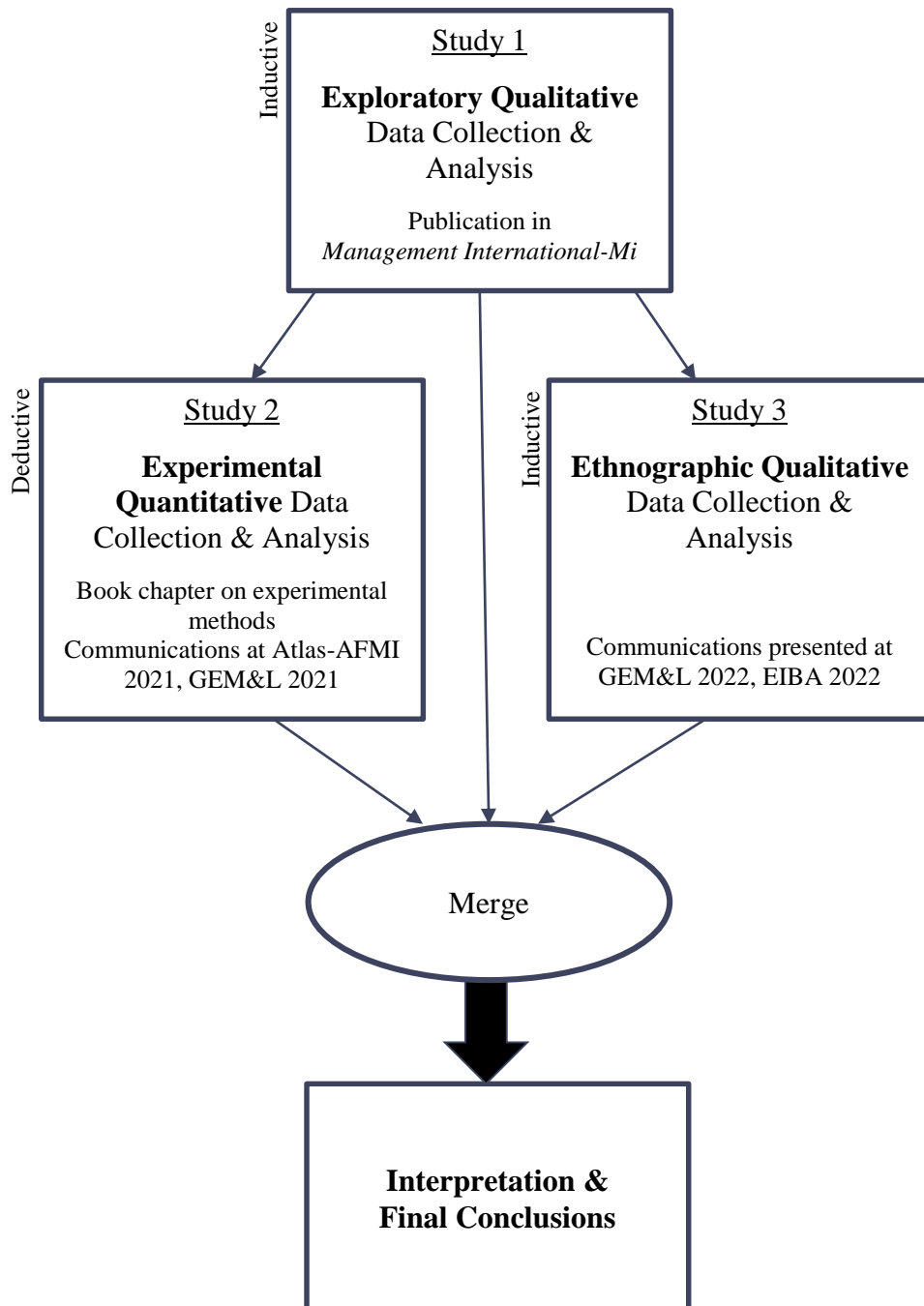
5.2 This thesis' research design: An overview

In order to address the complexities of how language diversity influences global virtual team processes, to raise new ideas and to explore relationships, we chose to incorporate a mixed method approach for this thesis. Mixed or multi-method studies have been cited as “invaluable to enhance the robustness of emerging theories in the [language-sensitive research] field” (Tenzer et al., 2017, p. 836). In addition, this design was chosen because multiple data sources have been shown to be useful to understand the construction of processes in technology-enabled learning environments (Dai et al., 2018; Finegold & Cooke, 2006). We suggest that this also applies to technology-enabled work environments.

As shown in Figure 7, this thesis mobilizes a multiple phase mixed methods design, which involved collecting and analyzing qualitative data in a first exploratory phase (Study 1), followed by parallel quantitative (Study 2) and qualitative (Study 3) data collection and analysis to better understand relationships discovered in the initial qualitative results. A final phase merged the data from all previous studies in order to collectively analyze the findings. This mixed method design largely follows a convergent design. While Study 2 looks more specifically at trust and Study 3 at team cohesion, Breuer and colleagues' (2016) findings suggest that trust and cohesion may in fact be the same construct that is measured in different ways. Therefore, we look at the same (or at least very similar concepts) from different angles. Then, results are compared directly (Creswell, 2015). The following sections are intended to provide an overview to the choice of methodologies mobilized in this thesis. Each of the

methods including elements related to the study design, samples and data collection and analysis will be explained in more depth in their dedicated sections in Part 3.

Figure 7: Studies in the mixed-methods research project



Study 1

The question that is explored is: How does language diversity influence team processes in the virtual context? This question is explored inductively through exploratory, semi-structured interviews which are conducted among 20 individuals working in multilingual virtual teams. These interviews aim to gain understanding of their experiences and of how their teams function.

Qualitative methods, and specifically interviews, were privileged in this exploratory phase in order to explore complex processes and to reveal new elements that may have not been previously identified in the literature. In particular, one of the most common methods in management research, interviews allow researchers to start a discussion around the object of interest (Gavard-Perret et al., 2012). The interview itself is characterized as an interpersonal meeting that results in verbal data produced as a result of the interaction between researcher and interviewee (Gavard-Perret et al., 2012). Semi-structured interviews are well-adapted for exploring complex individual processes (e.g. understanding, evaluation, decision-making, appropriation, immersion and mental images), confidential subjects or for highlighting individual differences, while still providing a certain degree of comparability among questions (Gavard-Perret et al., 2012; Myers, 2008).

The results from Study 1 revealed a lack of understanding concerning how language diversity intervened in specific team processes related to language management strategies, trust and team cohesion. Both individual and group perspectives on team processes were considered. Therefore, this led to the second phase which looked at specific team processes in both a qualitative and quantitative manner. The research methodology of the sub-studies was selected based on the type of question being put forth.

Study 2

Communication behaviors and trust through the lens of language diversity were identified in Study 1 as being particularly interesting to the larger research question. A quantitative study explored two sub-questions: *How does language diversity influence task-based communication behaviors in a multilingual virtual team? And how does language diversity and communication channel influence trust in a multilingual virtual team?* A quantitative method with a deductive research design was chosen to study these questions simultaneously in order to better

understand the relationships between the different variables at play. More specifically, this quantitative study took the form of an online, experimental game, which was chosen because it is meant to measure actual behavior, rather than collect self-reported data, which has been shown to be affected by social desirability and self-presentation (Tenzer et al., 2017).

Study 3

Team cohesion was also revealed as a topic that warranted more attention for its relationship with language diversity and virtuality. The sub-question being explored was: *How does language diversity influence the development of team cohesion in a multilingual virtual team?* In this qualitative study, an inductive design mobilized an organizational ethnography that focused on team cohesion in a European University alliance. Ethnography encompasses a method where the research must “go and see” what is happening in the field to uncover elements that may be invisible, still unknown or even deliberately hidden (Livian & Mitev, 2019, p. 107). In this way, the experimental research aimed to explain, whereas ethnographic observation aimed to understand (Livian & Mitev, 2019). Specifically, in the ethnography participant observations were carried out over the course of eighteen months, and interviews were conducted with fourteen members of the primary team under consideration and eleven other members within the larger organization. Through ethnographic research, this study attempted to identify a contextual explanation of perceptions and feelings of team cohesion in a multilingual virtual team (see Milliot & Freeman, 2015; Welch et al., 2011).

Integration and Final Conclusions

By integrating a mixed methods approach, we were able to gain a more complete understanding of the research problem with methods aiming to “overturn new rocks” and to more clearly understand phenomena and relationships. By combining qualitative and quantitative data, we obtained a richer understanding of the research question. As Livian and Mitev (2019) point out, “statistical results do not speak for themselves” (p. 101), so interpretation of data through a qualitative lens (e.g. recognition of the players’ contexts and of the researcher’s role within the creation of the scenario) provided more insight into how and why language diversity influences team processes.

Table 11: Three Studies

	Study 1	Study 2	Study 3
Research Question(s)	How does language diversity influence team processes in the virtual context? <i>(general research question)</i>	How does language diversity influence individual communication behaviors in a multilingual virtual team? <i>(sub-question a)</i> How does language diversity influence trust in a multilingual virtual team? <i>(sub-question b)</i>	How does language diversity influence the development of team cohesion in a multilingual virtual team? <i>(sub-question c)</i>
Research approach	Inductive	Deductive	Inductive
Methodology	Qualitative	Quantitative	Qualitative
Method	Exploratory interviews	Experimental serious game	Organizational ethnography
Sample or Case	20 team members or managers of multilingual virtual teams	311 participants	A 22-person team in a European University Alliance
Data collection	Semi-directed interviews of 20 individuals	364 variables integrated into a 2-hour individual, online serious game	18 months of participant observation: <ul style="list-style-type: none"> • 56 team meetings • 47 selected documents • Semi-directed interviews of 25 individuals
Data Analysis	Thematic coding	Descriptive statistics Mean value comparison Correlations PLS-SEM	Thematic coding Deducative coding Temporal coding
Data analysis software	NVivo	SPSS 25 SmartPLS 3	NVivo

Conclusion to Part 2

In Part 2, the researcher's positioning and the overall research design of this dissertation was explained. Specifically, Chapter 4 focused on the paradigmatic framework. The interpretivist paradigm informs the researcher's worldview and approach to research. In this way, the aim is to develop an in-depth understanding of the behaviors employed and of emotions experienced by individuals participating in multilingual GVTs. These individual understandings inform both task-related and socio-emotional processes at the team level.

Reflexivity of the researcher's position within the research is an essential consideration of interpretivism. Therefore, the researcher's background and overall relationship with the subject was discussed.

In addition, this dissertation valorizes the role of language in the research process. The multilingual aspects of the research process from the conceptualization of the research topic, to how the research was carried out, to how findings were reported were reflected upon.

From there, Chapter 5 explained the overall mixed methods research design incorporated in this dissertation. This dissertation is based on a convergent mixed methods research design incorporating qualitative and quantitative methodologies to study team processes from different perspectives. The advantages of mixed methods research is not only in approaching the research question from different perspectives, but also in the the analysis phase where analytic findings are strengthened through confronting the results.

Finally, this chapter provided an overview of the specific qualitative and quantitative methodologies employed in the three complementary studies included in this thesis. Study 1 is exploratory in nature and based on semi-structured interviews. Subsequently Study 2 mobilized an experimental online serious game created for the purposes of this dissertation. This is led in parallel to Study 3 which consists of an organizational ethnography in a European University Alliance. The three studies are concluded by combining their results for a final phase of analysis. The specific methodologies of these three studies will be further developed and explained in Part 3 before continuing on to describe the findings resulting from each study.

PART 3:

THREE COMPLEMENTARY STUDIES

Introduction to Part 3

The third part of this thesis describes the three complementary studies that were employed to answer our research question. The three studies are complementary in nature, but distinct in their specific aims and methodologies.

First, in **Chapter 6**, an exploratory study is carried out to establish understanding of the role of language diversity in teams with varying degrees of virtuality. Semi-structured interviews of 20 individuals in different organizations are carried out to provide a general overview of the questions and issues related to language diversity in their teamwork. The findings of this exploratory study indicate how multilingual virtual teams should pay special attention to choosing an appropriate functional language and communication channels, employ code-switching only in specific situations and identify language nodes to assist with communication. The findings also raised a number of questions which are explored in the subsequent studies.

The second study in **Chapter 7** dives into the relationship between language diversity, communication strategies and channels and trust in a multilingual virtual team. To understand the causal relationship between these variables, participants are confronted with a simulation in the form of an online serious game, during which they must make decisions regarding their use of language, communication channel and the like.

Finally, the third study in **Chapter 8** explores the development of team cohesion in a multilingual virtual team. In order to understand this team process (but also outcome), an organizational ethnography is carried out in a European University alliance, which develops understanding within this particular context.

Lastly, it should be noted that the studies have been written about in scientific communications. The first, exploratory study was published in a special issue of *Management international – Mi* that followed the Atlas-AFMI conference in 2021. The design of the second study was presented in multiple conferences including Atlas-AFMI 2021 and GEM&L 2021. Results from this study are presented for the first time in this dissertation. The third, ethnographic study was presented at the EIBA conference in Oslo in December 2022.

Chapter 6

Study 1: An Exploratory Study of Multilingual Virtual Teams

The first study in this thesis is an exploratory study which aimed to understand the role and influence of language diversity in virtual teams. Based on our literature review situated at the crossroads of language-sensitive management in IB and global virtual teams, the importance of communication processes was identified. While both fields of literature were rather well established (global virtual teams more so and over a longer period of time than language-sensitive research), there was little overlap that allowed us to understand the micro-processes involving tasks and relationships in multilingual virtual teams. As noted in the literature review, some authors such as Klitmøller and Luring (2013) even demonstrated opposing results between the fields of literature. For these reasons, we set out on an initial study to better understand the following research question:

How does language diversity influence team processes in multilingual virtual teams?

This chapter is based on an article published in *Management international – Mi* in 2021 and previously presented at the Atlas-AFMI annual conference in 2020.

Citation information:

Taylor, D. (2021). The Influence of Language Diversity on Virtual Team Communication: Overcoming Barriers and Leveraging Benefits. *Management international-Mi*, 25(spécial), 18-38.

This chapter is presented in four sections:

Section 6.1 describes the semi-structured interview methodology and sample.

Section 6.2 presents the exploratory findings from the qualitative data.

Section 6.3 discusses the findings and proposes perspectives for further research in multilingual virtual teams.

6.1 Methodology: Exploratory Interviews

6.1.1 Research design

This qualitative study on communication processes in multilingual GVTs was inductive and exploratory in nature. Qualitative, semi-structured interviews allowed us to raise new ideas in line with communication processes in multilingual virtual teams. Interviews are consistent with the dominant methodological paradigm in research on language in IB and allow us to better understand subjective perceptions (Pudelko, Tenzer & Harzing, 2015; Tenzer & Pudelko, 2015). The focus of the interviews was on individual strategies and perceptions within the team context. Therefore, a multilevel analysis of individual and team constructs are considered.

6.1.2 Interviewee criteria

Semi-structured interviews of 20 individuals with professional experience in multilingual GVTs were completed. Interviewing occurred in two phases, in early 2019 and early 2020, with two interviewees being interviewed during both phases. The intentionally diverse sample includes individuals from different teams as a means to provide a general overview of how different multilingual virtual teams function. The sample is composed of professionals in different fields, types and sizes of companies and teams, and hierarchical levels/ positions, such as managers, employees and researchers. However, due to the researcher's ties to the U.S. and France, the majority are from Western Europe or North America and work in French or American organizations.

The selected individuals all reported significant levels of language diversity within their team(s). However, team configurations varied widely. Regarding the individuals interviewed, the majority of them speak at least two languages at an intermediate level or above, and so could be potential language nodes. All interviewees speak advanced or native English, and French is also widely spoken. The language capabilities of the individual were considered within the context of the team's language diversity. Because the interviewer was bilingual, interviews were conducted in both English and French (see Table 12 and the interview guides in English and French in Appendices 3 and 4). One of these languages were either the interviewee's native language or a language that they spoke fluently (often the functional language in the workplace). This was meant to "open doors," build rapport between the interviewer and the interviewee and allow the collection of richer data (Welch & Piekkari, 2006, p. 425).

Table 12: Summary of individuals interviewed during the exploratory research phase

Interviewee										Primary team					
Interviewee Code	Gender	Job Level	Job sector	Country of Birth	Country of residence	Language - English level	Language - French level	# langs (advanced +)	# langs (intermediate+)	Type	Size	HQ Location	Dispersion (# of sites)	Corporate Language	Functional language
A1	M	Employee	Analyst	USA	USA	Native	None	1	1	Legal	21-30	USA	3	English	English
U2	M	Employee	Analyst	Ukraine	Ukraine	Adv.	Begin.	3	3	Project	6-10	USA	4	English	Multiple
F3	F	Employee	Translation	France	France	Adv.	Native	3	3	Project	1-5	USA	2	English	English
A4	F	Manager	Service	USA	USA	Native	Begin.	1	1	Service	31+	USA	7+	English	English
B7	F	Director	Service	Belgium	Belgium	Adv.	Adv.	5	5						

F5	F	Manager	Project mgmt	France	USA	Adv.	Native	2	3	Innov.	31+	USA	6	English	English
F6	M	Manager	Admin.	France	France	Adv.	Native	4	4	Admin.	11-20	Germany	1	Multiple	English
A8	F	Director	Sales	USA	France	Native	Int.	1	2	Sales	1-5	France	2	French	French
F9	F	Director	Change mgmt	France	France	Adv.	Native	2	3	Project	21-30	USA	5	English	English
F10	M	Director	Research	France	France	Adv.	Native	2	2	Project	6-10	France	2	French	French
Y11	M	Employee	Research	Yemen	France	Adv.	Int.	2	4	Research	21-30	France	1	French	French
U12	M	Manager	Research	Ukraine	France	Adv.	Int.	3	5	Research	6-10	France	4	English	Multiple
G15	F	Employee	Research	Greece	France	Adv.	Adv.	3	3						
S17	M	Employee	Research	Sweden	France	Adv.	Adv.	3	3						

B18	M	Employee	Research	UK	France	Native	Int.	1	2						
F13	M	Manager	Service	France	France	Adv.	Native	2	2	Maint.	6-10	USA	4	English	English
F14	F	Manager	Quality manager	France	France	Adv.	Native	2	3	Project	31+	SwitzrInd	7+	English	Multiple
I16	F	Employee	Analyst	Iran	France	Adv.	Adv.	3	3	Project	31+	USA	5	English	Multiple
F19	M	Director	HR	France	France	Adv.	Native	2	2	HR	31+	South Korea	4	Korean	English
A20	M	Manager	Operations	USA	USA	Native	None	1	1	Executive mgmt	6-10	UK	6	English	English

6.1.3 Interview process

Interviews were conducted in person or online depending on the availability of the interviewee. We found no significant differences based on these different methods. Interview questions explored language diversity from the individual's point of view, but also aimed to learn about team practices and organizational strategies. Semi-structured interviews provided some consistency while also giving freedom to change between topics or expand more or less on issues considered as more or less important (Myers, 2008; Tenzer & Pudelko, 2015). The four parts of interviews focused on the organization, the individual and their background, the team's characteristics and functioning, and more specifically, the influence of language diversity on team effectiveness. Regarding the organization, the internationalization strategy and HR practices concerning languages were explored. The individual was questioned about their feelings about virtual work, specificities regarding how they greet colleagues in person or by email, and the techniques they use to communicate with their team. To learn about the team, the interviewer asked about the team configuration, principal means of communication, situations in which members of the team experienced difficulties or misunderstanding, and finally if (and how) the team's language diversity affected its effectiveness.

6.1.4 Data analysis

The 22 semi-structured interviews were recorded and transcribed in their entirety (see Miles & Huberman, 2003) and analyzed with the help of the NVivo software. Recognizing the multilingual reality of this study, the interviews were transcribed and analyzed in their original language to guard against a loss of meaning but quotes in this dissertation are translated into English to be shared with a wider audience.

Inspired by input-process-output (IPO) models of diversity and language diversity from Kochan and colleagues (2003) and Church-Morel and Bartel-Radic (2014) respectively, data was organized in a first round of coding into four main areas including the team characteristics (input), team processes, team effectiveness (output) and organizational context (mediator). Subtopics were designated based on previous literature. During the first round of coding, new conceptual elements emerged, which were explored in a second round of coding of the full set of interviews. For example, these additional conceptual elements include fluidity between multiple GVTs, local virtuality versus global virtuality, multilingual greetings as complementary to a primary functional language, and the importance of cultural diversity

alongside language diversity. Fluidity between multiple GVTs and local virtuality versus global virtuality reflect the evolving work practices in today’s virtual environment. Indeed, many people who participate in GVTs participate in more than one, so team boundaries can be difficult to identify. Local virtuality refers to a lower degree of virtuality, where individuals participate in virtual work punctually (e.g. teleworking). Functional languages and multilingualism are especially at the heart of this study and will be presented in depth in the next section. Finally, all interviewees referenced culture without being prompted, which implies the interconnected nature of culture and language.

In addition, team processes were further divided into task-related and socio- emotional processes, as proposed by Powell, Piccoli and Ives (2004). Task-related processes include communication and coordination, while socio-emotional processes include trust, cohesion and belonging, but also confusion, frustration and anxiety. Table 13 specifies the data coding structure.

Table 13: Coding structure

First-level codes	Second-level codes	Third-level codes
Organizational context	Company strategy	Multinational company structure
		Internationalization goals
	HR practices	Designation of corporate language
		Focus on increasing team’s language proficiency during recruitment and trainings
		Organized team building events
	Team characteristics	Linguistic and geographic configuration
Physical location and proximity to others		
Individual competences		Language and communicational competence
		Empathy and openness to others

Team processes related to communication (see Table 13 for details)	Team linguistic practices	Flexibility in using a functional language
		Other language management practices (adaptation, code-switching, redundancy...)
	Virtual communication practices	Importance and frequency of virtual communication
		Choice of media for one-on-one and team communication (see Table 4)
	Language nodes	Leaders or managers with language and/or (inter)cultural competence
		Colleagues with language and/or (inter)cultural competence
	Emergent positive emotions	Trust
		Cohesion
		Appreciation
	Emergent negative emotions	Confusion
		Anxiety and frustration
		Lack of sense of closeness
	Team effectiveness	Goal completion
Ability to address a complex task		
Development of individual skills		Language and communicational competence
		(Inter)cultural competence
Individual satisfaction		Satisfaction with team interaction and intercultural context
		Dissatisfaction with inefficiencies due to language and virtual context

6.2 Exploratory findings of multilingual virtual teams

The team’s functioning is clearly influenced by the functional language, choice of communication channel, and communication content. Furthermore, aspects related to task processes (i.e. that are necessary for completing team objectives) also influence socio-emotional processes (i.e. team member relationships). The following section presents the research findings with a focus on team processes in multilingual GVTs. See Table 14 for an overview of the findings.

Table 14: Verbatims to illustrate team communication processes (first-level code)

Second-level code	Third-level code	Verbatims
Team linguistic practices	Flexibility in using a functional language	“my requirement for my team for instance is... if in a one-on-one conversation, we can switch to the native language of one of the two..., but when there's multiple people speaking multiple languages, we automatically all switch to English out of respect and to make sure that everybody just can follow the conversation.” [B7]
	Other language management practices (adaptation, code-switching, redundancy...)	<p>“When they spoke to us in a video conference, they spoke English. They spoke at a very advanced level. But when we arrived at a difficult point and we asked them a question, they would very often switch into German between them.” [F5]</p> <p>“As much as possible we try to really talk, but then following up in written form sometimes helps specifically because not everybody’s level of English is at the same level really. Sometimes it helps to send them a summary of what you have discussed afterwards in English so that they have the time to digest it afterwards.” [B7]</p>

Virtual communication practices	Importance and frequency of virtual communication	“I think the one thing you'll you always learn in the business world or any kind of organization is 'communicate, communicate, communicate, communicate” [A20]
	Choice of media for one-on-one and team communication	“We're miles apart. We just try to operate like we're next door to each other, and everybody's gotten fairly used to working at a distance... I think I really try to exploit the mediums that we have today.” [A20] <i>(see Table 5 for details on specific media)</i>
Language nodes	Leaders or managers with language and/or (inter)cultural competence	“I had kept the gal from China right next to me because I know her English is not as good... I would end up being her mouthpiece to tell people.” [A4] “More serious for me was to be responsible for a group of people. So I should at least be able to understand that group of people.” [U12]
	Colleagues with language and/or (inter)cultural competence	“When I have a client, sometimes who would write to me in Italian. Not speaking Italian, I would look at Google Translate. Or, if I needed further clarifications, I ask one of my Italian colleagues so that he translates exactly what it means in English.” [F13]
Emergent positive emotions	Trust	“I guess they just become more relaxed so it's not like their level of English has gotten better. They just feel more relaxed [...] Because they don't worry.” [U2]
	Cohesion	“For each request, each message, I will try to say ‘Thank you’ in the person's language... So, that definitely creates a strong connection.” [F19]
	Appreciation	“It makes the work more interesting to be able to discuss with other people from other cultures.” [F3]

Emergent negative emotions	Confusion or lack of understanding	“We realize that there is a very important loss online, because people are only partially there.” [F9]
	Anxiety and frustration	“Of course, we know that multiculturalism brings a certain richness to the project, but regarding communication, sometimes you are fed up of it.” [F5]
	Lack of sense of closeness	“It’s less engaging to not see our interlocutors in any case, even if we’re really conscientious.” [F9]

6.2.1 Language issues: Implementing a functional language

The team’s functional language(s) is/are the language(s) that are employed by team members on a day-to-day basis within the work environment, both formally and informally. Functional languages are influenced by the prescribed corporate language (if there is one), but also by the team’s linguistic and geographical configuration. For most of the cases studied, English is the functional language, however there is variation in the level and type of English. While many interviewees simply discuss proficiency, others qualify the type of English used as being “*broken English*” [I16] or a version of English influenced by other languages: “*the Czech people will say that they speak Czenglish, which is part Czech/ part English*” [A20]. Interviewees find that a common language is advantageous for teams composed of members with differing native languages: “*I don’t speak Italian, and they don’t speak French, so we speak in English*” [F13]. Besides English, French remains a functional language for some dominantly French teams or teams located in France. For example, a Swedish researcher states, “*one of [my teams] is pure French-speaking. So not only with French people, but the language of choice is French because we’re all situated in France*” [S17]. The use of a functional language allows teams to be more efficient and share access to the same information.

While a common functional language is meant to create a space of equal understanding, it can cause disparity between those of different proficiency levels. For example, a Greek employee describes that despite her advanced proficiency in the functional language, she feels that promotion within the organization is not possible because she does not speak the functional language at a native speaker’s level, and that she would consider leaving if changes are not

made [G15]. Furthermore, differing proficiencies in the functional language result in adaptation techniques, such as speaking more slowly or using simplified vocabulary. While this can be a positive point to aid communication, these techniques should be used carefully as to not reinforce differences: *“we didn't change the vocabulary, because we don't want to infantilize anyone”* [F5]. Overall, the findings show that a functional language aids understanding and goal completion, but disparity may prevent relationship building or opportunities for promotion.

6.2.2 Capitalizing on multilingual communication in addition to a functional language

While the vast majority of teams adopt a functional language, many also capitalize on additional supporting languages to increase understanding or improve relationships. Teams that work in organizations with multiple corporate languages or that work with colleagues from a specific geographic area while the corporate language comes from elsewhere (e.g. a cluster from an American multinational located in France, F3, I16) tend to use additional languages more freely. Teams with greater language disparity in the functional language practice code-switching, especially in one-on-one conversations when someone has difficulty understanding: *“I will switch to a language that helps communication”* [G15].

Also, using additional languages in greetings (of an email, for example) or to recognize a team member's cultural holiday is perceived as more acceptable and allows individuals to get to know each other. One Swedish interviewee located in France explains, *“I play around with it a bit because I usually write 'Bonjour' to people who are not French. It's to sort of show where I'm from and where I'm working”* [S17]. Therefore, multilingual communication aids in individual understanding and may increase group relationships when used in less formal situations. However, for formal or full-team communication, it is important to use a language that all group members understand and speak well: *“when there's multiple people speaking multiple languages, we automatically all switch to English out of respect and to make sure that everybody just can follow the conversation”* [B7]. Too much code-switching and side conversations can lead to subgroups and a lack of cohesion. Indeed, there is a fine line between operating officially in the functional language and choosing to add other languages for a more personal touch.

6.2.3 Choosing the most appropriate channel for effective communication

Media choice refers to the selection of a certain type of communication channel in relation to the message being transmitted and the person(s) receiving it. Email and voice calls are the most traditional media used for professional communication, while videoconferencing and instant messaging appear to be increasingly useful. Email is consistently the most used media on a day-to-day basis. Emails are used to quickly exchange information that can be forwarded throughout the organization [F3, F14, F19], to confirm and keep records [B7, F9, S17] and to work across time zones [A4]. It tends to be the simplest form of communication that requires the least planning: *“Organizing a meeting becomes usually more complicated than writing it. You know the availability of people, etc.”* [S17]. Email is convenient for group as well as formal messages [F18, A20].

Voice calls, whether they use a telephone or an online platform, are most useful to quickly resolve problems [F3, F6, S17]. Calls are efficient: *“a half an hour email could take five minutes to do over the phone”* [S17]. When a discussion by email results in too many exchanges or *“starts to ping pong around”* [B7], some teams shift to an oral discussion to gain time [A4, B7, F9]. However, voice calls do require an advanced language level and can be negatively affected by accents [F9, F19].

Video calls act similarly to voice calls, with the added benefit of seeing facial expressions and body language. They are established for regular team meetings and exchanges [G15, B18, F19]. One of the most significant advantages of a video conference is the possibility to share a computer screen and *“work through a process live”* [A1]. In addition, video can help team members establish rapport by seeing each other in their environment and by being able to see facial reactions and body language [F5]. An American sales director shares, *“it’s just nice to see a human body now and again”* [A8]. However, video requires a good internet connection, appropriate technology and advanced planning to integrate people in different time zones [A4, A20]. Also, multiple interviewees cited privacy or security concerns or team norms as a limit to using a video call software or to turning on the camera [F9, Y11, I16, S17, F19].

Instant messaging aids comprehension, especially with high language diversity, and allows for more lively team communication. A French HR director recounts, *“Messenger is more efficient for understanding the context, for digging deeper on certain points, especially with the Koreans, for example, who don’t speak English very well, but respond to written messages”* [F19]. Beyond positive effects on comprehension, instant messaging has the power

to bring people closer together, share humor and maintain a relationship through informal check-ins [F14, F19]. A French quality manager compares instant messaging as the closest option to face-to-face communication: *“For me, it's lively. I make it a tool to really try to reproduce as if we were face-to-face. Mimics that we could have, the non-verbal that is difficult to translate in an email”* [F14]. Team members that use instant messaging appreciate the quick feedback (i.e. more synchronous communication) and the possibility to show more of their personality through informal greetings and check-ins, as well as emoji.

A combination of communication channels further increases communication efficiency. The use of multiple communication channels can occur synchronously (e.g. sharing a screen during a voice call, A8, F10, F13, F14, S17) or asynchronously (e.g. confirming a work instruction by email after explaining it in a conference call, B7). This repetition is useful for important instructions and is adapted for people that learn in different ways, namely visual versus verbal learners. Repetition in a written form is also helpful for teams with high language diversity: *“Sometimes it helps to send them a summary of what you have discussed afterwards in English so that they have the time to digest it afterwards. In a multilingual team, that is very often very important”* [B7]. A French interviewee working with colleagues in India shares how repetition across different communication channels allowed her to overcome difficulty in understanding her Indian colleagues due to accents, *“I had to practice and mix [oral] with written communication to make sure I got it right”* [F9].

Overall, written media tends to be used significantly more in multilingual GVTs. For example, one director estimates that her highly-diverse and dispersed team communicates 80% by written means and 20% orally [F9]. Written media allow teams to communicate efficiently across time zones while adapting to accents and proficiency levels. Written media tend to make individuals with lower language proficiency more comfortable than oral channels, whereas oral forms of communication seem to help more with resolving problems quickly. Synchronous channels that replicate face-to-face communication, with body language, conversational messages or even arguably emoji, build relationships and rapport among team members. Table 15 summarizes these findings.

Table 15: Summary of communication media used in multilingual virtual teams

Media	Purposes, Advantages, and Difficulties	Details	Verbatims
Email	Primary purposes	For simple exchanges or information	“When it’s a simple one-off question, it’s easier to answer via email...” [A1]
		For confirmations	“We confirm in writing to assure that we understood well” [F9]
		For descriptions of a complicated work task	“If, for example, I ask them to do something, a task that requires a few days, I will more so write an email, to explain well what I want” [F13]
		For communicating information throughout the organization	“If we want to send a mass message, email is perfect. If we want to send a formal message, email is perfect” [F19]
	Advantages	Appropriate for temporal dispersion	“Email tends to be the mode because we’re all in different time zones” [A4]
		Possibility to evoke other languages in greetings or closings	“When I speak to Italians, I start with 'ciao' and after that, I speak in English. Or I finish with 'ciao.' It's a means to get closer too” [F14]
	Difficulties	Time-consuming	“a half an hour mail could take five minutes to do over the phone” [S17]
Voice, conference call (phone or online)	Primary purpose	For urgent matters or problem-solving	“what's urgent, what requires a decision, is by telephone” [F6]

	Advantages	Easy to combine with other media or screensharing	“We would cut the camera and use the text zone to send documents and PDFs” [F10]
	Difficulties	Accents become obvious	“Orally, we would have conference calls and their intonation made it so that I did not understand” [F9]
		Lack of body language	“When we speak by phone, we may not convey our emotions. For example, body language is not visible over the phone” [F13]
Videoconferencing	Primary purpose	For problem-solving	“I feel like my first instinct is usually to get on a [video] call just because it’s easier to talk about it and talk through issues and questions when you’re face-to-face” [A1]
		For group exchanges	“If we want a group exchange, in fact, there's no better method to use than video or teleconferences” [F19]
	Advantages	Visual cues	“I do like to use the video as much as you can because then you get to see people and you get to see the expression and what people are [thinking/feeling]’ [A20]
		More personal than other media	“We always use video, always... Because for one, communication... and it's just nice to see a human body now and again” [A8]
		Better understanding of interlocutor	“By calling, we come to better understand the English level of the person. We know how and with what words to explain” [F3]

	Difficulties	Privacy concerns	“We don't use the camera... I think it's a security aspect” [I16]
		Technology dependence	“Although [company] is starting to put in that type of technology, at least in our office, we need it within other offices to actually be successful” [A4]
Instant messaging	Primary purpose	For synchronous, written exchange	“Messenger is more efficient for understanding the context, for digging deeper on certain points, especially with the Koreans for example, who don't speak English very well, but respond to written messages” [F19]
		For prelude an exchanging via another medium	“I use Skype for instant messaging for short- 'Are you around?' and 'Can we have a call now?' and stuff like that, and then usually switch to a phone call to save time” [S17]
		For showing availability and interest	“We also want to show that we're present. It's constantly being in contact. Messenger is great for that because it allows us to be in touch, say 'How are you today?', without necessarily making a big deal out of it” [F19]
	Advantages	Instills confidence in team members	“For people who are a big less at ease or who don't dare to speak, it's easier to write... I think that messaging has facilitated exchanges” [F14]
		Imitates lifelike conversation	“I make it a tool to really try to reproduce as if we were face-to-face. Mimics that we could have, the non-verbal that is difficult to translate in an email” [F14]

		Use of emoticons and smiley faces	“I say 'hello' and put a little smiley. After that, there are people that use it more than others. It depends, and then it also allows us to share a little humor and things like that that aren't necessarily easy to convey” [F14]
	Difficulties	Lack of record	“at the beginning I started the conversation [and wrote]... important facts in these things. Then they disappear” [S17]
Combination of media	Purpose	For repetition across multiple media	“As much as possible we try to really talk, but then follow up in written form... Sometimes it helps to send them a summary of what you have discussed afterwards in English so that they have the time to digest it afterwards. In a multilingual team, that is very often very important” [B7]
		For illustration	“what we use a lot... is to be able to share the screen, not to see each other, but so I can show what's on my screen” [S17]

6.2.4 Reinforcing effective communication with language nodes and bridge makers

If individuals provide essential team coordination thanks to language skills, they may be language nodes. Language nodes help exchanges between two parties through translation or verifying others' messages. Beyond simply having the capacity to help, language nodes often feel a responsibility for it. For example, a Belgian manager that understands seven languages believes it is her responsibility to adapt to others when there is a communication issue: *“I think it's up to me to make the effort rather than them. So, when I find indeed that either people have trouble explaining something to me or they have trouble understanding what I'm saying, I will switch or I will ask them, ‘Okay, say it in (whatever their native language is)’ and see if that*

helps” [B7]. Colleagues that are physically or emotionally close can be effective language nodes by verifying a colleague’s message destined to an external client [Y11, G15] or by helping interpret incoming messages: “*I go to my colleagues. It’s like, ‘...What do you understand for this?’ ...these other things are still quite difficult sometimes: to get to know what the real message is*” [S17]. Translating may go beyond simply understanding the words, but may include interpretation of cultural meaning. So, language nodes are characterized by their language skills in multiple languages, but may occupy any role within the team: member or manager. Due to their language skills and propensity to help, language nodes become trustworthy, central interlocutors for communication across the team and hold a privileged role among their team members.

6.3 Discussion and perspectives for further research

This study demonstrates the issues surrounding multilingual GVTs and how the two variables of language diversity and virtuality are equally important to consider to understand team processes. For example, the particularities of multilingual GVTs make the stakes of choice of language and appropriate communication channel of an even greater importance than for face-to-face teams. Language nodes and bridge makers are also increasingly important for coordination in highly linguistically-diverse and dispersed teams.

6.3.1 Which language?

BELF is used by a significant number of multilingual GVTs, but other functional languages, i.e. French, may also be selected depending on the multinational company’s strategy, structure and transnationality (Luo & Shenkar, 2006). This study confirms the benefits of BELF for multilingual GVTs because a clearly-designated language for official communication reduces confusion. As BELF mixes English and other discourse practices from the speaker’s mother tongue, BELF speakers do not aim for native-speaker proficiency, which reduces pressure and makes them more comfortable speaking and writing (Kankaanranta & Planken, 2010). Focusing on proficiency has been shown to reduce perceived ability-based trustworthiness (Tenzer, Pudelko & Harzing, 2014). On the other hand, this study also demonstrates the limits of BELF or other functional languages. Despite evidence otherwise, non-native speakers have been perceived as less intelligent or capable than their native speaker counterparts. BELF is

not “cultureless” and should not be approached in that manner, by native or non-native English speakers (Kankaanranta & Planken, 2010). Also, while an international form of English is accepted for internal communication, native-speaker proficiency is usually the goal for external communication. So, team members that have outward facing roles may be incited to further develop their language proficiency.

Besides a *lingua franca*, we also observe the benefits of a monological multilingualism approach, which is an inclusive policy that recognizes a certain number of local languages, each being allocated for one context or another (Janssens & Steyaert, 2014). It is not yet at the level of a true *multilingua franca* approach in which language is a true bricolage of multiple linguistic resources all being used simultaneously (Janssens & Steyaert, 2014). In fact, in the 22 interviews, we did not encounter any team-wide *multilingua franca*, reflecting that a true *multilingua franca* is difficult to establish and that it is more common in social rather than professional settings (Feely & Harzing, 2003; Harzing et al., 2011). However, informal communication is essential in teams (Charles, 2007) and thus creates opportunities to integrate additional languages. Teams that communicate informally and personally and that are able to spend quality time together, even infrequently, show increased group capacity, individual satisfaction and trust. Teams that never meet face-to-face must address this lack of quality time through other means such as informal calls and online teambuilding activities. This high quality, interpersonal communication “combats barriers to trust establishment” and leads to improved team outcomes (Marlow et al., 2017). For this reason, we propose the use of additional languages in informal team communication such as in written greetings or small talk to indicate interest in others and improve group dynamics.

Code-switching has been widely debated in the field of language in IB. Our results also show that code-switching can increase understanding and efficiency in completing tasks, but it has the potential to cause intense emotion, tensions and reduced benevolence-based trustworthiness between team members when used too much (Hinds et al., 2014; Tenzer, Pudelko & Harzing, 2014). For this reason, we support Tenzer and Pudelko’s (2020) proposition that managers should limit code-switching (in group settings), practice guiding code-switchers back to the shared language and further reduce misunderstanding through repetition and regularly summarizing discussion outcomes during and following team meetings. However, we compromise by acknowledging the benefits of code-switching for knowledge sharing (one-on-one or via a separate channel during team communication) or building relationships in informal situations.

To summarize, the findings of this study point to a combination of a designated functional language with an official recognition of team members' language skills and backgrounds by encouraging switching to other languages in less formal and one-on-one situations. Such flexibility between languages may be easier in the virtual environment where team members can use multiple communication channels at the same time without interrupting the main conversation. For less formal situations, communication will more likely pass through informal communication channels, i.e. where messages are not usually saved or forwarded to others, such as instant messaging or texting. This official recognition of languages outside the functional language may be a step towards the future acceptance of a *multilingua franca*.

6.3.2 Which Communication Channel?

Multilingual GVTs use a combination of written and oral communication channels, privileging written channels for the most important messages and to confirm what has been previously conveyed orally. While the choice of communication channel does depend on individual preference and the tools provided by the organization, some are better adapted to certain messages than others. In choosing a channel, the team needs to consider language commonality and the type of message being sent. Our findings are generally consistent with Klitmøller and Lauring (2013) who find that rich media in highly diverse teams makes sharing complex messages difficult due to accents and that lean media gives more time to individuals with lower proficiency to reflect and correct their writing. Indeed, sharing important information in writing (or confirming it in writing) helps accommodate language diversity. Along with media richness, we observe the importance of media synchronicity. Again, our findings are consistent with Klitmøller and Lauring (2013) and Tenzer and Pudelko (2016) who highlight asynchronous media in multilingual settings because it eliminates pressure for immediate action.

However, as Tenzer and Pudelko (2016) point out, asynchronous and written communication is no “panacea” for all team communication, so teams should use a variety of media. For example, it is important to privilege lean, asynchronous media, such as emails, for efficiency and sharing important information, but also integrate rich, synchronous media, such as video calls, to create a more “personal” touch where team members can build personal relationships. Using media to create a more “personal” touch through social communication is

especially important in the virtual context where team members cannot build rapport in face-to-face situations (Powell et al., 2004).

We also promote the use of “in-between” options that allow team members to write to each other synchronously, such as instant messaging. In line with Li, Yuan, Bazarova and Bell’s (2018) study on the effects of language proficiency in multinational teams, instant messaging allows members with low language proficiency to feel more comfortable speaking up because social cues and thus cognitive and social constraints are restricted. This medium should be encouraged as it imitates lifelike conversation, bringing the benefits of face-to-face communication to the virtual context.

6.3.3 Which individuals to build language bridges?

Finally, the results highlight the central role of clearly identified language nodes for multilingual GVTs. People that master multiple languages and that can improve understanding by facilitating communication between two parties within the same group are known as language nodes, also known as bridge makers (Harzing et al., 2011). Likewise, Barner-Rasmussen, Ehrnrooth, Koveshnikov and Mäkelä’s (2014) study on boundary spanners (that operate between organizational units), found that language skills are more important than cultural skills to properly perform boundary spanning functions. We propose the same for language nodes within a single unit. Thereby, organizations need to identify individuals with pertinent language skills as well as a desire to help others. This can be done starting from the recruitment process, focusing on complementary team members based on their language competence. Our findings are consistent with Barner-Rasmussen and colleagues (2014) who believe that language nodes can occupy any role within the team, including manager, but should be ideally distributed across different organizational levels and job roles. Managers should also identify the language competencies already present within the team to understand who can act as a language node. In the virtual context, team members may be initially unaware of the language competencies present in the team, so helping to identify them is an important step to creating a more cohesive team.

This exploratory study highlighted how language diversity influences both task-related and socio-emotional processes. A number of language strategies including the implementation of a functional language that is both effective and facilitates relationship-building, how to mobilize limited code-switching without causing distrust, how to best operate across multiple

communication channels and the identification of language nodes warrants further attention. In addition, this raises the question of how to promote effective task processes but also strong socio-emotional processes such as trust and team cohesion.

Chapter 7

Study 2: Coordinating a multilingual virtual team in an online serious game

Inspired by the results of the exploratory study, we wanted to delve into the communication behaviors that had been found to be beneficial for managing language diversity in the virtual context. Specifically, we wanted to understand not only which communication behaviors were employed, but by whom and in what context. Here, we focus on task-related team processes.

At the same time, we were interested in further exploring socio-emotional processes. The focus went to a socio-emotional process previously identified in Study 1 that related to social interaction and the development of relationships: trust. Thus, sub-questions of Study 2 focused on task-related and socio-emotional processes to examine our main research question concerning how language diversity influences team processes in the virtual context from multiple perspectives. Parallel to Study 2 on trust presented in this chapter, and which was carried out using a quantitative experimental methodology, another socio-emotional process of interest to multilingual virtual teams (i.e. team cohesion) more clearly emerged during Study 3 which employed a qualitative ethnography (see chapter 8).

Sub-research questions explored in Study 2

- a. How does language diversity influence task-related communication behaviors in a multilingual virtual team?
- b. How does language diversity influence trust in a multilingual virtual team?

In order to test the two subquestions of Study 2 simultaneously, an experimental methodology mobilizing an online serious game was selected. We conceived and created a specific serious game (ELITE The Serious Game) to collect the data and thereby test these questions. The experimental nature of the tool allowed us to test causal relationships between

language diversity, communication behaviors and trust (Zellmer-Bruhn, Caligiuri & Thomas, 2016).

To test the relationships, on one hand, this research design allows the observation of behaviors within the simulation. Specifically, the simulation provides the opportunity to view how behaviors related to previously defined concepts such as code-switching and Business English as a *lingua franca* (BELF) are actually mobilized by individuals working in international team settings. On the other hand, questionnaires were also integrated to better understand the participants' perceptions and feelings of working in the multilingual virtual team, thus delving into socio-emotional processes.

The experimental game principles, scenario and measures will be further discussed before presenting the results concerning the behaviors and emotions of the 311 participations that experienced the two-hour simulation of leading a multilingual virtual team.

This chapter is presented in five sections:

Section 7.1 outlines the nature and principles of (quasi-)experimental methodologies, the traditions of experimentation in international management and finally a presentation of the serious game methodology that we employed for this study.

