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Evaluation and development of compassion as a transdiagnostic protective factor : cross-sectional, longitudinal, and interventional studies based on a processual approach

Marine Paucsik

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THÈSE

Pour obtenir le grade de

DOCTEUR DE L'UNIVERSITÉ GRENOBLE ALPES

Spécialité : PSYCHOLOGIE CLINIQUE ET PATHOLOGIQUE

Arrêté ministériel : 25 mai 2016

Présentée par

Marine PAUCSIK

Thèse dirigée par **CELINE BAEYENS**, Université Grenoble Alpes et
REBECCA SHANKLAND, Université Lumière Lyon 2

Préparée au sein du **Laboratoire interuniversitaire de
Psychologie/Personnalité, Cognition, Changement social** dans
l'**École Doctorale Sciences de l'homme, du Politique et du
Territoire**

**Evaluation et développement de la compassion en
tant que facteur protecteur transdiagnostique :
études transversales, longitudinales et
interventionnelles fondées sur une approche
processuelle**

**Evaluation and development of compassion as a
transdiagnostic protective factor: cross-
sectional, longitudinal, and interventional
studies based on a processual approach**

Thèse soutenue publiquement le **18 novembre 2022**, devant
le jury composé de :

Madame Céline Baeyens

PROFESSEURE DES UNIVERSITES, Université Grenoble Alpes,
Directrice de thèse

Madame Rebecca Shankland

PROFESSEURE DES UNIVERSITES, Université Lumière Lyon 2, Co-
directrice de thèse

Madame Catherine Blatier

PROFESSEURE DES UNIVERSITES, Université Grenoble Alpes, Présidente

Madame Lucia Romo

PROFESSEURE DES UNIVERSITES, Université Paris Nanterre,
Examinatrice

Madame Luisa Weiner

PROFESSEURE DES UNIVERSITES, Université de Strasbourg,
Rapporteuse

Monsieur Pascal Antoine

PROFESSEUR DES UNIVERSITES, Université de Lille, Rapporteur

Monsieur Pascal Delamillieure

PROFESSEUR DES UNIVERSITES - PRATICIEN HOSPITALIER,
Université de Caen Normandie, Examineur

Curriculum vitae

Marine Paucsik

Doctorante au Laboratoire Interuniversitaire de Psychologie (LIP/PC2S), Université Grenoble Alpes, France, Psychologue clinicienne & Psychothérapeute ; Présidente de l'association PPSY - Promouvoir les Psychothérapies ; Enseignante à l'Université Grenoble Alpes, Faculté Médecine Lyon 1, Sorbonne Université et à l'École des Psychologues Praticiens et Formatrice en Thérapie Fondée sur la Compassion, Psychologie positive et en Méditation de Pleine Conscience.

SITUATION ACTUELLE

- 2019-2022 : Doctorante au Laboratoire Interuniversitaire de Psychologie (LIP PC2S), Université Grenoble Alpes (UGA), Grenoble.
- Depuis 2022 : Enseignante à Association l'Année Lumière, Lyon
- Depuis 2021 : Enseignante D.U. Développer les compétences psychosociales, IUT, Université Grenoble Alpes (UGA), Grenoble.
- Depuis 2021 : Enseignante D.U. Thérapie Brèves, Faculté de Médecine, Université Claude Bernard, Lyon 1.
- Depuis 2021 : Chargée de cours, Institut de Formation en Soins Infirmiers (IFSI), Grenoble.
- Depuis 2020 : Enseignante D.U. Méditation, gestion du stress et relation de soin, Université de la Sorbonne, Paris.
- Depuis 2020 : Formatrice Psychologie Positive et Compétences émotionnelles, Symbiofi, Lille.
- Depuis 2019 : Enseignante D.U. Santé Mentale et Relationnelle, Université Grenoble Alpes (UGA), Grenoble.
- Depuis 2019 : Enseignante, l'École des Psychologues Praticiens, Lyon.
- Depuis 2019 : Présidente de l'Association PPSY, Promouvoir les Psychothérapies

FORMATIONS

- 2022 : INDOC ULB Bruxelles encadré par Christophe Leys and Ilios Kotsou. Mai-Juillet 2022.
- Septembre 2022 : Validation du Label de thèse « Recherche et Enseignement Supérieur » (RES) : 68h de formations effectuées sur le thème de la didactique dans l'enseignement supérieur, Université Grenoble Alpes.
- 2022 : Formation Thérapie Comportementale et Dialectique Niveau 1 avec Sibylle Von De Fenn, Symbiofi, Lille.
- 2022 : Formation Thérapie Focalisée sur les Emotions avec Anne Belgram-perkins, Symbiofi, Lille.
- 2022 : Formation Thérapie des Schémas avec Bernard Pascal, Symbiofi, Lille.
- 2020 : Formation aux bonnes pratiques clinique, CHU Grenoble-Alpes.
- 2020 : Formation burnout parental, diagnostiquer, comprendre et traiter le burnout parental, Training Institute for Parental Burnout.
- 2019-2020 : Mindfulness Based Compassion and Insight (MBCI) Niveau 1 & 2 (Programme de Pleine Conscience Basé sur la Compassion et l'Insight), Compassionate Mind Fondation France, Caen.
- 2018-2019 : Thérapie Fondée sur la Compassion niveau 1, 2 & 3 (pratiques de pleine conscience et de compassion), Compassionate Mind Fondation France, Caen.
- 2018-2019 : Formation à l'Instruction de Groupe FOVEA (Programme de pleine conscience intégrée, IGF), Vittoz IRDC et Université Grenoble Alpes, Grenoble.
- 2017-2018 : DU de Psychologie Positive, Université Grenoble Alpes, Grenoble.
- 2016-2017 : Formation à l'Instruction du Programme MBCT (Mindfulness Based Cognitive Therapy), Centre de formation de Crêt Bérard, Suisse.
- 2016-2017 : Formation au Trouble du Stress Post-traumatique, Clinique du trauma, Québec.
- 2016-2017 : Master 2 Psychologie Clinique – Pratiques Psychothérapeutiques, Université Grenoble Alpes, Grenoble.

ACTIVITES PROFESSIONNELLES ANTERIEURES

- 2017-2019 : Psychologue clinicienne et psychothérapeute, Centre Référent de Réhabilitation psychosociale et de Remédiation cognitive (C3R), Grenoble.

- 2019-2020 : Jury d'examen, Grenoble Ecole de Management (GEM), Grenoble.
- 2017-2018 : Jury d'examen, Institut de Formation en Soins Infirmiers (IFSI), Grenoble.
- 2017-2018 : Chargée de cours, Institut de Formation en Soins Infirmiers (IFSI), Grenoble.

ARTICLES SCIENTIFIQUES

- Hallez, Q., **Paucsik**, M., Tachon, G., Shankland, R., Marteau-Chasserieau, F., & Plard, M. (2022). How physical activity and passion color the passage of time: a response with ultra-trail runners. *Frontiers in Psychology*
- **Paucsik**, M., et al., (2022). Self-compassion and emotion regulation: testing a mediation model. Manuscript accepté pour publication dans *Cognition and Emotion*. Doi: 10.1080/02699931.2022.2143328
- **Paucsik**, M. et al., (2022). Self-compassion and savouring buffer the impact of the first year of the covid-19 on PhD students' mental health. *Stress and Health*, 1-11. <https://doi.org/10.1002/smi.3142>
- Matos, M., McEwan, K., Kanovsky, M., Halamova, J., Steindl, S.R., Ferreira, M., Linhares, M., Rijo, D., Asano, K., Gregorio, S., Marquez, M.G., Vilas, S.P., Brito-Pons, G., Lucena-Santos, P., da Silva Oliveira, M., Leonardo de Souza, E. Llobenes, L., Gumiy, N., Ileana Costa, M., Habib, N., Hakem, R., Khrad, H., Alzahrani, A., CHeli, S., Petrocchi, N., Tholouli, E., Issari, P., Simos, G., Lunding-Gregersen, Elklit, A., Kolts, R., Kelly, A.C., Bortolon, C., Delamillieure, P., **Paucsik**, M., Wahl, J.E., Zieba, M., Zatorski, M., Komendziński, T., Zhang, S., Basran, J., Kagialis, A., Kirby, J., Gilbert, P. (2021). Compassion Protects Mental Health and Social Safeness during the covid619 pandemic across 21 country, *Mindfulness*, Doi : <https://doi.org/10.1007/s12671-021-01822-2>
- Matos, M., McEwan, K., Kanovsky, M., Halamova, J., Steindl, S.R., Ferreira, M., Linhares, M., Rijo, D., Asano, K., Gregorio, S., Marquez, M.G., Vilas, S.P., Brito-Pons, G., Lucena-Santos, P., da Silva Oliveira, M., Leonardo de Souza, E. Llobenes, L., Gumiy, N., Ileana Costa, M., Habib, N., Hakem, R., Khrad, H., Alzahrani, A., CHeli, S., Petrocchi, N., Tholouli, E., Issari, P., Simos, G., Lunding-Gregersen, Elklit, A., Kolts, R., Kelly, A.C., Bortolon, C., Delamillieure, P.,

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- **Paucsik**, M., et al. (2021). Self-Compassion and Rumination Type Mediate the Relation between Mindfulness and Parental Burnout. *Int. J. Environ. Res. Public Health* 2021, 18, 8811. <https://doi.org/10.3390/ijerph18168811>
 - Matos, M., McEwan, K., Kanovsky, M., Halamova, J., Steindl, S.R., Ferreira, M., Linharelhos, M., Rijo, D., Asano, K., Gregorio, S., Marquez, M.G., Vilas, S.P., Brito-Pons, G., Lucena-Santos, P., da Silva Oliveira, M., Leonado de Souza, E. Llobenes, L., Gumiy, N., Ileana Costa, M., Habib, N., Hakem, R., Khrad, H., Alzahrani, A., CHeli, S., Petrocchi, N., Tholouli, E., Issari, P., Simos, G., Lunding-Gregersen, Elklit, A., Kolts, R., Kelly, A.C., Bortolon, C., Delamillieure, P., **Paucsik**, M., Wahl, J.E., Zieba, M., Zatorski, M., Komendziński, T., Zhang, S., Basran, J., Kagialis, A., Kirby, J., Gilbert, P. (2021). Fears of compassion magnify the harmful effects of threat of covid-19 on mental health and social safeness across 21 countries. *Clinical Psychology & Psychotherapy*, 1– 17. Doi : 10.1002/cpp.2601

EXPERTISE REVUE SCIENTIFIQUE

- Scientific Reports
- PLOS ONE
- Stress & Health
- Personal Relationship
- International journal of environmental research and public health
- New directions for child and adolescent development

OUVRAGES

- Gheysen, F., **Paucsik**, M., Delamillieure, P. (2022). La thérapie fondée sur la compassion. Fondements théoriques et applications cliniques. Elsevier.
- Shankland, R., **Paucsik**, M., Bobichon, P., Leca, A. (in prep). Intégrer la mindfulness dans son quotidien, le programme FOVEA. Dunod.

- **Paucsik, M.** et Gauchet, A. (in prep). Programme CBSM, livret du participant.
- **Paucsik, M.,** Baudier, J.B., Shankland, R. (2021). S’initier à la psychologie positive. Paris : Eyrolles.
- Shankland, R., Durand, J.P., **Paucsik, M.,** Kotsou, I., Andre, C. (2018). Mettre en œuvre un programme de psychologie positive, le programme CARE. Paris : Dunod.

CHAPITRES D’OUVRAGES

- RIBEYRON, J., PAUCSIK, M. & SHANKLAND, R. (2022). Self-compassion and its effects on mental health. in I. Masse, W., Pullin, E., Hughes, R., Shankland (Eds.), Anglais pour psychologues. Dunod
- GHEYSEN, F., PAUCSIK, M., DELAMILLIEURE, P. (2022). Compassion focused therapy and mindfulness. in P. Gilbert et G. Simos (Eds.), Compassion focused therapy in clinical practice. Routledge.
- PAUCSIK, M., SHANKLAND, R., BENNY, M. (2021). La santé mentale positive : historique, développement et enjeux actuels. In C. Martin-Krumm et C. Tarquinio (Eds), Grand manuel de psychologie positive - Fondements, théories et champs d'intervention - Fondements, théories et champs d'intervention. Paris : Dunod.
- PAUCSIK, M., & LANTHEAUME, S. (2019). Intervention de psychologie positive et bien-être au travail des professionnels de santé. In S. Lantheaume et R. Shankland (Eds.), Psychologie Positive : 12 interventions. Paris : In Press eds.

PRIX DE RECHERCHE

- 3EME PRIX DE RECHERCHE EN PSYCHOLOGIE POSITIVE (2018). Journée de Psychologie Positive, Grenoble.
- 2EME PRIX DE RECHERCHE EN PSYCHOLOGIE POSITIVE (2019). Journée de Psychologie Positive, Grenoble.

ORGANISATION DE MANIFESTATIONS SCIENTIFIQUES

- DEPUIS 2020 : ORGANISATION DU CYCLE DE CONFERENCES SUR LA THERAPIE FONDEE SUR LA COMPASSION avec Francis Gheysen, et en collaboration avec Rebecca Shankland, Catherine Bortolon, Céline Baeyens, Pascal Delamillieure et Isabelle Leboeuf. Laboratoire interuniversitaire de psychologie de grenoble (LIP/PC2S), UGA, et en partenariat avec les Laboratoires DIPHE (Lumière Lyon II) et SCALAB (Université de Lille) et les associations Compassionate Mind Foundation France, PPSY et Social +.
- DEPUIS 2020 : ORGANISATION ANNUELLE DE LA JOURNEE DE FRANCOPHONE DE PSYCHOLOGIE POSITIVE avec Jean Baptiste Baudier et Rebecca Bègue-Shankland. Maison des Sciences de l'Homme Alpes, UGA, en partenariat avec l'association française et francophone de psychologie positive et la chaire paix économique, mindfulness et bien-être au travail (GEM).
- DEPUIS 2020 : ORGANISATION ANNUELLE DE LA JOURNEE DE L'INNOVATION POSITIVE avec Jean Baptiste Baudier et Rebecca Bègue-Shankland. Maison des Sciences de l'Homme Alpes, UGA, en partenariat avec l'association française et francophone de psychologie positive et la chaire paix économique, mindfulness et bien-être au travail (GEM).
- DEPUIS 2020 : ORGANISATION DU CYCLE DE CONFERENCES ANNUEL FIL GOOD en collaboration avec Jean Baptiste Baudier et Rebecca Bègue-Shankland : allier la recherche et le bien-être en société. Maison des Sciences de l'Homme Alpes, UGA.
- DEPUIS 2020 : COORDINATION DU CYCLE DE CONFERENCES ANNUEL 1HEURE DE PSY PAR MOIS, en collaboration avec Laurent Bègue et Jean Baptiste Baudier, Bibliothèque Kateb Yacine de Grenoble, en partenariat avec la ville de Grenoble, le LIP/PC2S et la Maison des Sciences de l'Homme Alpes.

CONFERENCES INVITEES

- **Paucsik, M.** (2022). La Thérapie Fondée sur la Compassion. Congrès de l'AFSCC. Paris, 20 et 21 juin 2022.
- **Paucsik, M.** (2021). La Psychologie Positive. Masters classes de l'Ecole des Psychologues Praticiens. En ligne, 9 décembre 2021.

- **Paucsik, M.** (2021). Prendre soin de soi et des autres avec compassion. 49eme assises nationale des sages-femmes. En ligne, 19 mai 2021.
- **Paucsik, M.** (2021). Les competences emotionnelles au cœur de la relation de soin. 49eme assises nationale des sages-femmes. En ligne, 19 mai 2021.
- **Paucsik, M.** (2021). Et si nous devenions pleinement conscients ? prendre soin de soi et des autres avec la pleine conscience. Colloque 2021 du Comité Départemental d'Education pour la Santé des Alpes de Hautes-Provence. Sainte-Tulle, 26 janvier 2021.
- **Paucsik, M.** (2020). Les competences emotionnelles. 3eme Journée Universitaire pour les Soignants, Méditation, Soins et Santé, Université de la sorbonne. Paris, 18 septembre 2020.
- **Paucsik, M.** (2019). La Thérapie Fondée sur la Compassion. Conférence Fil Good, allier la recherche et le bien-être en société. Maison des Sciences de l'Homme Alpes, UGA. Grenoble, 23 janvier.
- **Paucsik, M.** (2019). Soulager les emotions difficiles. Cycle de conférence 1h de psy par mois, bibliothèque Kateb Yacine. Grenoble, 5 octobre.

COMMUNICATIONS ORALES DANS UN CONGRES

- **Paucsik, M., Leys, C., Marais G., Baeyens, C., ET Shankland, R.** (2022). La santé mentale des doctorants pendant la première année de covid-19. Semaine internationale de l'éducation et de la formation organisée par l'AREF, 12 septembre, Lausanne.
- **Paucsik, M., Gayet, C., Shankland, R. & Kotsou I.** (2022). Mindfulness-based interventions in schools and basic psychological needs satisfaction: Teacher vs. non-school staff mindfulness instructor effects. Semaine internationale de l'éducation et de la formation organisée par l'AREF, 12 septembre, Lausanne.
- **Paucsik, M., Tessier, D., Baeyens, C ET Shankland, R.** (2022). Increasing emotional regulation with compassion focused therapy, a single case study and randomized controlled trial. European Conference on Positive Psychology (ECP 2022). Reykjavik, 29 juin au 2 juillet 2022
- **Leys, C., Paucsik, M., Kotsou, I., Ben youssef mnif, S., Gay, P., Leduc, J., Benny, M., & Shankland, R.** (2022). The PERMA model revisited: Engaging in Coherent

Behaviour rather than Flow is related to greater flourishing. The 10th European Conference on Positive Psychology (ECP), 2 juillet, Reykjavik.

- **Paucsik, M.** (2022). Développer la régulation émotionnelle avec la thérapie fondée sur la compassion, une étude contrôlée randomisée. 3ème Colloque Francophone de Pratiques en TCC. Louvain-la-Neuve, 20 mai 2022.
- **Paucsik, M.** (2021). Découvrir un programme fondé la compassion, the Compassion Focused Program (CFP). Congrès Francophone et Français de Psychologie Positive, 4 et 5 juin 2021.
- Urbanowicz, A., **Paucsik M.**, Leys, C., Kotsou, I., Baeyens, C., & Shankland, R. (2021). La pleine conscience comme facteur protecteur contre l'épuisement parental en période de confinement. Congrès Francophone et Français de Psychologie Positive, 4 et 5 juin 2021.
- **Paucsik, M.**, Urbanowicz, A. & Shankland, R. (2021). Mindfulness practice and trait-mindfulness: protective factors against parental burnout during covid-19 pandemic. 2nd International Conference on Parental Burnout, 6-7 mai 2021.
- **Paucsik, M.**, & Shankland, R. (2019). Mettre en œuvre un programme de psychologie positive, le programme CARE. Congrès Francophone de Psychologie Positive de Metz, 15-17 mai 2019.
- **Paucsik, M.**, & Shankland, R. (2019). Promouvoir les ressources des professionnels de santé. Congrès Francophones de Psychologie Positive de Metz, 15-17 mai 2019.
- **Paucsik, M.**, & Revil Signorat, K. (2018). Comment accompagner vers une psychiatrie positive ? Congrès de Réhabilitation psychosociale de Lyon, 1-3 juin 2018.

ENSEIGNEMENT A L'UNIVERSITE

2021-2022

UNIVERSITE LIBRE DE BRUXELLE (BRUXELLE)

- Cours sur la compassion en psychothérapie (7h CM), Certificat d'Université de praticien·ne en thérapie d'acceptation et d'engagement (ACT)

FACULTE CLAUDE BERNARD LYON 1 (LYON)

- Cours sur la méditation de pleine conscience (21h CM), DU Thérapies Brèves.

SORBONNE UNIVERSITE (PARIS)

- Cours sur les compétences émotionnelles (3h CM), DU Méditation, gestion du stress et relations de soins.
- Cours sur les processus d'efficacité de la méditation de pleine conscience (1h), DU Méditation, gestion du stress et relations de soins.

UNIVERSITE LUMIERE LYON 2

- Cours sur les compétences psychosociales (10h), PsyEN EDO, Education, développement et conseil en orientation scolaire et professionnelle.

ECOLE DES PSYCHOLOGUES PRATICIENS (LYON):

- Cours Mindfulness (18h CM), Prépa-psy.

UNIVERSITE GRENOBLE ALPES (GRENOBLE) :

- Le développement socio-affectif : théorie de l'attachement et développement des premières compétences sociales et émotionnelles (4h), DU Développer les Compétences psychosociales
- La thérapie fondée sur la compassion (6h CM), DU de psychologie positive de Grenoble
- La méditation de pleine conscience (4h CM), DU de psychologie positive de Grenoble

2020-2021

SORBONNE UNIVERSISTE (PARIS)

- Cours sur les compétences émotionnelles (3h CM), DU Méditation, gestion du stress et relations de soins.

ECOLE DES PSYCHOLOGUES PRATICIENS (LYON):

- Cours Mindfulness (18h CM), Prépa-psy.

UNIVERSITE GRENOBLE ALPES (GRENOBLE) :

- Méthodologie clinique (20h, TD), Master 1 psychologie clinique pratiques psychothérapeutiques
- Introduction aux prises en charge (12h TD), L2 psychologie

- La thérapie fondée sur la compassion (6h CM), DU de psychologie positive de Grenoble
- La méditation de pleine conscience (4h CM), DU de psychologie positive de Grenoble

2019-2020

ECOLE DES PSYCHOLOGUES PRATICIENS (LYON):

- Cours Mindfulness (18h CM), Prépa-psy.

UNIVERSITE GRENOBLE ALPES (GRENOBLE):

- Méthodologie clinique (20h, TD), Master 1 psychologie clinique pratiques psychothérapeutiques
- Introduction aux prises en charge (12h TD), L2 psychologie
- La thérapie fondée sur la compassion (6h CM), DU de psychologie positive de Grenoble
- La méditation de pleine conscience (4h CM), DU de psychologie positive de Grenoble

FORMATIONS DANS DES ORGANISMES

DEPUIS 2022

AKAYOGI

- Interventions sur la régulation du stress

REMEDEE

- Accompagnement des douleurs chroniques avec la méditation de pleine conscience

DEPUIS 2019

PPSY (GRENOBLE)

- Formation à la thérapie fondée sur la compassion

INSTITUT DE FORMATION SYMBIOFI (LILLE)

- Formations aux compétences émotionnelles

- Formation à la psychologie positive

ENCADREMENT DE MEMOIRE

- ALICE LEGRAND (2022). Intervention de psychologie positive auprès de parents d'enfants avec TSA. DU de psychologie positive, Université Grenoble Alpes, Grenoble.
- ALEXANDRA GOMEZ (2022). Intervention de psychologie positive auprès de soignants. DU de psychologie positive, Université Grenoble Alpes, Grenoble.
- CLARA VIERA (2022). Intervention sur les forces. DU de psychologie positive, Université Grenoble Alpes, Grenoble.
- VERONIQUE FOURNY (2021). Intervention de psychologie positive dans un service d'addictologie. DU de psychologie positive, Université Grenoble Alpes, Grenoble.
- MAGALI RUBIO (2021). Mise en œuvre en Maison d'Arrêt d'un programme de psychologie positive visant le développement des compétences émotionnelles : étude de faisabilité. DU de psychologie positive, Université Grenoble Alpes, Grenoble.
- EMILIE DUPOIS (2021). La Flexibilité Cognitive en tant que médiateur entre la résilience et l'Épanouissement. Master 1 psychologie clinique, Université Grenoble Alpes, Grenoble.
- EMELINE DUMOULIN (2020). Les outils de la psychologie positive au service du sevrage tabagique. DU de Psychologie Positive, Université Grenoble Alpes, Grenoble.
- HALIMA BANKORBA (2019). Réflexion autour de la transférabilité d'un programme de psychologie positive. DU de Psychologie Positive, Université Grenoble Alpes, Grenoble.

ENCADREMENT DE STAGIAIRES CLINIQUE

- LUNA GINER (2021-2022). Stage découverte de l'animation d'un groupe sur la gestion du stress au sein de l'association PPSY.
- AMELIE CARLIER (2021-2022). Découverte du programme CBSM pour la prévention du burnout parental à l'Université Grenoble Alpes.

- ENCADREMENT DE STAGIAIRE RECHERCHE
- ADRIEN TEINTURIER (2020-2021) : Stage L3 stage d'observation et création d'une étude sur la régulation émotionnelle.
- ADRIEN TEINTURIER (2019-2020) : Stage L2 découverte du métier de chercheur en psychologie et de la psychologie positive.

Résumé

L'objectif de ce travail de thèse est d'étudier le rôle et le développement de la compassion en tant que facteur protecteur transdiagnostique en période de crise en se basant sur une approche processuelle. Cette thèse sur articles se divise en cinq parties : (1) une introduction théorique, (2) un premier recueil d'études portant sur l'évaluation de la compassion en tant que facteur protecteur, (3) un second recueil d'études portant sur l'évaluation d'interventions développant la compassion et leurs processus d'efficacité, (4) une étude portant sur les relations entre auto-compassion et régulation émotionnelle et (5) une discussion générale.