Section 7.2 explains the specific serious game created for this study, looking both from the player's point of view and explaining the research principles and measures included in the game.

Section 7.3 presents the data collection method and sample.

Section 7.3 presents the findings from the data collected from the serious game in two parts that reflect the two sub-research questions.

Section 7.4 discusses the findings and compares them to the scientific literature.

7.1 Serious games for experimental research in IB

This section aims to briefly present experimental research in the international business and management field by defining experimentation, reviewing some essential experimental articles and explaining the main challenges of experiments in the field. Finally, the serious game methodology mobilized within the context of this dissertation is introduced.

7.1.1 A general presentation of experimental research designs

Experimental research studies causal relationships between variables or causal processes within the context of theoretical predictions (Fischer & Karl, 2020). Experimental methods are generally part of a hypothetico-deductive approach with hypotheses from existing research being tested by comparing variable relationships (Livian & Mitev, 2019). Therefore, experimental research tends to simplify reality through studying only a limited number of variables in order to explain how the explanatory or independent variable affects the dependent variable by comparing groups (Livian & Mitev, 2019). An advantage of experimentation is that preferences and behaviors are not self-reported, but rather are exposed through the choices made by the subjects (Figureau et al., 2020).

There are a number of types of experimentation. True experiments refer to experiments in which the researcher has control over the variables and experimental procedures, and where participants are randomly assigned to conditions (Fischer & Karl, 2020). The variable that is under study is given to a group at random, whereas another group (i.e. the control group) is not exposed to the change (Igalens & Roussillon Soyer, 2019). True experiments can further be divided into those taking place in a dedicated and controlled space (i.e. “lab experiment”) and those taking place in someone’s normal environment (i.e. “field experiment”). Lab experiments are known to be major sources of knowledge in social sciences (Falk & Heckman, 2009). However, field experiments have a higher external validity than lab experiments because people’s behaviors will be less influenced by the setting and are therefore less biased. Yet, these types of experiments are costly, both in terms of time and resources, and contextual variables cannot be controlled with the same rigor.

In addition to true experiments, there are also quasi-experiments. These still involve manipulation of the independent variable (whether that is naturally occurring or deliberately caused by the researcher), but participants are not randomly assigned to conditions. There are

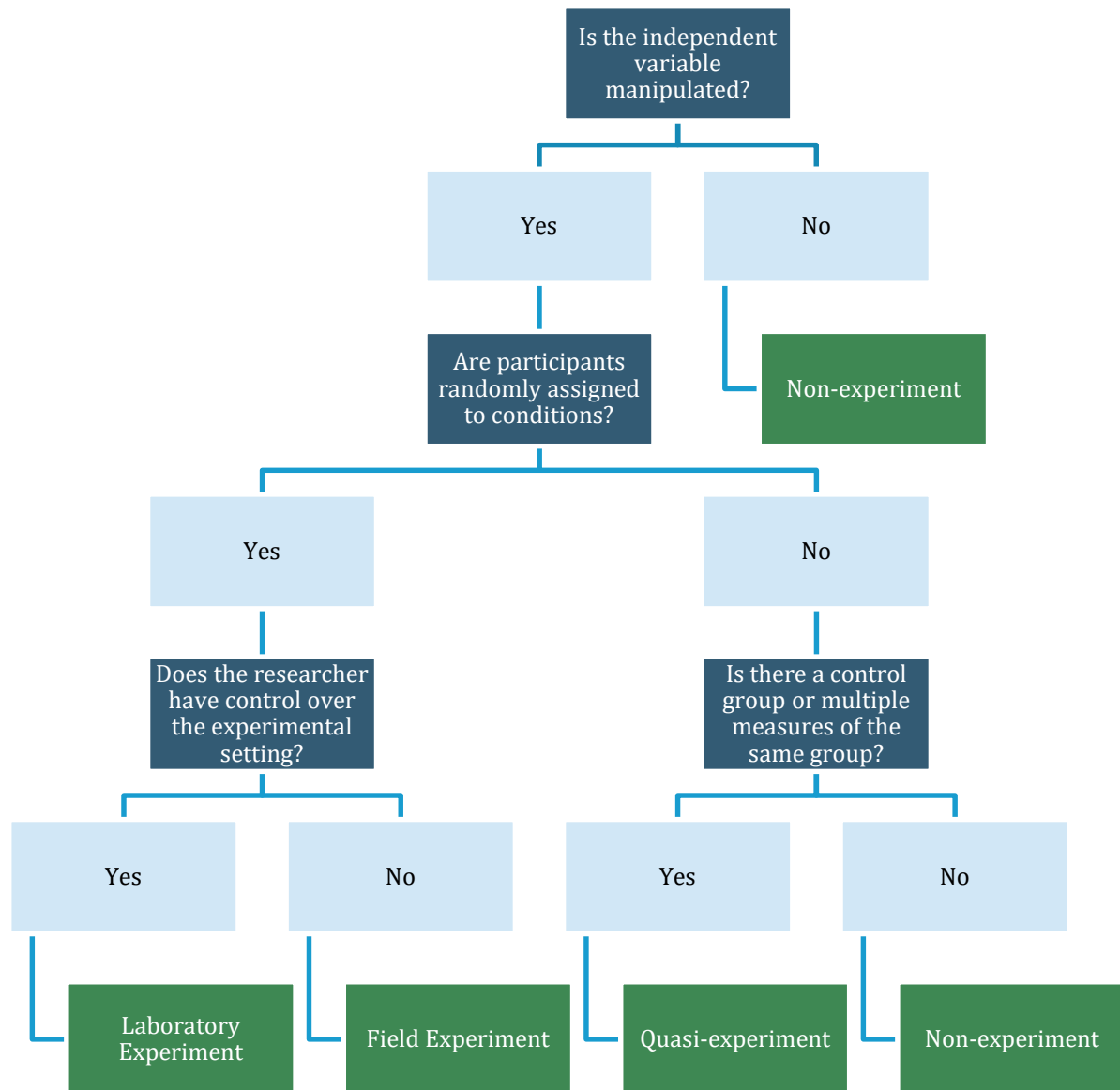
two main reasons for choosing a quasi-experimental design: 1) it can be of interest to let individuals choose the groups they want to belong to, but this creates biases, and more importantly, 2) there are already intact or pre-existing groups of interest (Grant & Wall, 2009). As Zellmer-Bruhn, Caligiuri and Thomas (2016) convey, researchers cannot simply randomly assign countries to political economies, companies to globalization strategies, or country of origin to individuals. More closely related to this research, culture and language can imply pre-existing groups or variables that cannot be controlled because people are born into cultures and learn languages and cannot simply pretend to have another culture or language for the sake of the experiment (van de Vijver & Leung, 1997). Due to the limits of creating groups, quasi-experimental research has less internal validity than true experimental research because the observed differences between groups could be due to external sources not considered within the context of the research (Igalens & Roussillon Soyer, 2019).

Yet, quasi-experimental research does have certain advantages. Igalens and Roussillon Soyer (2019) propose that quasi-experiments have five main advantages for organizational research:

1. They strengthen causal inference when random assignment and controlled manipulation are not possible or ethical.
2. They help build theories related to time.
3. They minimize ethical dilemmas which are more often associated with true experiments.
4. They can incorporate the context to explain conflicted findings.
5. They facilitate collaboration among practitioners.

The different variations of experimentation as discussed in this section are summarized in Figure 8.

Figure 8: Experimental research design (adapted from Podsakoff & Podsakoff, 2019, p. 143)



7.1.2 Experimental research in International Business and Management

In the field of international business and management, experimental research designs are relatively scarce compared to fields such as marketing and behavioral finance (Zellmer-Bruhn et al., 2016). In 2016, in the *Journal of International Business Studies (JIBS)*, one of the top journals in the field, it was revealed that less than 1% of its published empirical articles used experimental designs (Zellmer-Bruhn et al., 2016). More specifically in language-sensitive research in IB, Fan and Harzing (2020) only found eight out of 300 publications (2.5%) that adopted an experimental design.

The scarcity of experimental research in international management is due to the challenges inherent in multicultural and multilingual settings. As discussed with quasi-experimental designs, it can be difficult to randomly assign participants to groups when the conditions imply different national contexts, languages or other socio-demographic features. When the experiment attempts to compare international groups, it is especially difficult to constitute homogeneous and fully comparable samples (Zellmer-Bruhn, Caligiuri & Thomas, 2016). Consequently, most experimental designs in international management consist of quasi-experiments.

Despite a number of challenges, both true and quasi-experimental designs appear to be a real advantage for research in IB and language-sensitive research in IB in particular because they are capable of developing evidence for causal relationships (Zellmer-Bruhn et al., 2016) and isolating variables to account for specified changes in the dependent variable (Fischer & Karl, 2020). For example, Li and colleagues (2018) demonstrate how language proficiency affected information exchange within multinational teams through the use of experimental research. In line with this thinking, multiple calls for experimental methodologies for research in IB have been issued. For example, Van Witteloostuijn (2015) propose building an “experimental IB tradition,” highlighting web-based tools. Kochan and colleagues (2003) call for “experiments aimed at creating a positive link between diversity and performance.” Tenzer and colleagues (2017) call for “a broader application of experimental studies” to isolate the effects of language and measure actual behaviors. Fan and Harzing (2020) ask for more experiments on language research as a means to test and refine existing theories.

Beyond experiments in the strict sense of the word, Zellmer-Bruhn and colleagues (2016) encourage experimental approaches to control for alternative causes, to explore longitudinally and as complementary to other methods in a mixed methods approach. In addition, they encourage researchers to “think experimentally,” meaning to think critically in order to rule out plausible alternatives, to better understand theoretical constructs within the research context and to enhance conclusions about covariation, causal order and alternative explanations (Zellmer-Bruhn et al., 2016).

7.1.3 An experimental methodology based on a digital serious game

A serious game is a game with an educational objective. In the 1970s, Abt (1970) introduced the term “serious game” to designate games that were used for education. Today, we can define serious games as “a mental contest, [often] played with a computer in accordance with specific rules, that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives” (Zyda, 2005, p. 26).

Serious game pedagogy is based on the principles and advantages of experiential learning (Kolb & Kolb, 2005), where players are immersed into specific and realistic scenarios (Sanchez et al., 2011). After acting within the scenario to move the game forward, the player then receives “decision-related information” (Vermillion et al., 2017), which is meant to help the player learn about a specific topic. In general, serious games have attracted increasing attention as innovative and effective tools for learning and knowledge management (Michel, Kreziak & Heraud, 2009; Vallat et al., 2016). As demonstrated by the examples in Table 16, serious games in international management exist in numerous forms.

Table 16: Examples of serious games in international management

Game Name	Creator	Type of game	Principal
Barnga	Sivasailam “Thiagi” Thiagarajan	Card game	Players communicate in different ways and have different “rules” for dealing with universal situations
Kosmopolit	Language Dynamics Laboratory at the University of Lyon	Board game	Players collaborate to fulfill customers’ dining requests in different languages
<i>Moving Tomorrow – A Cultural Journey</i>	Prof. Marion Festing and Dr. Tobias Schumacher	Online game	Players develop their intercultural skills by traversing an international business scenario.

While serious games have traditionally been aimed at pedagogical purposes, we propose a new methodology that applies serious games for research. Serious games can be appropriate for (quasi-)experimental methodologies because they immerse the player into the scenario while still allowing a certain control over the study environment. Because players make decisions within the game context, serious games allow researchers to study actual behaviors, thereby reducing the effects of social desirability and self-presentation which can be seen in other research methodologies such as interviews (Tenzer et al., 2017). The context

and background in the scenarios are restricted in order to reduce noise (Figureau et al., 2020). In the field of economics, researchers have proposed video and online games as “less expensive substitutes for laboratory settings” (Vermillion et al., 2017). In IB, digital research tools have been suggested as a means to both conduct research and to teach about international management in a more playful way (van Witteloostuijn, 2015). Given the possibilities allowed by serious games, we decided to create and implement a serious game for this research.

7.2 ELITE The Serious Game: An Online Game about Communication & Leadership in a Global Virtual Team

In this section, we present the online serious game that was designed to collect experimental data for this research. The game is called *ELITE The Serious Game*, for “English Language in International TEams”, and it was developed within the context of the InterCCom project, a research project aiming to build serious games that can be used both as “laboratory” (quasi-) experimentation in international management and as training tools. The research project is led by Anne Bartel-Radic at Sciences Po Grenoble - Université Grenoble Alpes and involves professors and PhD candidates from over ten countries including France, the U.S., Brazil, Germany, Romania, Thailand, China, Bahrein, Yemen and Canada. Within the project, five different games have been or are under development, including *ELITE The Serious Game*, which was designed, created and carried out by this dissertation’s author. In addition, the InterCCom project team created the GenaGame gaming platform, for “generate a game,” which houses the games and allows researchers to export game data in the form of a spreadsheet. Game data includes all information related to players’ pathways, choices to multiple-choice questions and optional written justifications through the game.

Figure 9: Logos from the project, game and gaming platform respectively



In order to illustrate the design and founding principles of *ELITE The Serious Game*, the following subsections discuss:

- the player's view in the game,
- the process for creating the game scenario,
- the experimental principles and importance of realism,
- the educational objectives of the game.

7.2.1 The Player's View

ELITE The Serious Game was designed as a simulation where the player was immersed into a scenario, that of a multilingual virtual project team. The player was given the role of team coordinator of a fictitious team, which is shown in Figure 10. The team was composed of members of different nationalities and backgrounds and were located across the world, namely in Brazil, France, Portugal, Thailand, the UK and the USA. The corresponding languages were targeted as they represent vastly different languages on the global scale: English is spoken as a native language by 411.5 million people², but also by many more people across the world as a learned language, and is thus the “language of global business.” French is also recognized as an important language globally, serving as an official language of the United Nations³ and being the first language of 97.1 million people.⁴ In comparison, Portuguese has many more native speakers (227.9 million⁵), so demonstrates great importance for international business. Lastly, Thai is the official language of only one country, Thailand, and is only spoken worldwide by approximately 38.9 million people.⁶ Therefore, it remains comparably obscure on a global scale. By incorporating multiple languages, the game aimed to represent a truly linguistically diverse team.

Team members of the fictional team thus had different native languages and also spoke the common working language, English, at different levels and with more or less strong accents. For each national language, there were two characters with different qualities based

² <https://www.worlddata.info/languages/english.php>

³ <https://www.un.org/en/our-work/official-languages>

⁴ <https://www.worlddata.info/languages/french.php>

⁵ <https://www.worlddata.info/languages/portuguese.php>

⁶ <https://www.worlddata.info/languages/thai.php>

on English proficiency, gender, age and hierarchical status in the team. Regarding the two Anglophone characters (excluding the London-based CEO who simply served as source of information or for confirming player decisions), their English proficiency was based on BELF, such that one character spoke a more “internationalized” form of English that was void of complicated structures and idioms compared to his counterpart.

Figure 10: The fictional team in *ELITE The Serious Game*




Table 17: Description of the team members

Game Character	English Level⁷	Native Language	Age Category	Gender	Hierarchy
Emily Taylor	Native	English	25-40	Female	Lower
Dan Jones	Native	English	Over 66	Male	Upper
Fabienne Leblanc	C1	French	41-56	Female	Upper
Nicolas Dupont	A2	French	18-24	Male	Lower
Filipa Andrade	C2	Portuguese	18-24	Female	Lower
Luiz Gomes Silva	B1	Portuguese	57-66	Male	Upper
Somjai “Jiab” Boonya	C1	Thai	25-40	Female	Upper
Puttipong “Obe” Kraisee	B1	Thai	41-56	Male	Lower

Concerning the game context, the players were asked to lead and coordinate their team in order to collectively organize a product launch event. The introductory information that was given to the player is shown in Figure 11. The player worked through five game phases: an introductory phase of team formation followed by three phases in which the player worked through various issues and made important decisions related to the event context and the final phase where the player evaluated their team’s success. The player had to coordinate the team’s work and adapted their behavior appropriately. The overall project took place over the course of eight months, but the actual game duration was approximately two hours. The game duration proved to be a challenge for recruiting the desired number of participants. In order to encourage participation, the game was created such that participants could choose to play the entire game in one or multiple sittings, depending on their availability and preference.

⁷ English level based on the Common European Framework of Reference for Languages

Figure 11: Introduction to the company and project in *ELITE The Serious Game*


FROM: Claire
TO: You
DATE: March 25

Hello,
 As C.E.O., it is my pleasure to welcome you to Perfumes & Co!
 Attached, please find some information about the company and the project you will be coordinating.
 Then, you will receive a questionnaire to complete for the HR department.
 Please let me know if you have any questions.
 Kind regards,

CLAIRE
 CEO

TIP:
 Scroll down to find the email attachment.

THE COMPANY

PERFUMES & Co

- Specialist in perfumes
- Locations in 6 countries
- 100 employees worldwide



THE PROJECT

We are pleased to introduce our newest product: **Unique Perfume**



- To introduce our product to the market, we are planning on an international **product launch event** in Thailand.
- You have been hired as **team coordinator** to plan this event.



7.2.2 The process for creating the game scenario

Creating the serious game was a lengthy process, taking approximately eighteen months from its initial inspiration to when it was launched for data collection in March 2022. The process to develop the serious game iterated between specifying the research goals and questions, imagining the game context and fundamentals of game play (Djaouti et al., 2011), and developing the corresponding elements on the game platform.

The scenes present within the scenario were mainly inspired by situations experienced by actual multilingual virtual team members and “critical incidents” (Flanagan, 1954) that reflect real-life experiences that can be considered both problematic and significant (Chell, 2004). The lived situations and critical incidents were elaborated based on interviews from the exploratory study that recounted challenges related to language diversity in teams. In addition, they were also based on observations and discussions with other professionals in global virtual teams and event organization. The choice to consult professionals specifically in event organization was made because the game scenario was based on organizing an international event with a multilingual virtual team. Critical incidents are not new in international management research as illustrated by Flanagan (1954). They have previously been used to assess intercultural competencies (Bartel-Radic, 2014; Bartel-Radic & Giannelloni, 2017), and they have been identified as being well suited to uncovering and capturing the dynamic nature of emotions (Gooty et al., 2010). We believe that critical incidents can also serve simulations as a means to better represent reality.

Five complementary steps were key in the development of the serious game. During the steps of the game creation process, the consultation of researchers and professionals to validate the research protocol and game scenario at multiple times was indispensable. The five steps include:

1. *Hands-on training to create an online serious game using the InterCCom project methodology.* The researcher participated in two collaborative workshops in 2019 with an interdisciplinary and international project team of 50 members whose aim was to create a serious game for research and training in intercultural competence. The team employed improvisation theatre and design thinking methodologies (Chanal & Merminod, 2020; Dorst, 2011) to imagine scenes related to intercultural competence and communication. This participation not only helped train the researcher to create a game (e.g. construction of scenes with varying pathways, player personas to evaluate a

game's objectives), it also inspired elements of the scenario based on participant observations conducted during the teamwork.

2. *Interviews to identify critical incidents.* Following the articulation of the research question and originating from the exploratory research (Study 1), exploratory interviews with leaders and members of international project teams were conducted. These interviews helped identify lived situations and critical incidents related to the research question.
3. *Specifying the game context and learning goals with professionals in the field.* In-depth discussions with professionals who had extensive experience managing teams or organizing events (the game context) helped bring the game context closer to reality. The researcher met with two groups who were interested and experienced in international management five times where the game was presented at different stages of its conception and creation. In addition, the researcher met one-on-one with a professional with extensive experience managing teams and with a person responsible for event organization related to the tourism industry in the Isère region of France.
4. *A pilot study with researchers and professional in international business.* After writing the scenario, an adjustment and validation phase occurred during a pilot study of one version of the game in January 2022 which lasted three hours with 10 researchers and professionals in IB. This allowed us to fine tune the scenarios, ensuring that the questions within the game were appropriate for studying the research question.
5. *Final tests and feedback before launching the game.* Following adjustments from the pilot study and the creation of the three game versions (which will be discussed in the section on the experimental principles of the game) on the GenaGame platform, a last round of verification occurred where individuals from the researcher's immediate professional and personal network played the game. While some of these individuals were those involved in previous steps of the game's conception, six more individuals were able to look at the game with a "fresh set of eyes" and provide feedback. Final adjustments were made before launching the game for research data collection in March 2022.

7.2.3 The experimental principles and emphasis of realism

The serious game methodology allowed the researcher to artificially reconstruct an environment (e.g. online teamwork) and control a number of variables over the course of the

experiment. For example, pre-recorded videos and limiting the number of responses that the player could choose through multiple-choice questions provided a certain amount of control. However, there was some debate whether this should be considered a “true” experiment or a quasi-experiment, mainly because the groups under study were both attributed randomly and not randomly. On one hand, there were three game versions. Each of the versions highlighted a different communication channel with two of the main game scenes played out exclusively in the given channel. Version 1 was carried out in instant messaging, Version 2 was also carried out in instant messaging with the addition of emoji, and Version 3 was carried out over video calls. In this sense, we approached a true experiment because participants were randomly assigned a game version. On the other hand, because a key variable of interest was language diversity, this could also be considered quasi-experimentation. It was impossible to attribute language groups based on native language and English proficiency level to participants. The distribution of the three game versions across language groups will be discussed in section 7.3 on the data collection and sample.

It has already been mentioned that the game and the scenes with the game were meant to represent real-life experiences. Realism was implemented in 1) the player’s role, 2) the game environment, 3) the choices of pathways presented to the player and 4) the choice of scenes or “critical incidents.” Players were instructed to “be themselves” and use their personal experiences to their advantage. That is, the player was their own person, for example in terms of age, gender, nationality, professional experiences, etc. They did not take on a fictional persona as in many other games. This contributed to the player’s immersion into the story and was a specificity of the game, and of the larger InterCCom Project, compared to other (serious) games that have been developed in the field. Also, this was essential for the experimental aspect of the study.

While this was a single player game, it was meant to imitate a professional team environment as closely as possible. The game environment replicated the environment of a person actually working with a global virtual team from their computer. Exchanges with the other virtual team members took place online using e-mail, instant messaging, phone or video calls and document sharing. These exchanges were represented by “resources” in the game consisting more concretely of PDFs, images and short pre-recorded videos of one or more actors. Games resources were combined in series punctuated by multiple-choice questions. During the duration of the game, the background represented a computer screen, which was

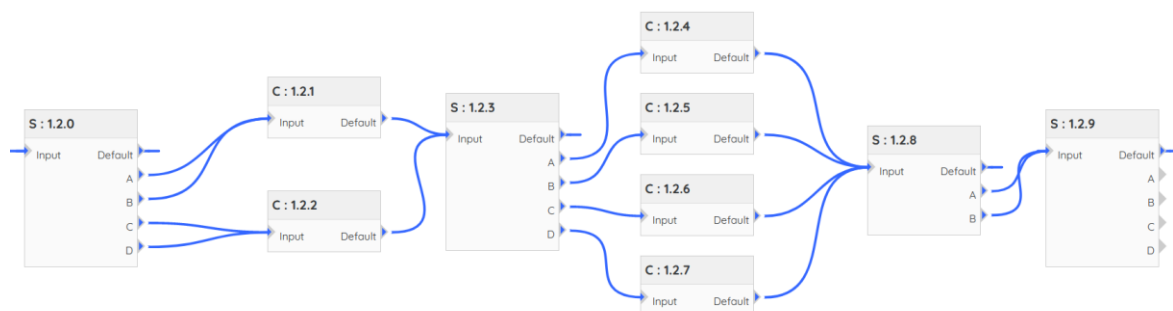
meant to immerse the player into the world of online work. Figure 12 provides an example of the game environment during a video conference call (i.e. pre-recorded video).

Figure 12: A screenshot of a video call in ELITE The Serious Game



Beyond the general context, realism was also demonstrated through the different pathways presented to the player. While all game players experienced the same general scenario, they did not experience it in the same way. Rather, a player’s choices and the communication and management styles that they adopted within the game had consequences and influenced their pathway through the game. This was reflected in the 24 scenes that made up the complete scenario and that were constructed with varying complexity and varying numbers of pathways. Figure 13 demonstrates a behind-the-scenes look of *ELITE The Serious Game* on the GenaGame game creation platform where different responses led to different pathways within the game.

Figure 13: Behind-the-scenes of *ELITE The Serious Game*: Construction of Scene 2.2



The intention of creating a game as realistic as possible was to immerse players into the situation and to elicit genuine responses, i.e. what would the player do or say when confronted with a specific situation? One game participant who worked on a daily basis in a multilingual GVT reported that it reminded him too much of work during his summer vacation, so he completed the game at a later date!

7.2.4 How can ELITE The Serious Game be used as a training tool?

A discussion of *ELITE The Serious Game* would not be complete without a brief explanation of how the game was used for training purposes. After all, the very idea of a *serious* game is that it is educational. This was also an important argument to find players and to encourage them to complete the approximately two-hour game. In terms of learning, the game followed the principles of experiential learning (Kolb & Kolb, 2005), and the player was immersed into situations representing international teamwork. Their choices of how to communicate and lead their team had consequences on their teamwork and success within the game. The player's goal was to select the response that represents how they would actually respond in the given situation and/or what they thought was "best," providing researchers with a view into what the player considered to be ideal behavior.

Players were informed of the consequences of their choices with two types of feedback. First, there was regular feedback throughout the game about experienced situations in terms of elements not directly related to the research question including general information about teamwork, leadership and national cultures. Second, the player received an in-depth explanation and scores for seven dimensions at the end of the game. These seven dimensions included team leadership, intercultural competence, foreign languages, language complexity, repetition, communication channel and emoji. The majority of these dimensions were addressed by the research question under study. While player feedback was constructed based on recommendations in current literature, a great advantage of the research aspect of the game is that we expect to incorporate recommendations based on the findings of this research in future versions of the game.

In designing the game, it was important that the training objectives did not interfere with the research objectives. Of course, following ethical and GDPR guidelines, the player was informed of the general research aims, of the fact that participating in the game contributes to the research project and of the contents and means of data storage. Participants were informed

of their rights and were asked for their acceptance to participate in the research before starting game play. However, precautions were taken to not provide any information to the player about the specific dimensions related to the research (e.g. communication strategies, channel and trust) until the final debrief at the end of the game. Participants were also unaware of the three game versions, which were distributed randomly across the sample during the data collection phase.

Overall, because the player's focus was on succeeding the game and getting high scores and because they were focused on the pedagogical elements of the game, the participant was less aware of the experimental condition as compared to a true laboratory experiment. This lack of awareness of being studied for research has been shown to be a benefit of quasi-experimentation (Podsakoff & Podsakoff, 2019).

7.3 Elaboration of the game questions, measures and variables

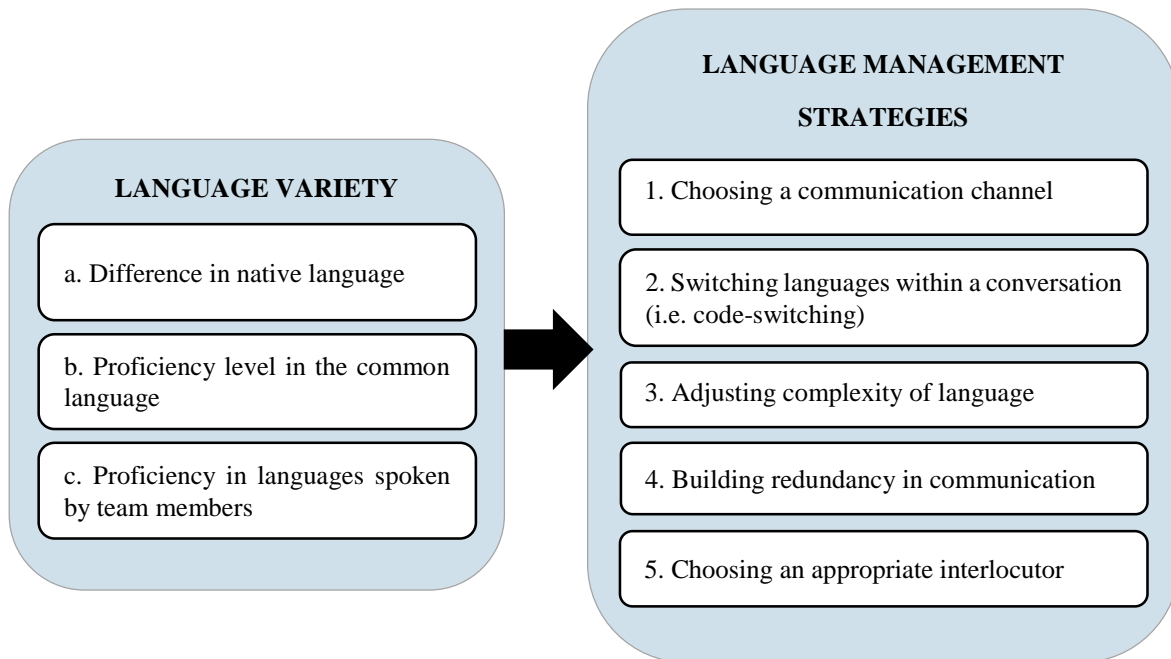
This section presents the questions and scales included in the game in relation to the research question, and therefore, it gives insight into the type of questions encountered by the player during game play. This section is presented in three parts. First, the research variables are discussed. Then, the questions related to player choices and behaviors are explored. These questions are part of game play and indicate how the player chooses to act in situations they encountered within the game. Finally, the measures that punctuate the game in the form of short questionnaires are then presented and explained.

7.3.1 Overview of the main variables

Thanks to the richness of the serious game tool, we were able to explore two sub-research questions in Study 2. The first sub question was: *How does language diversity influence individual communication behaviors in a multilingual virtual team?* We sought to determine the state of communication behaviors that had previously been identified as language management strategies. In other words, who employs which communication behaviors in multilingual virtual teamwork, and does this result from the language background of the individual? Concretely, an individual's native language, level in the common language and other spoken languages were considered as part of their language background. The communication behaviors that were considered include the choice of communication channel,

switching languages within a conversation (i.e. code-switching), adjusting the complexity of the language, building redundancy into communication and choosing an appropriate interlocutor. The relationships explored within this sub-research question are largely modeled in Figure 14.

Figure 14: General model of sub-research question 1

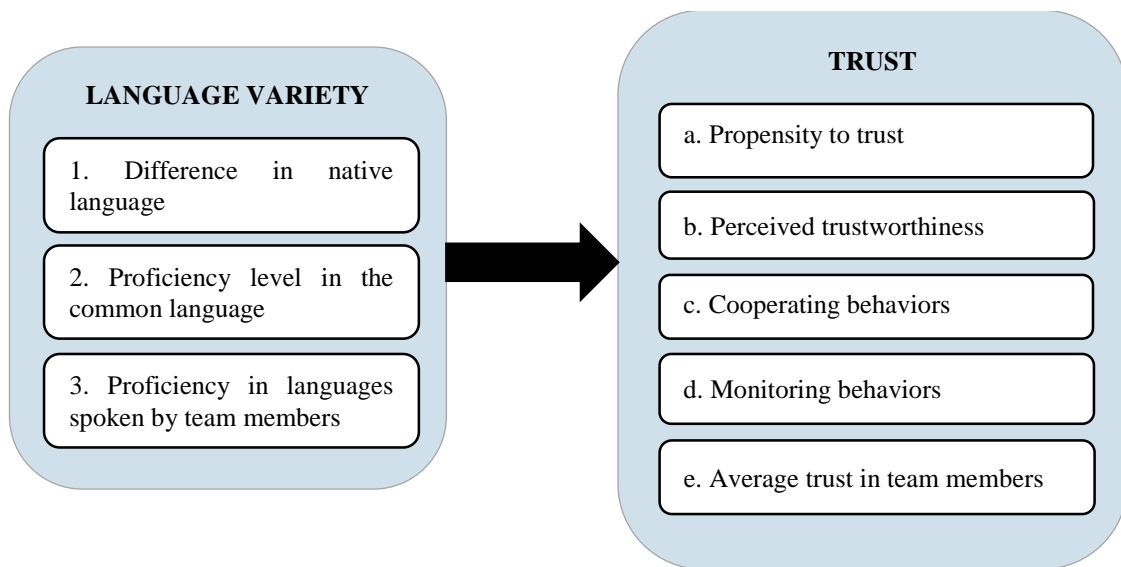


The second sub question was: *how does language diversity influence trust in a multilingual virtual team?* Again, the individual’s language proficiency (in the common language and other languages spoken by team members) was selected as the measure of language diversity. This was compared to perceived trust. Following Costa and Anderson (2011), overall perceived trust was measured through propensity to trust, perceived trustworthiness of the team, cooperating and monitoring behaviors in the team. In addition, a sense of how much the individual trusts each of their team members was incorporated. These measures will be further explained in the section on measurement scales.

While the focus of this question was on trust, we also remained open to the consideration of other variables within the context of this study. This stance of openness and reflexivity is characteristic of the interpretive paradigm. Therefore, while the main focus of the research is represented by Figure 15, the study’s results were also compared with other

variables including the participant’s perception of the team’s diversity, acceptance of technology use, communication channel and perception of team outcomes. Communication channel was particularly interesting to consider since previous studies demonstrated the importance of communication channels for teams with high language diversity (Klitmøller & Lauring, 2013).

Figure 15: General model of sub-research question 2



7.3.2 Game questions reflecting player communication behaviors

This section recounts the questions to which participants are confronted within the game. The simulation allowed players to choose between different behaviors related to five communication strategies including choice of communication channel, code-switching, language complexity, redundancy and choice of interlocutor. Communication channel was reflected in the choice of communicating by email, instant message, phone, screen sharing and video calls. Code-switching offered the option for the player to use languages besides English by either changing to another language completely or through greetings and short, familiar expressions. Language complexity looked at the degree of how complex the vocabulary, grammar and expressions were that the player chose to use within their international team. Redundancy reflected the opportunity to repeat, rephrase or ask for verification of information. Finally, choice of interlocutor proposed the selection of different team members who had

different job responsibilities, but also different native languages and different levels of English proficiency in situations where the participant needed to ask for clarification or choose someone to represent the team.

All players received the questions in the same order, yet sometimes in a different context based on their previous choices. For means of illustration, Scene 1 is presented. Scene 1 takes place after some introductory scenarios to meet the team and set the context for the teamwork. Scene 1 is where the first game questions related to this research arrive. There are four questions in Scene 1. The player first encounters a question regarding how they would like to communicate with their team on a specific matter. The player who chooses email will continue the scene with an exchange of emails, whereas the player who chooses a video call will continue the scene with a video call. Thus, players may be on different “paths” when the second question arrives, which is a question allowing the player to choose which interlocutor they would like to explain a specific English expression that was used within the scene. The scene continues with the chosen interlocutor, still in the chosen communication channel, so at this point, there are multiple paths (the number of communication channels * the number of interlocutors) that have developed in the game. The third question concerns redundancy. The player can reformulate the chosen interlocutor’s information or simply thank them and move on. After being presented more information by the team members, the game paths finally converge to a final question where the player chooses which email, among a selection of four emails, to send to the CEO to report the group’s decision from the scenario. This fourth and final question is not measured in the research, but is a means to check if the player has paid attention to the previous scenes. Thereby, it is both a means to verify their participation in the game and to reinforce the *game* dimension of the *serious game*.

We recognize that the organization of scenarios, where players encounter questions under different circumstances may influence the validity of the results. We attempted to overcome this threat to validity by asking each type of question multiple times at different times in the game. Each of the research questions are outlined in the following sub-sections, with an illustration of how the research question was asked in the game as well an explanation of how the data was thematically grouped before analysis (Thiétart, 2014). A number of game questions and possible responses are also included in Appendix 7 as a means to further illustrate the game’s measures.


Choice of communication channel

Choice of communication channel related mainly to media richness theory (Daft & Lengel, 1986) but also to media synchronicity theory (Dennis et al., 2008). Throughout the game, players chose the means by which they preferred to communicate with their team members who were located in different regions of the world. Specifically, the player could choose between communicating via email, instant messaging, phone calls (with or without screen sharing) and video calls. For example, as illustrated in Figure 16, the player chose how to contact their entire team to start a conversation about one of their major team tasks.

Figure 16: Illustration of a game question relating to the choice of communication channel

Scene 1.1.00

You receive an email from Claire, the CEO.



FROM: Claire
TO: You
DATE: April 17

Hello Coordinator,

I'm glad to see you're settling in and that your teamwork has started.

I'm writing you with the details concerning your first main task. Your team needs to decide a location and theme and book a venue for the event.

As a reminder, this event will be in Thailand and we plan on having about 150 guests in early November. After that, it's up to you to decide the city and specific venue within that city, and to think about décor and other design elements to create a cohesive theme.

Please keep me informed of your team's progress.

Kind regards,

CLAIRE
CEO

PERFUMES & Co
1.1.0

How do you prefer to contact your team to discuss the event location and theme?

- a. Email 1: Dear team, our first task is to decide on the event location and theme. Could you share your ideas by EMAIL?
- b. Email 2: Dear team, our first task is to decide on the event location and theme. Please share your ideas in our GROUP CHAT.
- c. Email 3: Dear team, our first task is to decide on the event location and theme. Let's schedule an AUDIO-ONLY CONFERENCE CALL.
- d. Email 4: Dear team, our first task is to decide on the event location and theme. Let's schedule a VIDEO CONFERENCE CALL.

The following scene with the team is carried out in the chosen communication channel.

The player was confronted with a number of questions related to their choice of communication channel as outlined in Table 18. In order to better understand the nuances related to the choice of communication channel, there were four types of situations defined which were based on the interlocutors present and their English proficiency level. The first type of situation, as illustrated above, involved a group of team members with varying proficiency levels. That is, team members had a mix of lower and higher English proficiency levels. There were three questions within the game to measure this first type of situation. The second situation involved team members only with higher English proficiency, but who were not native English speakers. Two game questions represented this second situation. The third situation involved team members who had relatively lower English proficiency and more pronounced accents. This occurred three times within the game, but in different configurations. The first question was one-on-one with a Thai interlocutor, whereas the second question groups the three team members who had lower English proficiency compared to their counterparts. The final situation, with three game questions, was with native English speakers, from the U.K. and the U.S.A. A complete overview of the questions and responses related to the choice of communication channel can be found in Appendix 7.

Table 18: Type of game questions related to the choice of communication channel

Research topic	Type of question	Number of questions in the serious game
Choice of communication channel	Mixed proficiency group	3
	High English proficiency	2
	Low English proficiency	3
	Native English speakers	3

In order to analyze the choice of communication channel, player choices were classified both categorically (i.e. which communication channel is chosen) and along a scale (i.e. how rich the media is). Concerning the media richness scale, the possible communication channels were classified from the leanest media to the richest media in the following order: 1) email – 2) instant messaging – 3) phone call – 4) phone call with screen share – 5) video call.

By studying choice of communication channel, we intended to better understand the nuances of choice of communication channel in multilingual virtual teams. Previous research has shown that leaner media is generally more useful to communicate with teams characterized

by high language diversity than compared to richer media (Klitmøller & Lauring, 2013). However, these previous findings lack the nuances related to the interlocutors involved in the exchange of information. While the team may overall have high language diversity, does the preference for lean media continue if only some group members are present? In addition, by defining four different situations based upon the interlocutor's English proficiency, we supposed that the choice of communication channel may be influenced by how easy or difficult the player perceives communication to be with other team members in the game. Therefore, choice of communication channel may depend on both the sender and the configuration of receivers of the message.

Code-switching

Code-switching is changing from one language to the next within the context of the same conversation (Heller, 1988). As illustrated in Figure 17, players of ELITE The Serious Game were presented with opportunities to switch to languages spoken by the fictional characters in the game. These languages include Portuguese, French and Thai. Some questions in the game also gave a Spanish option as an alternative, which was another way to verify if the player was paying attention or knew the languages they used.

Figure 17: Illustration of a game question relating to code-switching

Scene 2.3.11

You call Dan (the finance director) to discuss the budget for samples which you are producing for the event.



Video call with Dan:

Dan: Hi coordinator. In response to your request, the budget is approved for 200 samples with the event logo. That's enough for all event participants and some extra for some promotional samples, our partners, etc.

Which email do you send to Luiz [the head of production in Brazil] to share Dan's information?

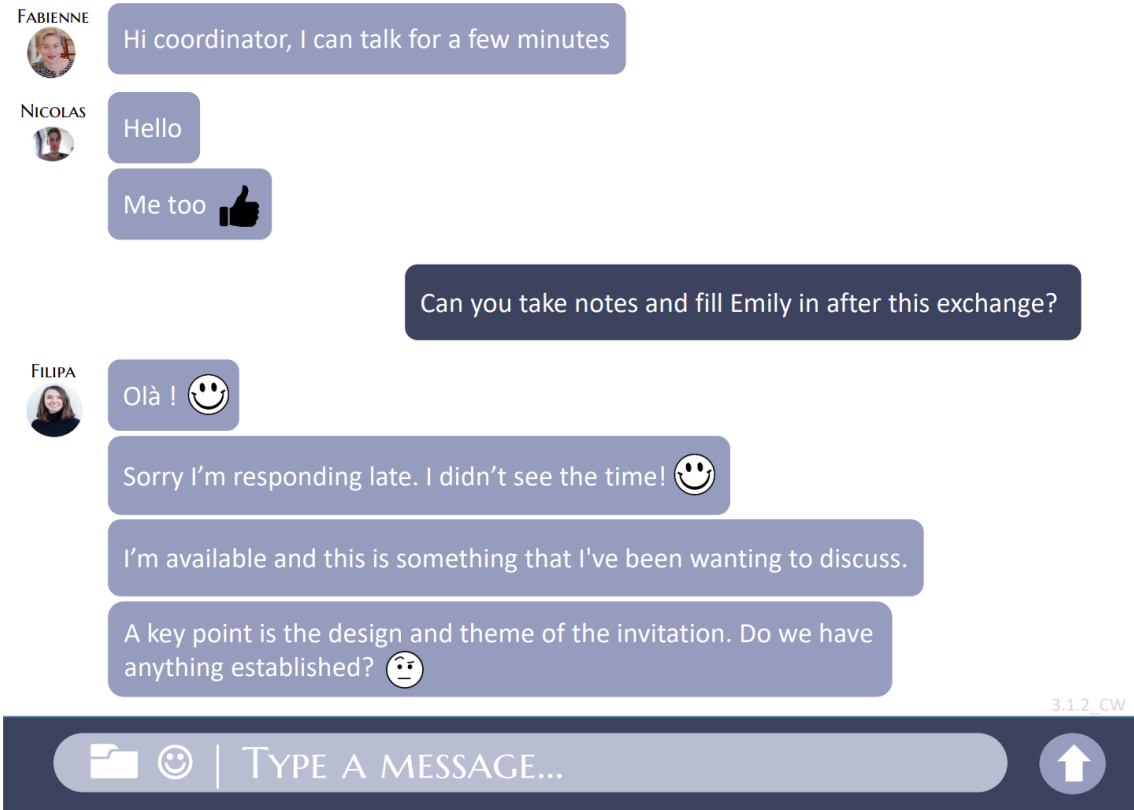
- b. Hello again Luiz, I've contacted Dan regarding how many perfumes to make, and he said 200. Please contact me with any further questions.
- c. Olá de novo Luiz, entrei em contato com o Dan sobre quantos perfumes fazer, e ele disse 200. Qualquer dúvida, entre em contato comigo.

Code-switching is generally defined as a complete shift into another national language. However, we were also interested in what we defined as “partial code-switching,” or using simple words and expressions in another language while speaking in the common language. Within the serious game, this mainly took the form of greetings or goodbyes, such as “hello” and “see you soon.” Some questions in the game were dedicated solely to partial code-switching, while others gave the player the choice to fully code-switch, partially code-switch or remain completely in English (i.e. not code-switch).

Figure 18: Illustration of a game question relating to “partial” code-switching

Scene 3.1.2

Message from you [the player] to the team via instant message: Hi all, we need to discuss the event invites, and I'd like to have a quick exchange here with those of you who are available now. So who's available?



FABIENNE: Hi coordinator, I can talk for a few minutes

NICOLAS: Hello

Me too 👍

Can you take notes and fill Emily in after this exchange?

FILIPA: Olà ! 😊

Sorry I'm responding late. I didn't see the time! 😊

I'm available and this is something that I've been wanting to discuss.

A key point is the design and theme of the invitation. Do we have anything established? 😐

3.1.2_CW

📁 😊 | TYPE A MESSAGE... 📤

Question: How do you say hello to Filipa?

- Hola Filipa, gracias por unirte.
- Olá Filipa, obrigado(a) por ter vindo
- Hi Filipa, thank you for joining.

Like choice of communication channel, code-switching was also observed based on different types of situations related to the individuals or group involved in the conversation. As shown in Table 19, the two types of code-switching (full and partial) were compared to two types of situations including communicating with 1) a multilingual group or 2) a monolingual group or one-on-one with another team member.

Table 19: Game questions related to code-switching

Research topic	Type of situation	Number of questions in the serious game
Full code-switching	Multilingual group	4
	Monolingual group or One-on-One	6
Partial code-switching	Multilingual group	4
	Monolingual group or One-on-One	3

In order to analyze the player’s propensity to code-switch in the four types of situations outlined above (full code-switching with a multilingual group, full code-switching with a monolingual group or with one person, partial codeswitching with a multilingual group and partial code-switching with a monolingual group or one person), player choices were reported as “0” for no code-switching or “1” for code-switching. Full code-switching and partial code-switching were analyzed separately. For two questions that offered the player a choice to fully code-switch, partially code-switch or not code-switch at all, each response was converted into two responses (no code-switching/ full code-switching and no code-switching/ partial code-switching) as shown in Appendix 7.

We suppose that the propensity to code-switch depends on a number of factors including 1) the languages spoken and understood by the player (e.g. if someone does not speak Thai, they will not use it), 2) the languages explicitly spoken by their interlocutor and 3) the group’s language diversity. Other factors may also influence this choice such as the communication channel in use.