L'introduction théorique fait un état de l'art à propos des différents éléments qui seront abordés dans cette thèse. Premièrement, elle aborde une nouvelle conceptualisation de la santé mentale, basée non plus sur une approche catégorielle, mais sur une approche processuelle transdiagnostique, i.e., qui explique les phénomènes psychopathologiques par des processus psychologiques communs. Parmi ces processus, ceux d'ordre émotionnel sont considérés comme contribuant au développement, au maintien et à l'aggravation de nombreux troubles psychopathologiques. L'introduction se poursuit ainsi en présentant les émotions, leurs rôles, leurs spécificités et la façon dont elles peuvent altérer la poursuite d'objectifs importants pour l'individu. Cela conduit le lecteur à comprendre la nécessité de développer une régulation émotionnelle qui soit fonctionnelle, c'est-à-dire utile pour la personne. Pour cela, plusieurs modèles de régulation émotionnelle sont présentés, ceux abordant des compétences générales de régulation émotionnelle et ceux proposant des stratégies spécifiques.

Pour développer ces compétences et stratégies, un facteur identifié par les recherches semble aujourd'hui prometteur : la compassion. La compassion est un facteur étudié de manière

relativement récente, dont les recherches sont en pleine expansion. L'introduction aborde alors les approches théoriques de la compassion qui dominent dans la littérature, ainsi que les interventions basées sur la compassion ayant fait la preuve de leur efficacité. Un focus est ensuite proposé sur l'auto-compassion, une des composantes de la compassion et sera notre point de référence pour les autres études présentées dans ce manuscrit. Ce focus s'articule autour des effets protecteurs de l'auto-compassion sur la santé mentale et de la façon dont la régulation émotionnelle pourrait contribuer à ses effets. Cette introduction se termine sur les trois questions qui ont guidé ce travail de thèse et qui structurent les trois grandes parties qui sont ensuite présentées :

- L'auto-compassion représente-t-elle un facteur protecteur efficace de la santé mentale en période de crise ?
- La régulation émotionnelle est-elle un processus permettant l'efficacité des interventions basées sur la compassion ?
- De quelle manière l'auto-compassion est-elle associée à la régulation émotionnelle ?

La Partie I présente une première étude (Chapitre 1) qui vise à aborder les dimensions de la compassion selon une approche processuelle et transdiagnostique. Elle s'appuie sur une définition intégrative de la compassion proposée par Strauss et al. (2016) et sur la littérature existante pour identifier des potentiels processus psychologiques sous-jacents à ces dimensions. Cette étude permet de comprendre les difficultés actuelles autour de la conceptualisation et de la compréhension de la compassion et nous a conduits à adopter l'auto-compassion comme mesure de référence pour les autres études qui sont présentées. Cette première partie présente ensuite trois études longitudinales qui ont été lancées durant le premier confinement français et qui évaluent le rôle protecteur l'auto-compassion aux côtés d'autres facteurs sur la santé mentale d'individus issus de la population générale (Chapitre 2), de parents (Chapitre 3) et de doctorants (Chapitre 4). Les résultats de ces études montrent que l'auto-compassion est un des

médiateurs de l'effet de la méditation de pleine conscience en tant que trait sur la santé mentale (Chapitre 2 et 3) et représente un facteur protecteur stable dans le temps en période de crise (Chapitre 4). Ensemble, les résultats de ces études révèlent l'importance de développer l'auto-compassion pour préserver la santé mentale des individus en période de crise et ont conduit à la réalisation des études présentées dans la seconde partie de cette thèse.

La Partie II débute par une méta-analyse (Chapitre 5) portant sur les études ayant évalué l'effet des interventions basées sur la compassion sur la régulation émotionnelle. Les résultats de cette méta-analyse, bien que prometteurs, mettent en exergue la nécessité de réaliser des études robustes sur le plan méthodologique (i.e., en utilisant des design contrôlés et randomisés), et évaluant la régulation émotionnelle en se référant aux modèles théoriques actuels qui la définissent et aux instruments d'évaluation qui leur sont associés. Ces éléments nous ont conduits à mener trois études interventionnelles ayant pour objectifs de tester l'effet d'un Programme Fondé sur la Compassion sur la régulation émotionnelle. Préalablement à leur réalisation, nous avons conduit une étude évaluant les qualités psychométriques de plusieurs échelles visuelles analogiques (Chapitre 6). Les résultats de cette étude ont montré que les différentes échelles présentaient de bonnes propriétés psychométriques vis-à-vis de leur échelle de référence, nous permettant alors de les utiliser dans notre première étude interventionnelle. Cette étude (Chapitre 7) se base sur l'évaluation de plusieurs cas uniques, afin d'observer et d'évaluer précisément les effets du Programme Fondé sur la Compassion sur la régulation émotionnelle, la santé mentale et la flexibilité cognitive. Cette étude montre que l'intervention permet de développer la régulation émotionnelle, la santé mentale et l'auto-compassion pour les quatre individus, mais n'a pas d'effet significatif sur la flexibilité cognitive.

Les résultats de cette étude nous ont menés à conduire une étude de plus grande ampleur, une étude randomisée et contrôlée en ligne (Chapitre 8) comparant les effets du Programme Fondé sur la Compassion et du Programme d'Entraînement aux Compétences Emotionnelles à

un groupe contrôle sur liste d'attente dans une population subclinique sur la régulation émotionnelle, la santé mentale, l'auto-compassion et les compétences émotionnelles. Les résultats de cette étude montrent plusieurs éléments importants. Premièrement, le Programme Fondé sur la Compassion a des effets similaires à un programme ciblant les compétences émotionnelles pour développer la régulation émotionnelle et l'auto-compassion et diminuer les symptômes de dépression, d'anxiété et de stress. Néanmoins, il apparaît comme moins efficace pour développer le bien-être et plus efficace pour développer les compétences émotionnelles. Enfin, les résultats montrent que l'effet des deux interventions sur les symptômes de dépression, d'anxiété et de stress passe par la diminution des difficultés de régulation émotionnelle. Ce dernier élément montre que la régulation émotionnelle est un des déterminants de l'efficacité du Programme Fondé sur la Compassion, qui pourrait donc s'avérer utile et efficace pour des individus souffrant de troubles psychopathologiques sévères. Afin de tester cela, nous avons conduit une étude pilote (Chapitre 9) évaluant la faisabilité, l'acceptabilité et les effets du Programme Fondé sur la Compassion comparativement au Programme d'Entraînement aux Compétences émotionnelles auprès d'individus présentant des troubles psychopathologiques sévères. Les résultats de cette étude montrent que les deux interventions sont pertinentes, adaptées et efficaces pour réduire les difficultés de régulation émotionnelle, les symptômes de stress et augmenter le bien-être, l'auto-compassion et les compétences émotionnelles. L'ensemble de ces études amènent donc à considérer que le Programme Fondé sur la Compassion peut être considéré comme efficace pour développer la santé mentale, diminuer les difficultés de régulation émotionnelle et augmenter les compétences de régulation émotionnelle, qu'il soit délivré dans une modalité en face à face ou visioconférence et ce, à destination d'individus présentant ou non des troubles psychopathologiques. Ces résultats montrent que les pratiques fondées sur la compassion semblent développer une meilleure régulation, ce qui nous a amenés à la réalisation de la troisième partie de cette thèse.

La Partie III présente une étude qui a évalué les liens entre l'auto-compassion, les compétences émotionnelles et les stratégies de régulation émotionnelle (Chapitre 10). Les résultats de cette étude montrent que l'auto-compassion prédit de plus grandes compétences et stratégies fonctionnelles de régulation émotionnelle et moins de stratégies dysfonctionnelles. L'analyse d'un modèle préliminaire intégrant ces dimensions révèle que la relation entre l'auto-compassion et les stratégies adaptatives de régulation émotionnelle est médiée par les compétences de régulation émotionnelle. Ces résultats ouvrent de nouvelles perspectives pour les recherches s'intéressant aux effets bénéfiques de l'auto-compassion et à ses effets sur la régulation émotionnelle qui sont discutés dans une dernière partie.

Ce travail de thèse se termine par une discussion générale qui propose une synthèse et une discussion des résultats obtenus à l'ensemble des études et au regard des trois questions qui ont orienté ce travail. Elle aborde également les apports et implications cliniques de ce travail et les limites qui en demeurent. Elle ouvre également plusieurs perspectives de recherches qui pourront guider de futures études s'intéressant à la compassion. Enfin, cette discussion générale se termine par une conclusion retraçant l'ensemble des résultats des études réalisées dans ce travail de thèse.

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A Arnaud, mes parents, ma sœur et mes ami-es,

Love really hurts without you 🎵

Introduction

Compassion as a key process in mental health

Introduction

A processual and transdiagnostic approach of mental health

Mental health is a major issue worldwide (Collins et al., 2011). In 2017, the global prevalence of depression was estimated to be 3.44% and increased by 7% during the epidemic of COVID19 (Bueno-Notivol et al., 2021). For this reason, mental health is one of the priority conditions covered by WHO's Mental Health Gap Action Programme (mhGAP) which is currently a significant revolution in its understanding (Dalglish et al., 2020). For over a hundred years, mental health disorders have been conceptualized through the prism of a categorical approach adopting a formal taxonomic system (Kendler, 2009). This approach led to the development of the *Diagnostic and Statistical Manual of Mental Disorders (DSM*; now in its 5th edition), and to the *International Classification of Diseases (ICD*; now in its 11th edition). Categorical approach and psychiatric nosologies define psychopathological disorders as distinct, independent and categorical constructs (Krueger & Eaton, 2015; Krueger & Markon, 2006). This led to the conception of specific protocols – mostly Cognitive Behavioral Therapy (CBT) – targeting a specific diagnosis identified, independently of the client (e.g., CBT for

Depression, for a review see Hofmann et al., 2012). These protocols have resulted in standardization of clinical practices and improved implementation of research-evaluated data and interventions (e.g., Salkovskis, 2002). However, there is an emerging and growing consensus that these psychiatric nosologies, and the corollary interventions, may be reaching the limits from research and clinical perspectives (Dalglish et al., 2020; Hofmann & Hayes, 2019). Among them, two major limitations have been identified: (1) these disorders share common etiological and maintenance processes (Fairburn et al., 2003; Fairburn & Harrison, 2003; Newby et al., 2015; Norton & Hope, 2005) as well as cognitive-affective, interpersonal, and behavioral features (Fairburn et al., 2003; Fairburn & Harrison, 2003; Newby et al., 2015) and (2) intervention manuals focused on disorders are difficult to apply to the reality of clinical contexts (Fairburn et al., 2003; Newby et al., 2015; Norton & Hope, 2005). This is why many researchers have proposed a new vision of mental health by adopting a so-called transdiagnostic approach, i.e., which focuses on the processes that contribute to the development and maintenance of mental disorders (Harvey et al., 2015). This approach states that there are key cognitive, behavioral and emotional processes present across a range of different disorders which causally contribute to the development and/or maintenance of psychopathology (Cludius et al., 2020; Harvey et al., 2004). More specifically, according to Mansell and colleagues (Mansell et al., 2009), psychological processes can be considered as transdiagnostic if: (1) they can be measured in both nonclinical and clinical samples, (2) they occur across diagnostic boundaries, and (3) they inform the development and maintenance of several classes of disorders. Based on this approach, several ‘transdiagnostic’ processes have been identified such as perfectionism (Egan et al., 2011), ruminations (Ehring & Watkins, 2008) or psychological inflexibility (Levin et al., 2013). Although research on the identification of these processes is still ongoing, one seems to be commonly accepted: emotion regulation (ER, Aldao et al., 2016). Research on ER as a transdiagnostic process has grown exponentially over the past years (Aldao

et al., 2016; Cludius et al., 2020; Lincoln et al., 2022; Sloan et al., 2017; Weissman et al., 2019). Research has provided a wealth of evidence suggesting that ER is a transdiagnostic process (as reviewed by Aldao et al., 2010; Harvey et al., 2004; Hofmann et al., 2012; Kring & Sloan, 2010; Nolen-Hoeksema & Watkins, 2011).

Nevertheless, the analysis of this process is far than evident. Emotion is a complex phenomenon to describe, despite an extensive literature, there is still no consensus on the definition of emotion (Cabanac, 2002).

The role of emotions for mental health

For several years, researchers in psychology have persisted in the study of its understanding and in the formulation of an exhaustive definition. This is the case of Izard (2010), who proposed the following definition: ‘Emotion consists of neural circuits (that are at least partially dedicated), response systems, and a feeling state/process that motivates and organizes cognition and action. Emotion also provides information to the person experiencing it and may include antecedent cognitive appraisals and ongoing cognition including an interpretation of its feeling state, expressions, or social-communicative signals, and may motivate approach or avoidant behavior, exercise control/regulation of responses, and be social or relational in nature (Izard, 2010, p. 367). Still according to Izard’s review (Izard, 2010), each emotion and emotional structure could fulfil six different functions as follows: (1) it interrupts/changes ongoing processing and focuses attention and direction of responses, (2) it motivates cognition and action and provides emotion information (including evolutionarily conserved communicative signals) to guide and coordinate the engagement of the individual in the physical and social environment for coping, adaptation, affiliation, and well-being, (3) it increases (or decreases) salience or value of an event to facilitate adaptive (or maladaptive)

associations between context, event, emotion feeling, and response, (4) it contributes to emotion and behavior regulation, well-being, and the safeguarding of sensitivities and concerns, (5) it act as social signalling, communication, and (6) provides a neural (often conscious) workspace for assembling solutions under the influence of emotion feelings that may range from mild to urgent (Izard, 2010, p. 365). These six functions are consistent with those identified in the work of Scherer and Ekman published several years earlier (Ekman, 1992; Scherer & Ekman, 1984).

Emotions are thus functional and, if in the course of our evolution, emotions have allowed humans to survive (Ekman & Davidson, 1994; Frijda, 1986; Oatley & Jenkins, 1996), they sometimes need to be regulated to contribute to our mental health and well-being (Aldao et al., 2010; Gross & John, 2003; Quoidbach et al., 2010).

According to Izard (2010), emotions can be triggered by several categories of stimuli: (1) innate and conditioned stimuli and other events/situations that present challenges or opportunities, (2) cognition, including memories, images and appraisal processes, (3) social interactions and affiliation, (4) goal-related activities, (5) ongoing emotion – cognition interactions, and (6) spontaneous changes in neurobiological systems/processes. These stimuli can lead to so-called positive or negative emotions depending on the pleasant or unpleasant character they will generate.

More specifically, positive emotions are emotions that we typically find pleasurable to experience. Positive emotions are made of many emotions with a pleasant valence, such as joy, pride, contentment or love, or of a more undifferentiated state of positivity (Carl et al., 2013). Positive emotions indicate that a positive opportunity has emerged or that attainment of a desired goal has been achieved, and they mobilize psychophysiological resources for responding to such situations. Several related theories (e.g., Depue & Iacono, 1989; Depue & Morrone-Strupinsky, 2005; Gray, 1987) have conceptualized positive emotions as corresponding to a specific affective – motivational system, namely the behavioral approach

system, which regulates positive goal-oriented behavior. In this sense, positive emotions facilitate approaching behavior (Cacioppo et al., 1999; Davidson, 1993; Watson et al., 1999). They therefore encourage individuals to engage with their environment and perform activities that will be meaningful and adaptive (Fredrickson, 2001). Thanks to these properties, positive emotions appear to broaden individuals' repertoires of thoughts and actions (Fredrickson & Branigan, 2001; Fredrickson, 1998). The benefits of positive emotions have led to the development of the broaden-and-build theory which states that positive emotions broaden the scope of attention, cognition, and action and that they build physical, intellectual, and social resources (Fredrickson, 1998). More precisely, the work by Fredrickson and her collaborators has highlighted the fact that the so-called positive emotions allow for (a) a broadening of individuals' thought – action repertoires (Fredrickson & Branigan, 2005), (b) the undoing of lingering negative emotions (Fredrickson & Levenson, 1998; Fredrickson et al., 2000), (c) the fuelling of psychological resilience (Tugade & Fredrickson, 2007), and (d) the building of psychological resilience that trigger upward spirals toward enhanced emotional well-being (Fredrickson & Joiner, 2002). Thus, cultivating positive emotions can contribute to health and well-being (Fredrickson, 2000). Despite the importance of positive emotions to health and well-being, a range of evidence suggests that disturbances in positive emotionality, including both excesses and deficiencies in positive emotions, convey vulnerability for emotional disorders (Brown & Barlow, 2009; Gruber, 2011). Thus, the regulation of positive emotions is an important issue since difficulties with ER contribute to disturbances in positive emotionality and could function as a risk or maintenance factor in the development and evolution of these disorders (Carl et al., 2013).

On the other hand, negative emotions can be defined as 'an unpleasant or unhappy emotion which is evoked in individuals to express a negative effect towards an event or person' (Pam, 2013). This seems particularly true for anger, fear, sadness, or disgust, which are closely

related to contextual factors in order to serve clear survival functions (Ekman, 1992). For example, fear will produce physiological changes that will allow us to respond quickly to a threat situation (Öhman, 2005; Öhman & Mineka, 2001). Thus, although considered as negative, they have the potential for functional utility (Parrott, 2002). However, negative emotional responses are adaptive in certain contexts and not in others, as for positive emotions, as underlined by dominant theories of emotion as ER (Cole et al., 1994; John & Gross, 2004), and current models of psychiatric disease (Nolen-Hoeksema & Watkins, 2011). ER is a field in continuous expansion in research, giving rise to numerous models that we will define in the following section.

Emotion regulation, a key process for mental health

ER refers to a set of processes by which individuals tend to control the nature and intensity of their emotions (Gross, 1998). The ability to successfully regulate positive or negative emotion is related to a number of important psychological, social, and physical health outcomes (Berking & Wupperman, 2012; Gross, 2002; Hu et al., 2014). When successful, ER allows us to adaptively cope with aversive situations by minimizing negative and painful emotions or, in contrast, by maximizing the positive sides of situations (Gross, 1998). Conversely, difficulties with ER have been postulated as a core mechanism underlying mood and anxiety disorders (for a review see, Lincoln et al., 2022). To further understand how these emotions can be regulated, Gross (2014) proposed a modal model of emotion, which describes, in abstract and general terms, the stages that constitute the formation of an emotional response. The series of stages include “attending to a situation, giving it a valenced meaning, and producing a loosely coupled set of experiential, behavioral, and physiological responses” (Sheppes et al., 2015, p. 381). The involvement of one or more processes implied in this series

of stages can then regulate the emotion (Barrett & Gross, 2001; Gross & Barrett, 2011). More concretely, this model of emotion generation will lead to five families of ER processes differentiated by the stage of the emotion-generative process that they primarily target: situation selection, situation modification, attentional deployment, cognitive change, and response modulation.

Each of these families involves different emotional regulation strategies. For example, the situation selection family refers to strategies that will involve changing the complete course of an emotional situation at the earliest stage. This may involve avoiding or exposing oneself to the emotional situation (Beck & Clark, 2009). Situation modification refers to attempting to change external features of a situation, such as modifying the emotional stimulus of the situation (Livingstone & Isaacowitz, 2015). Attentional deployment moves from trying to modify the way attention is directed to the situation, for example using distraction strategies (Sheppes et al., 2011). The fourth family of regulation consists in modifying late semantic-meaning processing after the emotional event, for example by using cognitive reappraisal strategies. (Cutuli, 2014; Ford & Troy, 2019). Finally, the last family corresponds to the last emotional stage and aims at modulating the response to the emotion by modifying the experiential, behavioral and/or physiological components of an emotional response. This can be done, for example, by using relaxation strategies or by suppressing emotional expression (Cutuli, 2014; Richards & Gross, 2016). This model has therefore allowed to identify several ER strategies, some of which are now considered as adaptive (i.e., cognitive reappraisal) while others seem rather maladaptive (i.e., suppressive expression) (for a review see, Aldao et al., 2010). However, many factors influence the link between emotional responses, context and a given outcome (e.g., some strategies may have short-term benefit and be considered as adaptive but may be functionally maladaptive in relation to longer-term indicators; Bonanno & Burton, 2013).

Therefore, a growing number of researchers emphasize the importance of the context and the skills of individuals on the adaptability of the strategies used. For example, previous studies showed that the effectiveness and adaptability of the strategy of cognitive reappraisal depended not only on the characteristics of the individuals (e.g., individual's skills) but also on situational factors (e.g., stressor's intensity, Ford & Troy, 2019; Troy et al., 2013). Therefore, several researchers emphasize the importance of choosing flexibly between ER strategies in order to adapt to different situational demands (e.g., Bonanno et al., 2004; Kashdan & Rottenberg, 2010).

Along with these findings, Berking and Whitley (2014) proposed a model, the Adaptive Coping with Emotion (ACE). Their model conceptualizes ER as the interplay of several skills, going beyond common ER strategies described above. In their model, adaptive ER is conceptualized as a situation-dependent interaction between seven emotion regulation skills including (a) the awareness of one's emotional experiences; (b) the ability to identify and correctly label perceived emotions; (c) the ability to correctly interpret body sensations; (d) the understanding of the circumstances that may have led to and maintained those emotions; (e) the ability to modify the intensity or duration of one's emotions; (f) to accept and tolerate unwanted emotions; (g) to confront certain situations; and finally (h) to be able to provide self-support (e.g., self-kindness). Their studies show that the skills included in the ACE Model help maintain or restore mental health and that the abilities to modify and to accept and tolerate aversive emotions are the most important regulatory skills (e.g., Berking & Znoj, 2008; Berking & Wupperman, 2012; Berking et al., 2008).

In light of the importance of ER for mental health, and as a putative mechanism of change in therapy (Gratz et al., 2015), the current challenge is to develop and evaluate processes and interventions that will help develop ER. In this line of research, one promising process is emerging: compassion (for a review see, Finlay-Jones, 2017).

Compassion, a promising factor to develop emotion regulation and mental health

Compassion is a felt response to suffering that involves caring and an authentic desire to ease distress (Goetz et al., 2010). In that sense, compassion is a motivation to perceive and recognize the suffering of others and the desire to alleviate it, to understand the universality of suffering, to feel moved by the person suffering and to connect emotionally with their distress, and to tolerate uncomfortable feelings in order to remain open to and accept the sufferer (Gu et al., 2017).

Despite the importance of compassion and increasing interest from researchers, psychotherapists, teachers, and other professionals, there is lack of consensus on its definition (Strauss et al., 2016). For example, compassion is sometimes defined as an emotion (Goetz et al., 2010; Lazarus, 1991), while others consider it more as a motivation to take care of themselves and regulate negative affect (Gilbert, 2010c). More precisely, it has been defined by Gilbert (2009, 2010b) as consisting of six attributes: sensitivity, sympathy, empathy, motivation/caring, distress tolerance and non-judgement. For Gilbert, *sensitivity* involves being attentive to the emotions of others and perceiving when they need help, *sympathy* is showing concern for the suffering of others, while *empathy* is defined as putting oneself in their shoes. *Distress tolerance* is defined as the ability to stay in touch with one's own or another's painful emotions without being overwhelmed by them. Finally, the last element of Gilbert's model – *non-judgment* – is defined as the ability to accept and tolerate another person even if their condition, or reaction, causes difficult feelings in oneself, such as frustration, anger, fear or disgust. Beyond these disparities in the conceptualization of compassion and on the basis of their work, Strauss and colleagues (Strauss et al., 2016) proposed a review of definitions of compassion to extract common elements from pre-existing definitions. Their review identified

five elements of compassion: (1) recognizing suffering in others, (2) understanding the common humanity of this suffering, (3) feeling emotionally connected with the person who is suffering, (4) tolerating difficult feelings that may arise, (5) and acting or being motivated to act to help the person (Strauss et al., 2016). This work provides an initial consensus on the elements that comprise compassion, but nevertheless does not operationalize compassion from a processual and transdiagnostic perspective. Importantly, the operationalization of the processes allows choosing therapeutic processes (i.e., underlying change mechanisms that lead to the attainment of a desirable treatment goal) and the corresponding therapeutic procedures (i.e., techniques or methods used in the therapy), contributing to the development of process-based therapy (Hofmann & Hayes, 2018). This will be the subject of the first study in this thesis, which aims to define the different transdiagnostic processes targeted by compassion.

Despite this recent operationalization of compassion, there seems to be a consensus on how compassion can be shaped. Indeed, compassion for others not only involves being aware of and moved by suffering and wanting to help, but also includes the ability to adopt a non-judgmental stance towards others and to tolerate one's own distress when faced with other people's suffering (Gilbert, 2010b, 2014). More specifically, compassion can be considered as three interdependent sub-constructs, also called the *flows of compassion*: compassion for others (i.e., to be concerned about the suffering of others and to help them to relieve it), compassion from others (to accept attention, kindness and help from others when in difficulty) and self-compassion (i.e., to accept to connect to one's own suffering and to try to relieve it as best as possible, Gilbert, 2019; Raes et al., 2011a).