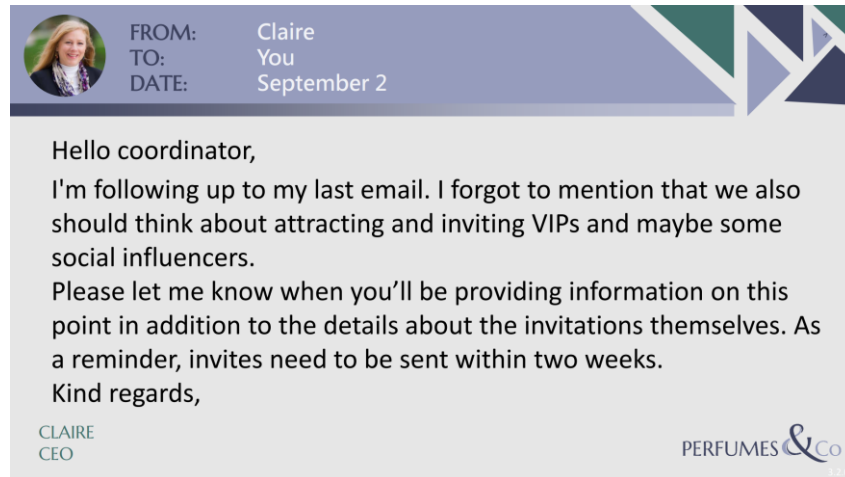
Language complexity

Language complexity was inspired by the concept of BELF (Louhiala-Salminen et al., 2005). In the game, players were given the choice of how to formulate comments or questions to their team. In these instances, two options were given with one that is more complex or advanced than the other. Complexity here was specifically formulated as more advanced vocabulary or grammar or using an idiom that is specific to a national language. The illustration of a question in scenario 3.2 (Figure 19) shows a choice with specific vocabulary that may not be known by all team members.

Figure 19: Illustration of a game question relating to language complexity

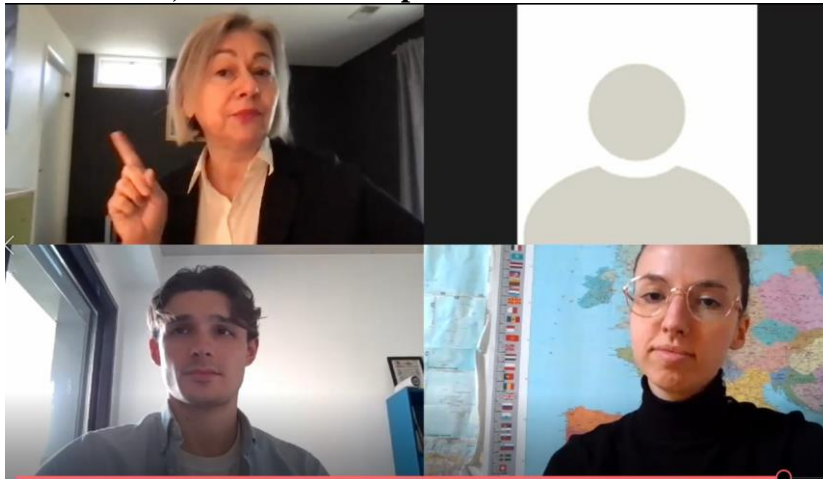
Scene 3.2.1

You receive the following email from the CEO while you are on a video call with Fabienne, Filipa and Nicolas discussing event invitations.



Coordinator (game player): Hey team, while you're still here... I just received an email from Claire saying we need to think about VIPs and social influencers. Do you have any thoughts how to do this?

Video call with Fabienne, Nicolas and Filipa



Filipa: Well, I think it's first important to underline the exclusivity of our event. For example, let's add a line to the invitations saying, "By exclusive invitation only". It's quite a small event, so we have to be selective about who comes.

Fabienne: I agree with Filipa. It's about creating a secretive allure. We can't reveal too much, and we have to make sure that only people on the list are allowed in. No gate-crashers.

You have a question. What do you ask?

- a. How will we dissuade gate-crashers from showing up at our party?
- b. How will we stop people who are not invited?

Table 20: Type of game questions related to language complexity

Research topic	Number of questions in the serious game
Language complexity	6

As shown in Table 20, language complexity was analyzed in the same manner across all game questions. In order to analyze the player’s propensity to use complex language, player choices were reported as “0” for less complex language or “1” for more complex language. We were especially interested in analyzing how the player’s English level could influence their propensity to use more or less complex language. In addition, international and professional experience could also affect language complexity.


Redundancy

Redundancy through the reformulation of information has been shown to be especially helpful for multilingual virtual teams (Neeley, 2021). Building redundancy refers to a repetition of information, for example by rephrasing information within a conversation or by confirming a work task in writing after sharing it orally. Redundancy is divided into sequential and simultaneous media pairing (Tenzer & Pudelko, 2016). Figure 20 illustrates an example of redundancy in *ELITE The Serious Game* where the player was given the option to reformulate their interlocutor’s questions before answering them.

Figure 20: Illustration of a game question relating to redundancy

Scenario 2.5

ONGOING CALL
WITH



Luiz (on the phone): Hi coordinator, how are you? I'm going to meeting, but it's important to ask. I'm asking about the email. Which size of perfume bottle do we use? How many we making? And where send them when finished?

What do you say to Luiz?

- a. Use the small sample bottle and send one to Claire and me first.
- b. So, you're asking about the bottle size and delivery location? It should be the small sample bottle and send one to Claire and me first.

Like previously defined communication behaviors, we observed redundancy in a number of different situations (see Table 21). The first two situations had to do with the group's English proficiency, whether it was mixed or lower proficiency on average. These first situations incorporated the simple repetition or reformulation of information. A third situation was where the player asked for verification if their interlocutor understood the information that was given. This was not simply the repetition of information, but asking if others understood what was discussed.

Table 21: Type of game questions related to redundancy

Research topic	Type of question	Number of questions in the serious game
Redundancy	Mixed group - repetition	4
	Low English proficiency group - repetition	3
	Verification	2

In order to analyze the player's propensity to be redundant, player choices were reported as "0" for an absence of redundancy or "1" for the use of redundancy. Like language complexity, we believed international experience would have an influence on the player's propensity to be redundant. We also expected that there would be more redundancy in situations where the player spoke to team members with lower English proficiency compared to the other situations presented above.

Choice of interlocutor

Choice of interlocutor refers to the individuals who were consulted for a given task, to provide information internally or externally or to respond to questions. Theoretically, choice of interlocutor was approached in a similar manner as bridge individuals based on language skills. Bridge individuals include bilingual employees, expatriation, inpatriation, non-native locals and parallel information networks (Harzing et al., 2011). Such individuals that help bridge within or between teams or subsidiaries thanks to their multilingual language skills are also known as language nodes. Figure 21 illustrates an example of choice of interlocutor in *ELITE The Serious Game* where the player was given the option to choose between different team members to present a proposal following a meeting.

Figure 21: Illustration of a game question relating to the choice of interlocutor

Scenario 1.2.9

You've been discussing a short list of event venues in Bangkok with your team by email.

FROM: Obe
TO: Unique Perfume Team
DATE: May 3

Nicolas say no to elephant sanctuary and hotel. Dan say garden expensive.

And skyscraper? It is big building and big space, good reputation and local suppliers for flowers and decoration and hire local people new. It is also near the Grand Palace, which guest like to explore and learn about Thai tradition.

Kind regards,
OBE
LOCAL EXPERT FOR THAILAND

FROM: Nicolas
TO: Unique Perfume Team
DATE: May 3

Yes, skyscraper venue is good for me!

NICOLAS
CORPORATE SOCIAL RESPONSIBILITY EXPERT

FROM: Dan
TO: Unique Perfume Team
DATE: May 3

Hello,

Ok, let's plan on booking the skyscraper venue with the beautiful city view. It responds to our needs because it is modern but we can easily incorporate traditional elements into the decor. It's near the Grand Palace which will be nice for our guests to learn about Thai history. It's the right size and well within our budget. Great, let's check that task off our list!

Best regards,
DAN
FINANCE DIRECTOR

FROM: Jiab
TO: Unique Perfume Team
DATE: May 3

Hello,

Perfect, I think this is a good option. Let's go ahead with this choice. We just need to make sure the rest of our team agrees before moving forward.

Best,

JIAB
SALES DIRECTOR (ASIA)

The group's choice is clear. Out of the four people that contributed to the discussion, who do you ask to present the group's proposal at the next team meeting?

- Dan
- Nicolas
- Obe
- Jiab

As Figure 21 demonstrates, participants chose interlocutors directly. In order to analyze these choices, we transformed these choices into different variations based on the interlocutor's native language and level of English proficiency. During the analysis phase, we also intended to control for gender and hierarchical status in the team.

Table 22: Type of game questions related to the choice of interlocutor

Research topic	Type of question	Number of questions in the serious game
Choice of interlocutor	Choice of native English interlocutor	5
	Choice of native French interlocutor	7
	Choice of native Portuguese interlocutor	4
	Choice of native Thai interlocutor	9

Preparing to analyze the questions regarding choice of interlocutor proved challenging. Each question where a player was asked to choose between certain interlocutors was transformed into multiple questions. Each interlocutor present in the question was thus attributed a “0” when they were not chosen as the interlocutor or a “1” when they were. It should be noted that questions included different configurations of possible interlocutors, so the number of choices of interlocutors varied from language to language as shown in the above table. In addition, another dimension was calculated for every question in conjunction with the player’s own native language. Thus, the “choice of interlocutor with the same native language” describes the participant’s propensity to choose an interlocutor from their same language. We expected that team members would choose others based on language skills including proficiency in English or other languages. We also intended to find out if choice of interlocutor could also be influenced by national language background. Are people inclined to choose interlocutors from their same language, even if they communicate in English?

7.3.3 Measurement scales about players’ perceptions of the team

The previous section described the player’s communication behaviors in the game. In addition, measurement scales organized in four questionnaires about the player’s self-perception, the teamwork and their (fictional) team’s performance were integrated periodically into the game. The first questionnaire which was presented after an introduction to the player’s objectives to the game mainly consisted of control questions, but also two measurement scales regarding the player’s acceptance of information technologies and empathy. A second questionnaire measuring group identification at Time 1 arrived after initial scenarios where the team got to know each other. A third questionnaire to measure trust arrived towards the end of the team’s collaboration (and after an experimental section with three different game versions, each carried out via a different communication channel). A final questionnaire arrived at the end of the game to measure group identification and perceptions of team performance and team communication inclusion.

Each of the measurement scales was introduced within the context of the game, for example as a questionnaire to complete for the human resources department or as a response to an email from a friend asking about the player’s new job. The measurement scales are outlined below with information regarding the source of the measurement scale, how it was adapted to the game and the internal coherence of the scale as calculated from the game data.

The internal coherence is displayed using Cronbach's alpha (α), where values ≥ 0.7 are considered coherent (Thiéart et al., 1999). In order to provide consistency across the different questionnaires, all items were measured on a 5-point Likert response scale ranging from strongly or completely disagree to strongly or completely agree. The scales are presented in the chronological order in which they appear in the game.

User acceptance of IT

First, given the study setting in virtual teams, we felt it necessary to better understand the player's relationship with digital technologies before observing their communication behaviors. Thus we included a measure from the field of Information Systems: Venkatesh, Morris, David and Davis' (2003) Unified Theory of Acceptance and Use of Technology (UTAUT). Players were questioned about their comfort and intention for using technologies via the measure's performance expectancy and effort expectancy constructs. Performance expectancy and effort expectancy are two of eight constructs included in UTAUT. Performance expectancy is "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003, p. 447). Effort expectancy is "the degree of ease associated with the use of the system" (Venkatesh et al., 2003, p. 450). Together, performance and effort expectancy determine attitudes and individual behaviors related to the use of technology (De Benedittis & Benhayoun-Sadafiyyine, 2018).

While the other constructs of UTAUT (attitude toward using technology, social influence, facilitating conditions, self-efficacy, anxiety and behavioral intention to use the system) have been shown to be significant direct determinants of intention or usage of technology, it was not possible to mobilize them in this study due to the measure's focus on very specific technology, i.e. "the system." Instead, we were interested more generally in the player's perception of, relationship with and use of technologies. Therefore, only the two constructs were mobilized in this research.

We further adapted the two specified constructs to our game by replacing certain vocabulary in the original measure; "the [specific] system" became more general "digital technologies." The scale is prefaced in the game with the following explanation of digital technologies: "Virtual teams collaborate through digital technologies, such as videoconferencing, instant messaging, e-mails, and platforms to share documents. Such

technologies are hereafter called ‘digital technologies’...” Thus, we contextualized the measurement tool (Thiéart, 2014).

Upon analysis of the scale, we found certain items were not internally coherent. In order to reach Cronbach’s generally acceptance threshold of > 0.7 , one item each from performance expectancy and effort expectancy was deleted. Below is a description of the scale with Cronbach’s alpha demonstrating the coherence of each construct. Deleted items are noted with strikethrough text.

Table 23: Scale of User acceptance of information technologies (adapted from Venkatesh et al., 2003)

Performance expectancy ($\alpha = 0.82$, reported from player data)

1. I find digital technologies useful in my job.
2. Using digital technologies enables me to accomplish tasks more quickly
3. Using digital technologies increases my productivity.
4. ~~If I use digital technologies, I will increase my chances of getting a raise or making more money.~~

Effort expectancy ($\alpha = 0.80$)

1. My interaction with digital technologies is clear and understandable
 2. ~~It is easy for me to become skillful at using digital technologies.~~
 3. I find digital technologies easy to use.
 4. Learning to operate digital technologies is easy for me.
-

Empathy

The participant was next questioned about their empathy. They self-rated their empathy based on seven personal questions. As shown below in table 24, three of the questions were not coherent. Final scale reliability is 0.77.

Table 24: Scale of empathy ($\alpha = 0.77$)

-
1. ~~I believe that there are two sides to every question and try to look at both.~~
 2. I try to look at everybody's side of a disagreement before I make a decision.
 3. When I am upset at someone, I usually try to “put myself in his or her shoes” for a while.
 4. I sometimes try to understand my friends better by imagining how this looks from their perspective.
 5. ~~I am tolerant towards people whose opinions are different from mine.~~
 6. ~~I think that I am an open minded person.~~
 7. Before criticizing somebody, I try to imagine how I would feel if I were in their place.
-

Perception of team trust

Because we were interested in better understanding the socio-emotional team process of trust, we integrated a questionnaire about team trust as perceived by the participant. We started with Costa and Anderson's (2011) 21-item measure of trust in teams, which was separated into four constructs including propensity to trust, perceived trustworthiness, cooperative behaviors and monitoring behaviors. A certain number of items were deleted from each of the constructs following factor analysis. In addition, the fourth construct, monitoring behaviors was deleted entirely. In this way, our trust construct is consistent with Breuer and colleagues' (2016) definition of team trust: "the shared willingness of the team members to be vulnerable to the actions of the other team members based on the shared expectation that the other team members will perform particular actions that are important to the team, *irrespective of the ability to monitor or control the other team members*" (p. 1152, italics added for emphasis). It should be noted that the propensity to trust and perceived trustworthiness constructs did not meet the internal coherence goal of 0.7. However, due to the exploratory nature of this methodology and the fact that they were not too far from the threshold, we decided to maintain these constructs as shown below.

Table 25: Scale of team trust (Costa & Anderson, 2011, p. 154)

Propensity to trust $(\alpha = 0.66)$	<ol style="list-style-type: none"> 1. Most people in this team do not hesitate to help a person in need. 2. In this team most people speak out for what they believe in. 3. In this team most people stand behind their convictions. 4. The typical person in this team is sincerely concerned about the problems of others. 5. Most people will act as "Good Samaritans" if given the opportunity. 6. People usually tell the truth, even when they know they will be better off by lying.
Perceived trustworthiness $(\alpha = 0.63)$	<ol style="list-style-type: none"> 7. In this team people can rely on each other. 8. We have complete confidence in each other's ability to perform tasks. 9. In this team people will keep their word. 10. There are some hidden agendas in this team. (r) 11. Some people in this team often try to get out of previous commitments. (r) 12. In this team people look for each other's interests honestly.
Cooperative behaviors	<ol style="list-style-type: none"> 13. In this team we work in a climate of cooperation. 14. In this team we discuss and deal with issues or problems openly. 15. While taking a decision we take each other's opinions into consideration.

($\alpha = 0.79$)	16. Some people hold back relevant information in this team. (r) 17. In this team people minimize what they tell about themselves. (r) 18. Most people in this team are open to advice and help from others.
Monitoring behaviors ($\alpha = 0.71$)	19. In this team people watch each other very closely. 20. In this team people check whether others keep their promises 21. In this team most people tend to keep each other's work under surveillance.

We further developed the measure of trust by creating a scale based on the fictional characters in the serious game. The participants were asked how much they felt they could trust each of their team members. Once combined, an average measure of trust in team members proved to be reliable, with a Cronbach's alpha of 0.78.

Table 26: Average trust in team members

I feel that I can trust [team member's name] in all aspects of our teamwork.

*Question asked for each of the eight team members, and averaged.

We were also interested in understanding how the player attributed trust to different team members. Therefore, we integrated questions asking with which team member it felt easiest or most difficult to communicate, with which team member the player felt closest or least connected to, and finally who the player felt they could trust the most or least.

Table 27: Selected trust in individual team members

Working on an international team can depend on your team members. Let me tell you about my team.

1. I find it easiest to communicate with _____.
2. I find it most difficult to communicate with _____.
3. I feel closest to _____.
4. I feel the least connected to _____.
5. The person I think I can trust the most is _____.
6. The person I think I can trust the least is _____.

*All of the team members are given as possible responses for each question.

Team Performance

While the focus was on team processes, we found it appropriate to end the game with a measure of the team's performance. However, finding an appropriate measure for performance is difficult. Ultimately, we decided to integrate three measures to explore how the player perceived their team's outcomes. First, a measure on team performance from Kostopoulos and colleagues (2013) looked at the extent to which the team met its goals, within the time and with the resources allocated to do so. One item, regarding the budget, was deleted because it did not correspond strongly enough to the others.

Table 28: Scale of Team Performance ($\alpha = 0.81$) (Kostopoulos et al., 2013)

-
1. Our team effectively used its resources.
 - ~~2. Our team was within the proposed budget.~~
 3. Our team was within the proposed time-schedule.
 4. Our team was able to meet its goals.
 5. Our team was able to respond quickly to problems.
-

Group Identification

A second measure of effectiveness focused on group identification. This measure from Wu and colleagues (2010) was integrated into the game twice: after the team gets to know each other and at the end of the team's collaboration.

Table 29: Scale of Group identification (Wu et al., 2010)

-
1. I like working in the Unique Perfume team. (*our addition to the group identification measure*)
 2. I identify myself as a member of my group.
 3. I am glad to be a member of my group.
 4. I identify with other members of my group.
 - ~~5. I feel strong ties with other members of my group.~~

Group Identification at Time 1 (after initial collaboration): $\alpha = 0.81$

Group Identification at Time 2 (at the end of the team's collaboration): $\alpha = 0.85$

Group Identification Difference = Group Identification at Time 2 – Group Identification at Time 1. $\alpha = 0.53$

Team Communication Inclusion

Finally, the player is asked how they perceive their team's communication: inclusive or not? We felt it appropriate to include an effectiveness measure directly related to communication given the strong relationship between language (diversity) and communication. The measure is from Lisak and colleagues (2016).

Table 30: Scale of Team Communication Inclusion ($\alpha = 0.77$) (Lisak et al., 2016)

-
1. My team members made an effort to communicate in ways that other members understand.
 2. My team members chose concepts and words with which each team member is familiar.
 3. My team members checked that their messages were correctly understood by everyone in the team.
 4. My team members made arguments that were clear and comprehensible to each other member.
-

Perception of team cultural diversity

Finally, at the end of the game, the participant was asked to rate the extent of the fictional team's cultural diversity (Lisak et al., 2016). That is, how culturally diverse was the team? Whereas all players were confronted with the same team, they may have perceived the extent of the team's diversity in different ways. The three items of perceived team cultural diversity were internally coherent.

Table 31: Measure of Perceived Team Cultural Diversity ($\alpha = 0.81$)

-
1. The members of my team vary widely in their cultural values.
 2. The members of my team hold totally different cultural perceptions and beliefs.
 3. The members of my team vary widely in their cultural communication norms and behaviors.
-

7.4 Data collection and sample

The game was implemented on the online game creation platform called GenaGame. This platform was created within the context of the larger InterCCom project, but further developed for the use of the game. The advantage of this tool for research was that all player data was exported in a spreadsheet which tracks each player's choices throughout the game. Each player was represented by a row, and their gameplay was reported in columns. A column was dedicated to each answer with "1" denoting which answer the player selected. Columns also reported the player's score (if the game creator attributed a numerical score to each response during the creation phase, such as "5" if the player chose a video call option), the time taken to make a choice and any written response justification. Players had the opportunity to write justifications to any choice within the game, and these justifications were also reported on the data export. While not used within the context of this research, these qualitative answers alongside the quantitative choices could prove promising for further research.

Once the game was made accessible on the online platform, participants were invited to play at the time and place of their choosing from March to August 2022. They were informed that the game took approximately two hours to play total, and that they could complete the game over one or more sessions depending on their preference. While we recognize that playing over multiple sessions may have affected the consistency of the data collection, we believed that this flexibility brought the game closer to reality because players were playing in the environment of their choosing and at a time that was convenient to them. In this regard, the simulation became more of a field experiment than a laboratory experiment. Allowing flexibility in when and how the player could access the game were also important aspects to recruit more players because few players, especially working professionals, were willing to commit to sitting for a full two hours at one time to play the game. The choice for players to play in one or multiple sittings was not considered within the data analysis of the dissertation. This remains an avenue for future research.

Next, we address the target population, which is important because the selection of a data sample influences both the external validity (i.e. the possibility of extending the results obtained from the sample to different places and times) and the internal validity (i.e. the relevance and internal consistency of the results in relationship to the researcher's stated objectives) (Thiétart, 2014). The study's validity is linked to three characteristics of the sample

including the nature of the elements that compose the sample (heterogeneous or homogenous), the method for selecting the elements and the number of elements selected (Thiétart, 2014).

Specifically, the targeted population consisted of individuals from five language groups including native English speakers, native French speakers, native Thai speakers, native Portuguese speakers and speakers of other native languages. These groups were chosen because they represent the languages spoken by the fictional team in the serious game. We used purposeful and quota sampling methods to recruit participants with the specified criteria. In quota sampling methods, the population is segmented in function of previously defined criteria (e.g. native language) so that each part of the population belongs to a segment (Thiétart, 2014). As such, potential players were classified by native language. This was largely indicated in an online registration form that was published on social media, among personal networks and in universities located in countries representing the target languages. Based upon their response, participants were classified in the appropriate language group and sent one of the three game versions at random.

The final sample included 311 respondents distributed across three experimental groups or game versions. Specifically, 109 respondents played Version 1, 103 played Version 2 and 99 played Version 3. As a reminder, the difference between the versions was the communication channel used in two scenarios which took place immediately before the questionnaire about trust. Version 1 occurred via instant messaging, Version 2 by instant messaging with the incorporation of emoji and Version 3 by video call.

Regarding the target populations, we were only partially successful in recruiting the desired number of respondents from each of the targeted language groups with 17% English native speakers, 30% French native speakers, 5% Portuguese native speakers, 11% Thai native speakers and 37% from other native languages.

In addition to native language, we also explored language proficiency levels as another dimension of language variety. Within the sample, the average level of English proficiency was higher on average than proficiency in the three other target languages. This is only natural since the game was in English, so players that were more comfortable in English were more inclined to participate. Excluding native English speakers, 77% of the non-native English sample has a B2 level of English or above. The B2 level denotes an advanced, independent user of the language that “can interact with a degree of fluency and spontaneity that makes regular

interaction with native speakers quite possible without strain for either party.”⁸ Therefore, B2 is generally considered acceptable for international collaborations.

Among French, Portuguese and Thai, players were more likely to have some knowledge of French. Only 42% of players did not have any knowledge of French. This reflects both a particularly of the sample and the state of language learning in general, where French is taught more often in secondary education and at university than Portuguese or Thai.

Table 32: Distribution of language proficiency levels across the sample

	none	A1	A2	B1	B2	C1	C2	Native
English proficiency level	0%	3%	4%	11%	20%	26%	18%	17%
French proficiency level	42%	6%	4%	5%	5%	2%	5%	31%
Portuguese proficiency level	89%	3%	1%	1%	1%	0%	0%	5%
Thai proficiency level	81%	3%	0%	1%	1%	2%	1%	11%

Table 33: Average language proficiency of participants (from no proficiency – 0 – to native speaker proficiency – 7)

	N	Minimum	Maximum	Mean	Std. Deviation
English level	306	1	7	4.85	1.540
French level	304	0	7	3.05	3.104
Portuguese level	307	0	7	0.48	1.609
Thai level	307	0	7	1.02	2.323

⁸ <https://www.coe.int/en/web/common-european-framework-reference-languages/table-1-cefr-3.3-common-reference-levels-global-scale>

It should be noted that while 311 participants completed the game, the number of respondents in the following tables varies. This can be due to two reasons: 1) the participant did not respond to the question, or 2) for game questions (not control questions), the participant chose a pathway that did not result in them responding to the question. These are limitations of the present data export and has been noted for future game improvements.

Next, we look at the control variables related to age, gender, level of education, and professional and international experience. Approximately half (53%) of the respondents are under 25 years of age. An additional 27% of respondents are 25-40 years of age, 13% are 41-56 years of age, 4% are 57-66 years of age and 3% are over 66 years of age. The age categories were selected based on commonly accepted generation ranges. There is a correlation between half of the respondents being under 25 years of age and half of the respondents having full-time student status. In fact, 49% of respondents are full-time students, 17% are part-time students and 34% have no student status. Given that many of the part-time students also reported working experience, we decided to regroup part-time students and non-student status to create a group called “working professionals,” which was studied in contrast to full-time students.

Regarding gender, 59% of respondents are female and 39% are male. While overall there were more young and female respondents, distribution of age and gender were mostly comparable across the three game versions, with slightly more middle-aged and female respondents playing Version 1 (instant messaging, no emoji).

Table 34: Distribution of age across the three game versions

		Version 1	Version 2	Version 3	Total
Age	Under 25	55	58	52	161
	25-40	28	31	26	85
	41-56	18	9	13	40
	57-66	5	4	4	13
	Over 66	3	1	4	8
Total		109	103	99	311

Table 35: Distribution of gender across the three game versions

		Version 1	Version 2	Version 3	Total
Gender	Male	40	40	40	120
	Female	67	60	56	183
	Other	0	1	0	1
	Preferred not to answer	2	2	3	7
Total		109	103	99	311

The participants' average level of education was overall rather high, and thus a particularity of the sample. Only 0.6% of participants had less than a high school diploma, 25% had a high school diploma or equivalent, 30% had an undergraduate degree or equivalent, 33% had a master's degree, 11% had a doctorate and less than 1% reported 'Other.'

Preparation of the database for data analysis was an intricate process. First, data from the three game versions were combined into one database. Game responses (where each possible answer was represented in a different column on a spreadsheet) were converted to a single column represented by a numerical value. Then, some columns were added to account for the analysis of one response across multiple research questions. Questions were combined based upon the research questions and configurations noted in the above sections. The aggregate variables that were created were calculated through an average of its items and verified for correlation. In all, the final spreadsheet includes 367 columns which represents a combination of total of 367 items, aggregate variables or factors to analyze. These variables are listed in Appendix 9.

Data analysis was approached in two steps using SPSS 25 and SmartPLS 3. The first step aimed to reduce complexity of the variables through principal component analysis (PCA). Thus, after performing descriptive statistics of the variables, we compared the sub-samples of the three game versions and of the native speakers from the different national languages in order to detect patterns and differences regarding the communication behaviors of individuals from different native languages and their views on team trust and performance. Correlations were detected to understand the relationships between variables.

Next, partial least squares structural equation modelling (PLS-SEM) was implemented to further explore the interdependency of the variables by creating a model of the teamwork. PLS-SEM was chosen as it enables the estimation of "complex models with many constructs, indicator variables and structural paths without imposing distributional assumptions on the

data” (Hair et al., 2019, p. 2). In addition, the technique is said to overcome the dichotomy between explanation and prediction, thereby bridging academic research and managerial implications (Hair et al., 2019). While we considered creating one model to represent all of the constructs (shown in Appendix 11), we ultimately decided to split the model in two, due to multilevel concerns. One of the final models focuses on individual communication behaviors (individual-level and action-based constructs) and the other focuses on perceptions of team trust and performance (team-level and based on perception). These steps will be further detailed in the following section on the findings from the experimental phase of this research.

7.5 Findings from the experimental serious game

7.5.1 An analysis of communication strategies and behaviors

The findings from the experimental serious game are presented in two parts, related to the two sub-research questions studied. This first section describes player behaviors related to communication strategies in multilingual virtual teams.

Descriptive statistics

This section presents general participant behaviors when confronted with specific situations throughout the game, which is followed by an investigation of the differences (or lack thereof) between experimental groups. Participant behaviors are divided into five categories: communication channel richness, code-switching, language complexity, redundancy and choice of interlocutor. Table 36 shows the average communication behaviors in different situations, as designated in section **7.2.2 Elaboration of the game questions, measures and variables**, across the entire sample.

Table 36: Descriptive statistics of game participants' communication behaviors

	N	Minimum	Maximum	Mean	SD
Communication channel richness, whole group	291	1.00	5.00	3.27	1.10
Communication channel richness, high proficiency	291	1.00	4.50	2.94	1.25
Communication channel richness, low proficiency	298	1.00	3.50	1.71	0.69
Communication channel richness, native speaker	294	1.00	5.00	3.02	0.21
Code switching, full/ multilingual group	298	0.00	1.00	0.10	0.19
Code switching, full/ monolingual group	298	0.00	0.83	0.17	0.20
Code switching, partial/ multilingual group	300	0.00	1.00	0.33	0.30
Code switching, partial/ monolingual group	194	0.00	1.00	0.40	0.35
Language complexity	298	0.00	1.00	0.48	0.24
Redundancy, mixed group	300	0.00	1.00	0.57	0.20
Redundancy, low proficiency group	305	0.00	1.00	0.69	0.29
Redundancy, for verification	306	0.00	1.00	0.69	0.34
Choice of interlocutor, English speaker	309	0.00	1.00	0.54	0.22
Choice of interlocutor, French speaker	309	0.00	0.86	0.27	0.17
Choice of interlocutor, Portuguese speaker	306	0.00	1.00	0.35	0.21
Choice of interlocutor, Thai speaker	309	0.00	1.00	0.45	0.17
Choice of interlocutor, same native language as participant	195	0.00	1.00	0.43	0.21

Communication channel richness

Regarding communication channel richness, which demonstrates a reliability (internal coherence) of 0.535 across the four types of game questions, participants tended to choose richer and more synchronous media when communicating with a mixed or high English proficiency group or when communicating with an English native speaker (with means ranging from 2.9 to 3.3 out of 5, where 5 represented the richest media). However, their behavior changed when communicating with a low English proficiency group. In these situations, players turned to leaner, asynchronous media (mean = 1.7 out of 5; no player consistently chose a richer media to communicate with team members with lower English proficiency).

In addition to observing descriptive statistics for communication channel richness, we further view the distribution of each of the communication channels in order to go beyond the construct of media richness and to observe specific media. In order to view the distribution, we specifically look at four questions related to the choice of communication channel. We choose these four questions because they contain the same options for responses, whereas other questions may include a different number of responses available for the player. These questions cover the choice of mode of communication in a full team setting (mixed English proficiency), in a mixed English proficiency group composed only of non-native English interlocutors, with a low proficiency interlocutor and with a native English speaker. As shown in Table 37, the distribution of the choice of communication channel changes depending on the context. Video call was privileged much more in the full team settings than any other. Email was especially privileged for situations involving low English proficiency speakers, but also native English speakers. This is quite interesting because this finding englobes both ends of the spectrum. In addition, instant messaging was used most with the low proficiency interlocutor, whereas a phone call was used most with the mixed English proficiency, non-native English group.

Table 37: Distribution of language channels in four situations

Context and question about communication channel	Email (%)	Instant messaging (%)	Phone call (%)	Video call (%)
Mixed proficiency group, team (<i>How do you prefer to contact your team to discuss the event location and theme?</i>)	13	27	4	56
Mixed proficiency group, Thai interlocutors (<i>How do you want to contact Jiab and Obe to arrange a pickup of the shipment?</i>)	26	22	27	25
Low proficiency (<i>The video call with Obe has ended, but an hour later you realize you need further clarification on hiring a decorator for the extra decorations. How do you prefer to contact Obe?</i>)	42	35	11	12
Native English speaker (<i>How do you want to contact Dan?</i>)	47	16	17	22

Code-switching

Code-switching is represented by two significantly different situations represented by full code-switching ($\alpha = 0.522$) and partial code-switching ($\alpha = 0.584$). Due to the weak internal

coherence of overall code-switching including both full and partial code-switching ($\alpha = 0.42$), these situations were studied separately. On one hand, full code-switching was used sparingly, but it was slightly more common to fully code-switch in a monolingual group or in one-on-one situations (17% of the time), compared to multilingual groups (10% of the time). This follows the convention that deters against the use of code-switching in the team setting because it can be seen as impolite or can cause major rifts in team trust (Tenzer et al., 2014). Monolingual and one-on-one situations will highly depend on the participant's language skills, which is demonstrated in Table 36 by the maximum value of 0.83, indicating that none of the 311 participants chose to fully code-switch in any situations within the game.

On the other hand, partial code-switching occurred to a much greater extent than full code-switching. Partial code-switching especially occurred in monolingual groups or one-on-one settings (40% of the time) and to a lesser extent in multilingual groups (33% of the time). Participants may have been more at ease using a foreign language in a smaller group or one-on-one setting. Furthermore, partial code-switching in the full team setting may be difficult to gauge without having established communication norms. It remains unclear whether one should use their own language or the languages of one or all of the team members present for greetings.

While full and partial code-switching did not correlate, there was a correlation between some of the code-switching events. Specifically, based on a Pearson correlation coefficient to assess the relationship between the code-switching situations, partial code-switching in a multilingual group was found to positively correlate with all other forms of code-switching: full code-switching in a multilingual group ($r(296) = .23, p < 0.001$),⁹ full code-switching in a monolingual group ($r(296) = .28, p < 0.001$) and partial code-switching in a monolingual group ($r(192) = .42, p < 0.001$). The players that tested their language skills through greetings in a multilingual setting were overall those that were the most liberal with code-switching, stemming from greetings in multilingual settings and extending to all other code-switching opportunities present within the serious game.

⁹ Pearson's correlation reported as $r(df) = [r \text{ value}], p = [p\text{-value}]$.

Language complexity

Results concerning language complexity are more difficult to interpret. Participants were divided in their use of more or less complex language with overall use of less complex language approximately 48% of the time. These results are limited by the low internal coherence of the questions in the serious game ($\alpha = 0.421$) and warrant further investigation to better understand who chooses to use more or less complex language and in which situations

Such a small Cronbach alpha is generally considered unacceptable. Upon analysis of the items related to language complexity, we found that the concept included two factors. However, upon implementing the two factors, Cronbach's alpha decreased. Ultimately, because the concept is not a true scale, we decided to follow a more qualitative logic and maintain a single factor, with the higher Cronbach's alpha. We see this as a limitation of our research, which should be improved upon in future studies.

Redundancy

Regarding redundancy, participants tended to use more repetition and reformulation in groups of lower English proficiency (69%) compared to groups of mixed language proficiencies (57%). Compared to simply repeating or reformulating information, participants used verification methods to ask their interlocutors if they understood 69% of the time when given the option.

Choice of interlocutor

Regarding choice of interlocutor, across all of the serious game participants, there was a tendency to choose an English-speaking interlocutor when given the opportunity (54% on average). Participants were also quite likely to choose a Thai interlocutor (45% on average), which might be explained by the central role of the Thai characters within the context of the game. Participants were less likely to choose French and Portuguese interlocutors, 27% and 35% on average respectively when given the opportunity to choose these interlocutors. In all, for players who came from one of the same native languages as those spoken by the fictional team in the game, they tended to choose an interlocutor of the same native language as themselves 43% of the time.

It should be noted here that the reason why the percentages related to the choice of interlocutor do not cumulatively equal 100% reflects the specific questions within the game. Each of the in-game questions did not include all of the possible interlocutors, and were thus configured in different ways. For example, one question asked the player to choose between an English-speaking interlocutor and a Thai-speaking interlocutor. The chosen interlocutor was compared to the other language, but was not included in the measures for French and Portuguese-speaking interlocutors. When one option was chosen in detriment to another, they became closely correlated. Table 38 demonstrates which interlocutor options were closely correlated, especially choosing an English or French-speaking interlocutor to the detriment of a Thai-speaking interlocutor. In addition, choosing a Thai-speaking interlocutor was done at the expense of a French-speaking interlocutor. These correlations indicate a particularity of this research design and should be considered in future serious game research projects.

Table 38: Correlation between choices of interlocutors based on native language

		Interlocutor English	Interlocutor French	Interlocutor Portuguese	Interlocutor Thai
Interlocutor English	Pearson Correlation	1	-.146**	-.091	-.585**
	Sig. (2-tailed)		.010	.114	.000
	N	309	309	306	309
Interlocutor French	Pearson Correlation	-.146**	1	-.298**	-.526**
	Sig. (2-tailed)	.010		.000	.000
	N	309	309	306	309
Interlocutor Portuguese	Pearson Correlation	-.091	-.298**	1	-.257**
	Sig. (2-tailed)	.114	.000		.000
	N	306	306	306	306
Interlocutor Thai	Pearson Correlation	-.585**	-.526**	-.257**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	309	309	306	309

Comparing different sub-groups of languages, communication channels and control variables
 Having explored the overall tendencies related to communication behaviors in the multilingual virtual team, the next step aimed to further describe how the communication behaviors differed between subsamples. The first subsamples to be explored related to participant language groups, which were grouped either categorically based on native language or on a scale for English proficiency. This was followed by an analysis of differences across game versions,

correlations between the communication behaviors themselves, correlations with perceptions of team effectiveness, and finally, other control variables.

Native language

Here, participants were grouped by their native language: English, French, Portuguese, Thai or another language. These language categories were compared to the communication behaviors as discussed above to better understand if individuals from different native languages tend to behave in different ways. In order to calculate the correlations, we first conducted a one-way variance analysis (ANOVA) of the communication behaviors to determine if there are statistically significant differences between the language groups.¹⁰ For behaviors that report statistical differences, we followed with a mean value comparison to more fully observe the behaviors attributed to the specific groups. The following paragraphs describe these statistical differences, which are then summarized in Table 39.

*Native language * communication channel richness:* A comparison of the choice of communication channels across native language groups revealed one statistically significant difference in the case of choosing a communication channel in a mixed proficiency group ($p = .017$). Specifically, native Thai speakers tended to choose poorer media (averaging 2.84 out of 5, where 5 is considered the richest media) compared to their counterparts (English speakers = 3.14, French speakers = 3.53 and Portuguese speakers = 3.55) when confronted with a mixed proficiency group. There was no statistically significant difference in choosing a communication channel in a high English proficiency group, in a group composed of members with low English proficiency or with native speakers between game versions.

*Native language * code-switching:* A comparison of code-switching across native language groups revealed statistically significant differences related to full (rather than partial) code-switching. A one-way ANOVA revealed a statistically significant difference between native language groups for code-switching in a multilingual group ($F(4, 293) = 4.885, p = .001$) and for full code-switching in a monolingual group ($F(4, 293) = 8.286, p < .001$). The mean value analysis revealed that the difference was strongest with native Thai speakers, who tended to code-switch overall significantly more than their counterparts. For example, Thai speakers

¹⁰ ANOVA results reported as ($F(\text{between groups df}, \text{within groups df}) = [F\text{-value}], p = [p\text{-value}]$).

code-switched three times more than native English speakers and more than twice as much as French and Portuguese speakers in multilingual group settings. Therefore, the Thai subsample used leaner communication channels to speak to the group, but also switched more to their native language when faced with other Thai speaking interlocutors. There was no statistically significant difference between the language groups for partial code-switching in a multilingual group ($p = .220$) or in a monolingual group.

*Native language * language complexity:* A comparison of the choice to use more or less complex language (in English) across native language groups also revealed an interesting particularity of international collaboration. The one-way ANOVA showed a statistically significant difference in language complexity in native language groups ($F(4, 293) = 9.836, p < .001$). It was the native English speakers who tended to use the least complex language (32% complex language) and the Thai speakers who used the most complex language (61% complex language). The French also used relatively complex language (51%) compared to the English speakers. These results may go against common sense because the non-native speakers of English tend to use more sophisticated English than its native speakers.

*Native language * redundancy:* No statistically significant difference was observed between native language groups concerning informational redundancy in any of the observed situations: repetition in a mixed group ($p = 2.264$), repetition in a low English proficiency group ($p = 1.789$) and verification of information ($p = .591$) did not significantly differ across native language groups.

*Native language * choice of interlocutor:* A comparison of native language groups concerning the choice of interlocutor revealed two statistically significant differences. A one-way ANOVA revealed that there was a statistically significant difference in choosing a French-speaking interlocutor ($F(4, 304) = 7.283, p < .001$) and in choosing a Portuguese-speaking interlocutor ($F(4, 301) = 3.278, p = .012$) between native language groups. Native French-speaking participants were almost twice as likely to choose a French-speaking interlocutor than an English-speaking interlocutor when given the opportunity. Native Portuguese-speaking participants chose Portuguese, English and Thai speaking interlocutors at approximately the same rate, but were much less likely to choose French-speaking interlocutors. However, given the small subsample of native Portuguese-speaking participants, this point remains to be further explored through the collection of additional data. There was no statistically significant

difference across native language groups for the choice of a native English interlocutor ($p = .403$) or a native Thai interlocutor ($p = .295$).

These results concerning the choice of an interlocutor can be further corroborated with the aggregate variable “Interlocutor from Same Native Language,” which compares the propensity of a participant to choose an interlocutor from the same native language as themselves. It can be observed that while the French were much more likely to choose a French interlocutor compared to the other participants, they did not necessarily choose someone from their language as much as other language groups. For example, this contrast can be observed between French-speakers who choose French interlocutors (33.3% of the time) and English-speakers who choose English interlocutors (57.1% of the time). Even Thai speakers tended to be more inclined to choose Thai interlocutors (46.5% of the time). These choices are likely influenced by the game context and situations presented to the participant. Thus, what is most interesting here is the fact that French speakers tended to choose French interlocutors, even when others did not.

Table 39: Communication behaviors across different native language subgroups

Participant Native Language		Communication channel richness, mixed proficiency group (scale 1-5)	Code Switch, Full/multi-lingual group	Code Switch, Full/mono-lingual group	Language complexity	Interlocutor French	Interlocutor Portuguese	Interlocutor from same native language
English N = 53	Mean	3.14	7%	12%	32%	19.0%	41.4%	57.1%
	SD	1.19	0.14	0.17	0.25	0.13	0.20	0.21
French N = 88	Mean	3.53	10%	20%	51%	33.3%	29.7%	33.3%
	SD	1.00	0.20	0.19	0.21	0.18	0.22	0.18
Portuguese N = 14	Mean	3.55	11%	23%	44%	21.0%	41.7%	41.7%
	SD	1.14	0.16	0.23	0.19	0.12	0.15	0.15
Thai N = 33	Mean	2.84	23%	32%	61%	23.8%	37.1%	46.5%
	SD	1.09	0.26	0.23	0.22	0.17	0.19	0.15
Other Language N = 110	Mean	3.23	7%	12%	51%	26.0%	34.3%	
	SD	1.07	0.18	0.19	0.24	0.17	0.22	
Total N = 298	Mean	3.27	10%	17%	48%	26.5%	34.9%	42.8%
	SD	1.10	0.19	0.20	0.24	0.17	0.21	0.21
ANOVA								
F		3.049	4.885	8.286	9.836	7.283	3.278	19.628
Signif.		.017	.001	.000	.000	.000	.012	.000

Communication channel richness (via game version) effect on communication behaviors

Next, we determined if the game version had any effect on communication behaviors. The game versions highlighted different communication channels. In each of the versions, two major sections of the game scenario took place in a different channel. Version 1 was through instant messaging, Version 2 was through instant messaging with the addition of emoji and Version 3 was through a video call. As with native language, we first conducted a one-way variance analysis (ANOVA) of the communication behaviors to determine if there were statistical differences in communication behaviors between the game versions. For behaviors that reported statistical differences, we display and further analyze the mean values to more fully observe the behaviors within the three sub-groups in the following paragraphs.

*Game version * communication channel:* No statistically significant difference was observed across the game versions concerning the player's preferred method of communication in any of the observed situations: in a mixed group ($p = .742$), in a high English proficiency group ($p = .288$), in a low English proficiency group ($p = .796$) or with native English speakers ($p = .104$).

*Game version * code switching:* A comparison code-switching across the three game versions revealed statistically significant differences in two situations. A one-way ANOVA shows that there was a statistically significant difference in full code-switching in a monolingual group between at least two of the game versions ($F(2, 295) = 3.023, p = .050$). In the full group, participants code-switched the least at 13% in the game version with emoji compared to 18.6% in the simple (i.e. without emoji) instant messaging version and 17.1% in the video call version. Emoji are meant to show emotions, so it is possible that the personal and emotional aspects of emoji replaced the need to try to use other languages to connect with team members.

Additionally, there was a statistically significant difference in partial code-switching in a multilingual group between at least two of the game versions ($F(2, 297) = 4.134, p = .017$). Participants were most liberal with 40.3% partial code-switching in the video call version compared to approximately 30.5% in both instant messaging options. Video calls are one of the richest communication channels and are known for helping build positive rapport among team members. Perhaps the personal and emotional aspects related to video calls reinforced the desire to connect and thereby greet team members in different languages. No statistically significant difference was observed between game version and code switching in a multilingual

group ($p = .067$) and between game version and partial code-switching in a monolingual environment ($p = .097$).

*Game version * language complexity:* Regarding language complexity, a one-way ANOVA revealed that there was a statistically significant difference across game versions ($F(2, 295) = 3.934, p = .021$). Participants were inclined to use more complex language in leaner, written media compared to richer, oral media. That is, participants who were attributed game version 1 (instant messaging) used complex language 50.5% of the time, and participants who were attributed game version 2 (instant messaging with emoji) used complex language 51.2% of the time. This compared to participants who were attributed game version 3 (video call) who reduced complex language to 42.5%.

*Game version * redundancy:* No statistically significant difference was observed across game versions for informational redundancy in any of the observed situations: repetition in a mixed group ($p = .754$), repetition in a low English proficiency group ($p = .065$) and verification of information ($p = .736$).

*Game version * choice of interlocutor:* A comparison of the choice of interlocutor across game versions revealed statistically significant differences in two situations. A one-way ANOVA showed that there was a statistically significant difference in choosing a native English-speaking interlocutor between at least two of the game versions ($F(2, 306) = 10.349, p < .001$). Another one-way ANOVA revealed that there was a statistically significant difference in choosing a native Portuguese-speaking interlocutor between at least two of the game versions ($F(2, 303) = 3.575, p = .029$). Both differences appeared in game version 2 (chat emoji), where English-speaking interlocutors were chosen the least (46.4%) among the other language groups, and Portuguese-speaking interlocutors were chosen the most (39.3%) compared to the other game versions. As previously mentioned, the percentages of each language should be viewed separately. Responses report which interlocutor was chosen among those present in the scene. Table 40 shows the distribution of choice of interlocutor across the game versions. These findings are quite interesting because they suggest that emoji influences who talks with who in a multilingual virtual team. However, no statistically significant difference was observed across game versions for the choice of interlocutor when choosing a native French-speaking interlocutor ($p = .148$), a native Thai speaking interlocutor ($p = .678$) or an interlocutor of the same language as the participant ($p = .141$).

Table 40: Differences of communication behaviors across game versions

Game Version		Code switching (full/ monolingual group)	Code switching (partial/ multilingual group)	Language complexity	Interlocutor English	Interlocutor Portuguese
1 – Instant messaging	Mean	18.6%	30.5%	50.5%	57.7%	33.8%
	N	104	104	104	109	108
	SD	0.21	0.30	0.23	0.239	0.214
2 – Instant messaging with emoji	Mean	13.0%	29.1%	51.2%	46.4%	39.3%
	N	96	98	96	101	99
	SD	0.16	0.27	0.25	0.205	0.209
3 – Video call	Mean	19.6%	40.3%	42.5%	59.1%	31.6%
	N	98	98	98	99	99
	SD	0.22	0.33	0.24	0.207	0.207
Total	Mean	17.1%	33.3%	48.1%	54.4%	34.9%
	N	298	300	298	309	306
	SD	0.20	0.30	0.24	0.225	0.212
ANOVA						
F		3.023	4.134	3.934	10.349	3.575
Signif.		.050	.017	.021	.000	.029

Correlations between English proficiency and communication behaviors

Following the comparison of groups to the communication behaviors, the next step addressed the level of English proficiency and communication behaviors. For this analysis, we calculated Pearson’s bilateral correlations coefficient (r) to determine which relationships are significant. In contrast to national language groups, English proficiency was reported on a scale. As with the previous section, correlations that were significant are reported in Table 41 at the end of the section.

*English proficiency * communication channel:* In reviewing the correlation between English proficiency level and media richness, we identified significant correlations with richer

channels in a mixed group and with native speakers. There was a positive correlation between English proficiency and choosing a richer, synchronous media in a mixed (multilingual and various proficiencies) group, $r(284) = .16$, $p = .008$. There was also a positive correlation between English proficiency and choosing a richer media to communicate with native English speakers, $r(287) = .25$, $p < .001$. These results indicate that the higher a person's English proficiency, the more they will tend to turn towards a richer, synchronous communication channel in team situations and with native English speakers. While the correlations above are considered statistically significant, they are weak (below .3). However, due to the novel and exploratory nature of this methodology, we chose to report all significant correlations. We found no significant correlations between English proficiency and choosing a richer, synchronous media in a group characterized by high English language proficiency ($p = .67$) and in a group characterized by low English language proficiency ($p = .06$).

*English proficiency * code-switching:* English proficiency level demonstrated a weak but significant correlation with code-switching. English proficiency level negatively correlated with both situations involving full code-switching including in a multilingual group, $r(291) = -.24$, $p = <.001$, and in a monolingual group, $r(291) = -.27$, $p = <.001$. That is, those who had a higher level of English were less inclined to fully code-switch, probably because it was unnecessary. This also implies that code-switching was mostly beneficial to increase understanding for individuals with lower proficiency in the common language.

In addition, English proficiency level weakly but positively correlated with partial code-switching in a monolingual group, $r(188) = .17$, $p = .019$. As such, individuals who were more advanced in English were more inclined to greet other individuals in their language. Perhaps, this implies a certain flexibility among more proficient speakers who are confident in their abilities in the native language but willing to recognize the others' language diversity in monolingual settings. There was no significant correlation between English proficiency and partial code-switching in a multilingual environment.

*English proficiency * language complexity:* English proficiency level and language complexity also demonstrated correlation. There was a negative correlation between the two variables, $r(291) = -.29$, $p < .001$. Therefore, those who had a higher English level tended to use less complex language. This is strongly linked to the findings that native English speakers tend to use less complex language.

*English proficiency * redundancy:* English proficiency level demonstrated no significant correlation with redundancy in a mixed group ($p = .113$), redundancy in a low proficiency group ($p = .941$) or redundancy for verification ($p = .691$).

*English proficiency *choice of interlocutor:* English proficiency level and the choice of interlocutor revealed a correlation in two instances. First, English proficiency was weakly negatively correlated with the choice of a native French speaking interlocutor, $r(302) = -.13$, $p = .024$. Second, English proficiency was weakly positively correlated with the choice of an interlocutor of the same language as the participant, $r(189) = .19$, $p = .009$.

Table 41: Communication behaviors * English level

		Media richness, mixed proficiency group	Media richness, native speaker	Code switching (full/multilingual group)	Code switching (full/monolingual group)	Code switching (partial/monolingual group)	Language Complexity	Interlocutor French	Interloc Native Lang.
Eng-lish level	Pearson Correlation	.156**	.254**	-.240**	-.267**	.170*	-.286**	-.129*	.189**
	Sig. (2-tailed)	.008	.000	.000	.000	.019	.000	.024	.009
	N	286	289	293	293	190	293	304	191

Correlations between communication behaviors

After verifying how language diversity correlated with communication behaviors, we also checked if and where behaviors correlated with other behaviors using Pearson correlation coefficients.

*Language complexity * full code-switching in a monolingual group, $r(296) = .13$, $p = .018$.* This positive correlation indicates that the more complex a person spoke in English, the more likely they were to code-switch in a monolingual group. There were no significant correlations between language complexity and the other code-switching situations.

*Language complexity * choosing a native English speaking interlocutor*, $r(296) = -.12$, $p = .035$. This negative correlation indicates that the more complex a person spoke in English, the less often they chose a native English-speaking interlocutor. There was no significant correlation between language complexity and choice of a French, Portuguese or Thai interlocutor. These findings on language complexity coincide with the previous findings that demonstrate how non-native English speakers tend to use more complex language than native speakers. We can conclude that non-native speakers use more complex language in English, but also tend to choose interlocutors with which they can switch languages to be more at ease.

*Choosing a native English-speaking interlocutor * choosing a richer media within a low proficiency group*, $r(296) = -.13$, $p = .029$. This negative correlation indicates that the more often an individual chose an English-speaking interlocutor, the more often they chose a leaner media when speaking with a low proficiency group. This likely represents individuals who had difficulty understanding someone with a lower English ability or an accent, and who may therefore have turned to English interlocutors or leaner media to avoid miscommunication.

*Choosing a French-speaking interlocutor * full code-switching in a multilingual group*, $r(296) = .23$, $p < .001$, and *choosing a French-speaking interlocutor * full code-switching in a monolingual group*, $r(296) = .16$, $p = .006$. These positive correlations indicate that individuals who tended to choose French interlocutors were also more prone to code-switching. These were likely French-speakers who preferred to speak to French interlocutors and speak in French when given the opportunity, even in front of a team. This may have come at the cost of redundancy as seen with the negative correlation between *choosing a French-speaking interlocutor * redundancy/ repetition in a mixed group*, $r(298) = -.16$, $p = .006$.

*Choosing a Thai-speaking interlocutor * full code-switching in a multilingual group*, $r(296) = -.17$, $p = .004$. This negative correlation indicates that those who chose Thai interlocutors avoided code-switching. This likely reflects the importance of the Thai interlocutors within the serious game context, alongside the lack of Thai skills for those who chose those Thai interlocutors.

Communication behaviors and the perception of team effectiveness

The principle goal of this exploration of communication behaviors was to better understand how people actually interact in the multilingual virtual setting and if that is influenced by their language background. In addition to understanding the ‘how’ and ‘why’ of communication

behaviors, we can also explore the ‘so what?’ Specifically, why are communication behaviors important? In a team setting, there are implications for how team members perceive team effectiveness, inclusion and identification. This section explores how each of the communication behaviors influences the participants’ perceptions of their team’s outcomes.

*Communication channel * team outcomes:* First, the choice of communication channel (media richness) influenced team outcomes in two situations. In mixed groups, the choice of a richer communication channel positively correlated with the perception of team performance, $r(281) = .19$, $p = .002$, and with group identification, but only early in the teamwork, $r(280) = .18$, $p = .002$. Therefore, using video calls made participants feel that the team was more effective and made them feel an initial connection with their team members. With native English speakers, the choice of a richer communication channel positively correlated with the perception of team performance, $r(281) = .16$, $p = .006$, team communication inclusion, $r(283) = .13$, $p = .023$, and group identification early in the teamwork, $r(285) = .16$, $p = .006$. Therefore, using a video call to communicate with native English speakers made participants feel that the team was more effective, communicated better and made them feel an initial connection with their team members.

*Code-switching * team outcomes:* Overall, full code-switching negatively correlated with performance and group identification by the end of the teamwork, but partial code-switching positively correlated with performance and group identification by the end of the teamwork. For performance, full code-switching situations involving multilingual groups, $r(288) = -.28$, $p < .001$, were more significant than with monolingual groups, $r(288) = -.17$, $p = .004$. Group identification by the end of the teamwork was negatively influenced by the use of full code-switching in team settings, $r(283) = -.20$, $p = .001$. The people who switched languages were those who are probably less at ease in English and thus perceived overall performance as lower and felt less connected to their team. It should be noted that these results describe how an individual’s own use of code-switching is related to their perception of how the team is functioning as a unit. It does not describe how people perceive others’ code-switching.

Partial code-switching in a monolingual group positively correlated with performance, $r(186) = .19$, and with group identification by the end of the teamwork, $r(184) = .17$, $p = .020$. Participants were keener to greet an individual or monolingual group in their native language, and this made them feel a sense of accomplishment. Interestingly, there was no correlation

between partial code-switching in a multilingual group and any team outcome. Indeed, choosing another language in a mixed group setting could be difficult; do you choose your own language or another language used by some (but not all) team members? Do you take the time to greet each person in their language? This confusion may indeed have caused participants to avoid multilingualism in group settings, whereas they felt more inclined to mobilize limited multilingualism in one-on-one or monolingual settings.

*Redundancy * team outcomes:* Redundancy had a small but statistically significant correlation with team performance in two situations including redundancy in a mixed group, $r(288) = .17, p = .004$, and verification redundancy, $r(288) = .12, p = .039$. Likewise, verification redundancy also positively correlated with team identification by the end of the teamwork, $r(283) = .12, p = .045$. Therefore, those participants who were more redundant in group settings or who asked for verification of information felt more confident in their team's performance and slightly more connected to their team members.

*Language complexity * team outcomes:* Language complexity had no significant effect on performance and group identification, but a positive correlation with communication inclusion, $r(290) = .16, p = .006$. This positive correlation is interesting because it implies that those who spoke in a more complex manner felt that their team had overall more inclusive communication practices.

*Choice of interlocutor * team outcomes:* Lastly, the choice of interlocutor reflected significant positive correlations with team performance, communication inclusion and group identification by the end of the teamwork. Yet, these choices mainly had to do with choosing non-English speaking interlocutors. Choosing a French, or Portuguese interlocutor caused participants to feel more negatively about their team's outcomes, while choosing a Thai interlocutor was overall positive. These perceptions likely had to do with the specific context explored in the serious game. See Appendix 10 for a full report of the correlations between communication behaviors and team outcomes.

Reporting on the control variables

In addition to the previous analysis of game version, here we report the differences between other control variables. An analysis of the *communication behaviors and age* revealed three statistically significant differences. First is related to the choice of communication channel with native English speakers, $r(292) = .21, p = <.001$. This positive correlation affirmed that older

generations tended to prefer richer media to communicate with native English speakers. Second is related to language complexity, $r(296) = -.32$, $p = <.001$. This negative correlation indicated that older generations tended to use less complex language than younger generations. Third is about choosing an interlocutor from the same native language, $r(193) = .16$, $p = .025$. This positive correlation showed that older generations tended to choose interlocutors from their native language more often than younger generations.

A comparison of *communication behaviors across genders* revealed no statistically significant differences.

An analysis of *communication behaviors and professional experience* revealed a statistically significant difference regarding language complexity, $r(291) = .30$, $p < .001$. This positive correlation showed that those with more professional experience tended to use more complex language.

An analysis of *international experience* revealed differences in how different aspects of international experience influenced communication behaviors. The most significant influence occurred based on traveling abroad for tourism purposes and working abroad. There was a statistically significant difference regarding choosing a communication channel with native English speakers and tourism, $r(289) = .18$, $p = .002$, and working abroad, $r(288) = .16$, $p = .005$. These positive correlations demonstrated how non-native speakers' efforts to both travel and work abroad made them more comfortable communicating orally and through richer, synchronous channels with native English speakers. Likewise, there was a statistically significant difference regarding language complexity and tourism, $r(293) = -.25$, $p < .001$, and working abroad, $r(292) = -.32$, $p < .001$. These negative correlations demonstrated how international experience led to being able to adjust language complexity down, in a BELF way.

7.5.2 An analysis of perceived trust

The second part of this findings section focuses on trust. In addition to integrating the trust dimensions, additional individual characteristics and perceptions of team outcomes are added to the overall analysis.

Descriptive statistics

Individual and team characteristics

In addition to the control variables (age, gender, student status, and professional and international experience) that were considered for the analysis of communication behaviors, we add two more measures of individual characteristics in order to approach the study of trust in the multilingual virtual team: empathy and user acceptance of information technologies. In this section, we also include the extent to which the participant perceives the team’s diversity.

First, participants tended to view themselves as rather empathetic with self-reported empathy measuring from an average of 3.79 to 4.16 on a scale of 5.

Table 42: Descriptive statistics of empathy

	N	Mean	Std. Deviation	Skewness		Skewness	
				Statistic	Std. Error	Statistic	Std. Error
I try to look at everybody's side of a disagreement before I make a decision.	302	4.16	.940	-1.574	.140	2.908	.280
When I am upset at someone, I usually try to “put myself in his or her shoes”	303	3.79	.902	-.911	.140	.962	.279
I sometimes try to understand my friends better by imagining how this looks from their perspective.	305	4.05	.780	-1.262	.140	3.092	.278
Before criticizing somebody, I try to imagine how I would feel if I were in their place.	308	3.92	.880	-.844	.139	.771	.277

Second, participants were asked about their acceptance of information technologies. On average, their responses evoked an overall ease and comfort in using technology with item

averages ranging from 3.91 to 4.48 on a scale of 5. Specifically, participants found technology useful in their jobs and felt that it helps them accomplish their work more efficiently.

Table 43: Descriptive statistics of user acceptance of IT

	N	Mean	Std. Deviation	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
I find digital technologies useful in my job.	308	4.48	.922	-2.328	.139	5.707	.277
Using digital technologies enables me to accomplish tasks more quickly.	308	4.36	.914	-1.848	.139	3.765	.277
Using digital technologies increases my productivity.	308	4.16	.943	-1.307	.139	1.787	.277
My interaction with digital technologies is clear and understandable.	306	4.09	.885	-1.318	.139	2.561	.278
I find digital technologies easy to use.	305	4.01	.874	-1.056	.140	1.588	.278
Learning to operate digital technologies is easy for me.	306	3.91	.941	-.926	.139	.913	.278

In addition, players found the cultural diversity of the fictional team to be quite significant. Responses ranged from 3.68 to 4.12 on a scale of 5.

Table 44: Descriptive statistics of perceived cultural diversity

	N	Mean	Std. Deviation	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std Error
The members of my team vary widely in their cultural values.	291	4.12	.797	-.542	.143	-.358	.285
The members of my team hold totally different cultural perceptions and beliefs.	294	3.68	.971	-.462	.142	-.463	.283
The members of my team vary widely in their cultural communication norms and behaviors.	292	3.72	.935	-.359	.143	-.594	.284

Perceptions of team trust

Participants were asked how trusting and trustworthy they found their team overall. Based on three factors, participants demonstrated that they perceived trust as quite high. There were some outliers that did not feel trust in their team, especially regarding whether team members used cooperative behaviors.

Table 45: Descriptive statistics of perceived team trust

	N	Minimum	Maximum	Mean	Std.	Skewness	Skewness	Kurtosis	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Deviation	Statistic	Std. Error	Statistic	Std.
					Statistic				Error
Trust Propensity	296	-4.867	1.929	.000	1.000	-.538	.142	1.506	.282
Perceived Trust	290	-4.929	2.131	.000	1.000	-.548	.143	1.948	.285
Trust in Cooperative Behaviors	292	-5.476	1.619	.000	1.000	-1.033	.143	4.056	.284
Trust Monitoring Behaviors	296	-2.947	2.587	.000	1.000	.353	.142	.163	.282

Participants were also asked how much they trusted each of the individual team members. The individual trust values were combined to an average trust score. In general, participants reported an average trust score of 75%, or 3.78 out of 5.

Table 46: Descriptive statistics of average trust in team members

	N	Mean	Std.	Skewness	Skewness	Kurtosis	Kurtosis
	Statistic	Statistic	Deviation	Statistic	Std. Error	Statistic	Std. Error
			Statistic				
Trust_ average	285	3.77632	.513215	-.086	.144	1.502	.288

For the last measure of trust within the team, participants were confronted with questions concerning who they trusted the most or least, with whom they communicated the easiest or had the most difficulty and to whom they feel the closest or least connected. A number of participants reported difficulty with these questions because they felt that they did not know the fictional team members well enough or that they felt they chose an arbitrary

response. Because of this, we proceed with caution for this analysis. However, despite some reservations, the results demonstrated a number of interesting tendencies.

First, we report findings in line with the raw description of the fictional team members chosen for each of these questions. Table 47 reports these instances. Participants trusted the two native English speakers most, with Jiab, the Thai interlocutor with high English proficiency also being selected a significant number of times. Filipa, the Portuguese character, was identified as the one that participants trusted least. The three team members with low English proficiency followed. Communication was by far easiest with Emily, the native English speaker. Communication was by far most difficult with Obe, the Thai team member with a low English level and a heavy accent. Participants felt closest to Emily and Jiab, two women who both speak English well. Participants felt least connected to Luiz, Nicolas and Dan, three men who are at either end of the English spectrum, either with low proficiency or native speaker status. As a general observation, none of the three low English proficiency team members received very promising selections as they were viewed as rather untrustworthy, difficult to communicate and difficult to build a relationship with. This is an interesting result about language proficiency. Yet, possibly most interesting, what this initial analysis demonstrates is that trust, communication and a sense of connection do not necessarily correlate. For example, Dan was identified as being the most trustworthy, quite easy to communicate with, but no participants feel very connected to him. These relationships will be further defined through mean value comparisons.

Table 47: Correlations between team members and trust

	Trust Most (Valid Percent)	Trust Least (Valid Percent)	Communication Easiest With (Valid Percent)	Communication Most Difficult With (Valid Percent)	Feel Closest To (Valid Percent)	Feel Least Connected To (Valid Percent)
Dan (native English)	28.8	2.7	18.9	3.0	6.8	17.0
Emily (native English)	23.6	6.1	40.1	4.7	30.7	3.4
Fabienne (French, high English proficiency)	12.0	11.5	12.5	7.7	11.6	10.9
Filipa (Portuguese, high English proficiency)	3.8	30.7	4.0	7.4	7.5	12.2
Jiab (Thai, high English proficiency)	18.8	3.4	16.8	7.4	25.3	4.8
Luiz (Portuguese, low English proficiency)	2.7	15.2	1.3	15.2	3.4	19.0
Nicolas (French, low English proficiency)	5.1	17.2	3.0	13.5	8.5	19.0
Obe (Thai, low English proficiency)	5.1	13.2	3.4	41.1	6.1	13.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Perception of group outcomes

Participants had an overall favorable view of the group’s outcomes with item averages ranging from 4.34 to 4.54 out of 5. Of course, following the storyline of the serious game, every participant who completed the game also completed the team’s “project.” Participants reported that the team met its goals, that the team was within the proposed time-schedule, that the team responded quickly to problems and that the team effectively used its resources.

Table 48: Descriptive statistics of team performance items

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Our team effectively used its resources.	295	4.34	.748	-1.586	.142	4.390	.283
Our team was within the proposed time-schedule.	294	4.42	.783	-1.704	.142	3.756	.283
Our team was able to meet its goals.	293	4.54	.694	-1.762	.142	3.832	.284
Our team was able to respond quickly to problems.	293	4.39	.757	-1.632	.142	4.244	.284

Likewise, participants also had positive views about team communication inclusion. The item with the highest rating was how team members made an effort to communicate in ways that other members understood (mean = 4.26).

Table 49: Descriptive statistics of communication inclusion

	N	Mean	Std. Deviation	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
My team members made an effort to communicate in ways that other members understand.	293	4.26	.733	-.981	.142	1.484	.284
My team members chose concepts and words with which each team member is familiar.	293	3.89	.793	-.597	.142	.202	.284
My team members checked that their messages were correctly understood by everyone in the team.	292	3.80	.842	-.409	.143	-.157	.284
My team members made arguments that were clear and comprehensible to each other member.	294	3.96	.783	-.616	.142	.497	.283

Group identification was measured twice within the game, the first time after getting to know the team and starting teamwork, the second time at the very end of the teamwork. All items slightly increased overall between time 1 and time 2.

Table 50: Descriptive statistics of group identification at time 1 and 2

	N	Mean	SD	Skewness		Kurtosis	
				Statistic	Std. Error	Statistic	Std. Error
I like working in the Unique Perfume team. @ Time 1	300	4.24	.681	-.980	.141	2.731	.281
I like working in the Unique Perfume team. @ Time 2	288	4.35	.681	-.963	.144	1.655	.286
I identify myself as a member of the team. @ Time 1	300	4.26	.703	-.994	.141	1.965	.281
I identify myself as a member of the team. @ Time 2	288	4.31	.813	-1.407	.144	2.549	.286
I am glad to be a member of the team. @ Time 1	299	4.29	.645	-.820	.141	2.024	.281
I am glad to be a member of the team. @ Time 2	289	4.38	.726	-1.099	.143	1.393	.286
I identify with other members of the team. @ Time 1	297	3.86	.776	-.274	.141	-.085	.282
I identify with other members of the team. @ Time 2	287	4.05	.841	-.703	.144	.200	.287

Mean value comparison of trust

Native language

A comparison of the effect of native language on the team trust revealed one statistically significant difference in the case of perceived trust ($p = .012$). Specifically, native French-speaking participants exhibited much less trust than any other groups, and the Thai-speakers demonstrated the most. There was no statistically significant difference when comparing native language and trust propensity ($p = .091$), trust in cooperative behaviors ($p = .319$) or in the average trust value across the team ($p = .256$).

Table 51: Native language and perceived trust

Native language		Perceived Trust
English	Mean	.089
	N	52
	Std. Deviation	.929
French	Mean	-.317
	N	86
	Std. Deviation	.889
Portuguese	Mean	.169
	N	14
	Std. Deviation	.866
Thai	Mean	.219
	N	33
	Std. Deviation	1.379
Other	Mean	.124
	N	105
	Std. Deviation	.954
Total	Mean	.000
	N	290
	Std. Deviation	1.000

Language groups by English proficiency level

In reviewing the linear relationship between English proficiency level and the three trust factors, there were no significant correlations: *English proficiency level * Trust propensity* ($p = .194$), *English level * Perceived trust* ($p = .354$) and *English level * Trust in cooperative behaviors* ($p = .473$). Likewise, there was no significant correlation between *English level and the average trust in team members* ($p = .294$).

Next, the player's English level is compared with the English levels of the characters that they reported as trusting most and least, communicating easiest or having the most difficulty with and feeling closest or least connected to. Interestingly, weak but statistically significant correlations were found in four cases. There was a positive correlation between the player's English level and the English level of the character that the player trusted most, $r(285) = .14$, $p = .022$. Therefore, the participants' English level informed their choice of a native or near-native English-speaking character as the one they trusted most.

As previously discussed, there was a positive correlation between the player's English level and the character with whom the player found it easiest to communicate, $r(290) = .17$, $p = .004$. Similarly, there was a negative correlation between the player's English level and the English level of the character with whom they found it most difficult to communicate, $r(290) = -.21$, $p < .001$. In the previous cases, the higher the participant's English level, the easier they found it to communicate with a native or near-native English interlocutor.

In addition, there was a positive correlation between the player's English level and the English level of the character to whom the player felt closest emotionally, $r(286) = .19$, $p = .001$. Therefore, not only was the participants' trust in and communication with their fellow team members influenced by English proficiency, but so were their emotional relationships.

However, it should be noted that there was no significant correlation between the players' English level and the English level of the character they trusted least ($p = .310$) or felt least connected to ($p = .408$). Therefore, we can infer that English level mostly results in positive emotions related to other English speakers, but not necessarily in positive or negative emotions towards less proficient speakers.

Table 52: English level and trust in individuals

		English level
TrustMostEnglish	Pearson Correlation	.135*
	Sig. (2-tailed)	.022
	N	287
TrustLeastEnglish	Pearson Correlation	-.060
	Sig. (2-tailed)	.310
	N	291
CommEasiestWithEnglish	Pearson Correlation	.169**
	Sig. (2-tailed)	.004
	N	292
CommDifficultWithEnglish	Pearson Correlation	-.208**
	Sig. (2-tailed)	.000
	N	292
ClosestToEnglish	Pearson Correlation	.188**
	Sig. (2-tailed)	.001
	N	288
LeastConnectedToEnglish	Pearson Correlation	-.049
	Sig. (2-tailed)	.408
	N	290

Control variables

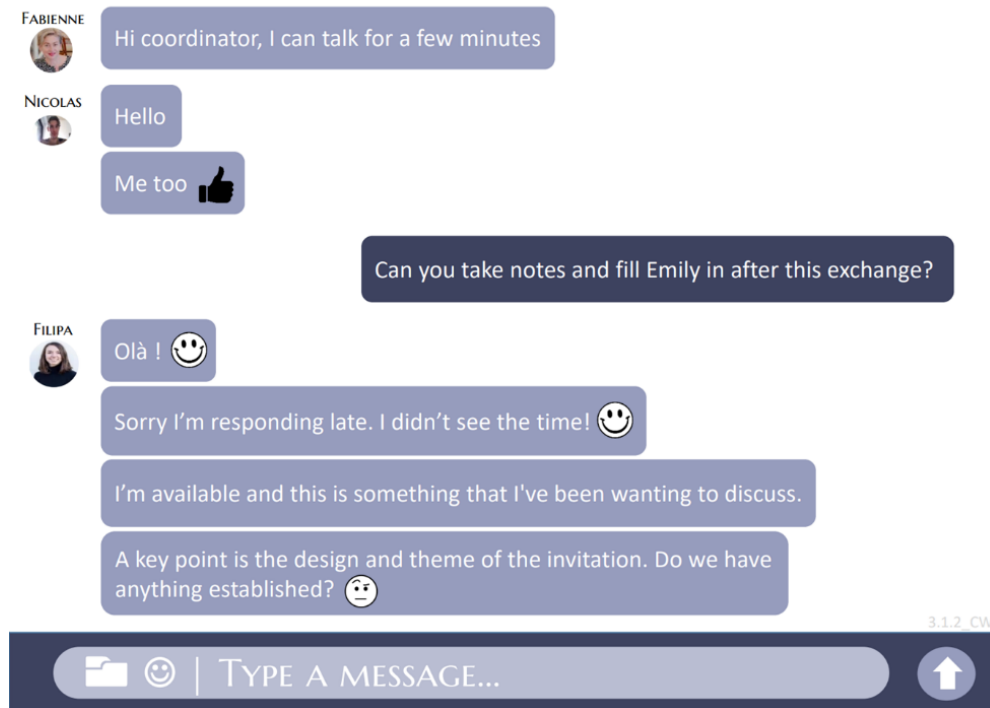
As in the previous section on communication behaviors, we tested if the game version, and therefore the communication channel, affected trust. There was no significant difference across game versions for any of the trust measures, including average trust propensity ($p = .727$), perceived trust ($p = .776$), trust in cooperative behaviors ($p = .947$) or average trust in the team ($p = .267$). Regarding the individual characters within the game, one difference was highlighted concerning the game character Filipa ($p = <.001$). Filipa was Portuguese, with a near native level of English. On average, participants trusted Filipa least in the game version that included emoji and most in the game version carried out through video call.

Table 53: Difference in trust for Filipa

Game Version	Mean	N	Std. Deviation
Chat	3.35	101	.854
Chat with emoji	3.26	96	.909
Video	3.72	97	.826
Total	3.44	294	.883

Because of this particularity, it is important to look at why Filipa’s trust may have been lost with the involvement of emoji, compared to the other forms of communication. We specifically highlight the following conversation that differentiates Game Version 2 where Filipa arrives late and uses a range of emoji (see figure 22). Discussion with participants revealed how they found Filipa untrustworthy due to her use of positive emoji in a negative context. They expected her to react differently and to show her regret for arriving late. In this way, by using emoji in the “wrong” way, participants developed distrust of this team member.

Figure 13: ELITE The Serious Game: Extract of a conversation with Filipa



The next control variable verified is the participant's age. A one-way variance analysis (ANOVA) revealed no statistically significant differences across age groups for trust propensity ($p = .163$), perceived trust ($p = .182$), trust in cooperative behaviors ($p = .782$), average trust in the team ($p = .612$) or trust in any of the specific game characters. Therefore, age had no effect on perception of trust in the multilingual virtual team.

Another control variable was the participant's gender. A one-way variance analysis (ANOVA) revealed no statistically significant differences in gender when compared to trust propensity ($p = .537$), perceived trust ($p = .982$), trust in cooperative behaviors ($p = .765$), average trust in the team ($p = .129$). However, in observing trust in specific game characters (team members), there were three statistically significant results. As shown in Table 54, females were more trusting of Emily, Jiab and Obe compared to male participants. These results warrant further analysis.

Table 54: Trust and gender

Gender		Trust Emily	Trust Jiab	Trust Obe
Male	Mean	3.94	3.89	3.51
	N	113	112	113
	Std. Deviation	.782	.820	.857
Female	Mean	4.13	4.14	3.77
	N	175	173	175
	Std. Deviation	.748	.671	.805
Total	Mean	4.05	4.05	3.67
	N	288	285	288
	Std. Deviation	.766	.742	.834
ANOVA				
F		4.171	8.011	6.708
Signif.		.042	.005	.010

An analysis of the correlation between professional experience and trust revealed no significant results: trust propensity ($p = .097$), perceived trust ($p = .938$), trust in cooperative behaviors ($p = .215$), trust average value ($p = .972$). In addition, there was no significant correlation between professional experience and trust in any of the specific game characters. An analysis of the correlation between international experience and trust also showed no significant results.

Perceptions of cultural diversity and trust

There was a positive correlation with between the participant's perception of how culturally diverse they perceived the team, and their trust in the team. Specifically, a perception of higher cultural diversity resulted in a perception of higher trust propensity, $r(284) = .24$, $p < .001$, higher perceived trust, $r(279) = .31$, $p < .001$, and more cooperative behaviors, $r(280) = .21$, $p < .001$. Therefore, the awareness of significant diversity helped the participants feel that their team members were more trusting and trustworthy.

Table 55: Correlations between perception of cultural diversity and trust

		Perception of Cultural Diversity
Trust Propensity	Pearson's correlation	.243**
	Sig. (bilatérale)	.000
	N	286
Trust Perceived	Pearson's correlation	.313**
	Sig. (bilatérale)	.000
	N	281
Trust Cooperation	Pearson's correlation	.213**
	Sig. (bilatérale)	.000
	N	282

Correlations between communication behaviors and trust

After verifying how language diversity and control variables correlated with trust, we also verified if and where trust correlated to the communication behaviors studied in the previous section using Pearson correlation coefficients. A number of weak correlations were revealed.

*Choice of communication channel in a mixed English proficiency group * Trust propensity*, $r(284) = .14$, $p = .015$. This weak positive correlation indicates that the more the participant chose a rich media in a team context, they more they felt team members were prone to trust others. Choice of communication channel (in any team configuration) did not correlate with any of the other trust dimensions.

Full code-switching was correlated with trust in a number of ways. *Full code-switching in a multilingual group * perceived trust*, $r(285) = -.15$, $p = .012$, and *Full code-switching in a multilingual group * Trust in cooperative behaviors*, $r(287) = -.15$, $p = .009$. These weak negative correlations indicate that the more the participant code-switched in the team setting, the less they perceived trust in their team or found their team members to use behaviors that demonstrated cooperation.

*Full code-switching in a monolingual group * Trust propensity*, $r(291) = -.17$, $p = .004$, and *Full code-switching in a monolingual group * Perceived trust*, $r(285) = -.13$, $p = .029$. These weak negative correlations indicate that switching languages, even in monolingual situations, caused participants to feel that their team members were less prone to trust others and were less trustworthy.

Partial code-switching also correlated with two of the three dimensions of trust. *Partial code-switching in a monolingual group * Trust propensity*, $r(190) = .18$, $p = .014$, and *Partial*

*code-switching in a monolingual group * Trust in cooperative behaviors*, $r(187) = .16$, $p = .028$. These weak positive correlations indicate that using greetings in other languages when speaking with monolingual groups or individuals caused participants to feel that their team members were more prone to trusting others and demonstrated more cooperation in the team.

Redundancy demonstrates two small, but statistically significant correlations with trust. *Redundancy in a mixed group * Trust propensity*, $r(293) = .17$, $p = .004$, and *Verification redundancy * Trust propensity*, $r(294) = .12$, $p = .040$. This weak positive correlation demonstrates that when participants used more repetition or asked for information verification, they found their team members more prone to trust others.

There were also a limited number of correlations between the choice of interlocutor and trust. *Interlocutor with the same native language as the participant * Trust propensity*, $r(186) = .15$, $p = .036$., and *Interlocutor with the same native language as the participant * Perceived trust*, $r(183) = .16$, $p = .030$. These positive correlations show that when participants chose interlocutors who had the same language as the participant, they viewed the team as more prone to trust and more trustworthy.

*Choice of a Portuguese interlocutor * perceived trust*, $r(288) = -.17$, $p = .005$, and *Choice of a Portuguese interlocutor * trust in cooperative behaviors*, $r(290) = -.15$, $p = .012$. These negative correlations show how choosing a Portuguese interlocutor within the serious game context led the participant to feel less trust in the team. However, limited instances also show that choosing a Thai interlocutor had an opposite effect such that it increased how the participant viewed their team's cooperative behaviors: *Choice of a Thai interlocutor * trust in cooperative behaviors*, $r(290) = .13$, $p = .025$.

The correlations between trust and communication behaviors are reported in full in Appendix 10.

Trust and the perception of team effectiveness

The principle goal of this exploration of trust was to better understand how language diversity influenced the perception of trust in a multilingual virtual team. In addition, we can also explore the 'so what?' Specifically, why is trust ultimately important? In a team setting, there can be implications for how team members perceive team effectiveness, inclusion and identification.

This section explores how trust influences the participants' perceptions of their team's outcomes.

In fact, all of the dimensions of trust showed a statistically significant positive correlation with all of the perceptions of the team's outcomes. Therefore, increased trust led to a higher perception of team performance and identification as a team member. Trust had the greatest correlation with general team performance and how the participants perceived their identification with the group by the end of their teamwork. Table 56 reports the specific correlations between the three trust dimensions and team performance, communication inclusion and group identification at two different times in the teamwork. As shown, correlations between trust and team outcomes were greater than with communication behaviors.

Table 56: Correlation between trust and team outcomes

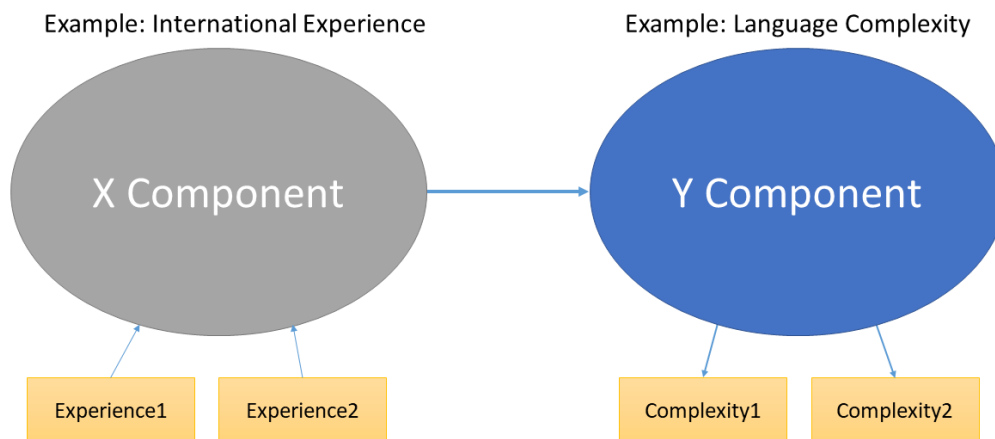
		Team Performance	Communication Inclusion	Group Identification @ Time 1	Group Identification @ Time 2	Group Identification Difference
Trust Propensity	Pearson's correlation	.454**	.344**	.379**	.496**	.149*
	Sig. (bilateral)	.000	.000	.000	.000	.014
	N	287	289	287	282	274
Trust Perceived	Pearson's correlation	.485**	.389**	.393**	.502**	.151*
	Sig. (bilateral)	.000	.000	.000	.000	.013
	N	281	284	282	278	270
Trust Cooperation	Pearson's correlation	.536**	.433**	.382**	.557**	.227**
	Sig. (bilateral)	.000	.000	.000	.000	.000
	N	283	286	283	279	271

7.5.3 Partial Least Squares Structural Equation Modeling (PLS-SEM)

Modeling communication strategies in a multilingual virtual team

We now aim to model the communication strategies available to players in the multilingual virtual team to better understand how multiple variables cumulatively influence how (groups of) participants act in given situations. In other words, we aim to model the complex interdependencies existing between the variables. In order to model this phenomenon, we use partial least square modeling in the SmartPLS software (Ringle et al., 2015). Overall, the partial least squares (PLS) algorithm results demonstrate how “the components of X are used to predict the scores of the Y components, and the predicted Y component scores are used to predict the actual values of the measured Y variables” as modelled in Figure 23 (Garson, 2016, p. 12).

Figure 14: Example of the general mechanism of PLS-SEM showing the influence of international experience on language complexity (adapted from Garson, 2016)



It is worth noting that the arrows in the above model, as seen between the components and their associated variables, can go in either direction, designating reflective versus formative modeling (Garson, 2016). This is done at the discretion of the researcher in the SmartPLS software, and we designated it based on the correlation between the variables constituting the components. In reflective modeling, measures are representative of the latent variable, so therefore, the variables simply reflect “reality” (Garson, 2016). Whereas in formative modeling, the latent variable is composed of the measures, which are each important for a complete understanding of the latent variable (Garson, 2016).

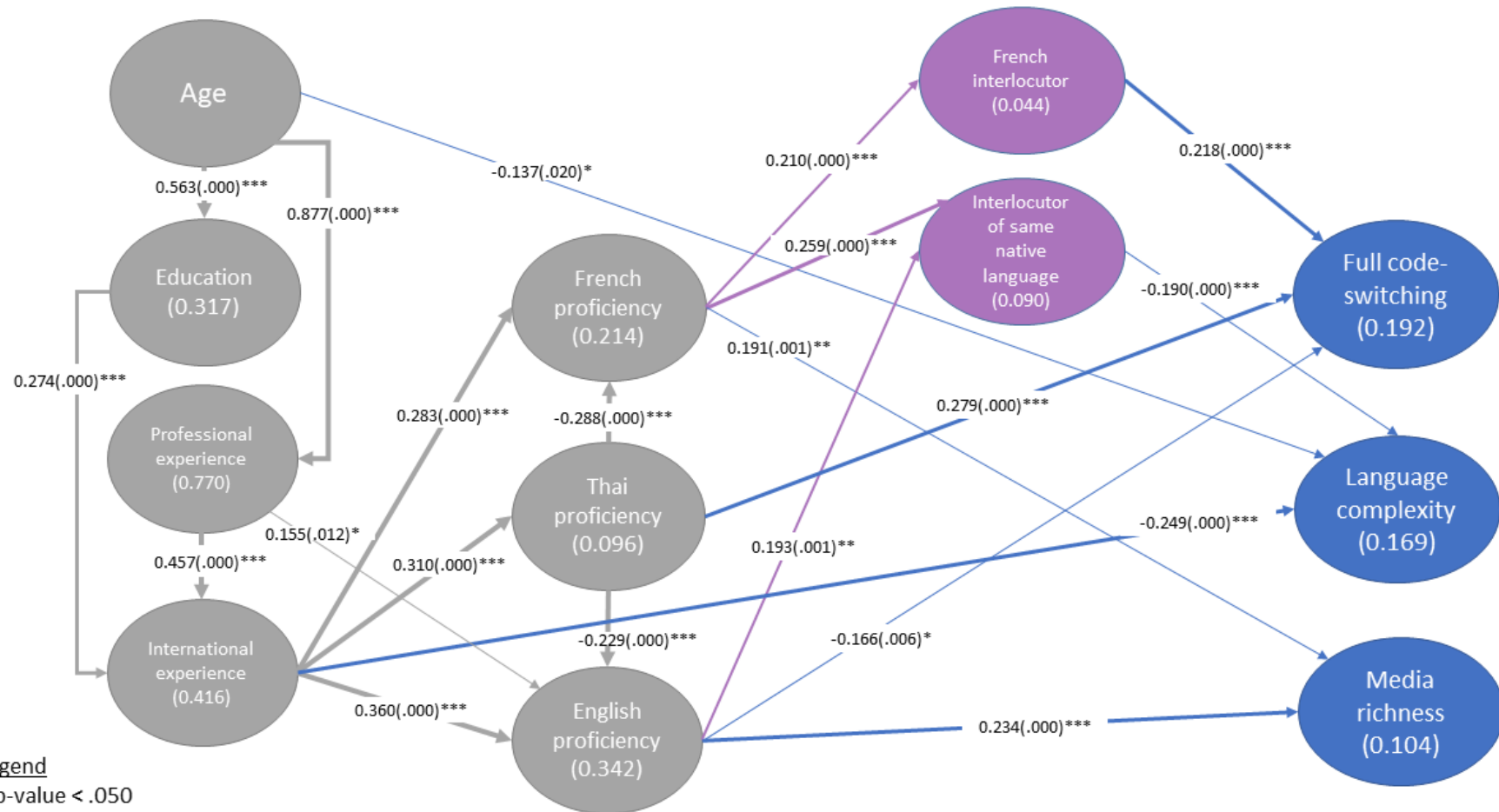
While we have already looked at relationships between variables on a one-to-one basis, this method of modeling allowed us to further test relationships across all of the variables. Modeling was approached in an exploratory manner because we intended to test if there were further relationships that had not previously been considered. PLS-SEM has been reported to be well suited to explore model extensions theoretically in order to identify the “drivers” of the outcome variables (Legate et al., 2021).

As stated earlier, while we considered attempting to create a single model looking at both communication strategies and perceptions of trust, we realized that the model was exceedingly complicated from a theoretical standpoint because it represented both factual indicators (choice of behaviors) and perceptions (perceptions of trust and performance), and individual-level constructs (individual characteristics, choice of individual behaviors) and group-level constructs (perception of team trust and performance). Due to this great complexity and because PLS is considered a “single-level form of analysis” (Garson, 2016), we ultimately decided to approach modeling in two phases. However, the full model is included in Appendix 11 and serves as a resource for future analysis. Below, we explain the model related to team member characteristics and the chosen communication behaviors. A second model describing trust and team outcomes follows in the next section.

We started modeling by integrating the variables related to communication behaviors. Media richness, code-switching, language complexity, redundancy and choice of interlocutor were designated as dependent, latent variables that were each constructed from multiple observed variables that had previously been selected through principle component analysis and reliability statistics (Cronbach’s alpha). By convention, a Cronbach’s alpha of greater or equal to 0.80 is designated for a “good” scale, 0.70 for an “acceptable scale” or 0.60 for a scale for exploratory purposes (Garson, 2016). Furthermore, following our previous findings that full and partial code-switching were separate constructs (component correlation = 0.07), these were added to the model separately. In addition, we transformed choice of interlocutor to better specify relationships between the participant and their chosen interlocutor(s) within the simulation. Therefore, dependent, latent variables were created specifying chosen interlocutors whose native language was English or French (the two most commonly spoken languages of participants) and where the chosen interlocutor’s native language corresponded to the native language of the participant.

Following the validation of the dependent variables, we began an iterative process of adding participant characteristics (i.e. independent variables) and calculating their influence on communication behaviors. Participant characteristics included the control variables of age, education level, professional experience, international experience, and proficiency levels in English, French and Thai. Gender, student status and game version were not integrated into the model at this stage, but were saved for later multi-group analysis. As part of the process of creating the model, we ran the PLS algorithm following the addition of each independent variable. Structural path coefficients with path loadings from 0 to 1 indicate the strength of paths connecting each other. Values closest to 1 are the strongest. As we neared the completion of the model, the structural path coefficients were tested for significance using bootstrapping, a resampling method that involves taking random samples and randomly replacing dropped values to estimate the standard error of the regression paths and other model parameters (Garson, 2016). Weak indicators with non-significant paths (p-values under .05) were dropped stepwise, one by one from the model, starting with the least significant path. The results of the path coefficients between the independent and dependent variables are modeled in Figure 24 and then further explained.

Figure 15: Modeling communication behaviors via PLS-SEM



Legend
 * p-value < .050
 ** p-value < .010
 *** p-value < .001

First, the independent variables show no significant influence on two dependent variables: partial code-switching and redundancy. As such, the choice to greet team members in another language and to repeat or rephrase information was not connected to the participants' language skills or international experiences. These were dropped from the model on individual communication behaviors.