These flows can also be independent, such that individuals can be good at directing compassion to others, yet may struggle with being self-compassionate (Lopez et al., 2018). Self-compassion is, in fact, one of the least developed or used flows in clinical populations (Kirby et al., 2019). For example, the meta-analysis by Kirby and colleagues (2019) found

positive correlations ($r = .487$) between fears of self-compassion and mental health difficulties. Their results also showed that clinical populations reported significantly stronger associations between mental health difficulties and fears of self-compassion, compared to non-clinical populations. When individual fear self-compassion, they have difficulties to be compassionate towards themselves and tend to be more self-critical and demanding of themselves (Pauley & McPherson, 2010; Rockliff et al., 2008). However, low levels of self-compassion are associated with high levels of dysfunctional attitudes and difficulty in emotion regulation such as self-criticism, ruminations or avoidance (Krieger et al., 2013; Yamaguchi et al., 2014), especially in clinical populations (Ehret et al., 2015). Self-criticism is indeed identified as a phenomenon associated with many psychopathological symptoms and disorders (for a review see, Werner et al., 2019). This is also the case for avoidance strategies that prevent individual from confronting aversive stimuli potentially triggering negative experiences (Hayes et al., 1996) and ruminations, which are defined as persistent and recurring thoughts unintentionally entering consciousness and focusing one's attention on one's depressive symptoms as well as on the implications of these symptoms (Nolen-Hoeksema, 1991). These factors are also present in a transversal way in many psychopathological disorders (e.g., Luca, 2019; McLaughlin & Nolen-Hoeksema, 2011).

Yet, Neff (2003) showed that self-compassionate individuals are more likely to accept their painful experiences rather than to try to avoid them, and to respond with warmth and understanding to overcome them rather than ruminate or self-criticize. Thus, self-compassion is thought to be an adaptive and alternative response to perceived failure (Gilbert et al., 2004) and may decrease the presence of transdiagnostic dysfunctional processes (e.g., Krieger et al., 2013; Raes, 2010; Werner et al., 2019). This is why many researchers are specifically interested in this sub-dimension of compassion, including researcher Kristin Neff, who has made a major contribution with her theory of Self-Compassion (Neff, 2003a; 2003b).

Self-compassion, an inter and intraindividual process for mental health

Extending compassion to the self, self-compassion refers to adopting a positive self-attitude that is open and sensitive to feelings of concern or distress, giving oneself feelings of care and kindness, adopting an attitude of understanding and not judging one's own inadequacies and failures, and recognizing that one's own experience is part of the common human experience (Neff, 2003a). Self-compassion is defined by three components: self-kindness, common humanity, and mindfulness. According to Neff (2003a), self-kindness refers to the tendency to be kind and understanding to oneself, especially in times of difficulty. Rather than turning to oneself with contempt or judgment, this dimension suggests treating one's own failings or inadequacies in a gentle, understanding, and supportive way. Self-compassion invites us to accept that we are not perfect and that this is common to all human beings. The dimension of common humanity allows to consider imperfection as part of the human condition, so that the weaknesses of the self are seen in a broad and inclusive perspective. This perspective of common humanity is also adopted with regard to experiences of suffering, reminding us that this is part of the human experience and that we are not alone in experiencing it. Finally, these painful experiences are also embraced in mindfulness, the third component of self-compassion. This involves being aware of the experience of the present moment in a clear and balanced way so as not to ignore or ruminate on the painful or uncomfortable aspects (Brown & Ryan, 2003). Mindfulness allows one to approach experience as it presents itself, adopting a meta-perspective on one's own experience in order to be able to consider it with more objectivity and perspective (Neff, 2003a).

Behind its individual benefits, self-compassion is also associated with feelings of compassion and concern for others, so being compassionate towards oneself does not mean focusing only on one's own personal needs (Neff, 2003). In particular, self-compassion

involves recognizing that suffering, failure, and inadequacy are part of the human condition and that all people, including oneself, are worthy of compassion (Neff, 2003a).

This process is relevant to study for two main reasons: self-compassion could be an important process contributing to well-being and protecting against the emergence and maintenance of psychopathological disorders, but it also seems to be related to transdiagnostic processes like ER.

First, self-compassion is associated with many dimensions of psychological well-being (for a review, see Neff, 2009). A meta-analysis by Zessin et al. (2015) showed that self-compassion was positively associated with both subjective well-being, in terms of both positive and negative affect and life satisfaction, and psychological well-being. Individuals who have high levels of self-compassion respond less strongly to negative events, have higher positive affect and better mental health, and report greater life satisfaction than people who are low in self-compassion (Allen & Leary, 2010; Leary et al., 2007; Neff et al., 2007). While studies showed that self-compassion is linked to greater mental health, one of the most consistent findings in the research literature is that greater self-compassion is linked to less psychopathology (MacBeth & Gumley, 2012; Murris & Petrocchi, 2016). Self-compassion seems to be a key resilience mechanism to psychopathology (Trompeter et al., 2017) by moderating people's reactions to negative events (Leary et al., 2007). The meta-analysis by MacBeth and Gumley (2012) based on 20 studies provides robust results showing a negative correlation between levels of self-compassion and levels of psychological symptoms.

The strength of self-compassion is not only the reduction of psychopathologies, but also the improvement of positive mental health by enhancing factors such as kindness and positive emotions (Neff et al., 2007; Sirois et al., 2015). These benefits make it a key protective factor against stressful events (Muris & Petrocchi, 2017). Self-compassion promotes adaptive coping by reducing threat and allowing greater control over the stressful event (Allen & Leary, 2010b;

Chishima et al., 2018). Even in cases of trauma, research showed self-compassion as a healthy and alternative response to trauma as it may have the potential to soothe the symptom of posttraumatic stress disorder (Scoglio et al., 2018; Winders et al., 2020): individuals who have experienced trauma but are self-compassionate may feel less threatened by their trauma-related thoughts and feelings, and be more willing to soothe themselves in times of intense distress (Germer & Neff, 2015). In addition, self-compassion contributes to positive perceptions and evaluations of oneself, of others, of the world in general or of more specific experiences, which allows one to restore or maintain a sense of safety and security, even during upsetting events (Leary et al., 2007; Pauley & McPherson, 2010; Zeller et al., 2015).

Research on trauma, resilience and self-compassion provides evidence that self-compassion has protective properties against the deleterious effects of past or present difficult situations (for reviews see (Winders et al., 2020; Zeller et al., 2015). Given its properties for both mental health and the prevention of mental health disorders (e.g., MacBeth & Gumley, 2012; Trompetter et al., 2017), it could be a major asset in addressing significant threats such as the COVID-19 pandemic, which can result in a range of negative consequences for mental health and psychosocial well-being (Prout et al., 2020). Therefore, three studies in this thesis examine the buffering effects of self-compassion against the impact of the COVID-19 pandemic on depression, anxiety, and stress among the general population and in two at-risk populations (parents and PhD students).

A second argument concerns the links between self-compassion and ER. Beyond its protective role, research adopting a processual perspective has investigated the processes mediating the effect of self-compassion. Preliminary results suggest that self-compassion may improve mental health by promoting ER (for a review see Inwood & Ferrari, 2018). Thus, proposing interventions that develop self-compassion would make it possible to act on mental health but also on transdiagnostic factors such as ER. Among the interventions developing self-

compassion, Compassion Focused Therapy (CFT) offers a relevant psychotherapeutic model (Leaviss & Uttley, 2015). CFT was developed by Gilbert (2009, 2014) and is considered part of the third wave of CBT (Gilbert, 2010a). While CFT shares features with CBT (e.g., re-evaluating thoughts, focusing on behavioural change and acceptance of aversive experiences), CFT also has its own characteristics. This psychotherapeutic model is based upon a combination of evolutionary psychology, attachment theory, and social mentality theory (Gilbert, 2014a). CFT aims to develop self-compassion and more globally compassion in its three flows by developing a mode of relationship and regulation based on soothing and affiliation (Gilbert, 2014a). To this end, CFT is based on several evidence-based therapeutic techniques such as soothing breathing, imagery and chair-work practices. For example, *soothing breathing practices*, key practices in CFT, consists of slowing and deepening the breath and focusing on slowing down the mind and body (Matos et al., 2017). They have been shown to be effective in developing a state of calm and soothing by activating the vagal parasympathetic nervous system (Porges, 2007; Steffen et al., 2021). Compassion Focused Imagery (CFI) is aimed at developing compassion and affiliative capacity (Rockliff et al., 2011). The *practices* consist of imagining feelings and having compassionate thoughts, motivations and behaviors (Rockliff et al., 2011). They are shown to be effective in reducing psychopathology and increasing feelings of self-compassion and self-reassurance in a number of mental health settings (Gilbert & Procter, 2006; Laithwaite et al., 2009; McEwan & Gilbert, 2016; Rockliff et al., 2008; 2011). Lastly, CFT also uses *chair-work*, which is experiential interventions using chairs and their relative positions for therapeutic purposes (Pugh, 2017). In CFT, this psychotherapeutic method focuses on multiple emotions, selves and internal relationships (Bell et al., 2021). This technique allows the enhancement of compassion, emotion differentiation and the development of new forms of self-relating (Bell et al., 2020; 2021). While numerous studies and meta-analyses support the efficacy of CFT across a range of outcomes and various populations,

research should consider the mechanisms of change responsible for the effectiveness of intervention in CFT (Kazdin, 2007). Some previous research suggested that ER may be an effective self-compassion process although this has not been evaluated with CFT interventions (Finlay-Jones, 2017; Inwood & Ferrari, 2018). Therefore, to understand and clarify the state of the literature on the effect of self-compassion practices on ER, we conducted a meta-analysis on this topic, which is presented at the beginning of the second part of this thesis.

In addition, although there are a wide range of studies on the effectiveness of CFT, Leaviss and Uttley's systematic review of published evidence for CFT (Leaviss & Uttley, 2015) concluded that more high-quality trials are needed. This statement is also highlighted by the systematic review by Craig et al. (2020). Among the 29 studies included in their reviews, 24 did not compare CFT to an alternative therapy. Thus, the apparent effectiveness of CFT may be attributable to a 'psychological intervention' rather than CFT per se. Indeed, there is a need for high quality Randomized Control Trials (Craig et al., 2020). The authors also shed light on the significance of the duration of CFT interventions to be effective. Their findings indicate that at least 12 sessions of CFT are required to significantly reduce clinical symptomatology across populations. These different points lead us to consider the need to build a standardized Compassion Focused Program (CFP) that meets these requirements and whose effectiveness is compared to other therapies. This will be the focus of the three studies that comprise the second part of this thesis. A study of multiple single cases will allow for the evaluation of how CFP develops ER over the sessions. As this type of design requires specific measurement tools, this study is preceded by a study evaluating the psychometric qualities of the visual analogue scales that we have constructed and used in the multiple single case study. These two studies will be followed by a randomized controlled trial that will test the generalizability of the results obtained in a subclinical population and compared to another therapy. This second part will

conclude with a pilot study that tested the transdiagnostic application of CFP on a clinical population.

Finally, these studies will contribute to a greater understanding of the links between self-compassion and ER. As presented above, several models of ER exist and it seems that self-compassion could be a common factor for ER strategies and skills (e.g., Inwood & Ferrari, 2018). For example, some studies have evaluated the link between self-compassion and some ER strategies. Their results showed that self-compassion was negatively associated with ruminations (Odou & Brinker, 2014) and on the other hand, positively associated with cognitive restructuring (Allen & Leary, 2010; Chishima et al., 2018). Concurrently, other research has explored the link between self-compassion and ER skills. For example, Finlay-Jones and colleagues (2015) tested a self-compassion model of ER and their results showed that self-compassion significantly and negatively predicted ER skills difficulties. Thus, to better understand the relationship between self-compassion and ER, the last study presented in this thesis evaluated the links between self-compassion and ER strategies and skills and proposes an integrative ER model of self-compassion.

On the basis of this emerging scientific field, we decided to carry out ten studies allowing to answer the three main questions addressed in this thesis:

1. Can self-compassion be a protective factor of mental health during time of crisis?
2. Is emotion regulation a process involved in the effectiveness of compassion-based interventions?
3. How is self-compassion related to emotion regulation?

To answer these questions, we conducted a preliminary study presented in Chapter 1 that aims to identify potential processes involved in the sub-dimensions of compassion. To answer our first question, we conducted three studies, presented in Chapters 2, 3 and 4.

Regarding the second question, we conducted five studies presented in Chapters 5, 6, 7, 8 and 9. Finally, to answer our third question we conducted a tenth study presented in Chapter 10 of this thesis.