A number of participant characteristics (age, education level, professional experience and international experience) correlated amongst themselves. Both education level and professional experience mediated the effect of age (the older the participant, the higher their education level or the longer their professional experience) on international experience. This correlation is quite natural because people gain experiences with age.

More interestingly, in observing the effects of these characteristics on the dependent variables, both age and international experience were demonstrated to have a negative influence (path coefficients of -0.137 and -0.249, respectively) on language complexity. The older the participant and the more experience they have in international settings, the less complicated of language they would employ. International experience especially can help train individuals to communicate in more effective ways with people from diverse backgrounds, which results in reducing complexity of vocabulary, grammar and expressions.

International experience also demonstrates a clear correlation with language proficiency. The correlation was strongest with English (.360). Those with the most international experience (travel, study or work abroad) had either learned English within the international setting or are native English speakers. French proficiency was also strongly correlated with international experience (.283), which reflects a similar effect as English where those who had significantly travelled, studied or worked abroad learned French or were native French speakers. However, Thai was strongly negatively correlated with international experience (-.310). Therefore, those who had international experience travelled less to Thailand, but also the Thai participants in our sample had less international experience than the rest of the sample. In all, proficiency in the different languages was negatively correlated such that those who mastered Thai spoke less English and French. However, there was no significant correlation between proficiency in English and French. These results surrounding language levels indicate a particularity of our sample.

Proficiency levels in the different languages also had mediating effects on the dependent variables. English and French proficiency both had positive effects (.191 and .234

respectively) on media richness. The higher an individual's proficiency in these languages, the more likely they were to use richer media such as a video call. While English proficiency follows conventions saying that higher-proficiency speakers more easily turn to rich media for sharing complex information, this does not explain the propensity of French-speaking participants to turn to video calls.

English and Thai proficiency affected full code-switching, though in opposite ways. Increased English proficiency resulted in less code-switching, whereas increased Thai proficiency resulted in significantly more code-switching.

Choice of an interlocutor of the same language (as the participant) and choice of a French-speaking interlocutor proved to be mediating variables. Choice of an interlocutor with the same native language mediated the relationship between language proficiency (of both English and French) and language complexity. Choice of a French-speaking interlocutor mediated the relationship between proficiency in French and full code-switching.

Ultimately, this model demonstrates that only a small amount of variance of the communication behaviors is explained by the participant's characteristics. Indeed, the coefficient of determination of the dependent variables (R-square, indicated within the circles in the model in Figure 24) can be described as weak. Specifically, R-square for full code-switching, language complexity and media richness were .192, .169 and .104 respectively. In general, R-squares of greater than or equal to .67, .33 and .19 are classified as substantial, moderate and weak respectively (Chin, 1998 in Garson, 2016). Due to the exploratory nature of the model and the construction of the dimensions (which cannot be classified as true multi-item scales), we decided to maintain R-squares below the generally accepted "weak" threshold.

As a final step in the modeling of communication behaviors, we performed multi-group analysis in SmartPLS 3 to determine if the PLS model differed between groups. Specifically, we verified groups based on gender, student status and game version. Multi-group analysis was initiated by defining the groups. Gender was defined based on two options: male and female. Within the simulation, participants were also given the opportunity to respond "Other" or "I prefer not to answer," but there were not enough respondents for these options to warrant an analysis of these groups. Student status was defined based on full-time student status or not. Both response options of "not a student" and "part-time student" were grouped to create the sub-sample of working professionals, which is a comparable sample to the full-time student sample with approximately 150 participants in each. It was assumed that those who had "part-

time student” status were also working at the same time since we had targeted “continuing education” students during sampling. Game version refers to the three versions of the game that were attributed at random to participants and that differ based on the communication channel privileged in certain scenes within the serious game.

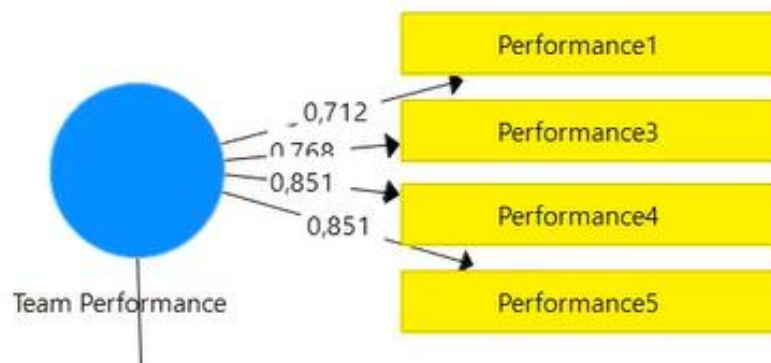
Multi-group analyses report no significant difference between males and females or between full-time students and non-full-time students. Despite having no significance, this last result is in fact quite interesting for this research because it shows how student samples are legitimate for research on communication behaviors in multilingual virtual teams. Student samples have been traditionally discarded in international management research because it is thought that undergraduates could not demonstrate proficient background and experience to respond sensibly to research questions (van Witteloostuijn, 2015). Thanks to our findings, we can confidently respond that students are representative of our target population, which is an essential question that researchers face when choosing a sample (Fan & Harzing, 2020).

The multi-group analyses revealed one significant difference relating to the game version. Comparing game versions 1 (instant messaging) and 3 (video calls), the path weight of the influence of French level on the choice of a French-speaking interlocutor increased by a path coefficient of 0.319 ($p = .010$). Therefore, those with higher French proficiency were more inclined to choose French interlocutors when interacting increasingly through the richer (and oral) communication channel. That is, participants preferred choosing interlocutors who spoke a language that they mastered especially in richer video settings compared to leaner, email settings.

Modeling trust in a multilingual virtual team

As with the previous model, we started by creating the dependent variables in our model, which included team performance, group identification at Time 2 (at the end of the simulation) and communication inclusion. As demonstrated by Team Performance in Figure 25, the team outcome construct is reflexive, meaning that the indicators (e.g. Performance1) are affected by the latent variable (e.g. Team Performance).

Figure 16: Reflexive indicators for Team Performance



After verifying correlation of the trust constructs, we added trust to the model as a second order construct, thereby creating a higher order model. Higher order models refer to models where the indicators of at least one of the latent variables (e.g. trust) are other latent variables (e.g. perceived trust) (Garson, 2016). Hair and colleagues (2014) explain two reasons for using higher order models: 1) to reduce the number of structural relationships under analysis in PLS, and 2) to deal with collinearity among first-order latent constructs.

The individual characteristic variables were added through an iterative process involving the verification of reflexive or formative variables and their influence on other variables within the model.

In the complete model, as found in the mean comparison analysis, we observe that trust strongly correlated with all three team outcomes: performance (.492), communication inclusion (.463) and group identification (.283). The perception of team diversity demonstrated a positive correlation (.279) with trust, also as already described earlier in these findings. The perception of team diversity also directly correlated (.215) with communication inclusion. Therefore, the more the participant perceived cultural diversity, the more inclusive they found the team's communication style.

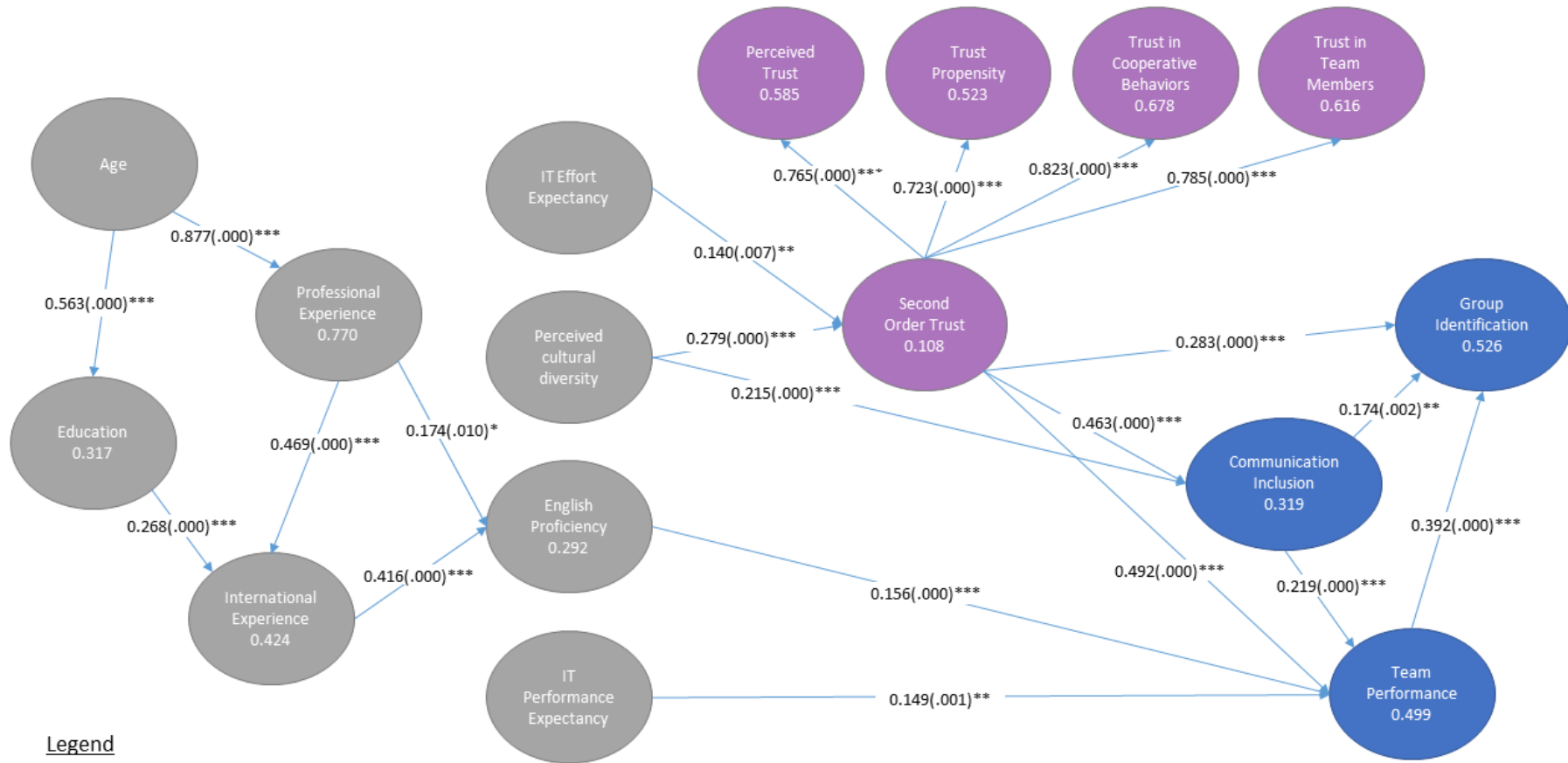
Age, professional experience, education level and international experience demonstrated a similar effect as in the model on communication behaviors: they mostly affected English proficiency. English proficiency itself demonstrated a positive correlation with team performance (.156).

A new variable in this model compared to the PLS model on communication behaviors, user acceptance of IT also had a surprisingly strong influence overall. However, the two factors

of user acceptance of IT reacted in different ways. IT effort expectancy, or the expectancy that using technology will be easy and require little effort, influenced trust (.140), whereas IT performance expectancy, or the degree to which using the technology will help an individual perform better, influenced team performance (.149).

With the completed model (see Figure 26), we are able to explain 52% of the variance of group identification, 31% of communication inclusion and 50% of team performance.

Figure 17: Modeling perceptions of trust and performance via PLS-SEM



Legend

- * p-value < .050
- ** p-value < .010
- *** p-value < .001

The multi-group analyses indicate that there was no significant difference in the PLS model when comparing males and females. However, they reveal two minor differences relating to the game version. Comparing game versions 1 (instant messaging) and 2 (instant messaging with emoji), the path weight of the influence of communication inclusion on the sense of group identification increased by .391. Therefore, in an environment where there was only text, no emoji, it was more important for team members to sense that communication was inclusive in order to attain group identification compared to work settings where team members used emoji.

In addition, whereas the study of communication behaviors demonstrated no significant difference between student and non-student samples, there was one significant difference between these sub-samples when considering trust. The path weight of the influence of cultural diversity on the perception of team trust was greater for students with a path coefficient of .327. For the student subsample, the influence of the perception of cultural diversity on trust was even stronger than for the subsample of working professionals. Perhaps the acknowledgement of cultural diversity is a particularly positive way to build trust for students. Whereas working professionals, who naturally have more international experience, do not have the same need to identify diversity, or perhaps diversity is normalized and they therefore do not identify the difference as being so extensive as compared to students.

7.6 Discussion on language diversity, communication behaviors and trust

Here, we confront the findings from our serious game analysis with the literature. The structure of this section is organized around the five observed communication behaviors and trust in a multilingual virtual team. We conclude by further justifying the importance of the virtual context for this research question.

7.6.1 Language complexity and (B)ELF

The study of language complexity demonstrates challenges to implementing Business English as a *lingua franca* (BELF) mainly due to difficulties in overcoming psychological “language-induced pressures.” How language complexity is moderated by communication channel and the benefits of international experience are also highlighted.

Surprisingly, in our study, native English speakers used the least complex language, whereas participants with lower English proficiency levels used the most complex language. Our findings demonstrate how native speakers adapt to multilingual environments by reducing their level of language and thereby enact more BELF communication. This contradicts Louhiala-Salminen and Kankaanranta (2012) who show how native English speakers are a source of division in multilingual teams due to their lack of consideration for adapting their language level.

At the same time, non-native speakers are stuck in an English as a *lingua franca* (ELF) frame of mind where native speakers are the ideal frame of reference (Charles, 2007). As is natural in ELF, language-induced anxiety is clearly present. While language-induced anxiety is based on one’s relative language proficiency compared to others (Tenzer & Pudelko, 2015), we suggest that it mainly exists for lower proficiency individuals in a mixed proficiency team setting. Tenzer and colleagues (2014) determine that language-induced anxiety is a reason why team members may reduce trust in others “for fear of being exploited.” Our results did not confirm a relationship between language complexity and trust, but we encourage further research on this topic.

The question for non-native speakers then becomes *how* to shift from an ELF to a BELF mindset and reduce language-induced pressures? One response to this question is seen in the choice of communication channels. Our findings demonstrate how video calls reduce

participant language complexity compared to instant messaging. In a written communication channel, teams avoid language challenges related to accents (Klitmøller et al., 2015), and there is more space to increase understanding and one's language level by using a dictionary or online translator, for example. Thereby, the effects of language diversity are reduced. Because there is space to increase language level and because language diversity is diminished in written communication channels, language complexity can increase without the same negative effects that are implied in verbal channels.

A final observation about language complexity demonstrates that the relationship between high media richness/ synchronicity and reduced language complexity is also informed by international experience. The greater a participant's international experience, the richer the communication channel they select and the less complex of language they use. Therefore, thanks to international experience, people are more at ease communicating in a richer media because, for them, hearing markers of language diversity in international and professional settings is more commonplace. In addition, they have more practice adapting their language to the multilingual context. In the international management literature, international experience has been shown to have a positive (but weak) influence on intercultural understanding and certain traits linked to intercultural competence such as emotional stability, self-confidence and low ethnocentrism (Bartel-Radic, 2014). By viewing our results through an intercultural competence lens, we conclude that international experience can be a means by which individuals can gain both self-confidence and understanding of what is required for working in a multilingual environment.

7.6.2 Redundancy and performance

While redundancy is highlighted as a means to help teams communicate better and be more efficient (Harzing et al., 2011), our results are inconclusive about who uses redundancy and in what situations. The most interesting finding concerning redundancy demonstrates that the participant's own repetition makes them feel more trust in the team. This is in line with Tenzer and Pudielko (2015) who promote frequent repetition to reduce the impact of language barriers in multilingual teams. Yet, our findings go further by showing that it is not only hearing redundant information, but also being redundant ourselves.

7.6.3 Code-switching and multilingualism

Our findings demonstrate the value in studying full code-switching and other uses of multilingual communication separately. English proficiency level affected the choice to switch fully to another language or use greetings or short expressions in opposite ways. Those with higher English levels fully switch less than individuals with a lower level. High English levels coincide with less (full) code-switching because those who speak the common language well will have less need to change languages to increase their understanding in multilingual contexts. At the same time, higher English proficiency leads to the increased use of greetings and short expressions in the languages spoken by team members. That is, those who are most comfortable in English also feel the freest to use language flexibly in greetings and the like.

The communicational channel also influences code-switching. Indeed, participants fully switched the least in Version 2 with emoji. As emoji convey emotions, participants may have felt more comfortable and trusting, no matter their English level. The concept of emotional contagion (Hatfield et al., 1993) evokes how the display of emotions can spread emotions to others. Our findings imply a connection between emotion contagion (which is generally perceived face-to-face) and the virtual context through emoji. In addition, this links to language complexity, such that in written (less rich and less synchronous) communication, team members can more easily turn to external tools such as online translators to help increase their language skills, thereby avoiding the need for code-switching. Participants partially switched most in Version 3 with video calls. This reflects how richer channels creates better spaces for inclusion, as will be discussed in the forthcoming discussion section on choice of communication channel and media theories.

In turn, these two versions of code-switching influence the perception of outcomes in opposing ways. On one hand, the participant's own use of (full) code-switching leads them to perceive lower trust and team effectiveness compared to those who do not fully code-switch. This mirrors previous findings that full code-switching is problematic because it can reduce trust in the team (Harzing & Feely, 2008; Harzing et al., 2011; Tenzer et al., 2014) and other-directed resentment (Tenzer & Pudelko, 2015). Yet, our findings demonstrate that it is not only seeing others code-switch that causes these negative effects, but also the fact of code-switching oneself.

On the other hand, the participants' own use of partial code-switching in one-on-one settings makes them perceive higher trust and improved team outcomes. By promoting

acceptance of multiple languages, Bordia and Bordia (2015) encourage viewing language diversity as an advantage, more than a challenge. As such, we suggest that partial code-switching can be a means to demonstrate language inclusiveness. Language inclusiveness has been demonstrated to positively influence performance and creativity (Lauring & Klitmøller, 2017). Therefore, partial code-switching should be encouraged as a means to show openness to language diversity, while full code-switching should be avoided in the team setting.

7.6.4 Choice of interlocutor and language nodes

People tend to choose interlocutors from their native language when given the opportunity, more than interlocutors with the highest English proficiency levels. This supports the concept of “language nodes” (Marschan-Piekkari et al., 1999) that arise thanks to an individual’s cultural and language skills (Barner-Rasmussen et al., 2014). Specifically, the most beneficial language skills are those relative to the rest of the team, rather than simply absolute proficiency in the common language. Klitmøller and colleagues (2015) found that English proficiency was more important than cultural symmetries for effective collaboration, but we propose that language nodes can help overcome certain limitations traditionally linked to inadequacy in common language proficiency. These findings also expand upon the notion of language nodes in showing that when language nodes are implemented in the team, team trust increases. In other words, choosing an interlocutor from the same native language causes the individual to feel more trust in the team. Practically, managers can build teams whose members have similar language backgrounds in order to overcome deficiencies in common language proficiency.

7.6.5 Choice of communication channel and media theories

Individuals with higher English proficiency prefer richer media for team communication. These team members have been said to feel less satisfied with leaner media for collaboration purposes (Fleischmann et al., 2020). When the participant has a higher English proficiency level, this reduces overall language diversity in the team, which thereby confirms the literature that shows the value of rich media for complex exchanges in the team setting based on situations where the language diversity is reduced (Klitmøller & Lauring, 2013). However, the results of this study are inconclusive regarding situations with greater language diversity.

Klitmøller and Lauring (2013) suggest addressing languages differences with leaner communication channels.

In comparison, those with lower proficiency tend to turn towards leaner media. As identified by Tenzer and Pudelko (2016), foreign language-induced cognitive load, referring to the overwhelming effort required in using a foreign language, is an antecedent to the choice of communication channel in global virtual teams. In addition, lower proficiency team members generally feel less included when communicating through any channel, but find richer channels to be less helpful for decision-making when compared to higher proficiency team members (Fleischmann et al., 2020). Therefore, lower proficiency team members will turn to written, asynchronous means of communication in order to better direct their effort during teamwork. These means of communication integrate rehearsability and reprocessability, which Fleischmann and colleagues (2020) posit is an important extension to media richness theory in language-sensitive research.

In addition, the richer the communication channel selected, the more people felt team trust propensity. In other words, team members seemed more trusting in video calls than in email or instant messaging. This reflects previous studies which demonstrate how video calls can integrate some social presence cues similar to face-to-face that improve team member relationships (Klitmøller & Lauring, 2013).

Overall, our findings highlight the need for a mix of communication channels. Richer media improves trust, team member relationships, inclusion and satisfaction, and leaner media helps lower proficiency team members cope in a linguistically diverse environment and increases the overall level of task accomplishment (Fleischmann et al., 2020). In addition to highlighting communication channels that aid lower proficiency team members, native English speakers should pay special attention to help reduce the cognitive load experienced by lower proficiency team members.

7.6.6 Trust in a multilingual virtual team

We are generally surprised by the lack of correlations between language skills and team trust, and between international experience and team trust. Regarding language skills, we can conclude that relative proficiency is more important than absolute English proficiency for trust formation in multilingual teams, which follows Tenzer and colleagues (2014). In addition, our

results are inconclusive concerning international experience. Kassis Henderson and Louhiala-Salminen (2011) found that individuals with experience in multilingual settings were more likely to trust others and to be trusted than those who had no experiential or intellectual exposure to other languages than their own. This point remains to be further studied.

While English proficiency did not affect overall team trust, it did affect how people trust on an individual basis. Specifically, higher English proficiency meant that people chose team members with high English proficiency when responding to the questions: Who do you trust most? Who is communication easiest with? Who do you feel closest emotionally to? On the opposite side, high English proficiency did influence who the person thought it was most difficult to communicate with, but not who they trusted least or with whom they felt the least connected. We tie these results to social identity. Language is a driver of social identification (Bucholtz & Hall, 2004), and linguistic identities, which are a form of social identity, help individuals make sense of the world around them, thereby influencing how they respond to other languages than their own (Bordia & Bordia, 2015). At the same time, building a collective identity has been cited as a particularly complex challenge for multinational teams (Cohen & Kassis-Henderson, 2012; Tenzer & Pudelko, 2020). One dimension of collective identity, emotion investment, depends on trust in the community and identification with the community (Carton et al., 2021; Melucci, 1995). We believe that our results indicate this difficulty that is inherent in building a collective identity.

Interestingly, while the focus of this study was on language diversity, our results highlight some cultural differences regarding the perception of trust. The native French speakers perceived team trust the least, whereas the native Thai speakers reported the highest levels of team trust. This supports evidence that trust is both culture specific and culturally universal (Ferrin & Gillespie, 2010). In other words, average levels of trust have been shown to differ across national contexts, but characteristics related to trust such as trustability, benevolence and integrity are universally praised for growing trust (Ferrin & Gillespie, 2010).

In our findings, higher trust in the team leads to a better perception of team outcomes. This is consistent with research on virtual teams that demonstrates a positive relationship between trust and team effectiveness because trust encourages coordination and collaboration (Breuer et al., 2016).

7.6.7 The virtual context

Lastly in this discussion of the results from the serious game study, we provide evidence that accounting for the virtual context in considering language diversity and team processes and outcomes is essential. As previously mentioned, communication channels mediated two communication behaviors: language complexity and code-switching. We respond to Lockwood and Song (2020) who encouraged the study of accommodation strategies in virtual teams in addition to language proficiency.

Moreover, we look at a situation where emoji may have actually hurt trust towards a team member. The Portuguese team member, Filipa, was trusted least in Version 2 with emoji after using positive emoji in a negative situation. This demonstrates how specific communication behaviors, and in a more general sense virtuality, affect trust development. Similarly, Marlow and colleagues (2017) proposed that virtuality moderated the relationship between (early) trust and performance. As such, we encourage proceeding with caution in the thinking that younger generations who are employing more creative forms of communication, such as text messaging abbreviations or emoji, may “short-circuit cultural communication misunderstandings” (Zander et al., 2012).

Overall, the findings from this serious game study on language diversity in global virtual teams demonstrate a number of contributions to the scientific literature, many of which warrant further analysis. In addition, the findings indicate a number of managerial implications, which will be further expanded upon in the conclusion of this dissertation.

Chapter 8

Study 3: An Organizational Ethnography in a European University Alliance

The third and final sub-question is how does language diversity influence the development of team cohesion in a multilingual virtual team? While we were generally interested in furthering our exploration of socio-emotional processes in the multilingual virtual team context, this sub-question on team cohesion is explored without the presupposition of specific variables. Rather, we take a more open stance in order to be open to the possibility of other influences at play. The intent was to go and see what actually happened in the field, question the actors involved and explore the question from a more grounded perspective.

In order to further understand language diversity in professional, virtual contexts, researchers call for an investigation of the influence of technologies on knowledge sharing and mutual understanding in cross-language encounters, as well as a greater attention around the effects of language on team dynamics and performance (Karhunen et al., 2018; Li, Yuan, Bazarova, & Bell, 2018). One team dynamic worth pursuing is team cohesion. Team cohesion is interesting because it can be considered both a team dynamic as it is a socio-emotional process (Powell, Picolli, & Ives, 2004) and a team outcome (Hackman, 1987; Neeley, 2021). Therefore, it should be explored based on a processual or temporal approach.

In the spirit of constructive and positive intercultural management (Barmeyer, Bausch, & Mayrhofer, 2021; Stahl & Tung, 2015), we aim to better understand how language diversity influences the development of team cohesion in the virtual context by exploring how language diversity acts as both a barrier and an enabler of team cohesion. To answer this question, we conduct an eighteen-month ethnography study of a multilingual virtual team in a European university network. The team's goal to promote multilingualism and multiculturalism helps us understand how language diversity can be implemented, as well as where teams (even ones that believe in the benefits of multilingualism) struggle. Within this network, we observe how teams function, how team member relationships evolve and how team members translate their individual feelings of cohesion within the multilingual GVT context. The analysis focuses on the team level, while also taking individual impressions into account. The results reveal how

language diversity influences the dimensions of team cohesion in different ways throughout the team's life-cycle. Language diversity acts as both a barrier and enabler during different aspects of the teamwork based upon the team member's attitudes and team communication norms. The results aim to demonstrate how language diversity, an inherent characteristic of GVTs, can be leveraged towards more cohesive teams and therefore more effective teamwork.

This chapter is presented in three sections:

Section 8.1 describes the organizational ethnography methodology and sample.

Section 8.2 presents the findings through the evolution of the team over the course of 18 months.

Section 8.3 reconsiders the findings through the lens of barriers and enablers of the development of team cohesion.

8.1 Methodology: Organizational ethnography

8.1.1 Research design

This study is based on a (mostly online) organizational ethnography of a working group within a European University Alliance. Following the inductive and exploratory study, the researcher entered the field with a stance of openness in order to better understand the relevance of language diversity in the team under study. The researcher's stance of openness was key as it let her be "surprised by the field" and thereby let the research question emerge from the field itself (Livian & Mitev, 2019, pp. 102–103).

After an initial period of discovery and an initial round of thematic coding of the data, the researcher returned to the field with the concept of team cohesion more concretely in mind. During this time, the researcher continued to maintain a stance of openness, but focused more specifically on aspects related to the different dimensions of team cohesion such as task cohesion, social cohesion and belonging (Salas et al., 2015). Sensitivity towards the context was key as context is in a "reciprocal relationship with language," such that context both affects and is affected by language (Karhunen et al, 2018).

Ethnography was chosen as it involves fieldwork methods meant to engage the “extraordinary-in-the-ordinary” with actor-centered and context-sensitive analysis and theorizing (Yanow et al., 2012). With its focus on social practice, this was meant to understand the intricacies of “how things work” (Van Maanen, 2011), by becoming an actor in the field (Sall & Mitev, 2019). Ethnography has been identified as having potential for multilingual studies because it can allow the researcher to better understand how languages are fluid and used and created within a specific context (Karhunen et al., 2018).

Consistent with organizational and online ethnography, fieldwork consisted of a combination of observation, talking to people and studying artefacts within an organizational and online setting (Rahm-Skågeby, 2011; Yanow et al., 2012). Participant observation in weekly online team meetings and in two Alliance-wide in-person events over the course of eighteen months allowed the researcher to become completely immersed in the field in order to understand “the common sense, everyday, unwritten and unspoken, tacitly known ‘rules of engagement’ used by situational ‘natives’” (Yanow et al., 2012). This participation can be characterized as overt, since the team under observation was aware of the researcher’s role (Livian & Mitev, 2019).

Semi-structured interviews with members of the team and other outside members in the larger organization was a means to explicitly evoke individual perspectives and emotions.

Finally, material artefacts included research-relevant texts such as email correspondence, collaborative documents, organizational presentations and websites, and written work produced by the team. Comparing observations made within the field and official documents produced by the organization can prove to be beneficial to gain a greater understanding of the topic (Livian & Mitev, 2019).

8.1.2 The research setting: Team Diversity

Following the European Commission’s call for European University alliances in 2019,¹¹ one such alliance with teams from seven European universities is collaborating on training programs, student and staff mobility (both physical and virtual), and innovative pedagogical

¹¹ For more information about European Universities: <https://education.ec.europa.eu/education-levels/higher-education/european-universities-initiative>

methods. In doing so, they work towards a common goal: creating a European inter-university “campus” that fosters excellence, innovation and inclusion. As such, diversity is key and can be seen in the transdisciplinary and transnational teams working towards these common goals.

The Alliance is organized with ten teams and further sub-teams with members representing the different universities. One sub-team that was established in February 2020, the focus of this study, addresses and promotes linguistic and cultural diversity within the network. The primary team of interest, henceforth “Team Diversity” for its work on linguistic and cultural diversity, is a project team working towards a common goal and consisting of about eighteen members that are representative of the network’s diversity (Chevrier, 2012). The team is characterized as a project teams, defined as “groups that perform a defined, specialized task within a definite time period, and whose members are generally cross-functional and disband after project termination” (Chiocchio & Essiembre, 2009, p. 392). Linguistically, team members all speak at least two languages: English and their first language, which is often, but not always, the language of their home university. The vast majority speak numerous additional languages at varying levels. For means of illustration, we could talk about team member P8 who feels to be a good representative of the Alliance as she speaks or understands five of the eight Alliance languages, in addition to her native language, English.

Team Diversity was a good fit for this study because of the richness of the team’s language diversity and their belief in the positive aspects of language diversity despite the fact that they only use English as a common language. The field researcher thought it interesting to explore this paradox between the team’s belief in the positive aspects of language diversity, but not using multilingualism within the teamwork. In addition, the team’s goals of promoting multilingualism and multiculturalism coincide with the researcher’s background and interests. Specifically, the field researcher is a native speaker of English, has experience teaching English as a foreign language to adults, but she is fluent in French and participates in the Francophone research community (for an explanation of differences between the Anglophone and Francophone research communities, see Santistevan & Karjalainen, 2015). This was key because it gave the researcher access to the field, and it allowed her to become immersed in the team’s work and contribute to the team’s goals, thereby discovering what happens as an actor in the environment. The team was informed of the general research goals at the beginning of the collaboration.

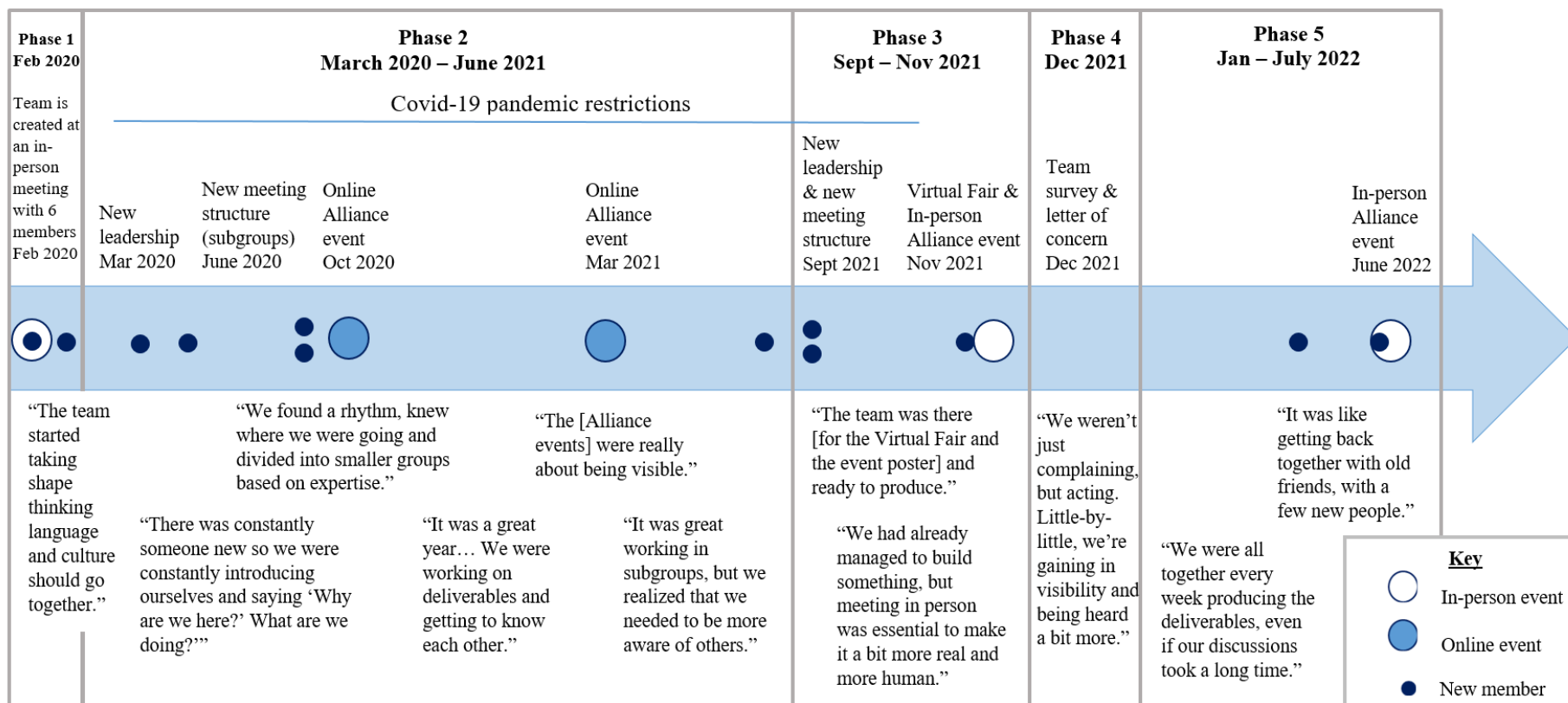
Table 57: Team members regularly participating in "Team Diversity"

Interview Code	Organizational & Team Role	Role at institution	Country Location	Native Language	Additional spoken languages (above beginner)	Dates of participation (present = October 2022)
A7	Team member	University Teacher in Intercultural Communication (ICC)	Finland	Korean	English	September 2021 - present
A8	Team member	English language lecturer and Writing Clinic service coordinator	Finland	English	Finnish French	September 2021 - present
C3	Team member	Responsible for language course organization and certification	Spain	Catalan and Spanish	English French	September 2020 - present
D1	Former team member	Executive assistant	Germany	Germany	English French	September 2019 - May 2021
D12	Team member	Master's student in Applied Linguistics	Germany	German	English Italian Spanish	November 2021 - present
D15	Team member	Research associate and PhD candidate at the department of Linguistics/Multilingualism.	Germany	German and Russian	English	April 2022 - present
D16	Team member	Co-director of language resource center / research associate at the department of Linguistics/Multilingualism	Germany	German	English, French	June 2022 - present
G2	Former team coordinator, Former sub-team leader	Retired	France	French	English Italian Spanish Russian	September 2019 - May 2022
G9	Institution's steering committee, Team coordinator, Sub-team leader	English teacher for engineers and head of language learning and teaching projects	France	French (Canadian)	English Russian	November 2019 - present
G11	Former team member	Master's student and employee of the University Alliance	France	French	English Spanish Arabic	February 2020 - June 2022
K1	Sub-team leader	Associate Professor at KTH Language and Communication, Director of Studies, and Programme Director	Sweden	Swedish	Chinese English Norwegian Danish	Early 2020 - present
L5	Team coordinator, also participates	Managing Administrator of the International Office	Portugal	Portuguese	English Spanish	April 2020 - present

	in another team					
P1	Team member, also participates in another team	Administrative staff	Italy	Italian	German Chinese English French Spanish Turkish	June 2020 - present
P2	Team member, also participates in other teams	Project manager	Italy	Spanish and English	Italian Catalan French	February 2020 - present
P3	Team member, also participate in another team	Language Centre coordinator, Member of the teaching and language lab	Italy	Italian	English French	February 2020 - present
P8	Team member	English language instructor	Italy	English and Spanish	Italian Swedish French German Catalan Portuguese Dutch	Early 2020 - present

In addition to the multilingual nature of the team, the team is also highly virtual in its interactions (see Martins et al., 2004 for a discussion of degree of virtuality). Given the team members' geographic dispersion, virtual work has been essential since the network's creation. From the beginning of the covid-19 pandemic and until late 2021 when the alliance organized an in-person event, most members had never met in person. Rather, the alliance operated exclusively online through email, video conference meetings and an online platform for shared documents. In June 2022, the alliance organized a second in-person event, which provided a means of observing the evolution in teamwork and team cohesion. Figure 27, elaborated during discussions with the team's leader, illustrates the main phases and events marking the team's life-cycle.

Figure 18: Timeline of the team’s interaction from February 2020 to July 2022 (elaborated through discussions with the team leader)



8.1.3 Data collection

Data collection consisted of participant observations, semi-structured interviews and consultation of shared, collaborative documents and public documents (see Table 58). Multiple data sources allowed the researcher to explore perceptions of team cohesion at both the team and individual level and across multiple times during the life of the project.

Participant observations where the researcher took field notes of relevant information were conducted from May 2021 to October 2022. They allowed the researcher to observe actual behaviors in virtual team interactions over a significant period of time in the life of this group (Tenzer & Pudelko, 2015; Tenzer et al., 2017). The observations focused on how members spoke about the network and its goals, how members worked together and the communication strategies they employed which made the team more efficient or more cohesive. By participating and interacting with the team with their chosen online services and applications for teamwork, the researcher came to understand how the team used different online tools (Rahm-Skågeby, 2011). As a contrast to the online observations, in November 2021 and June 2022, the researcher participated in in-person events for all members of the alliance.

After an initial observation phase lasting approximately seven months to understand the context, or as Van Maanen (2011, p. 220) puts it, “a good deal of child-like if not blind wandering about in the field”, continued participant observations and interviews allowed the researcher to go in more depth by learning about individual perceptions and understandings of the teamwork. Qualitative, semi-structured interviews were selected because they allow better understanding of subjective perceptions. Team members were asked about their interpretation of the Alliance’s and the subgroups’ goals and values, sense of belonging to the group, communication difficulties and techniques and overall feelings towards the group and about teamwork. While the main focus was on Team Diversity, additional interviews were conducted in conjunction with another researcher with individuals throughout the Alliance as a means of comparison. Semi-structured interviews took place just after the first in-person event in November 2021. More informal, follow-up interviews also took place during the second in-person event in June 2022 to discuss any evolutions.

Interviews were conducted in English, except for one interview with team member G2 that took place in French. While previous research highlights the benefits to interviewing in the interviewees native language (Welch & Piekkari, 2006), the interviewer did not possess the language skills to interview in the numerous native languages of all the team members, which

is a limit expressed in other language-sensitive research (Kroon et al., 2015). However, interviewees were encouraged to use words or expressions from languages other than English when it felt more natural, when a word from a specific language best embodied the concept, or when they had difficulty expressing themselves. In this way, interviews took on a multilingual component with interviewees employing specific words or expressions in order to get their point across: “I am a very, very convinced European, and I am a very, very convinced *citoyenne* of this world” (D1), “I think it's a project *d'envergure*” (G11), “She would be less in charge of work. We'd feel more *implicado*” (C3), and “*das ist eine Frechheit!*” (D1). Even in the interview in French with G2, a number of English words that had become common vocabulary in the University Alliance context were employed, “Donc sur le *spatial chat*, pour faire la *Virtual Fair*, c'était aussi quelque chose de nouveau qui m'a bien amusée aussi, parce que c'était aussi des *challenges*.”

In addition to observations and interviews, the researcher also consulted material artefacts as a means of understanding how the team fit into the larger context and viewing how the team communicated and worked together. Artefacts in this study include email correspondence, collaborative documents, organizational presentations and websites, and written work produced by the team of interest. The data collection sources are summarized in Table 58.

Table 58: Data sources collected between May 2021 and June 2022

Source	Number
<u>Interviews</u>	
Individuals from Team Diversity	14
Individuals from other teams in the Alliance	11
<u>Observations</u>	
Team Diversity meetings (weekly, 2 hours on average)	48
Other team meetings (sporadically)	6
Network events (twice a year for 3 consecutive days)	2
<u>Artefacts</u>	
Emails (selected)	20
Collaborative documents	22
Organizational presentations and websites	4
Conference paper written by Team Diversity members	1

8.1.4 Data analysis

Data analysis took place in three main steps: thematic coding inspired by an emergent approach (Gioia et al., 2013), then a more deductive coding incorporating Salas and colleagues' (2015) dimensions of team cohesion, and a last step focusing on the temporal aspects of the teamwork. During all steps, the role of virtuality and language were highlighted.

After uploading observation notes, interview transcripts and other collected documents to NVivo software, the researcher conducted a first round of detailed thematic coding. This first round remained true to the terminology and wording used by the team members, and thereby could be characterized as “open coding” (Locke, 2001 in Tenzer & Pudelko, 2016). In line with the interview guide, this first step revealed similarities and differences in interpretations of the Alliance's and the subgroups' goals and values, sense of belonging to the group, communication difficulties and techniques and overall feelings and emotions connected to their teamwork.

In a second step (see Table 59), the researcher incorporated the multidimensional aspects of team cohesion by reorganizing the first-round themes into the five main cohesion dimensions including task cohesion, social cohesion, belonging, group pride and morale (Salas et al., 2005). This second step revealed a great number of factors related to team cohesion, which was helpful to establish understanding of the concept, but many factors were beyond the scope of language diversity.

A third and final step reorganized the data into a processual view. In this way, we were able to observe subtle changes in communication norms and expressions of team member feelings. Throughout the final step, we analyzed where and how language, language diversity and communication intervened throughout the life of the team.

Table 59: Cohesion dimensions and coding themes

Cohesion dimension	2nd order themes	Language as the team’s objective or their experience?
Task cohesion	Belief in goals, working towards same goal at both organizational and group levels	Language as objective
	Perception of group’s commitment, engagement, and investment	
	Helping and supporting each other to achieve goals	
Social cohesion	Connecting & relationship building	Language as experience
	Likeness (similarity)	
	Trust, psychological safety and acceptance of each other	
Belonging	Sense of community, feeling part of something bigger than oneself and liking each other	Language as objective and experience
	Importance of frequency of communication, of in-person communication, of getting to know each other on a personal level	
	Group vs. organizational belonging	
Group pride	Reinforcing the team’s ideologies	Language as objective and experience
	Group accomplishments	
	Us vs. Them	
Morale	Enduring frustrations: within group or caused by organization or institution	Language as objective and experience
	Marginalization and others’ lack of understanding or belief in team’s goals	
	Loyalty, “sticking up for each other”	

Table 60: Team Cohesion dimensions across five team phases

	Phase 1: Formation (virtual and face-to-face)	Phase 2: Finding a rhythm during the pandemic (virtual only)	Phase 3: New leadership and meeting in-person for the 1st time (virtual and face-to-face)	Phase 4: Struggling with being visible in the Alliance (virtual only)	Phase 5: Working as normal and seeing old friends again (virtual and face-to-face)
Task Cohesion	Minimal task cohesion begins with the establishment of team goals	Task cohesion is established early and continues to grow with weekly meetings and subgroups to approach various tasks.	Task cohesion tested with confusion around how the team’s goals fit into the Alliance’s goals, but remains strong thanks to active and supportive members.	Task cohesion is reinforced by members being encouraged and supported by each other, but confusion and feeling overwhelmed by the Alliance’s goals continues.	Task cohesion continues, but some inconsistencies are revealed as long meetings take a toll and the team questions their understanding of their goals.
Social Cohesion	None	Social cohesion starts shortly after task cohesion as team members start to relax and allow space for more informal communication.	Social cohesion is boosted by in-person interaction where team members demonstrate acceptance and build individual relationships during informal communication.	Being back online reveals some inconsistencies in social cohesion when individuals who did not participate at the in person event reveal they don’t feel as if they really know their team members.	Social cohesion is reinforced again in-person over meals with more team members.

Belonging	None	A sense of belonging grows among the core team members who are the most active.	Team members' sense of belonging grows and then is boosted by the change in leadership and the in-person event. Team members that were absent from the in-person event do not feel as much sense of belonging.	Belonging grows in the team in general (despite some individual variation) as the team performs a SWOT analysis and sends a letter of concern, which clarifies their desired role in the Alliance.	The team feels a strong sense of belonging as if like 'old friends' or 'at home,' with a couple new people.
Team Pride	None	A small sense of team pride begins as the team works to become more visible by participating in two online Alliance events.	Team pride grows slightly as the team produces material for Alliance events, which makes them proud of their accomplishments.	Team pride is tested when the team feels that their accomplishments are shadowed by their difficulties of being heard and seen within the Alliance.	Team pride grows as the team recognizes that they are different from other teams and have a lot to offer. They believe their team cohesion is visible to others at the Alliance in-person event.
Morale	None	The group keeps a positive attitude as the pandemic is underway. Loyalty develops with the common struggle.	Morale grows, but is tested by the Alliance and organizational difficulties.	Morale continues to be tested by organizational difficulties and feeling heard and seen within the Alliance, but the marginalization brings the team together.	Morale continues to be tested as newer team members feel more implicated than ever, but other team members start feeling disenchanted.

8.2 Findings on team cohesion in a European University alliance

As demonstrated with the timeline of the team's interaction, the team experienced five phases of teamwork, each corresponding to different compositions of how teamwork was organized, leadership styles, level of virtuality and new members. Within each phase, language diversity acts as a barrier and an enabler to the development of team cohesion. In addition, the five dimensions of team cohesion also develop and are influenced in different ways by language diversity and virtuality.