Part I

Understanding the protective role of
compassion

Chapter 1: Compassion, a review of potential transdiagnostic processes

Marine Paucsik¹, Catherine Bortolon¹, Rebecca Shankland^{2,3} & Céline Baeyens¹

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¹Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, LIP/PC2S, 38000 Grenoble, France

²Univ. Lumière Lyon 2, DIPHE, 69676 Bron Cedex, France

³Institut Universitaire de France

1. Résumé

La recherche sur la compassion a connu un développement rapide ces dernières années. De nombreuses études ont montré ses bienfaits sur la santé mentale. Pour autant, les processus psychologiques sous-jacents que la compassion mobilise et qui expliquent son efficacité n'ont à ce jour pas été identifiés. Sur la base des cinq éléments de la compassion (reconnaître la souffrance, comprendre l'universalité de la souffrance humaine, ressentir ce que la personne souffre, tolérer les sentiments inconfortables et la motivation à agir pour soulager la souffrance) répertoriés par Strauss et al. (2016), plusieurs processus potentiels sous-jacents à la compassion ont été identifiés. Actuellement, ces processus sont considérés comme des compétences ou des stratégies de régulation émotionnelle. Leur analyse permet de comprendre les liens étroits entre la compassion et la régulation émotionnelle, mais qui restent à évaluer et modéliser dans de futures études.

Mots-clés : Compassion; Auto-compassion; Processus psychologiques; Régulation émotionnelle

2. Abstract

Research on compassion has been growing rapidly in recent years. Numerous studies have shown its benefits on mental health; Nevertheless, the underlying psychological processes that compassion mobilizes and that explain its effectiveness have not yet been identified. Based on the five elements of compassion (i.e., recognizing suffering, understanding the universality of human suffering, feeling for the person suffering, tolerating uncomfortable feelings, and motivation to act/acting to alleviate suffering) reported by Strauss et al. (2016), several potential processes underlying compassion have been identified. Currently, these processes are considered as skills or strategies of emotional regulation. Their analysis provides an understanding of the close connections between compassion and emotional regulation, but which remain to be evaluated in future studies.

Keywords: Compassion; Self-compassion; Psychological processes; Emotional regulation

3. Introduction

Over the last few years, compassion has been the subject of numerous studies regarding its beneficial effects on mental health (for some meta-analyse see Inwood & Ferrari, 2018; Kirby, 2017; Kirby et al., 2019; MacBeth & Gumley, 2012). Several approaches exist to define compassion (Strauss et al., 2016). It is sometimes defined as an emotion. For example Goetz et al. (2010) define compassion as: “a feeling that arises from witnessing the suffering of others and motivates a subsequent desire to help” (Goetz et al., 2010, p.351). On the other hand, other researchers do not define compassion as an emotion but rather as a mindset, such as Feldman and Kuyken (2011) who define compassion as “an orientation of the mind to recognize the pain and universality of suffering and the ability to welcome suffering with kindness and empathy, equanimity and patience” (p. 145). Other researchers also mention other formulation as compassionate love but whose definition is close to the previous ones. For example, Sprecher and Fehr (2005) defined compassionate love as a caring, helping and tender attitude towards the other, especially when they are suffering. Finally, in order to standardize the definitions, authors have proposed to conceptualize compassion as a multidimensional construct. In this multidimensional approach, one author is nowadays considered as a reference in the study of compassion (Gilbert, 2009, 2010, 2019). Gilbert proposed a theoretical framework with therapeutic implications for the study and understanding of compassion based on an evolutionary and humanistic approach. Gilbert defines compassion as a motivation to accept, relieve and prevent suffering (Gilbert, 2019). More specifically, compassion is defined as a multidimensional construct that comprises several attributes, such as: a motivation to care, a capacity for sympathy, an ability to tolerate unpleasant emotions, and a capacity for empathic understanding, non-judging and non-condemning (Gilbert, 2005, 2009, 2010). Finally, in terms of the orientation of compassion, we can have compassionate motives for others, experience compassion from others, and have compassion for ourselves (Gilbert, 2009, 2010; Neff, 2003).

Faced to the diversity of approaches and definitions, Strauss and colleagues (2016) conducted a literature review and proposed a new definition of compassion (Dalai Lama, 1995; Feldman & Kuyken, 2011; Gilbert, 2009; Goetz et al., 2010; Kanov et al., 2004; Lazarus, 1991; Neff, 2003a; Pommier, 2010). They propose an integrative definition of compassion based on cognitive, affective, and behavioral processes that would be composed of five elements: (1) recognition of suffering, (2) understanding of the universality of suffering in the human experience, (3) feeling empathy for and connection to the sufferer, (4) emotional tolerance, and (5) motivation to take action to alleviate suffering.

Given the importance of compassion to mental health, it is not surprising that a multitude of compassion-based interventions are being developed. Indeed, all of these interventions have been the subject of meta-analyses showing their effectiveness on different dimensions such as self-compassion, mindfulness, well-being and anxiety-depressive symptoms in clinical and non-clinical populations (Ferrari et al., 2019; Kirby et al., 2017; MacBeth & Gumley, 2012; Wilson et al., 2019; Zessin et al., 2015).

For example, some studies have shown their effectiveness in treating depression, anxiety and stress (for a meta-analysis, see MacBeth & Gumley, 2012), for post-traumatic stress symptoms (Luo et al., 2021), for patient with borderline personality disorder (Feliu-Soler et al., 2017), and also for schizophrenia spectrum disorders (Mavituna et al., 2022). We can therefore consider these interventions as transdiagnostic. However, how and why compassion-based psychotherapy leads to change remains unresolved. Current psychotherapy research is strongly concerned with identifying processes of change that underlie psychotherapeutic effects (Kazdin, 2007; Moldovan & Pinteau, 2015). The objective is no longer solely to evaluate the effectiveness of interventions, but above all to evaluate the processes that they mobilize and that are responsible for their effectiveness (Laurenceau et al., 2007).

It is therefore important to identify the processes that compassion practices involve to reducing psychopathological symptoms. This line of study also responds to a new perspective in psychology: the processual and transdiagnostic approach (Dalglish et al., 2020; Mansell et al., 2008). This approach aims to identify common psychopathological features that are shared across disorders (Mansell et al., 2009). Transdiagnostic processes can be defined as multiple cognitive-behavioural processes maintaining several psychological disorders (e.g., Harvey et al., 2004; Mansell et al., 2009). To be considered as transdiagnostic, a process must meet two criteria (Harvey et al., 2004): it must be present in at least four psychological disorders and contribute causally to the development and/or maintenance of the psychopathology, rather than being an epiphenomenon of these disorders (Harvey et al., 2004). Several categories of transdiagnostic processes have been identified: metacognitive, cognitive, emotional, behavioural and motivational processes (Philippot, 2016). Recent developments within the transdiagnostic approaches provide additional promising avenues for understanding why compassion training is beneficial. One of the most striking features of the rapidly growing literature is the wide range of problems, disorders, and populations for which the practice of compassion appears to be helpful (e.g., MacBeth & Gumley, 2012).

Compassion may be a protective factor against the onset, maintenance, and/or worsening of many psychopathological disorders (e.g., MacBeth & Gumley, 2012). One hypothesis is that compassion might mobilizes several « adaptive » transdiagnostic processes. Therefore, this article aims to identify the potential functional processes that compassion mobilizes and the dysfunctional processes that it attenuates which may underlie the effect of compassion-based interventions on a range of psychopathological disorders. For this, we will rely on the definition proposed by Strauss et al. (2016) and identify the functional processes of each of these dimensions and how they can counteract those that are dysfunctional.

4. Recognising suffering, an emotional awareness process

Compassion implies to approach our emotions and feelings even when they are distressing (Gilbert, 2019). In that sense, compassion implies to recognize one's emotions and thus, to become aware of emotional state (Neff, 2003a). For example, previous studies showed that self-compassionate individuals attempt to better understand (Neff, 2003a) and gain clarity about their emotions (Finlay-Jones et al., 2015). Thus, emotional awareness seems to be a key process of compassion and is also an important process for mental health. Lane et al. (1990) were one of the first to propose a model of emotional awareness, i.e., the individuals' capacity to be aware of and describe emotions.

According to the authors, emotional awareness level can vary depending on the complexity of the representation of emotions, which are represented at five different levels. Each level indicates the extent to which individuals are able to access their own emotional experience and understand it. The first level is the awareness of one's own somatic sensations associated with the emotion (sensorimotor level). In the second level, individuals are aware of the action tendencies associated with the emotion. It is from the third level that individuals are aware of experiencing and expressing emotions, first unidimensional (third level), and later a blend of emotions (able to discriminate different emotions; fourth level), followed by an unrestricted multidimensional awareness of one's own experience and experience of the other (fifth level). That is to say, emotional awareness develops through a series of orderly stages inspired by the work by Piaget (1937).

Another well-known definition of emotional awareness comes from studies on alexithymia (Bagby et al., 2009; Maroti et al., 2018). Alexithymia is defined as comprising four inter-related components including difficulty identifying feelings in the self, difficulty describing feelings, difficulty fantasising, and externally orientated thinking with an excessive

focus on details rather than focusing attention toward one's own internal states (Taylor et al., 1999). The externally oriented thinking has been recently conceptualised as reduced attention toward one's internal experience or avoidance of these experiences (Preece et al., 2017). Emotion awareness refers to the first two components of alexithymia (i.e., difficulty identifying feelings in the self and describe these feelings) as well as the reduced attention toward one's own emotions (Preece et al., 2017).

In both Taylor et al.'s (1999) and Lane's (2000) definitions, two components of emotional awareness emerge: the ability to be aware and to identify and describe feelings. Recently, it has been proposed that emotional awareness is a multidimensional meta-knowledge that can be divided in two processes, which are complementary (Boden & Thompson, 2015; Thompson et al., 2017). The first processes is *emotional clarity*, defined as "the extent to which people unambiguously identify, label, and characterize their own emotions" (Boden & Thompson, 2017, p.1). This process can be further divided in two sub-categories: emotional clarity about the type of emotion and the cause of emotion (Boden & Berenbaum, 2011; Boden & Thompson, 2015). The second processes refer to the capacity to *attend to one's own emotions*. Attention can be further divided into voluntary and involuntary attention (Boden & Thompson, 2015; Huang et al., 2013) . On the one hand, people choose deliberately to pay attention or avoid attending to their internal experience whether it is positive or negative. On the other hand, their attention might involuntarily be drawn by an emotion or avoid it. According to Bonde et al. (2017), attention toward emotions is a necessary process to the development of clarity. That is, one needs first to be able to attend to his/her emotions in order to develop a meta-emotional knowledge leading to clarity.

Considering that emotion delivers crucial information for people to respond adaptively to their environment, attention to one's emotion and clarity about them are essential to adaptive and flexible Emotion Regulation (ER, Berking & Lukas, 2015; Gross, 2015). For instance,

according to the adaptive coping with emotions model (Berking & Lukas, 2015) awareness of emotions, the ability to identify and label an emotion as well as to understand the prompts of emotions are crucial for effective ER. The extent to which ER will be effective depends on the strategies used and therefore the level of emotional clarity (Boden & Thompson, 2015). For instance, clarity about the type of emotion might allow individual to use more adaptive ER strategies such as reinterpreting a stressful situation (Boden & Thompson, 2015; Gohm et al., 2005). Likewise, individuals who attend to their emotions might be more capable to recognize their suffering and subsequently adopt an adaptive ER strategy such as seeking social support and/or accept this emotion (Boden & Thompson, 2015; Gohm & Clore, 2002). Conversely, low levels of clarity were related to a greater use of suppression (e.g., Arndt et al., 2018). Moreover, involuntary attention has been found to be related to worry and inversely related to acceptance (S. Huang et al., 2013) and voluntary attention to reappraisal and inversely to suppression (Bond et al., 2015).

As emotion clarity and attention are crucial for ER, corollary, reduced clarity and attention might contribute to mental health disorders. Bonde et al. (2015), for instance, found that ER strategies mediated the association between emotional awareness and depression. Moreover, Huang et al. (2013) found that increased involuntary attention and reduced lower levels of voluntary attention were associated with depression. As for another example, Kimhy et al. (2012) found that individuals with schizophrenia reported lower levels of clarity (i.e., describing and identifying emotions) when compared to healthy individuals. Conversely, higher levels of emotional awareness seems to be a protective factor against the emergence of paranoia (Ludwig et al., 2020). Finally, studies showed that reduced emotional awareness was associated with depressive and anxiety symptoms in youth (Sendzik et al., 2017) and adults (Novick-Kline et al., 2005), with substance use disorders (Carton et al., 2010), borderline personality (Cole et al., 2009; Derks et al., 2017); and post-traumatic stress disorder (Frewen et al., 2012). Thus,

emotional awareness appear as a relevant transdiagnostic processes to be target during clinical interventions, in particularly those that seek to improve ER (e.g., Kranzler et al., 2016; Weissman et al., 2020).