Phase 1: Team formation

The European University Alliance officially launched in late 2019. In its proposal, multilingualism was written to be “an integral part” for students with a goal of “flexible multilingualism” to include English and local languages of the partner universities for student instruction (project proposal, 2019, p. 5). Yet, English was chosen as the Alliance's official working language (project proposal, 2019, p. 8). The team providing language courses, tandems and tools was placed in the support services division. However, this structuration quickly changed.

Those involved in the project met for the first time in February 2020. There, people working on language and culture (a different subgroup in the project proposal) found their goals to coincide and decided to bring the subjects together in Team Diversity. This included six of the original members of the 2022 team. One member (who would later become team leader in Phase 3) recounts their first meeting: “*There were these people around the table, and in the first hour, I started feeling ‘Yes, we can work together.’ And I was looking at the people who were in my own subgroup, of course, and I started feeling good. I said, ‘OK, OK, we can go somewhere’*” (Itw.G9). She saw cohesion grow around the task as team members shared their ideas about language and culture. They united over their professional interests: “*The people, sharing common goals and common goals about language learning and intercultural communication, understanding, and this is something that has always interested me. So I'm with a group of people who share these similar type of interests, so it's excellent*” (Itw.G9). In addition, the team members' multilingual and multicultural backgrounds would help to achieve their goals because, as she says, “*how can we build a European university if we ourselves are not mixed? If our group is not a mixed group?*” (Itw.G9). Finally, in conclusion to this in-

person meeting and despite knowing very little about her counterparts, the team member began to feel *“a few connections, very good connections”* (Itw.G9), foreshadowing social cohesion.

Phase 2: Finding a rhythm during the pandemic

The beginning of Phase 2 coincided with the worldwide shutdown as covid-19 crept across the globe. The team expanded as new members joined, such as team member K1 who heard of the whole initiative after the start of the project and felt that his department should be involved. The team started meeting regularly online. Like many others throughout the world, they quickly learned about online video call software and its different features, such as simultaneously using video and chat. Multilingualism was present, for example in greetings, but otherwise often hidden in one-on-one chats where members asked for clarification or shared information (Itw.C3). English was reinforced as the Alliance’s working language as it acted as a gatekeeper to participation. In one instance, it resulted in an expert from a partner university being *“excluded because her level of English was not good enough. She quit. Sadly. She was very valuable, but she couldn’t follow the conversation”* (Itw.C11).

Team structuration evolved as subgroups were created to accomplish their tasks. The subgroups were effective in helping the team gain visibility in the Alliance. Another team member describes her pride of the team and how the team’s diversity contributes to its effectiveness: *“I like to see that despite our differences, we share many things in common and we can get to a common understanding of things, and we can have common targets or interests and work together to achieve them. And yet it’s spicy. It gives a special touch to look at it from different perspectives and even different cultural backgrounds. And it makes it more interesting I find and more rich”* (Itw.C3).

Leadership during Phase 2 was directive, asking for reports and organizing meetings with rather strict schedules (i.e. concentrating on task cohesion). It was especially during meetings which the leader did not attend that team members started taking time to share, discuss and joke, which was a highlight of the team meetings for team member A2. Team members began making real connections (i.e. social cohesion). They especially connected over common professional and personal interests as well as their backgrounds, such as a multilingual upbringing. The virtual aspect did not hinder these connections, but reinforced them during the pandemic as described by one person who saw the team more than her family who lived far away (Itw.G11), which created a personal sense of belonging to the team.

By combining frequent meetings with the opportunity to connect over their shared interests and backgrounds, accomplishing their shared objectives and gaining visibility in the Alliance, the team began to feel a sense of belonging. As one team member sums up, “*we started meeting very regularly quite quickly, and little by little, we got to know each other. Quite early on, in the fall [of 2020], I think we started feeling there was a group there. But no, it didn't happen instantly*” (Itw.G9).

Phase 3: New leadership and meeting in-person for the first time

Phase 3 started in summer 2021 with a change in leadership when the leader left and a subgroup leader took over. Her approach was more participative, always asking for consensus and discussion in the online meetings. This approach along with the fact that the team strives for precise English terminology and common understanding made for long discussions. Sometimes this resulted in frustration when “*sometimes we don't have much time, and some meetings we discuss a lot just to stay at the same place, or we decide something in one meeting and then in the next meeting someone has a different idea, and then we start discussion all over again*” (Itw.L5), but overall team members recognize this continual discussion as positive and necessary for their task cohesion. Also, despite any linguistic or cultural barriers that exist, they developed group pride because they recognized, “*we are moving forward and we are doing something,*” which is very gratifying and positive (Itw.G2).

This phase was also characterized by members finding inspiration in others who appeared to be engaged and committed to achieving their common goal, even while feelings of confusion and being overwhelmed arose around the Alliance’s overall goal. As one person expressed, “*There are times when I feel it's too big. But the people around me who seem to be ready to carry on doing it... And other people around seem to believe in it and seem to believe that we can do something*” (Itw.G9). This increased morale. Yet, others observed that commitment and engagement was individual such that “*some people, usually the same people, are very active and some are very mute*” (Itw.C3) or as another person says, “*you get the image that some people are sort of more central to this enterprise than others*” (Itw.K1). Lack of sufficient language skills is one explanation among a myriad of reasons that could explain varying participation and engagement.

English continued to be privileged over multilingualism. Instances of multilingualism tended to be in greetings at the beginning of meetings (both helping to develop and resulting

from social cohesion), in one-on-one or small group situations where all members speak a language other than English and, rarely, to help someone understand an important point (task cohesion). A team member explained, *“that power of English somehow has a kind of side effect that we actually don't truly endorse the multilingualism because we just rely so much on English”* (Itw.A7). Similarly, some team members have noted awareness of a power imbalance between native and non-native English speakers. While some point out that they learned new words from the English speakers (Itw.L5), others felt less secure and took more time to prepare in this setting, thereby having a negative influence on morale and possibly task cohesion (Itw.D8).

This resulted in a disconnect between the work being carried out by the team and how they functioned as a group, specifically in that they did not use multiple languages in the way that they promoted them. After one isolated example of multilingualism at the in-person event, one team member shared, *“I liked it because for heaven sakes, we're [Team Diversity]. I like it when I hear sometimes other languages being sort of thrown about. I think it's also who we are, that we are what we actually are doing or working on. We're not just one culture or one language”* (Itw.A8). It seemed to be a real challenge to actually implement the use of languages within their team as they would like to do within the alliance and their home universities. However, national languages seemed to be considered, albeit in a subtler way. A native English speaker who also speaks French admitted, *“maybe just once or twice, I've almost subconsciously chosen words that are closer to the French, so I know she'll pick it up immediately, just in case she's not listening, even though her English is very good”* (Itw.A8).

The end of Phase 3 (November 2021) is notably marked with the second in-person event for the team, but by then, the composition was very different and many new people had joined the team. Team members recognized that the meeting was not necessary for task cohesion because it had already been established in the online context: *“We were already a solid group after working a year and a half together. We were a cohesive group and so we meet there, and we were so productive”* (Obs.P8). Yet, while team members did bond online, it felt *“just essential to be together and to be with the real people”* (Itw.G9) to grow social cohesion and belonging. By the end of the event, one team member recounted how she felt more connected to her team members in this European University Alliance than with those at her home university due to the frequency with which they interacted during the pandemic and the reinforcement of their relationships in person (Itw.A7).

In exploring belonging with the team members around this time, multiple expressions of belonging emerged. The most common was “family” or “home” which underlined a similarity or at least familiarity between individuals: *“I mean this is a multicultural, multi-linguistic group, where I already feel at home, perhaps because of my background, but to me that's the norm”* (Itw.A8). Other common expressions of belonging included “European,” “friends,” and “Team Diversity-er” (name changed for anonymity). “Team Diversity-er” is also one example of “team speak” that emerged and that demonstrated the team’s cohesion.

At the same time, some members felt that not enough had been done to get to know each other. This was largely attributed to the virtual context and the lack of time for personal discussions at the event. One member shares, *“I share a group with people who I've never talked to and I don't know anything about, and it's probably the same the other way around... to know the more personal side of us, the human side of it... would help us to feel more connected for the work to do, and [a bit] more participative in the meetings maybe, and feel more implicated”* (Itw.C3). Team members expressed an interest in learning about each other’s linguistic and cultural backgrounds, expertise and university contexts.

Phase 4: Struggling with being visible in the Alliance

Phase 4 lasted approximately one month in December 2021, but represented a turning point for the team when they wrote a letter of concern to Alliance management to express their frustration. The group did not feel like they were being taken seriously or that others understood the implications of their mission of promoting language diversity. As the team leader explained, *“our group has written a letter of concern because we feel that we're told that multilingualism is necessary, multiculturalism is necessary, but we keep raising our flag saying, ‘You need to come to us. We need to do something about this. We're not being approved.’ So this idea of letter of concern is to write black-and-white, ‘Something has to be done’”* (Itw.G9). Likewise, a newer member assumed the frustrations of the group and discussed the group’s morale by explaining, *“I think it's very, very important to endorse and advocate diversity. That's one of the key values. Apparently, we're unhappy about whether that value has been actualized”* (Itw.A7).

Despite difficulties linking the team’s goals with the Alliance’s ones, the team did seem to bond over the belief that their team’s goal, compared to other teams, was of great importance: *“Well, I think that our goals, especially from our group, are really important and especially*

multilingualism. I feel like it should be more present in Europe” (Itw.D12). Another team member shared, *“we are sort of promoting linguistic pluralism in another way that other task forces may not be doing”* (Itw.K1). This “us” versus “them” mentality regarding the use of languages created a divide between the team and the rest of the alliance, and yet it reinforced belonging as team members banded together to stand up for what they believe in. Even so, the same team member admitted that the European ideal of “united in diversity” probably *“goes for a lot of people”* (Itw.K1).

Phase 5: Working as normal, seeing old friends again and starting to feel disenchanted

Echoes were felt from Phase 4 as the team continued to feel unheard, yet this, they acknowledged, could also be attributed more largely to the professional culture. As such, languages and cultures were not recognized in the way that the team would have liked: *“You feel that... working with language and communication and cultural issues, you're somewhat marginalized in the setup”* (Itw.K1). One team members expresseed this same notion in a positive light to increase morale, referring to the team as *“underdogs”* (Itw.A8). In line with this struggle, three team members co-wrote a conference communication outlining the difficulties of implementing multilingualism and multiculturalism in a technical European University Alliance.

Despite feeling disenchanted with their work not being recognized, one team member reflected on how multilingualism was (and actually had always been) a part of the group with its influence on task cohesion. While team members spoke English, they could help each other by accepting that *“nobody is expected to speak perfectly, to get rid of their own accent”* (Itw.D12), as long as they can get their point across. In addition, the multilingual character of the team was acknowlged because *“you could also say a word in another language, and somebody else might translate it to English”* (Itw.D12).

Likewise, the team also recognized that the multilingual and multicultural character of the team led to openness and acceptance, positively influencing all team cohesion dimensions. One person explained the difference between the benefits of multilingualism and multiculturalism for the group, saying that *“I think the multiculturality might make the environment more open and make the people more open to behavior that might not be what they're used to. So, I think that that part is more about accepting different behaviors and*

different things. Then, the language is more about maybe accepting that somebody doesn't speak perfectly, that they're trying to get what they want to say. So, it's more on a linguistic level" (Itw.D12). Acceptance can be linked to diversity such that the team accepted and accommodated different English levels and took pride in the diverse linguistic and cultural backgrounds of its members. The team worked to accommodate the different working and learning styles, but also possibly language differences, of its members, for example, with one member proposing to take a moment to *"think with my fingers"* when approaching a difficult task (Obs.K1). This acceptance also led towards trust in each other.

A notable event that concluded this phase is an in-person Alliance event. Team members described this event as if *"getting back together with old friends, with a few new people"* (Itw.G9). At the in-person event, the group embraced some untranslatable words, like *fika* from the Swedish, which refers to a sort of social coffee break. Another essential outcome from the event related to the team's goals. Before the event, there seemed to be consensus around the idea of promoting and creating opportunities for multilingualism and multiculturalism. And yet, almost 2.5 years into the project, at an in-person teambuilding activity, a red flag was raised when team members expressed concern that *"in this group we haven't agreed and we haven't defined [multilingualism and multiculturalism]"* (Obs.P8) insofar as to what language diversity meant for the team's final, concrete outcome. In other words, the team's task cohesion was called into question. While this came as a shock to some, thankfully it was not too late to address this question before the next Alliance phase when two more university partners were preparing to join the project.

8.3 Discussion on language diversity and team cohesion

This study considers how language diversity influences team cohesion in the virtual context. The team that is being considered is quite a singular case because not only are the team members multilingual, but their common goal also relates to promoting languages and cultures. Within this team, language diversity acts both as a barrier and as an enabler to building team cohesion. These aspects are explored in more depth in the next sections. Finally, we discuss some of the side effects of language diversity and how this team was able to support language diversity between themselves.

8.3.1 Language diversity as a barrier

The power of English

Despite theoretical acceptance of all languages, there exists a dominant power of English. This is due, in part, to the official acceptance of (only) English as the Alliance's working language. This corresponds to the struggle to implement multilingualism and multiculturalism in technical fields, where an 'English is enough' attitude prevails (Kjellgren et al., 2022). So, it is true that having a common language is not only convenient, but necessary. Some individuals like having English as the working language because it helps improve their English skills. Yet, others who have lower proficiency or comfort in using English can experience a range of intense emotions as a result of language asymmetries (Hinds et al., 2014) and appear less competent to their counterparts (Li et al., 2018), which can ultimately lead to their exclusion. We further argue that these language asymmetries can also prevent relationship building (i.e. social cohesion) due to the difficulties in expressing oneself in a foreign language. Ultimately, the power of English results in the side effect that language diversity is not truly endorsed.

The difficulty of implementing multilingualism

Multilingualism is difficult to implement in highly-diverse teams, especially when there is no common language besides English. While scholars believe a multilingual approach is the best solution for multilingual and multicultural teams, it is also the most difficult language approach to implement (Chevrier, 2013). Similar to how language barriers have been addressed in the literature (Harzing et al., 2011), implementing multilingualism depends on multiple levels: individual, team, organization and professional. At the individual and team level, it requires individual skills and team communication norms that integrate the multiple languages. The organizational and professional levels must also provide support for multilingualism to be implemented and accepted in a larger sense. Tensions between the team and organization were reflected in Team Diversity's letter of concern and feelings of being marginalized and unheard. This could have serious consequences on morale, but in this instance, the team's feeling of being "underdogs" and fighting for their strong beliefs in the power of language diversity made the team proud of their small accomplishments.

8.3.2 Language diversity as an enabler

Acceptance and the benefits of diverse perspectives

Language (and cultural) diversity creates a richness and openness where the group can better achieve its objective thanks to more diverse perspectives and acceptance of each other. This is in line with Mannix and Neale's (2005) findings that underlying differences resulted in higher performance because diversity facilitates creativity and group problem solving. There is a pride around this diversity, seen through qualifications such as “*enriching*” (Itw.D1) and “*spicy*” (Itw.C3), as well as social cohesion thanks to acceptance of and interest in each other. Belonging develops as team members come to feel at home in a group that reflects and accepts their diversity. Belonging is increased in the face-to-face context where (especially cultural) diversity becomes more visible. Thanks to the diversity, we see how language and communication dynamics are driving forces for international teamwork in the same way that Charles (2007) sees them as driving forces in global business.

Regarding the team's working language, previous findings on multilingual virtual teams showed BELF is essential to accomplish goals, but limited multilingualism connects team members by highlighting their diversity when used for team greetings or less formal communication (Taylor, 2021). BELF increases task cohesion, while multilingualism has a greater influence on social cohesion.

At the same time that language diversity creates richness and openness, the virtual space can provide different spaces for a team's varying needs with varying spaces for discussion and brainstorming in both oral and written forms. Thereby, team members can “think with their fingers,” which has been shown to be beneficial for linguistically-diverse teams (Klitmøller & Luring, 2013). This coincides with Gilson and colleagues' (2015) view that the virtual setting harnesses diversity while increasing creativity within a team. Thus, if we consider Harzing and colleagues (2011) proposition of switching communication channels as a means to solve the language barrier, we can further propose that varying communication channels depending on the task also promotes team cohesion and effectiveness within multilingual virtual teams. However, we do recognize the limits of the virtual context which restricts social communication, and therefore team cohesion (Karjalainen & Soparnot, 2010) because meetings are “work time” and too much socializing is not seen as appropriate.

Uniting in diversity

“United in diversity” is the motto of the European Union. As the EU explains, “it signifies how Europeans have come together, in the form of the EU, to work for peace and prosperity, while at the same time being enriched by the continent's many different cultures, traditions and languages” (*EU Motto*, 2022). The team takes pride in their diversity, going so far as to distinguish themselves from other groups. They are thus united in *their* diversity, finding pride in their otherness, which even on the individual level, does not seem to fit into one national culture.

8.3.3 Barrier or enabler? The side effects of language diversity

This final section discusses the side effects of language diversity, which can often waver between barriers and enablers based on how they are approached. For example, the team spends a significant amount of time discussing definitions and finding the correct wording in their productions. At first look, this may seem to make the team less efficient. However, in reality, the team could arguably be more effective than teams that do not take the time to do this. Even when in a team where all team members share the same native language, misunderstandings can arise when perceptions are different. By addressing different perceptions, this multilingual team increases their shared understanding and thereby task cohesion.

Team members can use their language skills to help increase understanding through quite practical means. In one example, the team member chooses words closer to the native language of her interlocutor. In this way, BELF is not only “a variety of discourse practices originating from the speakers’ mother tongue”, but also from their interlocutor’s (Kankaanranta & Planken, 2010). Indeed, BELF is not “cultureless” (Charles, 2007), but this should be considered by both those sending and receiving the message, which seems to have been unaddressed in previous literature.

Lastly, we could also address multilingual “team speak” (coming from the concept of “company speak,” which is a register of language similar to national languages, but in professional settings; Church-Morel & Bartel-Radic, 2016; Welch et al., 2005). Like inventing a special term for a Team Diversity team member, or taking on specific words from national languages, such as *fika*, “team speak” demonstrates how language is fluid and closely related to the team’s processes (Angouri & Piekkari, 2018), thus a product of social action (Karhunen

et al., 2018). Therefore, “team speak” emerges during the development of team cohesion and is reinforced by the team’s success.

Conclusion to Part 3

Part 3 includes three studies on language diversity in global virtual teams.

The first study was exploratory in nature and addressed the general research question. Through 20 interviews of team members and managers of multilingual virtual teams, a number of communication strategies that are employed by such teams were identified. In addition, this exploratory study set the stage for the following two studies that each focused on a specific team process: trust and team cohesion.

The second study addressed two sub-research questions through the implementation of an experimental serious game. First, players' behaviors within the simulation were observed. Then, the players' perception of trust was analyzed in conjunction with the player's profile and communication behaviors. Ultimately, team effectiveness depends on the appropriate use of communication strategies and the development of team trust.

The third study explored team cohesion through an organizational ethnography. By becoming a part of a multilingual virtual team, the researcher was able to inductively identify how language diversity played an important role in team cohesion. Different aspects of team cohesion were reinforced through the use of a common language and the support of additional languages by the team members.

CONCLUSION

General Discussion

This dissertation explored the question: *how does language diversity influence team processes in global virtual teams?* Overall, we propose that communication processes must be carefully managed in order to create trust and team cohesion, which are essential for high-performing teams. As shown by the results of the three studies, communication is influenced by individual language characteristics, norms and behaviors which are informed by the team's collective diversity. Specifically, Study 1 highlighted the importance of choosing a team functional language, choosing appropriate communication channels based on the team's configuration and message purpose and recognizing the role of team-centered language nodes based on their language skills. Study 2 demonstrated how individual language characteristics informed who used what language management strategies and when. The behaviors that were especially influenced by English proficiency level included language complexity, code-switching and choice of communication channel. Study 2 also showed how team-level trust varies from trust in specific individuals in a multilingual virtual team. Trust in specific individuals is influenced to a greater extent by individual language characteristics. Yet, all forms of trust are necessary for a high-performing team. Study 3 focused on the development of team cohesion during the lifecycle of a multilingual virtual team. The team members' similar beliefs and attitudes towards language diversity, support (or lack thereof) from the organization and communication norms helped establish team cohesion.

After having discussed various implications of our results related to each study, we now intend to 1) go a step further in approaching the effects of language diversity through a discussion of surface and deep-level diversity implications and 2) further justify the link between language-sensitive research in IB and literature on global virtual teams by highlighting the importance of context.

Distinguishing surface-level and deep-level implications of language diversity

In this section, we discuss how our findings demonstrate that language diversity is both a surface and deep-level type of diversity (Harrison et al., 1998), and how language diversity has both surface and deep-level implications on teamwork in multilingual virtual teams.

Surface-level diversity observes overt differences in groups (Harrison et al., 1998). This has traditionally been associated with biological and demographic characteristics that are “immediately recognizable” such as age and gender (Harrison et al., 2002). Deep-level diversity refers to differences in attitudes, beliefs and values, which are communicated and learned through interaction (Harrison et al., 1998). Diversity characteristics tend to be classified as either surface-level or deep-level, even though there has been some confusion regarding this classification (see Harrison *et al.* 1998 for the example of education). However, our findings demonstrate that language diversity is *both* a surface and deep-level diversity characteristic.

At the surface-level, language can be an inevitably visible characteristic of GVTs. For example, as reported across the three studies in this dissertation, it is rather obvious who has a high or low proficiency level in the common language or a more or less native-like accent compared to other team members. At the deep-level, language diversity informs how team members relate to each other and how they work together. Conscientiousness is an important aspect of deep-level diversity (Harrison et al., 2002). Therefore, understanding each other’s languages backgrounds and views on language diversity as well as being aware how that could affect teamwork is a deep-level aspect of language diversity.

Not only is language both a surface and deep-level type of diversity, but it also exhibits surface and deep level implications on teamwork. A contribution of this dissertation is that language diversity can have surface-level implications on team communication, but its effects are deeper on trust and team cohesion.

Regarding surface-level implications on team communication, we demonstrated how language background and proficiency influence individually-employed language management strategies. A range of communication strategies have been evoked as important for communicating in and managing linguistically-diverse teams (Feely & Harzing, 2003; Harzing et al., 2011). They can generally be understood as task-related communication processes because the reason for employing such strategies is to increase team effectiveness. We take this understanding of communication strategies further in Study 2 by establishing how language characteristics influence who uses these strategies and when. Our findings demonstrate that English proficiency level (when English is the common team language) and native language influence a number of communication behaviors such as code-switching and language complexity. Therefore, individual language characteristics inform team member interactions. Furthermore, we support the findings of Li and colleagues (2018) and Klitmøller and Lauring

(2013) who show that language proficiency is an important consideration for the choice of a communication channel, which we classify as a communication strategy, because of its effects on global virtual team dynamics, processes and effectiveness. Communication channels and the influence of the virtual context will be further discussed in the next section.

In addition, Study 2 revealed that absolute language proficiency had little effect on perceptions of team trust. This follows findings that “the effects of demographic diversity might play a less significant role in team outcomes than may have been thought” (Harrison et al., 2002). In this way, it is not simply individual characteristics, such as proficiency in English, that influences team trust.

Regarding the deeper implications of language diversity on teams, we demonstrate how attitudes, beliefs and values related to languages and language use affects trust and team cohesion, which in turn affect team functioning. Extending the above example regarding how absolute proficiency does not correlate with trust, a more significant result is how relative language proficiency and language distance is perceived, which does influence the extent of trust in specific team members. This provides support for social identity theory (Tajfel & Turner, 1986) which demonstrates how people will identify with others who possess the same overt characteristics. In turn, those who sense similarity in others will in turn evaluate them more positively than others (Harrison et al., 2002). Therefore, rather than individual language characteristics, relative characteristics such as relative language proficiency and relative native language have greater implications regarding trust in multilingual teams.

In line with the above example from our findings, language difficulties have been shown to have more important consequences for emotion-based socialization than the task-based, technical aspects of working together (Kassis-Henderson, 2005). In this way, Tenzer and colleagues (2014) showed how perceptions of others’ language proficiency have deeper-level consequences on perceptions of competence, dependability and trustworthiness of team members. Trust is therefore both cognition-based and emotion-based (Tenzer et al., 2014).

Comparable to our findings on trust, in Study 3 we demonstrated how similar attitudes towards language diversity within the team are a source of team cohesion, while different attitudes towards language diversity within the organization are a source of frustration. Similar to our findings on relative language proficiency, the development of team cohesion based on similarities in attitudes and the belief of the importance of language diversity also echo social identity theory (Tajfel & Turner, 1986).

Before continuing the discussion of surface versus deep-level diversity, it is important to define how attitudes towards language diversity can differ. In other words, assuming that “diversity is good,” what else should we know? Study 3 highlighted the disconnect between top-down (often English-only) language policies and bottom-up (more flexible) multilingual practices which come to exist through interaction. Language diversity has traditionally been deemed a barrier for teams, a barrier that persists despite the use of technology in the virtual context and that makes collaboration difficult (Chudoba et al., 2005). Other literature has proposed to view language diversity as “a valuable addition” (Bordia & Bordia, 2015). A third attitude towards language has proposed to reinforce the attitude that multilingualism is in fact “a mundane practice” because most teams nowadays are in fact multilingual, at least in their composition of team members (Angouri & Piekkari, 2018). Over the course of this research, we have observed a prevalence of the third attitude which regards language diversity in teams as commonplace. While some interviewees in Study 1 spoke of the difficulties encountered due to language diversity or the satisfaction they received from working in a multilingual team, a number of interviewees in Study 1 and the overall team in Study 3 tended to discuss language diversity as a normal trait within the team. This attitude regarding language diversity is important to consider for its implications in team processes. In addition, based on the findings from Study 3, we propose that organizations should work towards a harmonization of attitudes towards language diversity across individual, team and organizational levels. By “uniting in diversity,” organizations will be better able to foster trust and team cohesion.

By separating the surface and deep-level effects of language diversity and by discussing different attitudes towards language diversity, we demonstrate how language diversity is an important consideration for task-based team communication and socio-emotional processes related to trust and team cohesion. Language characteristics and attitudes inform how teams function, how trust is attributed throughout the team and how the teams can unite in their beliefs about language. We promote the development of a deeper understanding of language diversity that goes beyond the surface-level characteristics related to perceptions of language skills and backgrounds. Instead, we encourage teams to develop a deeper understanding of the beliefs and attitudes towards language diversity that are held by individual team members and work to establish greater similarity over time. Harrison and colleagues (2002) showed how sharing those more fundamental psychological features through exchanging personal information and demonstrating behaviors takes time. Our results regarding the improvement of team

identification between two times in Study 2 confirm the temporal aspects of developing team cohesion.

Extending theory on the choice of communication channel

Our findings confirm the importance of recognizing the research context, which we propose as an extension to traditional theories on the choice of communication channel (i.e. media richness theory and media synchronicity theory). These theories classify communication channels based upon the inherent characteristics of those channels. Yet, what is lacking is the understanding of how context also affects the usefulness of such channels. That is, four contextual factors including individual, technical, social and emotional factors should be considered in addition to accounting for which communication channel works the best for what type of message.

This dissertation is foremostly situated within language-sensitive research in international business and aims at contributions to this field. However, the topic under study cannot be fully understood without integrating knowledge from other fields of research. Management of information systems is one such field that informs the understanding of language diversity in global virtual teams through the consideration of Information and Communications Technology (ICT). As pointed out by Walsh and colleagues (2018) in the introduction to their edited volume of the most influential authors in information systems, the field of information systems is interested in human-centered issues that are explored through the prism of ICTs (Walsh et al., 2018). Because of its strong implications for this research, we revisit our findings and analysis through the lens of literature in the field of information systems, and more specifically concerning theories on the choice of communication channel. From there, we propose an extension to these theories that integrates a more contextual perspective.

Information systems can be defined as “a set of social actors who memorize and transform representations *via* information technologies and operating modes” (translated; Rowe & Reix, 2002, p. 11 in Walsh et al., 2018). Therefore, both human and technological factors are considered, as well as the interaction of both through the operationalization of technology. Information systems consider both what de Vaujany (2009, p. 11 in Walsh et al., 2018) refers to as the container (its technical structures which interact with the organization) and its content (data, information and knowledge). In this regard, the container may refer to the

global virtual team structure and the communication systems available for the team's use, and the content may refer to individual and team-level knowledge and decision-making.

The connection between research on language-sensitive management in IB and global virtual teams began with the consideration of how organizational structure and internal processes facilitate interaction and determine what information is shared among collaborators (Daft & Lengel, 1986; Pallud, 2018). Media richness theory (Daft & Lengel, 1986) and media synchronicity theory (Dennis et al., 2008) instruct how to select appropriate communication channels depends on the message complexity and the requirements of knowledge sharing. As a reminder, face-to-face communication is considered the richest form of communication, integrating instant feedback, body language, language variety and personalization, whereas standard written documents with no specific recipient are generally considered the leanest (Daft & Lengel, 1986; Pallud, 2018). As such, our findings confirm the importance of considering communication channel for proper team functioning because of its effects on team processes in multilingual virtual teams. For example, in Study 2 we demonstrated a direct relationship between communication channel and two communication behaviors through the experimental serious game study. Specifically, language tends to be more complex in leaner, written communication channels. Full code-switching occurred the least in instant messaging when emoji were present, and partial code-switching occurred the most in video calls. In addition to these communication behaviors, our results demonstrated a weak, but statistically significant, relationship between the communication channel richness and synchronicity and team communication inclusion and group identification, which are important for a well-functioning team.

A major limit of theories on choice of communication channel is the lack of consideration of contextual factors (Pallud, 2018). That is, the choice of communication channel is not completely rational and straightforward, but is affected by different contexts. In this way and in line with our proposition that a consideration of context is essential, we encourage a more contextualized view of theories in information systems. Specifically, we propose an extension of these theories by integrating four contextual factors: individual, technical, social and emotional factors. The first three have previously been identified as possible extensions of media richness theory (Pallud, 2018). However, when considering context, emotional factors that influence relationships should also be considered (Cohen & Kassis-Henderson, 2012).

Individual factors in our research relate to a person's language skills and background. Our findings from Study 2 demonstrate how higher proficiency in the common language correlates with an individual's propensity to use richer media. This is in line with Li and colleagues (2018) who studied the effects of language proficiency on knowledge exchange, specifically exploring the difference between face-to-face and virtual teams using only computer-mediated (i.e. instant messaging) communication channels. They found that language proficiency had a stronger effect in face-to-face teams because instant messaging helped relax constraints traditionally experienced by lower proficiency team members (Li et al., 2018). Therefore, lower proficiency team members appreciated the opportunities presented by leaner media, more so than higher proficiency team members.

Also, at the level of individual factors influencing choice of communication channel, we study a person's comfort with and acceptance of information technologies. Within Study 2, we mobilized the Unified Theory of Acceptance and Use of Technology (UTAUT) from Venkatesh and colleagues (2003). Specifically, performance expectancy and effort expectancy demonstrated different correlations in the larger model of multilingual virtual team functioning. Our findings from Study 2 demonstrate how performance expectancy, or how helpful technology is perceived to get the job done, is correlated with the perception of team performance. More interestingly, effort expectancy, or how much required effort is perceived to use the technology, is correlated with the perception of team trust. While these findings are not directly related to language diversity, we believe they are important indications of how individual contextual variables influence the choice of communication channel.

Technical factors have been addressed by authors such as Klitmøller and Lauring (2013) and Tenzer and Pudelko (2016) who pointed out that leaner, written media can help teams avoid issues such as pronounced accents. Our findings from Study 1 support the proposition that team members with more pronounced accents would do better to turn to written channels especially when they want to convey important or complex information to their team members.

In addition, technical factors are informed by the communication channels and the technology available to the team. Whereas an interviewee in Study 1 shared the importance of instant messaging to make exchanges lively and as close to face-to-face as possible (itw.F14), not all teams choose to use instant messaging or have this option available. In another example,

the team under ethnographic study in Study 3 reported how the option of regularly meeting over video conference sparked their sense of team cohesion (itw.G9).

Social factors in multilingual virtual teams are informed especially by geographic and temporal distances that restrict face-to-face interaction, the communication norms instilled in the team and cultural differences (Pallud, 2018). Cultural and linguistic differences have previously been shown to have different effects on the choice of communication channel in global virtual teams (Klitmøller & Luring, 2013). We argue that is not simply differences that affect the team, but rather how the team approaches this diversity. In other words, is there an “English is enough” attitude or a real desire to be multilingual (Kjellgren et al., 2022)? This reflects one of the main struggles related to language found in Study 3.

Finally, we add **emotional factors** as an essential context to consider within theories on choice of communication channel. In Studies 1, 2 and 3, communication channels or the combination of channels affected how language diversity influenced trust and team cohesion. Our research indicates how a combination of media is essential for team communication. In addition, when team members make an effort to share their emotions (which is considered more difficult in GVTs than face-to-face teams), there is increased trust and cohesion within the team. This may reflect “emotional contagion” where emotions of one individual are transmitted to others (Haag & Laroche, 2009). While emotional contagion has been usually conceived through mimicry of expressions, postures and movements in face-to-face settings (Hatfield et al., 1993), we believe that written and verbal communication through ICTs should also be considered.

One method that conveys emotions through ICTs is through pic speech (Trinh-Bouvier, 2015, in Pallud, 2018), an example of which is emoji. While emoji are generally perceived to reduce the ambiguity of with written text (Pallud, 2018), our results also demonstrate the negative effects that emoji can have on socio-emotional processes such as trust, when used incorrectly (Study 2). These emotional factors that intervene in communication channels further exacerbate emotional responses within the team. Therefore, we demonstrate a link between choice of communication channel, TICs and team emotional states such as trust and cohesion.

Trust and team cohesion in turn have a positive correlation with perceptions of the team’s outcomes, which in Study 2 included team performance, communication inclusion and group identification. Haag and Laroche (2009) demonstrated how emotions influenced the

performance of management teams. We believe this influence can also extend to the team itself. Similarly, Zhang (2013, in Pallud, 2018) has shown how affective responses can influence decision-making and team behaviors. Likewise, Takeda and Chartier-Plante (2018) discuss how trust increases when individuals feel that their team members are receptive, which in turn increases knowledge sharing in virtual communities. As such, we concur that trust is both affected by ICT use and affects ICT use in turn (Takeda & Chartier-Plante, 2018).

Overall, by incorporating these four contextual factors, we propose a reconceptualization of theories related to the choice of communication theory. Stemming from the social practice view of language in which context is the key for understanding language practices in multinational organizations (Karhunen et al., 2018), we thereby extend the need for considering context to the discipline of information systems.

In addition, we propose bringing language-sensitive research in IB closer to the field of information systems. There are already a certain number of similarities between the fields. For example, like language-sensitive research in IB, information systems is also a field that is known for being inspired and informed by other disciplines (Walsh et al., 2018, see Venkatesh et al., 2003 for an example). Therefore, we believe that bringing together these fields can provide rich information on the links between language diversity and ICT.

Contributions, Implications and Future Research

Theoretical Contributions

This thesis contributes theoretically to language-sensitive research in international business by examining language diversity in global virtual teams through the lens of team processes. To do so, we take on a social practice view of language which emphasizes the importance of context and how language is a fluid concept. While previous research has often focused on an instrumental view of language or a cultural view of language, we believe that language-sensitive research must consider these views but ultimately go beyond these constructs to understand language as a process in itself that is strongly influenced by and has an influence on society.

We differentiate between task-related processes, such as communication surrounding tasks and teamwork, and socio-emotional processes, such as trust and team cohesion. Language diversity is shown to influence both, but in different ways. Concerning task-based processes, we highlight five communication behaviors that have previously been identified as helpful to multilingual teams and analyze them in the virtual context. Each of the behaviors is shown to be mobilized differently depending on individual language background and team language diversity composition. Concerning socio-emotional processes, we bring the influence of language diversity on trust and team cohesion to the forefront. By looking through the lens of these socio-emotional processes, language diversity demonstrates deeper implications for team emotional states and performance than compared with the task-based communication behaviors.

Finally, the importance of bringing together the disciplines of information systems and language-sensitive research in IB is also highlighted. In line with our proposition to consider context, we propose four contextual factors including individual, technical, social and emotional factors to contribute to media richness and synchronicity theories.

Methodological Contribution

This research proposes a novel methodology with potential for simulating social interaction and experimentally comparing behaviors. The methodology is mobilized to test multiple research questions within a single online serious game. By controlling the context, we

are able to limit the number of variables under observation, while creating a simulated reality of multilingual virtual teamwork. By proposing multiple versions of the same serious game which are distributed randomly among participants, we implement an experimental protocol.

While we were confronted with a number of difficulties surrounding the serious game design and technical implementation, we believe this methodology proves promising for future research on behaviors in international management.

In addition, the developed serious game is used as a tool for training in multilingual communication and teamwork. The game has been tested by professionals and students in France, the U.S. Thailand, and Brazil, among the many other countries represented by our participant sample, who affirmed the usefulness of the digital game for training. As one player said, “Playing the game is a great experience: it is so fun and informative. I learned a lot about international team leadership, intercultural communication and myself along the way!” (English teacher at Université Grenoble Alpes). Therefore, this methodology is a way to bridge research, education and communication of scientific research with a larger public.

Managerial Implications

The managerial recommendations resulting from these findings concern the importance of understanding team language diversity, and of choosing appropriate communication behaviors and channels to develop strong trust and team cohesion for high-performing global virtual teams. The following advice pertaining to team configuration, team practices and general attitudes and beliefs can help managers build and maintain such teams.

Team configuration

- When creating a multilingual virtual team, attention should be given to the individual’s sensitivity towards language and cultural diversity.
- Building a team with a configuration based on similarities in language backgrounds and skills can help overcome deficiencies in common language proficiency.
- Language nodes with key language skills can be implemented within the team as a means to increase team trust.
- International experience can help individuals gain self-confidence and understanding of what is required for working in a multilingual environment.

Team practices

- During teamwork, native English speakers should pay special attention to help reduce the cognitive load experienced by lower proficiency team members.
- Both higher and lower English proficiency team members should be encouraged to reduce language complexity.
- Full code-switching should be avoided in the team setting due to its negative effects on perceptions of trust and effectiveness, but greetings (partial code-switching) should be encouraged in one-on-one settings for the opposite reasons.
- Instant messaging helps team members increase their language level and understanding, while maintaining synchronous communication for effectiveness.
- Varying communication channels across both verbal and written forms depending on the task promotes team cohesion and effectiveness.
- The emergence of “team speak” is an indicator of team cohesion, so should be encouraged.

The organization’s role

- Organizations should approach “English-only” policies with caution because this could prevent the positive aspects of language diversity from being present.
- By establishing similar beliefs and attitudes towards language diversity within the team and across the organization, rather than highlighting language differences, teams will develop trust and team cohesion.

Limits, Learning and Looking Forward: Propositions for Future Research

A doctoral thesis represents a project, which has evolved and grown alongside the doctoral candidate. As with any project, there are choices that have been made, taking its team (because this doctoral candidate is certainly not alone) down one path or another. These choices may be at the cost of other opportunities, whether those opportunities were initially in sight or not. This section is meant to reflect on the journey of the doctoral thesis, considering the choices that were made, how the work could have been improved, and imagining where to go next.

There are a number of limitations associated with the overall research design and with each of the studies, which should be considered in future research. While this section does not intend to discuss every limitation, it is meant to provide an overview of the most serious ones and provide advice to overcome them in future research. Overall, one major limit has to do with the main topic under study: language diversity. While group diversity is explored from a variety standpoint, it would be helpful to further investigate other types of diversity including separation and disparity. Likewise, variety could be measured with more rigor. For this reason, future research establishing a measure of language diversity and its types is encouraged.

A second limitation of the overall research is related to the very nature of multilingual research. While attempts were made to clearly state the multilingual nature of the research (e.g. multilingual interviews, participants and study contexts), the studies mainly looked at English-speaking teams. Sources are mainly in English, with some in French. Among the data collected in languages other than English, all information in was translated into English. Despite embodying the “problem,” we cannot entirely disagree with Chanlat (2022) who would point out his regret for the dominance of research studied and published in (only) English. Furthermore, it is possible that the author’s limited language abilities may have caused certain meanings to have been lost in translation. For these reasons, the academic community would benefit from guidelines for treating (or rather reinforcing) research in multilingual settings.

A final limitation of the overall research has to do with the virtual context under study. While the main communication channels were integrated into this research, teams today are using a larger variety of technologies for collaboration purposes. These various technologies should be incorporated into future research. In addition, these teams and technologies should be studied under a generational lens because the newer generations approach and view technology with different attitudes than older generations (Venkatesh & Morris, 2000).

Looking specifically at the serious game and ethnographic studies, there are also a number of limitations. The online simulation is neither completely a field nor a lab experiment. It is a predesigned simulation which controls a number of variables, but participants play on their own time, in vastly different contexts. Some completed the game in one hour and one sitting, while other chose to play the game over multiple sessions, sometimes taking over four hours total. Some chose to play on a weekend when they were “off” from work time, while others played during the week. Thus, as is common in web-based experiments, it was

impossible to control for aspects related to the participant's environment, which may therefore lead to lower internal validity (Figureau et al., 2020).

Furthermore, using serious games for research is quite novel in the field of international business, and it has presented a number of challenges and constraints both from the creator's point of view and for data export and analysis. We look forward to further improving the relationship between research and serious games in the future through further analysis of the data from ELITE The Serious Game (for example through a more processual view as was done with the ethnographic study), additional games, game platform improvements in line with experimental research. As such, additional analysis and experiments can help identify different causes of a phenomenon in an incremental manner, which increases external validity (Fan & Harzing, 2020).

The ethnography also presents a number of limitations and future avenues for future. The sample is a team that clearly values multilingualism and multiculturalism in a European University Alliance. This team is certainly not representative of all teams both through its task and its settings. Future research should study other project teams in more business-oriented settings. In addition, there is always a risk of hypothetical bias when conducting interviews and overt observation. Hypothetical bias refers to when participants respond to questions or act in a way that is different than they actual would behave (Bohm, 1972 in Figureau et al., 2020). One way to overcome this bias is to continue to complement the findings with data collected from other sources. For example, taking inspiration from the ethnographic study, the serious game methodology could be applied to further study team cohesion in multilingual virtual teams.

As demonstrated in the preceding paragraphs and as established by this dissertation, the opportunities are numerous to further develop research traversing the boundary between language diversity and global virtual teams. Having proposed that high-performing multilingual virtual teams are those where trust and team cohesion have been established by successfully managing communication processes, we encourage further research aimed to help managers and teams prepare for online work. This online work is not new, but it is evolving rapidly. Organizations would do well to benefit from the advantages inherently present, but sometimes difficult to manage, in multilingual global virtual teams.

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LIST OF TABLES

Tableau 1: Les concepts essentiels	13
Tableau 2: Les sous-questions de recherche et les méthodologies associées	21
Table 3: Essential concepts	29
Table 4: The sub-research questions and associated methodologies	35
Table 5: Language diversity: Definition and typology	49
Table 6: Language barrier solutions (adapted from Harzing et al., 2011 and Church-Morel & Bartel-Radic, 2014).....	54
Table 7: Communication processes and information (adapted from Dennis et al., 2008).....	78
Table 8: Task-related and socio-emotional processes in multilingual GVTs	86
Table 9: The five dimensions of team cohesion (adapted from Salas et al., 2015, p. 368)	93
Table 10: A comparison of Anglophone and Francophone international management research (adapted from Santistevan & Karjalainen, 2015)	104
Table 11: Three Studies	114
Table 12: Summary of individuals interviewed during the exploratory research phase.....	121
Table 13: Coding structure.....	125
Table 14: Verbatims to illustrate team communication processes (first-level code).....	127
Table 15: Summary of communication media used in multilingual virtual teams	133
Table 16: Examples of serious games in international management.....	148
Table 17: Description of the team members	152
Table 18: Type of game questions related to the choice of communication channel	164
Table 19: Game questions related to code-switching	168
Table 20: Type of game questions related to language complexity.....	170
Table 21: Type of game questions related to redundancy	171
Table 22: Type of game questions related to the choice of interlocutor.....	173
Table 23: Scale of User acceptance of information technologies (adapted from Venkatesh et al., 2003)	176
Table 24: Scale of empathy ($\alpha = 0.77$).....	176
Table 25: Scale of team trust (Costa & Anderson, 2011, p. 154)	177
Table 26: Average trust in team members	178
Table 27: Selected trust in individual team members	178
Table 28: Scale of Team Performance ($\alpha = 0.81$) (Kostopoulos et al., 2013)	179

Table 29: Scale of Group identification (Wu et al., 2010).....	179
Table 30: Scale of Team Communication Inclusion ($\alpha = 0.77$) (Lisak et al., 2016)	180
Table 31: Measure of Perceived Team Cultural Diversity ($\alpha = 0.81$)	180
Table 32: Distribution of language proficiency levels across the sample	183
Table 33: Average language proficiency of participants (from no proficiency – 0 – to native speaker proficiency – 7).....	183
Table 34: Distribution of age across the three game versions	184
Table 35: Distribution of gender across the three game versions	185
Table 36: Descriptive statistics of game participants' communication behaviors.....	187
Table 37: Distribution of language channels in four situations	188
Table 38: Correlation between choices of interlocutors based on native language.....	191
Table 39: Communication behaviors across different native language subgroups.....	194
Table 40: Differences of communication behaviors across game versions	197
Table 41: Communication behaviors * English level	199
Table 42: Descriptive statistics of empathy	204
Table 43: Descriptive statistics of user acceptance of IT	205
Table 44: Descriptive statistics of perceived cultural diversity	205
Table 45: Descriptive statistics of perceived team trust	206
Table 46: Descriptive statistics of average trust in team members.....	206
Table 47: Correlations between team members and trust.....	207
Table 48: Descriptive statistics of team performance items	208
Table 49: Descriptive statistics of communication inclusion	209
Table 50: Descriptive statistics of group identification at time 1 and 2	210
Table 51: Native language and perceived trust.....	211
Table 52: English level and trust in individuals.....	212
Table 53: Difference in trust for Filipa	213
Table 54: Trust and gender	215
Table 55: Correlations between perception of cultural diversity and trust.....	216
Table 56: Correlation between trust and team outcomes.....	218
Table 57: Team members regularly participating in "Team Diversity"	241
Table 58: Data sources collected between May 2021 and June 2022.....	245
Table 59: Cohesion dimensions and coding themes	247
Table 60: Team Cohesion dimensions across five team phases	248

LIST OF FIGURES

Figure 1: Research at the crossroads of three fields of literature in (international) management	43
Figure 2: The continuum of media richness (adapted from Daft et al., 1987).....	75
Figure 3: Typical synchronicity for selected media (adapted from Dennis et al., 2008).....	77
Figure 4: The Basis of Input-Process-Output (IPO) models.....	83
Figure 5: Model of multilingual virtual team functioning (elaborated by the author, inspired by Church-Morel & Bartel-Radic, 2014 and Kochan et al., 2003).....	88
Figure 6: Paradigmatic Alignment (source: elaborated by the author, inspired by Milliot & Freeman, 2015)	99
Figure 7: Studies in the mixed-methods research project	111
Figure 8: Experimental research design (from Podsakoff & Podsakoff, 2019).....	146
Figure 9: Logos from the project, game and gaming platform respectively.....	149
Figure 10: The team in ELITE The Serious Game	151
Figure 11: Introduction to the company and project in ELITE The Serious Game.....	153
Figure 12: A screenshot of a video call in ELITE The Serious Game	157
Figure 13: Behind-the-scenes of ELITE The Serious Game: Construction of Scene 2.2.....	153
Figure 14: General model of sub-research question 1	160
Figure 15: General model of sub-research question 2	161
Figure 16: Illustration of a game question relating to the choice of communication channel	163
Figure 17: Illustration of a game question relating to code-switching	166
Figure 18: Illustration of a game question relating to “partial” code-switching.....	167
Figure 19: Illustration of a game question relating to language complexity	169
Figure 20: Illustration of a game question relating to redundancy	171
Figure 21: Illustration of a game question relating to the choice of interlocutor	173
Figure 22: ELITE The Serious Game: Extract of a conversation with Filipa	214
Figure 23: Example of the general mechanism of PLS-SEM showing the influence of international experience on language complexity (adapted from Garson, 2016)	219
Figure 24: Modeling communication behaviors via PLS-SEM.....	222
Figure 25: Reflexive indicators for Team Performance	226
Figure 26: Modeling perceptions of trust and performance via PLS-SEM	228

Figure 27: Timeline of the team’s interaction from February 2020 to July 2022 (elaborated through discussions with the team leader)243

LIST OF APPENDICES

Appendix 1: Communications associated with this research (as of December 2022).....	301
Appendix 2: Reviews of language-sensitive research in IB	304
Appendix 3: Interview guide for Exploratory Study 1 (in English)	305
Appendix 4: Interview guide for Exploratory Study 1 (en français)	309
Appendix 5: Coding Structure for Exploratory Study 1	313
Appendix 6: Flyer for ELITE The Serious Game.....	318
Appendix 7: ELITE The Serious Game questions.....	320
Appendix 8: ELITE The Serious Game In-Game Questionnaires.....	328
Appendix 9: Serious game variables.....	335
Appendix 10: Correlations from ELITE The Serious Game	343
Appendix 11: The full PLS-SEM model from the serious game.....	346
Appendix 12: Interview guide for Ethnographic Study 3	347
Appendix 13: Coding structure from Ethnographic Study 3	352

Appendix 1: Communications associated with this research (as of December 2022)

Peer-reviewed journal article

Taylor, D. (2021). The Influence of Language Diversity on Virtual Team Communication: Overcoming Barriers and Leveraging Benefits. *Management international-Mi*, 25(spécial), 18-38. [HCERES: A Ranking]

Book chapters

Bartel-Radic, A., Taylor, D., & Asshidi, H. (2022). Comment développer et mesurer les compétences transversales en management international ? In S. Nivoix & Christian Marcon (coords.), *Internationalisation : la mobilisation des ressources immatérielles* (pp. 123-142). Paris : Vuibert.

Bartel-Radic, A., Taylor, D., & Asshidi, H. Digital serious games for training and research on soft skills in international management (routledge chapter). Forthcoming.

Bartel-Radic, A., Mouillot, P., & Taylor, D. (2019) Experimental Methods in International Management Research. In: Bartel-Radic, Anne (coord.) *Méthodes de recherche innovantes et alternatives en économie et gestion / Innovative and alternative research methods in economics and Business Administration*. Luxemburg : EIKV, pp. 61-75.

Bartel-Radic, A., Mouillot, P., & Taylor, D. (2019) Les méthodes expérimentales dans la recherche en management international. In : Bartel-Radic, Anne (coord.) *Méthodes de recherche innovantes et alternatives en économie et gestion / Innovative and alternative research methods in economics and Business Administration*. Luxemburg : EIKV, pp. 46-60.

Conference communications

2022

- Taylor, D. Building team cohesion: How language diversity enables virtual teams, European International Business Academy (EIBA), Norwegian Business School, Norway, 8-10 December 2022.
- Taylor, D. Building team cohesion in multilingual teams: The benefits of virtuality? 15th GEM&L International Conference on Management and Language, Passau University, Germany, 19-21 May 2022.
- Kjellgren, B., Taylor, D., & Serrano Van Der Laan, M. *Struggling at the core: multilingualism and multiculturalism in a European University Alliance*, SEFI Annual Conference, Barcelona, Spain, 19-22 September 2022.

2021

- Taylor, D. An Experimental Serious Game to Study Language Variety and Language Management Strategies in Multilingual Virtual Teams, *11ème Conférence annuelle d'Atlas-AFMI*, conférence virtuelle, 3-5 mai 2021.
- Taylor, D. Language Variety and Communication Strategies in Multilingual Virtual Teams: An Experimental Serious Game Study, *14th GEM&L International Conference on Management and Language*, EM Strasbourg Business School/ en ligne, 10-12 mai 2021.
- Taylor, D., Projet de thèse : Le management des équipes virtuelles, plurilingues, *14th GEM&L International Workshop on Management and Language*, EM Strasbourg Business School/ en ligne, 4-6 mai 2020 et 10-12 mai 2021. **GEM&L 2020 Best Doctoral Paper Award**
- Taylor, D. & Corbett-Etchevers, I. Les jeux sérieux numériques et modulaires : un outil d'accompagnement pour développer et évaluer *les soft skills*, *32ème congrès de l'AGRH*, Paris, France, 13-15 octobre 2021.

2020

- Bartel-Radic, A., Taylor, D. & Asshidi, H. Comment développer et évaluer les compétences de travail en équipe internationale par les jeux sérieux ? *10ème Conférence d'Atlas-AFMI*, Poitiers, France, 18-20 mai 2020.
- Bartel-Radic, A., Taylor, D. & Asshidi, H. Pedagogical innovation and research on soft skills in international management through digital serious games. *20ème Conférence d'EURAM*, Dublin, Ireland/ en ligne, 4-6 décembre 2020.
- Taylor, D. Designing an Experimental Game about Language Diversity in Virtual Teams, *1st Virtual International Language Days*, Aschaffenburg University of Applied Sciences/ en ligne, 23-24 novembre 2020.
- Taylor, D. Multilingual, Virtual Teams: The Influence of Language Diversity on Global Virtual Teamwork. *10ème Conférence d'Atlas-AFMI*, Poitiers, France/ en ligne, 18-20 mai 2020.
- Taylor, D. Projet de thèse : Le management des équipes plurilingues et virtuelles, *10ème Conférence d'Atlas-AFMI*, Poitiers, France/ en ligne, 18-20 mai 2020. **Prix du meilleur projet doctoral de la 10ème Conférence d'Atlas-AFMI**
- Taylor, D. Understanding team adaptation processes based on language proficiency in multilingual, virtual teams using an experimental approach, *IACCM Global Virtual Conference*, en ligne, 26 juin 2020.

2019

Taylor, D. L'impact de la diversité linguistique sur les équipes virtuelles de projet d'innovation. *Dixièmes journées du Groupe Thématique Innovation de l'AIMS*, Grenoble, France, 16-18 octobre 2019.

Appendix 2: Reviews of language-sensitive research in IB

Year	Authors	Publication	Main Findings	Proposals for future research
2017	Tenzer, Terjesen & Harzing	Management International Review (journal)	A review of research in the field divided into research setting, theories, methodology and findings. The most utilized theories included culture, gravity model of trade, MNC and new venture internationalization, linguistic relativity and language-based social identity.	Proposal to extend the scope of target regions, languages and academic collaborations, to build on existing theories (culture, internationalization, linguistic relativity, social identity), to include theories from different disciplines, to increase the diversity of methods and data sources, to address topics at individual, group, firm, country and multilevel perspectives.
2018	Karhunen, Kankaanranta, Louhiala-Salminen & Piekkari	Journal of Management Studies (journal)	Three categories regarding the conceptualization of language were identified: 1) language as a top-management problem, 2) language as an individual characteristic of employees, and 3) language as social practice in MNCs.	1) Focus on the fluidity of languages and how people use them and 2) broaden the notion of communicative resources beyond language/ explore how language blends with other communicative resources and with new technologies.
2020	Tenzer & Pudelko	Managing Multilingual Workplaces: Methodological, Empirical and Pedagogic Perspectives (book)	Review of the main research trends including language-induced power distortions, issues regarding social identity formation, emotional conflict, obstacles to trust building and hurdles to knowledge sharing.	Encourages research considering additional team processes and emergent states, and investigation of the linguistic challenges of virtual teams and performance outcomes of language diversity in teams.
2022	Piekkari, Gaibrois & Johansson	Journal of Comparative International Management (journal)	The epistemological paradigms employed by researchers in this subfield are more diverse than in the larger IB field. The main paradigms include the positivist, interpretivist and critical paradigms.	Research where research deemed high-quality and legitimate is produced and who produces it. Re-analyze the data set through the lens of temporal context.

Appendix 3: Interview guide for Exploratory Study 1 (in English)

Project Presentation: Linguistic Diversity in Virtual Teams

This project aims to understand how linguistic diversity influences virtual team dynamics.

The study shall be a qualitative study with interviews of professionals working in an international and virtual context. The interviews are expected to last about one hour each.

The goals of this study are to better understand:

- The behaviors linked to languages
- The effects of linguistic diversity on the behaviors and habits of team members
- The influence of the aforementioned behaviors on the dynamics of the overall team

The questions shall relate to the following themes:

- Virtual and remote work
- Language choice
- Formal vs. informal communication
- Spoken vs. written language
- Behavior modifications (vocabulary, speed, communication frequency...)
- Humor
- Confidence in oneself and others
- Power
- Sub-groups or clusters

Interview Guide: Linguistic Diversity in Virtual Teams

Questions	Goals, Analysis Guide
Introduction	
Research Presentation <ul style="list-style-type: none"> • Volunteer basis, Confidential nature of the interview 	Create confidence
Could you present yourself? <ul style="list-style-type: none"> • Culture(s) et languages(s) (native or learned) • Experience working with people remotely? • Role/ job in the organization • Interest in this research? 	Information about the interviewee, create confidence
The Organisation	
In your own words, how would you describe the international character of the organization? <ul style="list-style-type: none"> • Organisation/ organigramme • Number of countries 	Organization's internationalization Strategy and performance
What are the company's practices concerning languages?	Practices

<ul style="list-style-type: none"> • Corporate language ? • Rules are advice • Hiring practices • Proposed employee trainings 	Company culture
Your Team	
<p>Would you please describe the team(s) in which you work?</p> <ul style="list-style-type: none"> • Number of teams and percentage of time devoted to each • For each team: <ul style="list-style-type: none"> • What is the team’s role and objective within the organization? • How many people? • Your role within the team • For how long has the team existed? How long have the various members been a part of the team? • Where are the team members located? 	Information about the team
<p>Could you describe the linguistic composition of the team(s)?</p> <ul style="list-style-type: none"> • What languages do its members speak (native and second/ third/ etc languages) • What is the level of proficiency (you and the team) of the various languages ? If possible, use the European language framework (A1-C2). • What languages are necessary for your work • How did you decide what language to work in? 	Information about the team
Practices	
<p>How often do you communicate with the members of your team (especially those who are working remotely)?</p>	Importance of communication
<p>What are your principal means of communication (telephone, email, video, document sharing...)?</p> <ul style="list-style-type: none"> • Why? • For what types of information? • Is this the same for the rest of your team? • What percentage of the time do you talk in person vs. write vs. use a different oral method such as telephone or videoconference? 	Means of communication and interaction
<p>How do you feel about working remotely from your colleagues? Do you have a preference for communication face-to-face or virtually?</p>	

<p>Tell me about how you greet your colleagues... When you write to your team (together or to a specific person)...</p> <ul style="list-style-type: none"> • How do you begin your correspondence ? (introductory word + title/ last name or first name) • What expression(s) do you usually use to finish your correspondence? • Do your colleagues use the same expressions? If they don't, what impression does that give you? • Do you use exclamation points or smiley faces? When or for what context? • Why or why not? 	Practices
<p>What methods or techniques help you communicate with your team and organization?</p> <ul style="list-style-type: none"> • Choice of a common language or a context-specific language • Internal, company practices • Translation (internal ou external) • Intermediaries or bridge people • Changes in vocabulary, speed, humor... 	Practices
<p>Could you share an example of a situation in which you faced difficulties when communicating with your team?</p> <ul style="list-style-type: none"> • How did you resolve the problem? • Are there certain practices or rules prescribed by management to handle these situations?direction à ce sujet ? • Do you feel that these practices are sufficient? 	Practices (what is does vs what is said)
<p>Do you believe that how your company handles languages favors certain people over others? For example, if they can express themselves better...</p> <ul style="list-style-type: none"> • What is the role played by these individuals in the team/ company ? (bridge individual, advice...) 	Power
<p>Do you feel that you know your team on a personal level? Are there certain people you know better than others?</p>	Relationships
<p>Do you ever communicate informally with your colleagues? When you do, how does the way you communicate change?</p> <ul style="list-style-type: none"> • With whom do you usually speak ? 	Relationships
<p>Are there certain people that you avoid communicating with do to language barriers?</p> <ul style="list-style-type: none"> • Why ? • What methods do you use to avoid communicating with them? 	Relationships
<p>Do you feel that there are sub-groups or clusters within your team? Between whom?</p>	Relationships

Multilingual Character	
In your opinion, does the multilingual character of your team constitute an advantage or a difficulty for your work? In what ways?	Performance
Are you satisfied with how the team functions?	Performance
Do you believe that the language diversity of your team affects its performance in any way?	Performance
Has there been an evolution in the way the team manages language diversity? <ul style="list-style-type: none"> • Does your team work better together now than before? • Have the members of your team developed skills due to the multilingual character? • Have they improved their language skills 	Performance Team Dynamics
Clôture	
Is there anything that we haven't discussed that you would like to add?	
Thanks	

Appendix 4: Interview guide for Exploratory Study 1 (en français)

Présentation du projet : la diversité linguistique en équipe virtuelle

Ce projet a pour but d'essayer de comprendre comment la diversité linguistique influence la dynamique des équipes à distance.

L'étude sera une étude qualitative avec des entretiens de professionnels qui travaillent dans un milieu international et à distance. On anticipe que les entretiens dureront chacun environ 1 heure.

Les objectifs de cette étude sont de mieux comprendre :

- Les comportements liés aux langues
- Les effets de la diversité linguistique sur les comportements et les habitudes des membres d'équipes
- L'influence de ces comportements sur la dynamique de l'ensemble de l'équipe

Les questions porteront sur les thèmes suivants :

- Le travail virtuel
- Le choix de langue
- La communication formelle vs informelle
- La langue parlée vs langue écrite
- Les changements d'habitudes (vocabulaire, vitesse, fréquence de communication...)
- L'humeur
- La confiance en soi et des autres
- Le pouvoir
- Les sous groupes (*clusters*) ...

Guide d'entretien : Diversité linguistique en équipe virtuelle

Questions posées	Objectifs, Grille d'analyse
Phase d'introduction	
Présentation de la recherche <ul style="list-style-type: none">• Volontariat, Confidentialité	Créer la confiance
Pouvez-vous vous présenter ? <ul style="list-style-type: none">• Fonction• Culture(s) et langue(s) (maternelles et apprises)• Depuis quand avez-vous l'habitude de travailler à distance ?• Motivation à participer à cette recherche	Mieux connaître l'interlocuteur, créer la confiance
L'organisation	

<p>Pouvez-vous me parler de l'internationalisation de l'entreprise ?</p> <ul style="list-style-type: none"> • Organisation/ organigramme • Nombre de pays 	<p>Importance de l'internationalisation pour l'entreprise</p> <p>Stratégie et performance</p>
<p>Quelles sont les pratiques de l'entreprise concernant les langues ?</p> <ul style="list-style-type: none"> • Une langue corporate ? • Consignes ou conseils • Pratiques de recrutement • Formations proposées 	<p>Pratiques</p> <p>Culture d'entreprise</p>
<p>Votre équipe</p>	
<p>Pouvez-vous me décrire l'équipe dans laquelle vous travaillez ?</p> <ul style="list-style-type: none"> • Le rôle et l'objectif de l'équipe au sein de l'entreprise • Le nombre de personnes • Votre rôle • Ancienneté de l'équipe et de ses membres • Emplacement des membres de l'équipe 	<p>Information sur l'équipe</p>
<p>Comment se présente la composition linguistique de l'équipe ?</p> <ul style="list-style-type: none"> • Langues parlées par les membres (maternelles et étrangères) • Niveau de maîtrise (vous et l'équipe). Si possible identifier avec le cadre européen. • Nécessité pour le travail 	<p>Information sur l'équipe</p>
<p>Pratiques</p>	
<p>Parlez-moi de la fréquence de communication avec votre équipe (surtout ceux à distance).</p>	<p>Importance de la communication</p>
<p>Quelles méthodes de communication privilégiez-vous (tél, email, vidéo...) ?</p> <ul style="list-style-type: none"> • Pourquoi ? • Pour quels types d'informations ? • Est-ce que c'est pareil pour tous les membres de l'équipe ? 	<p>Modes d'interaction et de communication</p>

<p>Comment ressentez-vous le travail à distance de vos collègues ? Préférez-vous travailler en face-à-face ou à distance ?</p>	
<p>Parlez-moi des salutations... Quand vous écrivez à votre équipe (ensemble ou individuellement) ...</p> <ul style="list-style-type: none"> • Comment commencez-vous votre correspondance ? (mot d'introduction + titre/ nom ou prénom) • Comment terminez-vous vos messages ? • Vos collègues utilisent-ils les mêmes expressions ? Si non, qu'en pensez-vous ? • Utilisez-vous des points d'exclamation ou des smileys ? Dans quel contexte ? • Pourquoi ou pourquoi pas ? 	Pratiques
<p>Que faites-vous pour communiquer avec les membres de votre équipe compte tenu des langues maternelles différentes ?</p> <ul style="list-style-type: none"> • Choix de langue commune et/ ou en fonction du contexte • Pratiques internes • Traduction (interne ou externe) • Passer par des intermédiaires • Changement de vocabulaire, de vitesse, d'humeur ... 	Pratiques
<p>Pouvez-vous partager un exemple d'une situation dans laquelle vous avez rencontré des difficultés de communication avec votre équipe ?</p> <ul style="list-style-type: none"> • Comment avez-vous résolu le problème ? • Existe-il des pratiques mises en place et/ou formalisées par la direction à ce sujet ? • Ces pratiques vous semblaient-elles pertinentes ? 	Pratiques tenues vs. prescrites
<p>Est-ce que le fonctionnement des langues est plus favorable à certains membres ? (ils s'expriment mieux...)</p> <ul style="list-style-type: none"> • Quel est le rôle de ces individus dans votre équipe ? (pont, donne des conseils...) 	Pouvoir
<p>Avez-vous l'impression de connaître bien votre équipe ? Est-ce qu'il y a certaines personnes que vous connaissez mieux que d'autres ?</p>	Rapports
<p>Communiquez-vous de façon informelle avec d'autres membres de votre équipe ? Changez-vous vos habitudes</p>	Rapports

<p>quand vous communiquez de façon informelle avec ces personnes ?</p> <ul style="list-style-type: none"> • Avec qui parlez-vous principalement ? 	
<p>Est-ce qu'il y a certaines personnes avec qui vous préférez ne pas communiquer pour des raisons associées aux langues ?</p> <ul style="list-style-type: none"> • Pourquoi ? • Que faites-vous pour éviter la communication avec cette (ces) personne(s) ? 	Rapports
<p>Vous semble-t-il qu'il existe des sous-groupes dans votre équipe ? Entre qui ?</p>	Rapports
Le caractère multilingue	
<p>Selon vous, le caractère multilingue de votre équipe représente-il plutôt un intérêt ou une difficulté dans votre travail ? Pourquoi ?</p>	Performance
<p>Etes-vous satisfait du fonctionnement de l'équipe par rapport à son caractère multilingue ? Pensez-vous que vos collègues sont satisfaits... ?</p>	Performance
<p>Est-ce qu'il y a eu des changements par rapport à la manière dont l'équipe gère son caractère multilingue ?</p> <ul style="list-style-type: none"> • Est-ce qu'elle y arrive aujourd'hui mieux qu'avant ? • Est-ce que les membres de l'équipe ont développé des compétences grâce à ce travail multilingue ? • Les membres de l'équipe ont-ils amélioré leurs compétences en langues étrangères ?... 	Performance Dynamique de l'équipe
Clôture	
<p>Y a-t-il des choses que nous n'avons pas abordées qui vous semblent importantes?</p>	
<p>Remerciements</p>	

Appendix 5: Coding Structure for Exploratory Study 1

1 Organizational context

1.1 strategy

1.1.1 structure

1.1.2 internationalization

1.1.3 project

1.1.4 evolution (of strategy, of org)

1.1.5 focus on internal development

1.2 company culture

1.2.1 values

1.3 HR practices

1.3.1 corporate language

1.3.2 trainings

1.3.3. recruitment

1.3.4 events, team building

1.3.5 mediator

1.3.6 bureaucracy

2 Team characteristics

2.1 linguistic configuration

2.1.1 the interviewee

2.1.2 the team

2.1.3 English proficiency

2.1.4 French proficiency

2.1.5 disparity, level of common language

2.1.6 variety of native languages

2.2 dispersion

2.2.1 geographic

2.2.2 temporal

2.3 objective, task

2.4 size

2.5 age, generations

2.6 individual competences

- 2.6.1 linguistic
- 2.6.2 technical
- 2.6.3 communicational
- 2.6.4 cultural
- 2.6.5 openness, esprit d'ouverture
- 2.6.6 critical thinking, esprit critique
- 2.6.7 empathy
- 2.7 fluidity between teams
- 3 Team processes
 - 3.1 virtual communication
 - 3.1.1 choice of media
 - 3.1.1.1 SMS
 - 3.1.1.2 e-mail
 - 3.1.1.3 instant messenger
 - 3.1.1.4 telephone, conference call (no video)
 - 3.1.1.5 videoconference
 - 3.1.1.6 screenshare, sharing documents
 - 3.1.1.7 internal comm, collaborative platforms
 - 3.1.1.8 face-to-face
 - 3.1.1.9 redundancy across different media
 - 3.1.2 frequency of virtual comm
 - 3.1.3 experience, importance
 - 3.1.4 flexibility
 - 3.1.5 working hours
 - 3.1.6 individual preference and feelings
 - 3.1.6.1 positive
 - 3.1.6.2 negative
 - 3.1.7 difficulties of virtual work
 - 3.1.7.1 technology dependence
 - 3.1.7.2 time lag
 - 3.1.7.3 lack of face-to-face time
 - 3.1.7.4 lack of -team- time
 - 3.1.7.5 other difficulties

- 3.1.8 benefits of virtual work
- 3.2 linguistic practices
 - 3.2.1 functional language
 - 3.2.1.1 multilingualism
 - 3.2.2 written practices
 - 3.2.2.1 opening and closing greetings
 - 3.2.2.1.1 multilingualism
 - 3.2.2.2 emoticons, smileys, memes
 - 3.2.2.2.1 frequency
 - 3.2.2.2.2 type
 - 3.2.2.2.3 media
 - 3.2.2.2.4 purpose
 - 3.2.2.3 punctuation, capital letters, color coding
 - 3.2.2.3.1 frequency
 - 3.2.2.3.2 type
 - 3.2.2.3.3 media
 - 3.2.2.3.4 purpose
 - 3.2.2.4 length of written communication
 - 3.2.2.5 language level
 - 3.2.2.5.1 internal
 - 3.2.2.5.2 external
 - 3.2.2.6 cultural differences
 - 3.2.2.7 difficultés
 - 3.2.3 language management practices
 - 3.2.3.1 adaptation (behavior)
 - 3.2.3.1.1 body language, gestures
 - 3.2.3.1.2 speed
 - no change
 - slow down
 - 3.2.3.1.3 vocabulary
 - 3.2.3.2 code-switching
 - 3.2.3.3 direct questioning
 - 3.2.3.4 redundancy, repetition

- 3.2.3.5 rephrasing
- 3.2.3.6 translation
 - 3.2.3.6.1 dictionary
 - 3.2.3.6.2 automatic, machine
 - 3.2.3.6.3 databases
 - 3.2.3.6.4 in-house
 - 3.2.3.6.5 third-party
- 3.2.3.7 drawing
- 3.2.3.8 interpretation
- 3.2.4 formal vs. informal comm
 - 3.2.4.1 formal communication
 - 3.2.4.2 informal communication
- 3.2.5 experimentation of comm methods
- 3.2.6 communication avoidance
 - 3.2.6.1 due to speaker's language level
 - 3.2.6.2 due to speaker's accent
 - 3.2.6.3 due to receiver's language level
 - autres (défense, prévention)
- 3.3 key people
 - 3.3.1 management
 - 3.3.2 direct manager
 - 3.3.3 team representative
 - 3.3.4 colleague
 - 3.3.5 local, nationality
 - 3.3.6 with specific skills
 - 3.3.7 motivated
- 3.4 duration of team interaction
- 3.5 role of culture
 - 3.5.1 learning about cultures
 - 3.5.2 different cultural practices
 - 3.5.3 affinity with same or similar culture
 - 3.5.4 resistance to the 'other'
- 3.6 emergent positive emotions

- 3.6.1 trust
- 3.6.2 cohesion
- 3.6.3 appreciation of intercultural context
- 3.7 emergent negative emotions
 - 3.7.1 confusion
 - 3.7.2 anxiety
 - 3.7.3 frustration
- 3.8 misunderstanding, conflicts ex.
- 3.9 Subgroups
- 4 Team effectiveness
 - 4.1 goal completion
 - 4.1.1 efficiency, time
 - 4.1.2 type of task
 - 4.2 development of group capacity
 - 4.3 development of individual skills
 - 4.3.1 technical skills
 - 4.3.2 language competence
 - 4.3.3 intercultural competence
 - 4.4 individual satisfaction
 - 4.4.1 satisfaction with intercultural context
 - 4.4.2 satisfaction with group practices
 - 4.4.3 satisfaction with teamwork, team interaction
 - 4.4.4 dissatisfaction

Appendix 6: Flyer for ELITE The Serious Game

ELITE

THE SERIOUS GAME

A GAME FOR DEVELOPING
LEADERSHIP AND TEAMWORK SKILLS
IN A GLOBAL VIRTUAL TEAM

YOUR MISSION:

Coordinate a group of eight people located across the world to organize a product launch event in Thailand.

YOU WILL:

- ◇ Work with people from the **UK, the USA, France, Portugal, Brazil and Thailand**
- ◇ Address the challenges of online work
- ◇ Organize meetings & designate tasks
- ◇ Use multiple communication channels
- ◇ Make important decisions that influence your path through the game



WHAT WILL I LEARN ABOUT IN ELITE THE SERIOUS GAME?

This game will allow you to adapt to the new challenges of remote work, especially with highly-diverse groups. The game interface replicates teamwork with the exchange of emails, chat messages and audio and video calls with people from different countries and cultures. By coordinating the team and working through the tasks, you will learn about international team leadership through experience and “by doing.”

Also, throughout the game, you will regularly receive practical information to better coordinate your team. At the end of the game, you will be provided with more detailed information about your leadership style and how your communication strategies fit into this type of team.

I AM A PROFESSIONAL OR STUDENT. CAN I PLAY ON MY OWN?

Yes. This is a single-player, online game that is designed especially for professionals. This game can help prepare you for working with international colleagues in online projects.

I AM A TEACHER. CAN I USE THE GAME IN MY COURSE?

Yes. This game can be integrated into a variety of courses including international management, international human resources management, intercultural communication, and business English.

We recommend that students play the game independently followed by a class debrief to cover specific topics in more depth. Please contact us for more information about how this game could fit into your course.

HOW LONG IS THE GAME?

The game lasts approximately 2 hours, but it can be completed over multiple sessions.

IS IT FREE?

Yes! For a limited time, we are providing free access to this game.

WHERE DID THE IDEA COME FROM?

This game is part of a doctoral project led by Danielle Taylor and supervised by Anne Bartel-Radic and Isabelle Corbett-Etchevers at Université Grenoble Alpes (France). The research looks at how a diversity of languages influences teamwork in virtual teams.

**INTERESTED IN PLAYING OR
WANT TO KNOW MORE?
CONTACT US!**

danielle.taylor@univ-grenoble-alpes.fr

**MAKE DECISIONS AND
LEAD YOUR TEAM
TO SUCCESS!**



Appendix 7: ELITE The Serious Game questions

Choice of communication channel

Scene	Game Question	Possible responses in the game	Research designation of the response (1-5)
Choice of communication channel - Mixed proficiency group			
1.1.00	How do you prefer to contact your team to discuss the event location and theme?	Email 1: Dear team, our first task is to decide on the event location and theme. Could you share your ideas by EMAIL?	1 – email
		Email 2: Dear team, our first task is to decide on the event location and theme. Please share your ideas in our GROUP CHAT.	2 – instant messaging
		Email 3: Dear team, our first task is to decide on the event location and theme. Let's schedule an AUDIO-ONLY CONFERENCE CALL.	3 – phone call
		Email 4: Dear team, our first task is to decide on the event location and theme. Let's schedule a VIDEO CONFERENCE CALL.	5 – video call
2.4.2/ 2.4.3	How do you want to contact Jiab and Obe to arrange a pickup of the shipment?	Email	1 – email
		Phone	3 – phone call
		Video call	5 – video call
		Instant message	2 – instant messaging
4.1.06	How do you want to receive the report?	Share your report by email by the end of the week (and be sure to include the whole team).	1 – email
		Let's have a video call at the end of the week for you to share your reports.	5 – video call
Choice of communication channel - High English proficiency			
2.1.02	What do you want to do [following a question	Ask for details by responding to Emily's email.	1 – email

	about an issue with the logo design]?	Start a video call with Jiab and Emily to discuss the problem.	5 – video call
4.2.05/ 4.2.06/ 4.2.07/ 4.2.08	Do you want to send the document or simply explain what you don't understand?	Use screenshare and stay on the phone	4 – phone call with screenshare
		Send the document by email to Jiab and wait for her response	1 – email
		Explain what you don't understand orally	3 – phone call
Low English proficiency			
1.3.3/ 1.3.4/ 1.3.5	The video call with Obe has ended, but an hour later you realize you need further clarification... How do you prefer to contact Obe?	Video call	5 – video call
		Email	1 – email
		Instant messaging	2 – instant messaging
		Phone call	3 – phone call
2.2.1	Who do you want to report the group's decision to you and how?	LUIZ, can you report the group's decision back to me via INSTANT MESSAGE?	2 – instant messaging
		OBE, can you report the group's decision back to me via INSTANT MESSAGE?	2 – instant messaging
		NICOLAS, can you report the group's decision back to me via INSTANT MESSAGE?	2 – instant messaging
		LUIZ, can you report the group's decision back to me via EMAIL?	1 – email
		OBE, can you report the group's decision back to me via EMAIL?	1 – email
		NICOLAS, can you report the group's decision back to me via EMAIL?	1 – email
Native speaker(s)			
2.3.10	How do you want to contact Dan?	Email	1 – email
		Video call	5 – video call
		Instant message	2 – instant messaging
		Phone call	3 – phone call
2.5.0	How do you want to contact Dan to ask what this means for the rest of the budget?	Video call	5 – video call
		Email	1 – email

3.3.00	You want to invite Dan and Emily to discuss the marketing budget. How do you contact them?	Invite them to a video call	5 – video call
		Send an email	1 – email

Code-switching

Scene	Game Question	Possible responses in the game	Research designation of the response (0/1)
Multilingual group – Full code-switching			
3.1.5	How do you respond to Nicolas' concerns?	Ok Nicolas, no problem. Then we'll get the information to Emily to work on the invitation design, and I will contact Luiz to ask about scented paper.	0 – No code-switching
		Ok Nicolas, pas de problème. Then we'll get the information to Emily to work on the invitation design, and I will contact Luiz to ask about scented paper.	0 – No (full) code-switching (<i>see partial code-switching</i>)
		Ok Nicolas, pas de problème. Ensuite, nous fournirons les informations à Emily pour qu'elle travaille sur la conception de l'invitation, et je contacterai Luiz pour poser des questions sur le papier parfumé.	1 – Full code-switching
3.3.02/ 3.3.13	How do you want Jiab to tell you about the Asian market?	Jiab, could you explain in English so everyone understands?	0 – No code-switching
		Jiab, could you explain in Thai so that I'm sure to understand? We'll share the information with the group right after.	1 – Full code-switching
3.3.03/ 3.3.04/ 3.3.14/ 3.3.15	How do you want Fabienne to tell you about the European and North American markets?	Fabienne, could you explain in English so everyone understands?	0 – No code-switching
		Fabienne, could you explain in French so that I'm sure to understand? We'll share the information with the group right after.	1 – Full code-switching
4.1.08/ 4.1.13	You want more information about the news article that Nicolas shared with the	I can't read the text on your screenshot. What exactly did the article say?	0 – No code-switching
		Je n'arrive pas à lire le texte. Que dit exactement l'article ?	1 – Full code-switching

	group. What do you say to Nicolas?		
Monolingual group or One-on-One – Full code-switching			
1.2.3	Obe has sent you a private message asking you to help explain Nicolas' ideas. What do you say?	[send to Obe] Nicolas doesn't approve two of the venue options and reminds the team to support local and ethical organizations.	0 - No code-switching
		[send to Obe] (translated into Thai) Nicolas doesn't approve two of the venue options and reminds the team to support local and ethical organizations.	1 - Full code-switching
		[send to Nicolas] It seems that not everyone understood your message. Could you explain your ideas again?	0 - No code-switching
		[send to Nicolas] (translated into French) It seems that not everyone understood your message. First, could you explain your ideas to me in French so I'm sure to understand?	1 - Full code-switching
1.3.2	Do you understand Obe's information?	Ok Obe. That sounds ok to me.	0 - No code-switching
		I'm not sure I understand. What do you mean Obe?	0 - No code-switching
		(in Thai) I'm not sure I understand. What do you mean Obe?	1 - Full code-switching
2.3.06/ 2.3.07	What do you respond [to Luiz's question]?	Envie uma amostra para eu aprovar e depois envie as outras para o escritório na Tailândia. Vamos verificar com Dan sobre o orçamento para ver quantos podemos fazer.	1 - Full code-switching
		Send one sample to me to approve and then send the others to the office in Thailand. Let's check with Dan regarding the budget to see how many we can make.	0 - No code-switching
		Envíeme una muestra para que la apruebe y luego envíe las otras a la oficina en Tailandia. Verifiquemos con Dan sobre el presupuesto para ver cuántos podemos hacer.	1 - Full code-switching
2.3.11/ 2.3.12/	Which email do you send to Luiz	Hello again Luiz, As we discussed, you will be using the small sample bottle to	0 - No code-switching

2.3.13/ 2.3.14	after your phone exchange?	produce perfumes with the event logo. You will send one to Claire and me, and the rest to our offices in Thailand. I've contacted Dan regarding how many perfumes to make, and he said 200. Please contact me with any further questions.	
		Hello again Luiz, I've contacted Dan regarding how many perfumes to make, and he said 200. Please contact me with any further questions.	0 - No code-switching
		(in Portuguese) Olá de novo Luiz, Conforme conversamos, você utilizará o pequeno frasco de amostra para produzir perfumes com a logomarca do evento. Você enviará um para Claire e para mim, e o restante para nossos escritórios na Tailândia. Entrei em contato com Dan sobre quantos perfumes fazer e ele disse 200. Por favor, entre em contato comigo se tiver mais perguntas.	1 - Full code-switching
		(in Portuguese) Olá de novo Luiz, entrei em contato com o Dan sobre quantos perfumes fazer, e ele disse 200. Qualquer dúvida, entre em contato comigo.	1 - Full code-switching
2.4.4	In what language do you plan on discussing the pickup with Jiab and Obe?	English only	0 – No code-switching
		Thai only	1 - Full code-switching
		Greet them in English, then switch to Thai	0 – No full code-switching
		Greet them in Thai, then switch to English	0 – No full code-switching
		In both English and Thai, switching as needed	1 - Full code-switching
4.2.00	Who do you call by phone to ask for help interpreting the sales information (and in what language do you speak)?	I call Jiab and speak in English.	0 – No code-switching
		I call Jiab and speak in Thai.	1 – Full code-switching
		I call Fabienne and speak in English.	0 – No code-switching
		I call Fabienne and speak in French.	1 – Full code-switching

Multilingual group – Partial code-switching

2.2.2	How do you want to finish the message to the group?	Thank you team!	0 - No code-switching
		Obrigado time ! / Obrigada time !	1 - Partial code-switching
		ขอบคุณทีมงาน	Partial code-switching
		Merci l'équipe !	Partial code-switching
		Thank you/ Obrigado/ ขอบคุณ (Āhxbkhuṅ)/ Merci !	Partial code-switching
3.1.2	How do you say hello to Filipa [who just joined the group call]?	a. In Spanish	0 - No code-switching
		Olá Filipa, obrigado(a) por ter vindo	1 - Partial code-switching
		Hi Filipa, thank you for joining.	1 - Partial code-switching
3.1.5	How do you respond to Nicolas' concerns?	Ok Nicolas, no problem. Then we'll get the information to Emily to work on the invitation design, and I will contact Luiz to ask about scented paper.	0 – No code-switching
		Ok Nicolas, pas de problème. Then we'll get the information to Emily to work on the invitation design, and I will contact Luiz to ask about scented paper.	1 - Partial code-switching
		Ok Nicolas, pas de problème. Ensuite, nous fournirons les informations à Emily pour qu'elle travaille sur la conception de l'invitation, et je contacterai Luiz pour poser des questions sur le papier parfumé.	0 – No partial code-switching (see full code-switching)
3.3.19/ 3.3.10/ 3.3.11/ 3.3.20/ 3.3.22	How do you say goodbye [to the group]?	Até logo	1 - Partial code-switching
		À bientôt	1 - Partial code-switching
		See you soon	0 – No code-switching
		เจอกันเร็วๆนี้	1 - Partial code-switching
		Até logo / A bientôt / See you soon / เจอกันเร็วๆนี้	1 - Partial code-switching

Monolingual group or One-on-One – Partial code-switching

2.3.00	You need to ask Luiz to start production. How do you begin your message?	Hello Luiz,	0 – No code-switching
		Bonjour Luiz,	1 - Partial code-switching
		Olá Luiz,	1 - Partial code-switching
		สวัสดี	1 - Partial code-switching
2.4.4	In what language do you plan on discussing the pickup with Jiab and Obe?	English only	0 – No code-switching
		Thai only	0 – Not partial code-switching
		Greet them in English, then switch to Thai	1 - Partial code-switching
		Greet them in Thai, then switch to English	1 - Partial code-switching
		In both English and Thai, switching as needed	0 – Not partial code-switching
4.2.01/ 4.2.02/ 4.2.03/ 4.2.04	How do you respond to Jiab/ Fabienne?	Hello Jiab/ Fabienne, can you help me understand a sales document that Claire sent?	0 – No code-switching
		Āwāṣḍī Jiab/ Fabienne, can you help me understand a sales document that Claire sent?	1 - Partial code-switching
		Bonjour Jiab/ Fabienne, can you help me understand a sales document that Claire sent?	1 - Partial code-switching
		Olà Jiab/ Fabienne, can you help me understand a sales document that Claire sent?	1 - Partial code-switching

Language complexity

Scene	In-game Question	Possible responses in the game	Research designation of the response (0/1)
2.3.01	What do you write to Luiz in the message?	Claire approved the logo with the yellow shower flower. Please send Claire and I a sample of the bottle with the logo. Then,	0 - Less complex

		you should prepare for production. It's urgent. Thank you.	
		The logo with the yellow shower flower has been approved by Claire. Please send Claire and I a sample of the bottle with the logo. Then you should prepare for production. We'll need to make headway quickly! Thank you.	1 - More complex
3.1.1	This is pretty important information for Emily, but she's not available. Who do you ask to take notes and fill Emily in after this conversation?	Can you take notes and inform Emily after this exchange?	0 - Less complex
		Can you take notes and apprise Emily of the situation after this exchange?	1 - More complex
3.2.1	You have a question. What do you ask?	How will we dissuade gate-crashers from showing up at our party?	1 - More complex
		How will we stop people who are not invited?	0 - Less complex
3.2.2	How do you answer Filipa's question?	We can designate an area by the entrance for photos. It's also adjacent to the window.	1 - More complex
		We can choose an area by the entrance for photos. It is also next to a window.	0 - Less complex
3.3.05/ 3.3.06/ 3.3.16/ 3.3.17	To be clear, where are these numbers and this information coming from?	Jiab and Fabienne, have you performed a SWOT analysis of our product on the market?	1 - More complex
		Jiab and Fabienne, have you analyzed the position of our product in the market?	0 - Less complex
4.1.07/ 4.1.12	The rainy season was longer than usual this year. How do you respond to Jiab?	Yes, it looked like it rained cats and dogs!	1 - More complex
		Yes, it looked like it rained a lot!	0 - Less complex

Appendix 8: ELITE The Serious Game In-Game Questionnaires

Questionnaire 1

About this questionnaire: at beginning of game, divided into multiple pages so players don't have to scroll too long

1. Do you agree to take part in this research?
 - a. I understand that my answers within ELITE The Serious Game will be collected for research, and I willingly agree to participate in this research.
2. Your age:
 - a. under 18
 - b. 18-24
 - c. 25-40
 - d. 41-56
 - e. 57-66
 - f. 66+
3. Your gender:
 - a. Male
 - b. Female
 - c. Other
 - d. I prefer not to answer
4. What is the highest degree or level of education you have completed?
 - a. less than high school
 - b. high school / equivalent
 - c. bachelor/ equivalent
 - d. master's
 - e. doctorate
 - f. other
5. Are you currently a student?
 - a. Yes, I am a full-time student.
 - b. Yes, I am a part-time student.
 - c. No, I am not a student.
6. On which continent did you primarily live during your formative years to age 18?
 - a. North America
 - b. South America
 - c. Europe
 - d. Africa
 - e. Asia
 - f. Australia
7. On which continent have you spent most of your life?
 - a. North America
 - b. South America
 - c. Europe
 - d. Africa
 - e. Asia
 - f. Australia
8. What is your native language?
 - a. English (UK)
 - b. English (USA)
 - c. English (Canada)
 - d. English (Australia)

- e. English (Other)
 - f. French (France)
 - g. French (Belgium)
 - h. French (Canada)
 - i. French (Other)
 - j. Portuguese (Portugal)
 - k. Portuguese (Brazil)
 - l. Portuguese (Other)
 - m. Thai
 - n. Other
9. What is your level of English according to the Common European Framework of Reference for Languages (CEFR)?
- a. Basic User - A1
 - b. Basic User - A2
 - c. Independent User - B1
 - d. Independent User - B2
 - e. Proficient User - C1
 - f. Proficient User - C2
 - g. Native speaker
10. What is your level of French according to the Common European Framework of Reference for Languages (CEFR)?
- a. I do not speak or understand any French.
 - b. Basic User - A1
 - c. Basic User - A2
 - d. Independent User - B1
 - e. Independent User - B2
 - f. Proficient User - C1
 - g. Proficient User - C2
 - h. Native speaker
11. What is your level of Portuguese according to the Common European Framework of Reference for Languages (CEFR)?
- a. I do not speak or understand any Portuguese.
 - b. Basic User - A1
 - c. Basic User - A2
 - d. Independent User - B1
 - e. Independent User - B2
 - f. Proficient User - C1
 - g. Proficient User - C2
 - h. Native speaker
12. What is your level of Thai according to the Common European Framework of Reference for Languages (CEFR)?
- a. I do not speak or understand any Thai.
 - b. Basic User - A1
 - c. Basic User - A2
 - d. Independent User - B1
 - e. Independent User - B2
 - f. Proficient User - C1
 - g. Proficient User - C2
 - h. Native speaker
13. I have travelled abroad for tourism.

- a. Never
 - b. 1-5 times
 - c. 6-10 times
 - d. More than 10 times
14. I have studied abroad.
- a. Never
 - b. Less than 4 months
 - c. 4 – 12 months
 - d. For more than 12 months
15. I have worked abroad.
- a. Never
 - b. less than 1 year
 - c. 1-2 years
 - d. 3-5 years
 - e. 6-10 years
 - f. more than 10 years
16. How often do you interact online or electronically with people who are located in another country than you?
- a. on a daily basis
 - b. on a weekly basis
 - c. on a monthly basis
 - d. on a yearly basis
 - e. Never or almost never
17. How many years of professional working experience do you have?
- a. None
 - b. 1-5 years
 - c. 6-10 years
 - d. 11-15 years
 - e. 16-20 years
 - f. 21-25 years
 - g. 26-30 years
 - h. more than 30 years
18. What is your current employment status?
- a. Employed full-time
 - b. Employed part-time
 - c. unemployed
 - d. retired
 - e. self-employed
 - f. other
19. What best describes the type of organization for which you currently work?
- a. For profit
 - b. Non-profit
 - c. Government
 - d. Other
 - e. Does not apply
20. Which of the following terms best describes the company or organization?
- a. Local
 - b. National
 - c. International
 - d. Does not apply

21. If you work in an international company, where do you work?
 - a. At headquarters
 - b. in the same country as the headquarters (but not at the headquarters itself)
 - c. in a country other than the headquarters
 - d. does not apply
22. Have you ever participated in a global virtual team (in other words, a working team whose members are in different countries and who communicate via digital technologies)?
 - a. No, never
 - b. Yes, once
 - c. Yes, more than once
 - d. Yes, frequently
 - e. Yes, very frequently or all the time
23. What was your role when working in a global virtual team?
 - a. Team leader
 - b. Team member
 - c. Both
 - d. I have never participated in a global virtual team.