Fostering compassion might help to develop a more open, clear and understanding stance towards distressing emotions which might in turn reduce the development of mental disorders. Some cross sectional studies showed that self-compassion involves emotional awareness (Neff, 2003a; Neff, 2003c). The meta-analysis by Kirby et al. (2017), also suggests that compassion-based interventions (CBIs) significantly increased awareness. However, in this meta-analysis, the authors include interventions with mindfulness while there are other interventions with no formal meditation/mindfulness components that instead focused on psychoeducation, writing tasks (e.g., letters), self-reflections, and imagery exercises (Kelly et al., 2009). At this time, it is therefore not possible to determine whether emotional awareness is activated in compassion or if it is a requirement for compassion. It is possible that, in order to develop an attitude of caring, understanding, and helping in times of difficulty, a preliminary requirement is to be able to be aware of what one is feeling (Bardeen et al., 2012). In this sense, awareness and overall, mindfulness skills, would be essential to compassion, but it is also possible that mindfulness is an integral component of compassion, as suggested by Neff (2003a). This is one of the major limitations in studying the links between compassion and mindfulness, given the overlap of these constructs in Neff's self-compassion scale, which is also the commonly used scale. As suggested by Prentice et al. (2021), future research could use an alternative measure of emotional awareness, such as the Levels of Emotional Awareness subscale (Lane et al., 1990), alongside the DERS-SF, to explore the relationship between the mindfulness component of self-compassion, emotional awareness, and ER difficulties.

The challenge today is to evaluate whether emotional awareness is specific to mindfulness practice or is also developed through compassion-based practices that do not

include meditation as compassionate imagery. Future studies will be able to evaluate more precisely the links between compassion and mindfulness and emotional awareness.

5. Understanding the universality of suffering, a decentering process

The common humanity dimension describes the degree to which individuals recognize that suffering is part of being human and therefore part of every person's life (Pommier, 2011; Strauss et al., 2016). For example, Dreisoener et al. (2020) found that common humanity writing practice significantly enhanced overall self-compassion. In that sense, feeling of common humanity seems to be a component of compassion that would contribute to its effect on mental health. A feeling of common humanity involves realizing that all humans make mistakes and go through difficult times (Neff, 2003a). The opposite of common humanity is isolation, a sense that emotional pain, flaws, or failures are inherent only to the self and a threat towards one's sense of belonging (Neff, 2003b). Perceived isolation may propel individuals to hide their true personality and pretend to have different emotions because they fear rejection and further isolation (Barnard & Curry, 2011). Self-compassionate individuals are more likely to view stressful events within the wider spectrum of human experience, a perspective thought to enhance a sense of relatedness and reduce the feelings of isolation and disconnection that are commonly experienced during times of failure or difficulty (Allen & Leary, 2010). It also tends to put one's personal experiences into greater perspective, so that the extent of one's suffering is seen with greater clarity (Neff, 2003) and requires that one engage in metacognitive activity that allows for recognition of the related experiences of self and other. This process tends to break the cycle of self-absorption and over-identification, thus decreasing egocentric feelings of separation while increasing feelings of interconnectedness.

One of the processes that could be mobilized by this dimension is decentering, which is theorized as a precursor to a self-compassionate response (Biehler & Naragon-Gainey, 2022) and a key process in compassion (Jazaieri et al., 2014; Roca et al., 2021; Trautwein et al., 2016). Decentering enhances connectedness to others and nature (Adair et al., 2018; Passafaro et al., 2021). Moreover, decentering has been argued to be linked with self-transcendence and to a blurring of the self–other dichotomy (Hanley et al., 2018). Thus, the link between decentering and connectedness is consistent with the fact of defining connectedness as a form of self-transcendence (Lengieza et al., 2021). The construct of decentering is conceptualized as the ability to “step outside of one’s immediate experience, thereby changing the very nature of that experience”(Safran & Segal, 1990, p.117). Low levels of decentering is characterized by an immersion in and an attachment to current mental experiences. Although this dysfunctional process has often been studied in the context of depression and anxiety, it is associated with a broad range of psychological symptoms (for a review, see Bernstein et al., 2015).

Decentering is a key skill taught in many psychotherapies as in cognitive and behavioral therapies (CBTs; Beck & Rush, 1979; Heimberg & Ritter, 2008) and in acceptance and mindfulness-based therapies (Bishop et al., 2004; Hayes-Skelton et al., 2015) for example. Several studies found that it is a transdiagnostic mediator of symptom change and quality of life improvement during treatment (Bieling et al., 2012; Hayes-Skelton et al., 2015; Hoge et al., 2015; Naragon-Gainey & DeMarree, 2017a). Theoretically, when individuals view their affective experiences from a decentered perspective, their emotions and thoughts should less strongly determine their subsequent responses and behaviors, allowing for greater capacity for adaptive self-regulation and healthy functioning. More specifically, the concept designates a shift from “being immersed in the drama of our personal narrative or life story”, towards being able “to stand back from (witness) our story’ about who and what we ultimately are” (Shapiro et al. 2006, p. 379). This process has been modelled by Bernstein and collaborators (2015) who

proposed a Metacognitive Processes Model of Decentering as consisting of the interaction of three interrelated metacognitive processes: Meta-awareness, Disidentification from Internal Experience, and Reduced Reactivity to thought Content. Meta-awareness represents a person's awareness of his or her current psychological experience (i.e., thoughts and feelings) and is a necessary precondition for the other processes. Disidentification from one's experience entails relating to one's thoughts and feelings in an objective, distant manner, whereas reduced reactivity to thoughts describes the decreased impact of one's thoughts and feelings on subsequent responses (Bernstein et al., 2019). According to their model, meta-awareness would allow the disidentification of internal experience by creating a distinction between the observing self or consciousness and the observed subjective experience (Deikman, 1982; Goleman, 1980; Hölzel et al., 2011; Shapiro et al., 2006). Meta-awareness would lead to less responsiveness to thought content by directing attention to experiences of the present moment (Hayes et al., 1999; Segal et al., 2013; Teasdale et al., 1995). Thus, when meta-awareness is oriented to the thought process, the content of thought can be interpreted as interpretations of present, past and future situations and experiences and, therefore, not necessarily as accurate representations of those situations and experiences (Hayes et al., 1999; Safran & Segal, 1990). Thus, the content of thought is no longer treated as a fact but rather as a simple mental construct that influences other mental processes such as motivation, planning, and emotion differently (Hayes et al., 1999; Teasdale et al., 2002).

In that sense, theorists have suggested that decentering counteracts rumination since decentered individuals are aware of their ruminative thinking and can relate differently to ruminative thoughts, and decreased rumination through decentering leads to reduction of depression (Fresco et al., 2007; Teasdale et al., 2002). Consistent with the theory, studies have consistently found this negative association between decentering and rumination (Fresco et al., 2007; Kurihara et al., 2010).

In one longitudinal study examining mindful positive ER, decentering predicted broader awareness and this in turn predicted more positive stress reappraisals and subsequent positive affect (Garland et al., 2017). Decentering can therefore be a protective process which allows to decrease other transdiagnostic processes such as ruminations (Hayes-Skelton et al., 2015; Hayes-Skelton & Marando-Blanck, 2019). For example, several studies have shown a moderate to large negative correlation between decentering and rumination, in both nonclinical samples and a clinical sample diagnosed with an anxiety disorder (Fresco et al., 2007; Fresco et al., 2007; Mori & Tanno, 2015; Naragon-Gainey & DeMarree, 2017b; Novick-Kline et al., 2005).

Within therapy, although decentering is not explicitly invoked by therapists, the process of decentering is involved in CBIs, just as it is in other therapies such as CBTs (Beck & Rush, 1979; Heimberg & Ritter, 2008) and acceptance and mindfulness-based therapies (Bishop et al., 2004; Hayes-Skelton et al., 2015). This process of over-and de-identification is mobilized from a compassionate perspective in CBIs (Logie & Frewen, 2015). In CBIs, the therapist helps the patients to modify his or her relations to thought (e.g., Frewen et al. 2008), which implies a decentering perspective (Farb et al., 2007), that can help to promote a feeling of social connexion (Adair et al., 2018) and diminish the dysfunctional automatic reactions. Thus, this decentering process allows to disengage from ruminations and feelings of self-isolation, and to respond to suffering from a broader perspective (Bernstein et al., 2019; Hutcherson et al., 2008).

These elements are consistent with a recent ecological momentary assessment study (Biehler & Naragon-Gainey, 2022) showing that self-compassion is closely associated with decentering in daily life. However, future research is needed to establish the mobilization of this process in self-compassion. It is possible that several processes are mobilized to develop a sense of common humanity. For example, being able to decenter allows one to avoid thoughts related to feelings of loneliness and isolation but does not allow one to generate other thoughts that allow one to feel connected. In that sense, it is possible that this process is combined with

emotional processes such as ER. Cognitive restructuring, an ER strategy, would allow for the development of alternative and oriented thoughts towards a feeling of connection and recognition that suffering is part of the human experience. However, Kobayashi et al. (2020) recently showed that these ER strategy fosters decentering. Indeed, it is possible that ER is an underlying process at decentering and would allow for the development of this feeling of common humanity. Thus, several types of processes could be intertwined in this feeling of common humanity. Future studies could assess the links between common humanity, ER and decentering. For example, future studies could evaluate the effect of interventions that develop common humanity and assess their effects on ER and decentering.

6. Feeling empathy for the person suffering and connecting with the distress

Related to decentering, compassion also involves a more empathetic concern and greater altruism (Neff & Pommier, 2013). Indeed, compassion allows to connect to one's own suffering and to that of others by adopting an understanding and caring attitude (Gilbert, 2009). However, feeling empathy, may not always be a pleasant experience and requires several abilities. Numerous studies have highlighted the lack of consensus and empirical definition of empathy (Eklund & Summer Meranius, 2021; Hall & Schwartz, 2019). Currently, empathy can be considered as cognitive and emotional multi-component process (Fortier et al., 2011).

More precisely, four different processes are identified: cognitively understanding the other, feeling what the other feels, sharing the other's world (i.e., experiencing what the other experiences, both representationally and emotionally), and maintaining self-other differentiation (Eklund & Meranius, 2021). Thus, empathy can be defined as the ability of one person to share and understand the internal states of someone else (De Waal & Preston, 2017), but to experience it with no confusion within one's own experience (de Vignemont & Singer, 2006; Decety & Lamm, 2006).

The cognitive dimension of empathy refers to the processes of inferring and reasoning about the beliefs, thoughts or emotions of others (Preston et al., 2007; Smith, 2006). Cognitive empathy corresponds to psychological and neuroscience research on perspective-taking, which is the capacity to make inferences about and represent others' intentions, goals and motives (other terms also include Theory of Mind or mentalizing; e.g., Frith & Frith, 2005; Premack & Woodruff, 1978).

Previous work has shown that perspective-taking is closely related to and a key aspect of human empathy, which refers to the ability to internally simulate and adopt the mental states of others (Healey & Grossman, 2018). It is a complex process that enables us to recognize and appreciate another person's point of view, whether it be the same or different from our own (Healey & Grossman, 2018). This component involves high-level processes, such as executive functions (especially inhibition), as well as the ability to distinguish oneself from others, in order to adopt the other's perspective and to assign thoughts and emotions (Decety & Lamm, 2006). Perspective-taking is sometimes characterized along two dimensions: cognitive and affective.

Cognitive perspective-taking may be defined as the ability to infer the thoughts or beliefs of another agent, while affective perspective-taking may be defined as the ability to infer the emotions or feelings of another agent (Healey & Grossman, 2018). The emotional dimension (a low-level process) is directly associated with emotional resonance, a term that refers to the fact that observing an emotion in another person is likely to induce the same emotion in the observer by activating identical representations (Eisenberg & Fabes, 1990; Fortier et al., 2018). Empathy for the sufferer is one component of empathy and can be defined as the ability to specifically understand and to connect with the suffering of others (De Waal & Preston, 2017; Decety & Jackson, 2004; Fitzgibbon et al., 2010). Recent functional magnetic resonance imaging and positron emission tomography studies have demonstrated that observing

or imagining another person's emotional state activates parts of the neuronal network involved in processing that same state in oneself, whether it is disgust, pain, or social emotion (e.g. Ruby & Decety, 2004; Singer et al., 2004). So, observing and imagining another person in a particular state is thought to activate a similar state in the observer. Unfortunately, this process can be altered by a deficit of ER skills (Decety, 2010; Naor et al., 2018) contributing to a form of empathic distress (Singer & Klimecki, 2014). Empathic distress refers to a strong aversive and self-oriented response to the suffering of others, accompanied by the desire to withdraw from a situation in order to protect oneself from excessive negative feelings (Singer & Klimecki, 2014). In contrast to compassion, empathic distress is a self-oriented aversive emotional response to the suffering of others that increases negative affect and promotes avoidance behaviors (Batson et al., 1987). Indeed, it seems that the empathizer's emotional state biases his or her interpretation of the other's emotional state. However, these interpretive biases can sustain psychological dysfunction by feeding maladaptive, self-confirming beliefs with misinterpreted evidence that is then taken as truth. Whether observation of distress in others leads to empathic concern and altruistic motivation, or to personal distress and egoistic motivation, seems to be modulated by ER such as cognitive reappraisal (Lamm et al., 2007).