All responses for the following questions unless otherwise noted include:

- a. Strongly disagree
- b. disagree
- c. Neutral
- d. Agree
- e. Strongly agree

(User acceptance of IT; Vankatesh, 2003, p. 460)

24. Virtual teams collaborate through digital technologies, such as videoconferencing, instant messaging, e-mails, and platforms to share documents. Such technologies are hereafter called 'digital technologies'... I find digital technologies useful in my job.
25. Using digital technologies enables me to accomplish tasks more quickly
26. Using digital technologies increases my productivity.
27. If I use digital technologies, I will increase my chances of getting a raise or making more money.
28. My interaction with digital technologies is clear and understandable
29. It is easy for me to become skillful at using digital technologies.
30. I find digital technologies easy to use.
31. Learning to operate digital technologies is easy for me.

(Empathy)

32. I believe that there are two sides to every question and try to look at both.
33. I try to look at everybody's side of a disagreement before I make a decision.
34. When I am upset at someone, I usually try to "put myself in his or her shoes" for a while.
35. I sometimes try to understand my friends better by imagining how this looks from their perspective.
36. I am tolerant towards people whose opinions are different from mine.
37. I think that I am an open minded person.
38. Before criticizing somebody, I try to imagine how I would feel if I were in their place.

Questionnaire 2

Placement at and of scenario 1: This questionnaire comes after the team has started working on their first tasks and has made some decisions. Questions 2-6 are from the ‘group identification’ scale. All questions also appear in the final questionnaire at the end of the game – so we can see how ‘group identification’ develops.

Preface: You want to share what it’s like working in the Unique Perfume team. What do you tell your friend?

- 1: I like working in the Unique Perfume team.
- 2: I identify myself as a member of the team.
- 3: I am glad to be a member of the team.
- 4: I identify with other members of the team.
- 5: I feel strong ties with other members of the team.
- 6: Our team communicates well.

Questionnaire 3

Placement after the “experimental section” which includes scenarios 3.1 and 3.2 (3 versions of these scenarios depending on communication channel). Questions are taken from the 21-item measure of trust in teams from Costa and Anderson (2011). Originally, this measure used a 7-point scale – I reduce it to 5 to be consistent with the other questionnaires.

Items and subscale composition of the final 21-item measure of trust in teams

Propensity to trust

1. Most people in this team do not hesitate to help a person in need.
2. In this team most people speak out for what they believe in.
3. In this team most people stand behind their convictions.
4. The typical person in this team is sincerely concerned about the problems of others.
5. Most people will act as “Good Samaritans” if given the opportunity.
6. People usually tell the truth, even when they know they will be better off by lying.

Perceived trustworthiness

7. In this team people can rely on each other.
8. We have complete confidence in each other’s ability to perform tasks.
9. In this team people will keep their word.
10. There are some hidden agendas in this team. (r)
11. Some people in this team often try to get out of previous commitments. (r)
12. In this team people look for each other’s interests honestly.

Cooperative behaviours

13. In this team we work in a climate of cooperation.
14. In this team we discuss and deal with issues or problems openly.
15. While taking a decision we take each other’s opinion into consideration.
16. Some people hold back relevant information in this team. (r)
17. In this team people minimize what they tell about themselves. (r)
18. Most people in this team are open to advice and help from others.

Monitoring behaviours

19. In this team people watch each other very closely.
 20. In this team people check whether others keep their promises.
 21. In this team most people tend to keep each other’s work under surveillance.
-

All items measured on a 7-point response scale (1 = “completely disagree”, 7 = “completely agree”). Reverse scored items denoted by (r). Researchers are encouraged to use the scale in future research with the written permission of the authors.

Source: Costa & Anderson (2011, p. 154)

Questionnaire 4

Page 1: relationships with other team members

1. I find it easiest to communicate with ____.
2. I find it most difficult to communicate with _____.
3. I feel closest to _____.
4. I feel the least connected to _____.
5. The person I think I can trust the most is:
6. The person I think I can trust the least is:

- a. Dan
- b. Emily
- c. Fabienne
- d. Filipa
- e. Jiab
- f. Luiz
- g. Nicolas
- h. Obe

Version 3:

I feel that I can trust *Dan* in all aspects of our teamwork.

Idem. (for all characters)

Page 2: communication canal and emoji

1: I find that it is generally easiest to communicate with my team members via _____.

- Email
- Phone call
- Video call
- Instant message
- Other

2: I find that using emoji such as smiley faces helps team communication.

3: Emoji such as smiley faces help me to understand the situation.

4: I use emoji in professional contexts.

Questionnaire 5

End of game – “team evaluation” after scenario 4.2

Page 1 (team performance)

- 1: Our team effectively used its resources.
- 2: Our team was within the proposed budget.
- 3: Our team was within the proposed time-schedule.
- 4: Our team was able to meet its goals.
- 5: Our team was able to respond quickly to problems.

Page 2: group identification (Q 2-5)

- 1: I LIKE WORKING IN the Unique Perfume team.
- 2: I IDENTIFY MYSELF AS a member of the team.
- 3: I am GLAD TO BE A MEMBER of the team.
- 4: I IDENTIFY WITH other members of the team.
- 5: I feel STRONG TIES with other members of the team.
- 6: Our team communicates well.

Page 3: Team communication inclusion

- 1: My team members made an effort to communicate in ways that other members understand.
- 2: My team members chose concepts and words with which each team member is familiar.
- 3: My team members checked that their messages were correctly understood by everyone in the team.
- 4: My team members made arguments that were clear and comprehensible to each other member.

Page 3: team diversity

The members of my team vary widely in their cultural values.

The members of my team hold totally different cultural perceptions and beliefs.

The members of my team vary widely in their cultural communication norms and behaviors.

Appendix 9: Serious game variables

- 1 Player_number
- 2 GameVersion
- 3 Research
- 4 Age
- 5 AgeCategory
- 6 Gender
- 7 Education
- 8 Student
- 9 Livedformative
- 10 Livedmost
- 11 Nativelang
- 12 Nativelangatendnotincluderariations
- 13 Bilingual
- 14 Englishlevel
- 15 Frenchlevel
- 16 Portugueseselevel
- 17 Thailevel
- 18 Traveltourism
- 19 Studyabroad
- 20 Workabroad
- 21 Onlineinteracionfrequency
- 22 Professionalexperience
- 23 Employmentstatus
- 24 typeoforg1
- 25 typeoforg2
- 26 Intlco
- 27 GVTexperience
- 28 GVTrole
- 29 TechUseful
- 30 TechEnable
- 31 TechProductivity
- 32 TechMoney
- 33 TechClarity
- 34 TechSkill
- 35 TechEasy
- 36 TechLearn
- 37 ITAcceptance
- 38 Empathy1
- 39 Empathy2
- 40 Empathy3
- 41 Empathy4
- 42 Empathy5
- 43 Empathy6
- 44 Empathy7
- 45 TeamLike1
- 46 TeamIdentify1

47 TeamGlad1
48 TeamIDmembers1
49 TeamTies1bugstronglydisagreetwiceforresponse1and5
50 TeamCommunicate1
51 TrustPropensity1
52 TrustPropensity2
53 TrustPropensity3
54 TrustPropensity4
55 TrustPropensity5
56 TrustPropensity6
57 TrustPerceived1
58 TrustPerceived2
59 TrustPerceived3
60 TrustPerceived4reversed
61 TrustPerceived5reversed
62 TrustPerceived6
63 TrustCoop1
64 TrustCoop2
65 TrustCoop3
66 TrustCoop4reversed
67 TrustCoop5reversed
68 TrustCoop6
69 TrustMonitoring1
70 TrustMonitoring2
71 TrustMonitoring3
72 CommChannelPref
73 EmojiHelps
74 EmojiUnderstanding
75 EmojiPro
76 CommEasiestWith
77 CommDifficultWith
78 ClosestTo
79 LeastConnectedTo
80 TrustMost
81 TrustLeast
82 TrustDan
83 TrustEmily
84 TrustFabienne
85 TrustFilipa
86 TrustJiab
87 TrustLuiz
88 TrustNicolas
89 TrustObe
90 Trust_average
91 Performance1
92 Performance2
93 Performance3
94 Performance4

95 Performance5
96 TeamLike2
97 TeamIdentify2
98 TeamGlad2
99 TeamIDMembers2
100 TeamTies2
101 TeamCommunicate2
102 CommInc1
103 CommInc2
104 CommInc3
105 CommInc4
106 CultDiv1
107 CultDiv2
108 CultDiv3
109 @1.1.00channel1
110 @1.3.3channel2
111 @2.1.02channel3
112 @2.2.1channel4
113 @2.3.10channel5
114 @2.5.0channel6
115 @2.4.2channel7
116 @3.3.00channel8
117 MCm34.1.06channel9
118 @4.2.05channel10
119 @1.2.0interloc2
120 @1.2.3interloc3
121 @1.2.9interloc4
122 @2.1.06interloc5
123 @2.1.07interloc7
124 IN2.2.1interloc8
125 @2.4.1interloc9
126 @3.1.1interloc10
127 @3.2.3interloc11
128 @3.2.6interloc12
129 @3.3.01interloc13
130 @4.0.1interloc14
131 @4.2.00interloc15
132 @1.1.05rep1
133 @1.1.06rep2
134 @1.2.8rep3
135 @1.3.1rep4
136 @1.3.10rep5
137 @2.1.03rep6
138 @2.3.05rep7
139 @2.3.08rep8
140 @2.3.11rep9
141 @3.1.4rep10
142 @3.3.08rep11

143 @1.3.2CS1
144 @1.2.3CS2
145 @2.2.2CS3
146 @2.2.5CS4
147 @2.3.00cS5
148 @2.3.06CS6
149 @2.3.11CS7
150 @2.4.4CS8
151 CS8afull
152 CS8bpartial
153 CS10afull
154 CS10bpartial
155 @3.1.2CS9
156 @3.1.5CS10
157 @3.3.02CS13
158 @3.3.03CS14
159 @3.3.19CS15
160 @4.1.08CS16
161 @4.2.00CS17
162 @4.2.01CS18
163 @2.3.01BELF1
164 @3.1.1BELF2
165 @3.2.1BELF3
166 @3.2.2BELF4
167 @3.3.05BELF5
168 @4.1.07BELF6
169 @1.2.0emoji1.1
170 @1.2.0emoji1yesno
171 @2.1.05emoji2
172 @2.1.05emoji2yesno
173 @2.2.0emoji3
174 @2.2.0emoji3yesno
175 @3.1.3emoji4
176 @3.1.3emoji4yesno
177 @3.1.5emoji5
178 @3.1.5emoji5yesno
179 @3.2.1emoji6
180 @3.2.1emoji6yesno
181 @3.2.2emoji7
182 @3.2.2emoji7yesno
183 @3.2.3emoji8
184 @3.2.3emoji8yesno
185 @3.2.6emoji9
186 @3.2.6emoji9yesno
187 @3.3.02emoji10
188 @3.3.02emoji10yesno
189 @3.3.03emoji11
190 @3.3.03emoji11yesno

191 @3.3.05emoji12
192 @3.3.05emoji12yesno
193 @3.3.07emoji13
194 @3.3.07emoji13yesno
195 @4.1.06emoji14
196 @4.1.06emoji14yesno
197 @4.1.07emoji15
198 @4.1.07emoji15yesno
199 @4.1.08emoji16
200 @4.1.08emoji16yesno
201 TechAccept_Fac1
202 TechAccept_Fac2
203 Empathy
204 EnjoyTeam1
205 EnjoyTeam2
206 EnjoyTeamDifference
207 Trust_Fac1
208 Trust_Fac2
209 Trust_Fac3
210 Trust_Fac4
211 Trust_Fac5
212 Trust_Propensity
213 Trust_Perceived
214 Trust_NotPerceived
215 Trust_Cooperation
216 Trust_KnowledgeHiding
217 Trust_MonitorBehav
218 Emoji_usefulness
219 Gender2
220 TeamPerformance
221 CommInclusion
222 CultDiversity
223 NativeLangu_EnglishOrNot
224 ModeOfComm1
225 ModeOfComm2
226 ModeOfComm3
227 ModeOfComm4
228 Redundancy1
229 Redundancy3
230 Redundancy4
231 Redundancy5
232 RedundancyNewMixed
233 RedundancyNewLow
234 RedundancyNewVerif
235 CodeSwitch1
236 CodeSwitch2
237 CodeSwitch3
238 CodeSwitch4

239 BELF
240 Nativelang2
241 CommEasiestWithEnglish
242 CommEasiestWithNativeLang
243 CommEasiestWithNativeLang2
244 CommEasiestWithAge
245 CommEasiestWithGender
246 CommEasiestWithHierarchy
247 CommDifficultWithEnglish
248 CommDifficultWithNativeLang
249 CommDifficultWithNativeLang2
250 CommDifficultWithAge
251 CommDifficultWithGender
252 CommDifficultWithHierarchy
253 ClosestToEnglish
254 ClosestToNativeLang
255 ClosestToNativeLang2
256 ClosestToAge
257 ClosestToGender
258 ClosestToHierarchy
259 LeastConnectedToEnglish
260 LeastConnectedToNativeLang
261 LeastConnectedToNativeLang2
262 LeastConnectedToAge
263 LeastConnectedToGender
264 LeastConnectedToHierarchy
265 TrustMostEnglish
266 TrustMostNativeLang
267 TrustMostNativeLang2
268 TrustMostAge
269 TrustMostGender
270 TrustMostHierarchy
271 TrustLeastEnglish
272 TrustLeastNativeLang
273 TrustLeastNativeLang2
274 TrustLeastAge
275 TrustLeastGender
276 TrustLeastHierarchy
277 @1.2.0interloc2English
278 @1.2.0interloc2Age
279 @1.2.0interloc2Gender
280 @1.2.0interloc2Hierarchy
281 @1.2.3interloc3English
282 @1.2.3interloc3NativeLang
283 @1.2.3interloc3NativeLang2
284 @1.2.3interloc3Age
285 @1.2.9interloc4English
286 @1.2.9interloc4NativeLang

287 @1.2.9interloc4NativeLang2
288 @1.2.9interloc4Age
289 @1.2.9interloc4Gender
290 @1.2.9interloc4Hierarchy
291 @2.1.06interloc5English
292 @2.1.06interloc5NativeLang
293 @2.1.06interloc5NativeLang2
294 @2.1.06interloc5Hierarchy
295 @2.1.07interloc7English
296 @2.1.07interloc7NativeLang
297 @2.1.07interloc7NativeLang2
298 @2.1.07interloc7Hierarchy
299 IN2.2.1interloc8English
300 IN2.2.1interloc8NativeLang
301 IN2.2.1interloc8NativeLang2
302 IN2.2.1interloc8Age
303 IN2.2.1interloc8Hierarchy
304 @2.4.1interloc9NativeLang
305 @2.4.1interloc9NativeLang2
306 @2.4.1interloc9Age
307 @2.4.1interloc9Hierarchy
308 @3.1.1interloc10English
309 @3.1.1interloc10Age
310 @3.1.1interloc10Gender
311 @3.1.1interloc10Hierarchy
312 @3.2.3interloc11English
313 @3.2.3interloc11Age
314 @3.2.3interloc11Gender
315 @3.2.3interloc11Hierarchy
316 @3.2.6interloc12English
317 @3.2.6interloc12NativeLang
318 @3.2.6interloc12NativeLang2
319 @3.2.6interloc12Age
320 @3.2.6interloc12Hierarchy
321 @3.3.01interloc13English
322 @3.3.01interloc13NativeLang
323 @3.3.01interloc13NativeLang2
324 @3.3.01interloc13Age
325 @3.3.01interloc13Gender
326 @3.3.01interloc13Hierarchy
327 @4.0.1interloc14English
328 @4.0.1interloc14NativeLang
329 @4.0.1interloc14NativeLang2
330 @4.0.1interloc14Age
331 @4.0.1interloc14Gender
332 @4.0.1interloc14Hierarchy
333 @4.2.00interloc15NativeLang
334 @4.2.00interloc15NativeLang2

335 @4.2.00interloc15Age
336 @1.2.3interloc3NativeLang2_French
337 @1.2.3interloc3NativeLang2_Thai
338 @1.2.9interloc4NativeLang2_English
339 @1.2.9interloc4NativeLang2_French
340 @1.2.9interloc4NativeLang2_Thai
341 @2.1.06interloc5NativeLang2_English
342 @2.1.06interloc5NativeLang2_Thai
343 @2.1.07interloc7NativeLang2_English
344 @2.1.07interloc7NativeLang2_Thai
345 @2.2.1interloc8NativeLang2_French
346 @2.2.1interloc8NativeLang2_Portuguese
347 @2.2.1interloc8NativeLang2_Thai
348 @2.4.1interloc9NativeLang2_Portuguese
349 @2.4.1interloc9NativeLang2_Thai
350 @3.2.6interloc12NativeLang2_French
351 @3.2.6interloc12NativeLang2_Portuguese
352 @3.3.01interloc13NativeLang2_English
353 @3.3.01interloc13NativeLang2_French
354 @3.3.01interloc13NativeLang2_Thai
355 @4.0.1interloc14NativeLang2_English
356 @4.0.1interloc14NativeLang2_French
357 @4.0.1interloc14NativeLang2_Portuguese
358 @4.0.1interloc14NativeLang2_Thai
359 @4.2.00interloc15NativeLang2_French
360 @4.2.00interloc15NativeLang2_Thai
361 Interlocutor_English
362 Interlocutor_French
363 Interlocutor_Portuguese
364 Interlocutor_Thai
365 InterlocNativeLang
366 Interloc_EnglishLevel
367 InternationalExperience

Appendix 10: Correlations from ELITE The Serious Game

		Team Performan ce	Communication Inclusion	Group Identification @ Time 1	Group Identification @ Time 2	Group Identificati on Difference
ModeOfComm1	Corrélation de Pearson	,187**	,074	,182**	,096	-,066
	Sig. (bilatérale)	,002	,215	,002	,110	,278
	N	283	285	282	279	271
ModeOfComm2	Corrélation de Pearson	-,004	,054	,097	,024	-,072
	Sig. (bilatérale)	,951	,362	,103	,688	,238
	N	283	285	282	279	271
ModeOfComm3	Corrélation de Pearson	-,069	,026	-,101	-,112	-,010
	Sig. (bilatérale)	,250	,666	,088	,061	,865
	N	283	285	287	279	271
ModeOfComm4	Corrélation de Pearson	,163**	,134*	,161**	,064	-,095
	Sig. (bilatérale)	,006	,023	,006	,287	,120
	N	283	285	285	279	271
CodeSwitch1	Corrélation de Pearson	-,282**	-,114	-,108	-,195**	-,101
	Sig. (bilatérale)	,000	,051	,066	,001	,092
	N	290	292	288	285	277
CodeSwitch2	Corrélation de Pearson	-,170**	-,047	-,002	-,052	-,074
	Sig. (bilatérale)	,004	,428	,967	,384	,220
	N	290	292	288	285	277
CodeSwitch3	Corrélation de Pearson	-,044	-,066	,075	,080	,017
	Sig. (bilatérale)	,458	,259	,201	,175	,776
	N	290	292	290	285	277
CodeSwitch4	Corrélation de Pearson	,190**	,115	,047	,171*	,150*
	Sig. (bilatérale)	,009	,113	,527	,020	,046
	N	188	190	186	186	179
RedundancyNew Mixed	Corrélation de Pearson	,168**	,065	,087	,073	-,046
	Sig. (bilatérale)	,004	,268	,137	,216	,444
	N	290	292	290	285	277
RedundancyNew Low	Corrélation de Pearson	,027	,046	,044	,005	-,009
	Sig. (bilatérale)	,646	,433	,455	,939	,886
	N	290	292	293	285	277
RedundancyNew Verif	Corrélation de Pearson	,121*	,051	-,009	,119*	,089
	Sig. (bilatérale)	,039	,388	,883	,045	,138
	N	290	292	294	285	277
Language Complexity	Corrélation de Pearson	-,018	,161**	,094	,024	-,045

	Sig. (bilatérale)	,756	,006	,113	,684	,455
	N	290	292	288	285	277
Interlocutor English	Corrélation de Pearson	,143*	-,057	,079	,064	-,052
	Sig. (bilatérale)	,015	,331	,174	,283	,389
	N	290	292	296	285	277
Interlocutor French	Corrélation de Pearson	-,140*	-,009	,003	-,191**	-,166**
	Sig. (bilatérale)	,017	,876	,959	,001	,006
	N	290	292	296	285	277
Interlocutor Portuguese	Corrélation de Pearson	-,233**	-,141*	-,094	-,187**	-,120*
	Sig. (bilatérale)	,000	,016	,108	,002	,045
	N	290	292	294	285	277
Interlocutor Thai	Corrélation de Pearson	,138*	,131*	-,009	,214**	,243**
	Sig. (bilatérale)	,019	,026	,872	,000	,000
	N	290	292	296	285	277
InterlocNativeLang	Corrélation de Pearson	,069	-,036	,077	,109	,061
	Sig. (bilatérale)	,351	,626	,288	,143	,412
	N	183	185	192	182	181

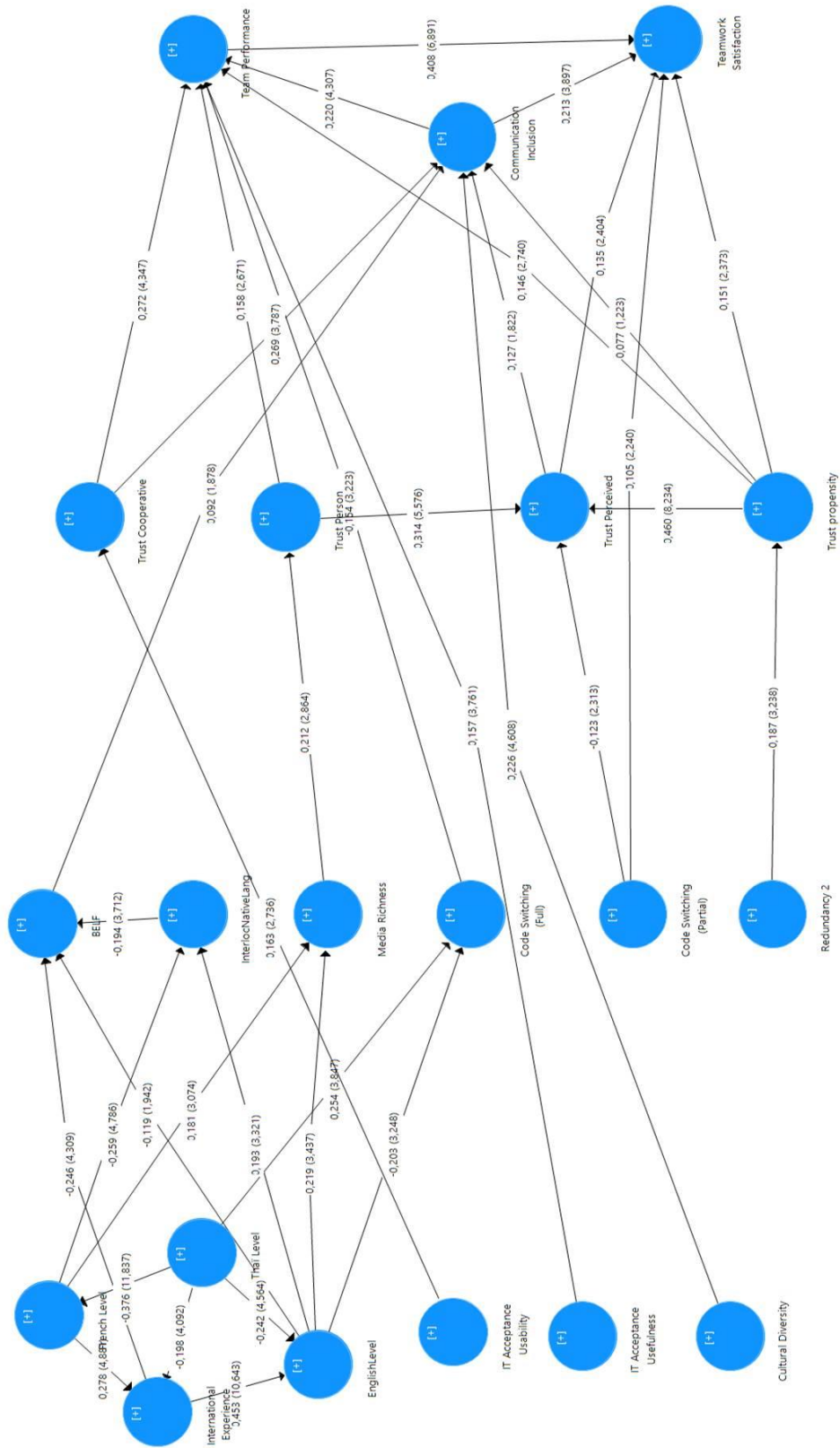
		Trust Propensity	Trust Perceived	Trust Cooperation
ModeOfComm1	Corrélation de Pearson	,144*	,102	,053
	Sig. (bilatérale)	,015	,089	,374
	N	286	281	282
ModeOfComm2	Corrélation de Pearson	-,075	,014	-,030
	Sig. (bilatérale)	,205	,814	,613
	N	286	281	282
ModeOfComm3	Corrélation de Pearson	-,098	-,064	,014
	Sig. (bilatérale)	,096	,286	,810
	N	289	284	285
ModeOfComm4	Corrélation de Pearson	,004	,013	,034
	Sig. (bilatérale)	,948	,829	,567
	N	289	284	285
CodeSwitch1	Corrélation de Pearson	-,087	-,147*	-,152**
	Sig. (bilatérale)	,138	,012	,009
	N	293	287	289
CodeSwitch2	Corrélation de Pearson	-,166**	-,129*	-,047
	Sig. (bilatérale)	,004	,029	,422
	N	293	287	289
CodeSwitch3	Corrélation de Pearson	,016	-,109	-,037
	Sig. (bilatérale)	,785	,063	,533
	N	295	289	291
CodeSwitch4	Corrélation de Pearson	,177*	,002	,160*
	Sig. (bilatérale)	,014	,984	,028
	N	192	185	189
RedundancyNewMixed	Corrélation de Pearson	,166**	,090	,079
	Sig. (bilatérale)	,004	,126	,180
	N	295	289	291
RedundancyNewLow	Corrélation de Pearson	,082	,038	-,022
	Sig. (bilatérale)	,162	,518	,713
	N	296	290	292

RedundancyNewVerif	Corrélation de Pearson	,120*	,066	,039
	Sig. (bilatérale)	,040	,262	,508
	N	296	290	292
BELF	Corrélation de Pearson	,059	,059	,099
	Sig. (bilatérale)	,312	,323	,093
	N	293	287	289
Interlocutor English	Corrélation de Pearson	,072	,099	,015
	Sig. (bilatérale)	,219	,093	,798
	N	296	290	292
Interlocutor French	Corrélation de Pearson	-,108	-,105	-,069
	Sig. (bilatérale)	,064	,074	,241
	N	296	290	292
Interlocutor Portuguese	Corrélation de Pearson	-,114	-,166**	-,147*
	Sig. (bilatérale)	,050	,005	,012
	N	296	290	292
Interlocutor Thai	Corrélation de Pearson	,100	,106	,131*
	Sig. (bilatérale)	,086	,073	,025
	N	296	290	292
InterlocNativeLang	Corrélation de Pearson	,153*	,160*	,034
	Sig. (bilatérale)	,036	,030	,643
	N	188	185	186

** . La corrélation est significative au niveau 0.01 (bilatéral).

* . La corrélation est significative au niveau 0.05 (bilatéral).

Appendix 11: The full PLS-SEM model from the serious game



Appendix 12: Interview guide for Ethnographic Study 3

*Interview guide created through collaboration with another researcher in the network.

Introduction	
<p>Research Presentation</p> <ul style="list-style-type: none"> <input type="checkbox"/> This research aims to understand important elements to be considered for the future participants involved in the building of a European university. The study is qualitative in nature with observations and interviews of members of the target European university network. Observations focus on team member interaction and accomplishments. <input type="checkbox"/> The goals of the interviews are to better understand your individual views and feelings: <ul style="list-style-type: none"> - Individual's reasons for participating and understanding of The network goals - Staff mobility - Language diversity <input type="checkbox"/> Volunteer basis, Confidential nature of the interview <input type="checkbox"/> Acceptation of recording the interview 	<p>Transparence of research goals and create confidence</p>
The Individual	
<p>Could you present your cultural and linguistic background?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Current location + university <input type="checkbox"/> Cultural backgrounds <input type="checkbox"/> Languages(s) spoken (native or learned + level) 	<p>Language diversity information/ background</p>
<p>Could you present your role(s) within the network?</p> <ul style="list-style-type: none"> <input type="checkbox"/> How did you join the network? <input type="checkbox"/> In which WP or TF are you? <input type="checkbox"/> How would you describe the activities of your group? <input type="checkbox"/> Duration of involvement? <input type="checkbox"/> Previous experience working with people from other institutions? <input type="checkbox"/> Previous experience working online? <input type="checkbox"/> Function at your home university? Tenure (for faculty)? 	<p>Role/ background</p>
<p>What is your interest in working with the network?</p> <ul style="list-style-type: none"> <input type="checkbox"/> <i>Expand my network</i> <input type="checkbox"/> <i>Confront problematic situations with other institutions and search for resolutions</i> <input type="checkbox"/> <i>Develop my curiosity, learn new knowledge</i> <input type="checkbox"/> <i>Possibility to travel</i> 	<p>Contribution to the network</p>

<input type="checkbox"/> <i>Improve my English proficiency</i> <input type="checkbox"/> <i>Impact my career</i> <input type="checkbox"/> <i>Others</i> Do you have any examples to share about any of these?	
Goals and motivations	
In your own words, what is the goal of the network? <input type="checkbox"/> Of the The network alliance	Alignment with goals
In your own words, what are the values of the network? <input type="checkbox"/> Of the alliance <input type="checkbox"/> How do you see these values demonstrated in your subgroup? <input type="checkbox"/> How strong / present are these values from your standpoint?	Alignment with values
What elements of the network match with your professional or personal goals?	Alignment with personal work goals/objectives and motivations
How much time and effort have you invested in the network? <input type="checkbox"/> Does this feel like an appropriate amount of time and effort? <input type="checkbox"/> For your return on investment? <input type="checkbox"/> To help the network achieve its goals? <input type="checkbox"/> How is this time considered by your institution? Do you get any credits for this time investment?	Investment
Personal investment and sense of belonging	
What do you like about this work dedicated to the network? What do you dislike about this work dedicated to the network?	Positive feelings, pride
Can you share the hierarchical structure of your institution? To what extent do you feel supported and encouraged by your institution?	Context
<i>(if not a leader)</i> To what extent, do you feel supported and encouraged by your team leader/management? <input type="checkbox"/> Can you give an example of a time when they helped you?	Support, encouragement, assistance
To what extent, do you feel supported and encouraged by your team members?	Support, encouragement,

<input type="checkbox"/> Can you give an example of a time when a team member helped you OR when you helped a team member?	assistance
<p>Do you feel a sense of belonging to the network?</p> <p>To your subgroup?</p> <input type="checkbox"/> If so, would you characterize it as strong, weak or something in between? <input type="checkbox"/> If so, at what point did your sense of belonging begin? (immediately, after a while, after meeting in person) <input type="checkbox"/> If not, why do you not feel this sense of belonging? <input type="checkbox"/> Does it feel stronger for the network or your subgroup? To what extent do you feel that you've developed relationships with the other team members?	Sense of belonging
<p>How might the network improve your professional career?</p> <p>Would you consider spending some time at any of the network's universities?</p>	Mobility
Teamwork and Communication	
<p>In your own words, what is the network's language policy?</p> <input type="checkbox"/> How do you feel about it?	Alignment with values, language use
<p>What communication methods or techniques make your teamwork <u>more effective</u>?</p> <p>What communication methods or techniques make your teamwork more interesting?</p> <input type="checkbox"/> <i>Choice of language</i> <input type="checkbox"/> <i>Choice of media</i> <input type="checkbox"/> <i>Use of Zoom functionalities (reactions, raise hand, chat...)</i> <input type="checkbox"/> <i>Translation tool/ website</i> <input type="checkbox"/> <i>Intermediaries or bridge people</i> <input type="checkbox"/> <i>Changes in vocabulary, speed</i> <input type="checkbox"/> <i>Humor</i> <input type="checkbox"/> <i>Others</i>	Communication strategies, support, assistance
<p>Have you seen the emergence of any informal sub-groups in Unite!?</p> <input type="checkbox"/> Within whom? <input type="checkbox"/> On what kind of topic? <p>Have you seen any informal inter-groups exchanges within Unite!?</p> <input type="checkbox"/> Within whom? <input type="checkbox"/> On what kind of topic?	Sub-groups visible or invisible

Personal experience	
How do you feel about working remotely from your colleagues?	Satisfaction with group
<p>Could you share an example of a situation in which you faced difficulties regarding communication or teamwork?</p> <input type="checkbox"/> How did you resolve the problem?	Communication difficulties
Can you give an example of a time in which you communicated in a language other than English within the framework of the network?	Multilingualism
<p>How does the use of the English language in your subgroup impact:</p> <input type="checkbox"/> Your contribution to the group <input type="checkbox"/> Your motivation to participate more or less actively <i>(applies only if people do not refer to that in the intro)</i>	Multilingualism
<p>In your opinion, is the multilingual character of your team more an advantage or a difficulty for your work?</p> <p>In what ways?</p>	Multilingualism
<p>Is the multicultural aspect of your subgroup:</p> <input type="checkbox"/> an advantage to your sub-group? <input type="checkbox"/> disadvantage to your sub-group?	Multicultural
If you could change anything about how your subgroup teamwork is organized, what would it be?	Structure of teamwork
If you had a new member joining from your institution, what advice would you give them?	Personal feelings
Other	
Is there anything that we haven't discussed that you would like to add?	
Is there anyone within in your institution that you would recommend that we should talk to?	
Conclusion	

Are you interested in receiving this research's results?	
Thank you very much for your time.	

Appendix 13: Coding structure from Ethnographic Study 3

Name	Description
1. Temporality	
1.1 @ Beginning	
1.1.1 Start date	
1.2 Growing and evolving	
1.3 Thinking of the future	
1.4 Desired change	
1.5 Outcome	
1.5.1 Effectiveness	
1.5.2 Efficiency, time	
1.5.3 Learning in unite	
1.6 Advice for newcomers	
2. Multidimensionality	Exploring the five most common dimensions attributed to team cohesion: task cohesion, social cohesion, belonging, group pride, morale
2.1 Task Cohesion	from Salas et al. (2015): the attraction or bonding between group members based on a shared commitment to achieving the group's goals and objectives
2.1.1 Belief in goals, working towards same goal	People need to be committed to working towards the same goal. This requires belief in the goal (both conceptually and belief that it can be done) both at the organizational level and team level. Many constraints can prevent people from working towards the goal.
2.1.1.1 Org goals_belief in, working towrds same goal, clarity, consensus	Here, we look at the organization's goals and values. In general, these goals are much larger and difficult to identify. They cross many different areas.

Name	Description
2.1.1.1.1 NEGATIVE	There is quite a lot of confusion around the organization's goals. Some people only understand the goals of their subgroup. Others don't entirely believe in the goals of the organization. In any case, the project is viewed by most as complex, overwhelming and confusing.
2.1.1.2 Team goals_belief in, working towards same goal, clarity, consensus	Having a common goal is essential for a team. In addition, the TEAM really believes in the the importance of their goal, promoting multilingualism and multiculturalism.
2.1.1.2.1 NEGATIVE, unclear or difficult to attain goals	
2.1.1.2.2 Aligning how team works with their goals	
2.1.1.2.3 Multilingualism, advantage	
2.1.1.2.4 Multilingualism, as goal	
2.1.1.2.5 Multilingualism, challenge	
2.1.1.3 NEGATIVE Constraints	There are a lot of negative constraints to completing goals, mostly relating to the ambiguity and complexity of the project, the time required, the lack of organization or communication about the organization etc.
2.1.1.7 Tasks & Work (to reorganize)	
Tangibility	
Tasks, tricky	
Tasks, variety of	
2.1.1.7.1 Ambiguity	

Name	Description
2.1.1.7.11 Time	
2.1.1.7.2 Complexity of project	
2.1.1.7.3 Lack of communication from above	
2.1.1.7.4 Lack of or bad organization	
2.1.1.7.5 Lack of understanding	
2.1.1.7.6 Organizational, institutional constraints	
2.1.1.7.7 Not being heard	
2.1.1.7.8 Too much work	
2.1.1.7.9 Cultural differences	
2.1.2 Perception of group's commitment, engagement, investment	Do people appear to be committed to achieving the group's goals?
2.1.2.1 Being committed, invested, engaged and active	People DO seem to be committed, invested engaged and active participants.
2.1.2.1.1 NEGATIVE, unclear investment	Not everyone is invested at the same level.
2.1.2.2 Frequency of interaction and responsiveness	When people are frequently participating and interacting, that signals that they are committed. The same goes for when they respond quickly to their team members' requests.
2.1.2.3 Leader demonstrating engagement	The leader plays an important role by showing their engagement.
2.1.2.4 Prioritization of Unite and team work	Sometimes, the organization's or team's work is put first or prioritized.

Name	Description
2.1.3 Helping, supporting each other to achieve goals	When people help and support each other, it signals commitment to the group and group members.
2.1.3.1 How support and help is perceived	Support and help occurs at many different levels: individually, team, leader, organization, institutionally. Besides feeling support and help FROM others, individuals also support and help others. In doing so, they may feel that they're contributing to the larger project.
2.1.3.1 INDIV is supportive, helpful, encouraging	
2.1.3.2 TEAM are supportive, helpful, encouraging	
2.1.3.3 LEADER is supportive, helpful, encouraging	
2.1.3.4 ORG is supportive, helpful, encouraging	
2.1.3.5 INSTIT is supportive, helpful, encouraging	
2.1.3.5.1 NEGATIVE, INSTIT lack of support	
2.1.3.6 'I' am supportive or helpful to my team	
2.1.3.7 Sense of contribution to larger project	
2.1.3.2 Means of supporting	The means of supporting other include many different ideas, but many are especially related to communication.

Name	Description
2.1.3.2.1 Necessity of English (BELF)	English is privileged as the functional language in this group. It is the only language that all members understand (at least to an extent).
2.1.3.2.1 NEGATIVE, English difficulties	
2.1.3.2.10 In-person communication	
2.1.3.2.2 Comm strategies for BELF	While everyone is using English, group members recognize that it's an international form of English. Acceptance of others is extremely important. Some adaptation techniques were noted.
2.1.3.2.2.1 Accepting everyone's English (BELF)	
2.1.3.2.2.2 Adapting English to person, level, context	
2.1.3.2.2.3 Lexical choices towards other language	
2.1.3.2.2.4 Reformulating questions or info	
2.1.3.2.2.5 NEGATIVE Pressure with Native speakers	
2.1.3.2.3 Multilingualism	There has been some limited use of multilingualism in the group, but it's been quite limited (see code-switching below for some examples of language use besides English). However, there is a general awareness and often a willingness to experiment, despite not knowing how to get started.

Name	Description
2.1.3.2.3.1 Awareness and use of multiculturalism	
2.1.3.2.3.2 Willingness to experiment and share	
2.1.3.2.3.3 NEG Lack of, difficulties to implement	
2.1.3.2.4 Company speak & Prof lang	Some instances of company speak show how the group has chosen their own terms. Some instances of professional language orient the language choice.
2.1.3.2.5 Online comm and channel	Teams working online have particularities. It is very important for team members to show their presence and implication on the online platforms, and to participate in collaborate work approaches such as google docs. Written communication and visual communication play important roles.
2.1.3.2.5.1 Showing presence and interacting	
2.1.3.2.5.2 Shared, collaborative tools and innov platforms	
2.1.3.2.5.3 Discipline	
2.1.3.2.5.4 Written comm	
2.1.3.2.5.5 Visual comm (replace nonverbal comm)	
2.1.3.2.5.6 NEGATIVE, online communication	
2.1.3.2.6 Code-switching	Instances of code-switching have been noted mostly for efficiency, understanding.

Name	Description
	Examples are quite limited in the full group setting. Some code-switching happens one-on-one or in small groups that are dominated by a certain language (and where any outsiders also have a good command of that language).
2.1.3.2.6.1 Code-switching for efficiency	
2.1.3.2.6.2 Code-switching for understanding	
2.1.3.6.3 National language subgroups	
2.1.3.6.4 NOT Code-switching to include all	
2.1.3.2.7 Creating communication norms	Creating communication norms makes everyone feel more at ease and less frustrated.
2.1.3.2.7.1 Deferring to other's language choice	
2.1.3.2.7.2 NEGATIVE, lack of communication	
2.1.3.2.8 Being interactive and creating spaces for interaction	Interaction between team members (and between groups) is very important for creating task cohesion because it shows people's commitment. It could also be integrated into social cohesion between interaction shows that people are comfortable and have a general attraction to certain people.
2.1.3.2.6 1-on-1 communication	

Name	Description
2.1.5b.2 Involving everyone	
2.1.5b.3 Links between groups	
2.1.5b.4 Leader's role	
2.1.5c.2 Small groups	
2.1.5c.3 NEGATIVE, decreasing efficiency	
Collaboration	
Compromise	
Consensus	
2.1.3.2.9 Being flexible	Flexibility is seen as an asset.
2.1.4 Confidence in team's abilities	Commitment can be (negatively) influenced when team members are confident that their team can accomplish the tasks they are given.
2.1.4.1 NEGATIVE, not believe in abilities, think could be better, different linguistic understandings	
2.2 Social Cohesion	from Salas et al. (2015): closeness or attraction based on social relationships in the group
2.2.1 Connecting & Relationship building	Social cohesion is about building relationships and connecting with others. Connections form and manifest in a variety of ways
2.2.1.1 Based on participation and work being accomplished	People feel connected with those with which they collaborate to accomplish something together.
2.2.1.2 Frequency of work, 'seeing' each other	The frequency and regularity of seeing each other is key for building relationships (online).

Name	Description
2.2.1.3 Based on duration of relationship	Relationships build over time.
2.2.1.4 Knowing each other on a personal level	People try to understand each other on a personal level - who are they outside of work.
2.2.1.5 Necessity of informal communication	Information communication is a way to connect.
2.2.1.6 In-person, face-to-face	It is easier to build relationships in-person, but is it necessary?
2.2.1.7 Desire to keep in touch outside of work	Similar to knowing each other on a personal level is the the idea that people want to continue their relationship outside of the work context.
2.2.1.8 Plurilingualism for connecting with others	Some share languages as a means of connecting.
2.2.3 Acceptance of each other	People connect when they feel accepted by others.
2.2.3.1 Feeling accepted & heard by team	
2.2.3.1.1 NEGATIVE feeling unheard	
2.2.3.2 Acceptance of cultural and linguistic diversity	
2.2.3.3 Acceptance of English language level	
2.2.3.4 Code-switching to include others	
2.2.3.5 Demonstrating acceptance, agreement	
2.2.3.6 Acceptance of working online	

Name	Description
2.2.4 Trust and psychological safety	People need to feel psychological safety with their group members in order to connect.
2.2.5 Likeness	People like to highlight similarities to show how they can relate to others.
2.2.5.1 Shared personal interests and values	
2.2.5.2 Shared professional interests	
2.2.5.3 Shared experiences, background, identity	
2.2.5.4 Shared understanding	
2.2.5.5 Shared personality traits	
2.2.5.6 Desire for, interest in plurilingualism	
2.2.6 Diversity & difference (positive appreciation)	Diversity and difference is also valued.
2.2.6.1 NEG Difficulties of cultural differences	
2.2.7 NEGATIVE, Preventing social cohesion	
2.3 Belonging (attraction to each other)	from Salas et al. (2015): the degree to which group members are attracted to each other
2.3.1 Sense of community	
2.3.2 Feeling part of something bigger than oneself	
2.3.3 Importance of frequency of communication	
2.3.4 Team vs Org	

Name	Description
2.3.4.1 NEGATIVE lack of belonging, org level	
2.3.5 Role of in-person interaction	
2.3.6 Liking people, people are nice or funny	There is a general sense of liking individuals and the team as a whole.
2.3.7 Visibility of organization on day-to-day basis	
2.3.8 Expressions of belonging	People express their belonging through a variety of terms.
2.3.8.1 Family, home	
2.3.8.2 'We' spirit, team spirit	
2.3.8.3 Tribe	
2.3.8.4 European	
2.3.8.5 Friends	
2.3.8.6 MMer	
2.3.8.7 Sub-subgroup member	
2.3.9 Development, growth of belonging	Belonging grows over time.
2.4 Group Pride	from Salas et al. (2015): the extent to which group members exhibit liking for status ideologies that the group supports or represents, or the shared importance of being a member of the group
2.4.1 Reinforcing TEAM ideologies	Spreading the ideologies of multilingualism and multiculturalism through the organization (and beyond)
2.4.2 Us vs them	The group identity seem to be based on an 'us' vs 'them' idea, where 'we' are doing a lot of important work
2.4.3 Group accomplishment	Team members of proud of their group's accomplishments.

Name	Description
2.4.3.1 NEGATIVE	The group may not have accomplished what it wants/ should.
2.4.3.2 Individual learning	
2.4.4 Pride of gp member's abilities	
2.5 Morale	from Salas et al. (2015): individuals high degree of loyalty to fellow group members and their willingness to endure frustration for the group
2.5.1 Enduring frustrations - within GP	Frustrations from other group members or from group work.
2.5.2 Frustrations, feeling unheard, unseen by ORG, INSTIT	
2.5.3 Marginalization, Others' lack of understanding, belief in multilingualism and multiculturalism	The group's morale is decreased when they feel marginalized
2.5.4 Loyalty, 'sticking up for each other'	Examples of times that people have "stuck up for each other" in the face of adversity or hierarchy.
3. Multilevel	
3.1 Individual level	
Plurilingualism to improve individual skills	
3.2 Team level	
3.3 Organizational level	
4. Registers of language	
Company speak	
National languages	
Professional language	
5. Virtuality	

Name	Description
Online vs in-person	
Online work, acceptance	
Online work, personal welfare	