Lutz and his collaborators (2008) showed that brain regions associated with empathic processes can be modulated by the intentional regulation of its emotional responses via the generation of compassion. Self-compassion creates an emotional distance from stressful events and enables us to see the context and the negative event more realistically, which is a common factor of self-compassion and mindfulness (Finlay-Jones et al., 2015). Compassion then makes it possible to cognitively re-evaluate the emotional attribution and the emotional meaning and to generate positive emotions via the activation of brain networks related to reward and affiliation (Preckel et al., 2018). It is also consistent with the results of Welp and Brown (2014) who found that self-compassion was related to feeling less personal distress in response to

someone else's emergency and those of Klimecki and collaborators (2014) who found that training compassion may reflect a new coping strategy to overcome empathic distress.

A recent study also showed that the effect of empathic distress on depression or anxiety is diminished when individuals used cognitive reappraisal, i.e., the ability to change one's evaluation of an event to alter its emotional significance (Gross, 2001, Powell, 2018). It is also consistent with other studies showing that one's self-reported capacity to understand others' emotions is positively related to the habitual use of more adaptive ER strategies such as reappraisal (Lockwood et al., 2014; Powell, 2018; Tully et al., 2016). It reflects a secondary appraisal of one's initial interpretation of a situation and allows to reframe an experience to regulate emotional distress (Desrosiers et al., 2013), and to change the emotional impact of distressing events by shifting negative cognitive biases (Gross & John, 2003).

Cognitive reappraisal involves generating and retaining non-negative interpretations while inhibiting negative interpretations of stimuli or situations that are evaluated as stressful (McRae, 2016). This ability has been associated with a range of positive outcomes, including affective (e.g., decreasing negative affect), cognitive (e.g., memory performance), and social outcomes (e.g., closer relationships with friends; for a review see Gross, 2014). In that sense, cognitive reappraisal is considered as an adaptive ER strategy (Aldao & Nolen-Hoeksema, 2012; Aldao et al., 2010). This strategy allows to counteract the interpretation biases which are transdiagnostic processes (Harvey et al., 2004). Indeed, several disorders are related to the absence of effective use of cognitive ER (Joormann & Gotlib, 2010). If cognitive reappraisal seems to be a key functional process in empathy, several studies showed that this process that can be developed through compassion (e.g., Bakker et al., 2019; Diedrich et al., 2016; Lutz et al., 2008). Specifically, a recent study showed that cognitive reappraisal is a mediating process in the protective effect of self-compassion on depression (Yu et al., 2022). Finally, compassion will involve a positive reappraisal of suffering, seeing it not as a threat but as an opportunity to

care and help oneself or other. Compassion involves changing or reframing people's relationship to an emotional experience in a caring and non-judgmental way, and this caring reappraisal or reframing may result in a reduction in distress and psychopathology (Bakker et al., 2019).

7. Tolerating uncomfortable feelings and accepting suffering

Tolerance and acceptance are two processes identified compassion (Gilbert, 2014; Neff, 2003b). Indeed, these two processes are very close because compassion, and more specifically self-compassion, requires the individual to experience and examine their negative emotions (Neff, 2003a, 2003b). Distress tolerance refers to an individual's perceived or real capacity to experience and endure aversive psychological or physical states (Leyro et al., 2010). In that sense, increasing one's ability to tolerate negative emotions may enable integration and processing of negative emotions, consequently reducing the deployment of maladaptive ER strategies such as avoidance (Berking & Whitley, 2014; Neff & Germer, 2013). The meta-analyse of Inwood and Ferrari (2018) showed that tolerance of negative emotions significantly mediate the relationship between self-compassion and depressive symptoms. More precisely, several studies have shown that low distress tolerance is associated with many addictive behaviors as to cigarettes, alcohol, illegal drugs and food addiction (e.g., Kozak & Fought, 2011). Previous studies already showed that self-compassion is positively link to distress tolerance (Basharpour et al., 2021) and that self-compassion is associate with improvements in depression symptoms via the tolerance of negative emotions (Diedrich et al., 2017). Finally, Keshavarz Mohammadi and Khalatbari (2018) showed that self-compassion treatment enhanced distress tolerance.

Acceptance entails fully experiencing emotions, thoughts, and bodily sensations without trying to change, control, or avoid them (Hayes et al., 1999). Acceptance has been described as a form of ER (Wolgast et al., 2013). Acceptance involves a strong focus on emotional responses (Hofmann & Asmundson, 2008; Wolgast et al., 2013) and an overriding of automatic responses (Alberts et al., 2012). Given that these aspects are essential features of ER strategies, acceptance could shape ongoing emotional responses. Studies showed that the habitual use of acceptance exerts beneficial effects on psychological health. For example, correlational studies have shown that the use of acceptance in daily life is associated with decreased negative affect (Kashdan et al., 2006; Shallcross et al., 2010).

In that sense, tolerance and acceptance contribute to a better way of regulating emotions unlike opposing strategies such as emotional avoidance (Juarascio et al., 2020). According to Hayes et al. (1996), the ability to tolerate and accept temporary psychological distress without the tendency to avoid or try to alter uncomfortable emotions is essential when such emotions can lead to healthier behavioural modifications. Indeed, rather than perceiving emotions as unacceptable or intolerable and leading to escape and avoidance behaviors (Simons & Gaher, 2005), tolerance and acceptance lead to an adaptive ER (Wolgast et al., 2011) and to an overriding of automatic responses (Alberts et al., 2012). In contrast to them, avoidance of internal experience is a transdiagnostic process identified in a range of psychopathological disorders including anxiety disorders (Bar-Haim et al., 2007; Bögels & Mansell, 2004; Koster et al., 2006; Sagliano et al., 2014). For example, some studies reveal a vigilance-avoidance pattern related to anxiety disorders such social phobia (Chen et al., 2002) and specific phobia (Tolin, et al., 1999). It is also identified in other psychological disorders such as affective disorders and schizophrenia (Loughland et al., 2002). Avoidance is identified as a process in which attention is paid as far as possible from the threat cues (Hayes, 1999, Koster et al., 2005; 2006; Mogg et al., 2004), and that impedes an adequate response to the threat (Cisler & Koster,

2010). Attention is initially directed toward threatening stimuli, but then diverted away from them (Koster et al., 2006; Lee & Knight, 2009), likely reflecting individuals' attempts to regulate their negative emotions through distraction strategies (Cisler & Koster, 2010). Consequently, avoidance can exacerbate the difficulties encountered or even create new ones (Ottenbreit & Dobson, 2008). For example, classic harmful avoidance strategy responses include excessive drinking, drug use, or high-risk sexual behaviors (Chawla & Ostafin, 2007). Thus, avoidance can contribute to a vicious cycle, with future aversive conditions evoking avoidance that is maintained by negative reinforcement (Manos et al., 2010).

Research has shown that avoidant functioning can stem from a lack of compassion (Krieger et al., 2013). For example, engagement with suffering may cause a degree of personal distress that can motivate us to move away from that suffering in order to reduce our own distress, and therefore away from a compassionate motivation and action (Steindl et al., 2021). Thus, CBIs may reduce avoidance of threatening stimuli (Daneshvar et al., 2020; Gerber & Anaki, 2019). In these therapies, the work involves expanding attention to all the elements of the environment, i.e., threatening and non-threatening, to help re-evaluate the perception of danger rather than to escape from it. Avoidance reduction in therapy also aims to challenge the individual's perception of danger by blocking his or her attempts to flee and seek safety. Rather, the patient is encouraged to maintain focus on the existing threat and to re-evaluate it in a larger, non-threatening context. In addition, self-compassion has been found to inversely predict emotional avoidance in community samples (Sydenham et al., 2017) and behavioural avoidance in outpatient clinical samples (Krieger et al., 2013). As a result, individuals with greater self-compassion appear less avoidant of difficult experiences (Finlay-Jones, 2017). Finally, a recent study showed that self-compassion may influence depressive symptoms through reducing avoidance (Adie et al., 2021). The current scientific literature thus leads to consider that compassion could be a means of reducing avoidance by promoting acceptance and distress

tolerance. However, future studies could test the specific links between self-compassion and these functional and dysfunctional processes.

8. Motivation to take action to alleviate suffering, an approach motivation

According to Gilbert, compassion is a motivation to attend to or engage with suffering, and the motivation to take helpful action (Gilbert et al., 2017). In that sense, compassion is a motivation that will help individuals remain committed even in times of pain to take care of each other. Compassion is rooted in a care and affiliative, other-related motivational system (Engen & Singer, 2016; Goetz et al., 2010; Klimecki et al., 2013a; 2013b). It emerges from this basic mammalian caring motivation and combines complex competencies that have evolved over the last two million years (Dunbar & Shultz, 2017; Gilbert, 2019). Compassion is a motivation to take care, a motivation which combine a motivation to approach with and an another one to engage and act. By developing acceptance, tolerance, and decreasing avoidance, compassion may allow for greater motivation to remain engaged in meaningful actions. Indeed, studies have shown that self-compassion is associated with less experiential avoidance and self-disengagement (Sirois et al. 2015; Thompson & Waltz, 2008).

Motivation can be defined as the stimulation and orientation of behavior. Its stimulation and orientation will depend on the approach and avoidance mechanism considered as a central motivational element because it will determine its orientation (Elliot, 2006; Elliot & Covington, 2001). Approach motivation can be defined as an activation or orientation of behavior by or toward positive stimuli, whereas avoidance motivation is defined as an activation or orientation of behavior by or toward negative stimuli (Elliot, 2006). Thus, stimuli rated as positive are intrinsically associated with an approach orientation aimed at obtaining something positive that is currently absent or retaining something positive that is currently present. On the other hand,

stimuli evaluated as negative are intrinsically associated with an avoidance orientation that aims to move away from something negative that is currently present and to keep that stimulus at bay (Elliot, 2006).

Although approaching positive/pleasant stimuli and avoiding negative/unpleasant stimuli is an essential component of adaptive behavior in response to important, emotionally relevant stimuli (Frijda, 1986), this motivational mechanism can also be dysfunctional (Loijen et al., 2020). Indeed, approach/avoidance behavior is generally considered to be the result of information processing (Metcalf & Mischel, 1999; Strack & Deutsch, 2004). However, information processing can be biased, particularly due to attentional biases such as the attentional avoidance mentioned above. Yet, when this mechanism is dysfunctional, it is considered a risk factor for the development and maintenance of various psychopathological disorders (Baas et al., 2020; Fox & Beevers, 2016; Loijen et al., 2020; Marteau et al., 2012; Mathews & MacLeod, 2005).

Dysfunctional avoidance/approach patterns are notably related to anxiety disorders (Ouimet et al., 2009; Sarfan, 2020) but also to depressive disorders (Trew, 2011), substance use disorders (Kemps et al., 2013; Ostafin et al., 2003) and psychotics disorders (Baas et al., 2020). In psychotherapies targeting the development of compassion, work is proposed on the processing of information perceived as threatening. Compassion involves an up-regulation of pleasant affect, a state of calm, and a sense of affiliation (Engen & Singer, 2014; Klimecki et al., 2013a). Compassion may include positive emotional states such as kindness, empathy, generosity, and acceptance but does not refer only to a positive emotional experience but to a suite of concrete healthy and prosocial behaviors (Phillips & Hine, 2021). In that sense, it increase the approach to pleasant stimuli, which is often lacking for example in depressive disorders (Trew, 2011).

First, it has been suggested that self-compassion decreases unhealthy behavior by acting upon these factors, i.e., by ameliorating negative emotions (e.g., shame, stress), self-criticism, and fostering the realisation that everyone can make mistakes, fail to reach goals or experience misfortune (Leary et al., 2007; Sirois, 2015). Self-compassion may simultaneously promote healthy behaviors by eliciting positive emotions that provide motivation to attain health goals, prompting the use of adaptive coping strategies that facilitate movement toward these goals, and by invoking feelings of self-kindness that manifest in the desire to take care of one's body (Sirois, 2015; Sirois et al., 2015).

More precisely, studies showed that self-compassion is related to individuals' willingness to help an individual in need (Welp & Brown, 2014), and that compassion training enhances prosocial behaviors (Leiberg et al., 2011; Lim & DeSteno, 2016). Other studies showed that self-compassionate individuals are less afraid of failure (Neff et al., 2005), and are more perseverant when they do fail (Neely et al., 2009). This may be explained by the fact that self-compassion for personal weaknesses, failures, and past moral transgressions results in more motivation to change for the better, trying harder to learn, and avoiding repeating past mistakes (Breines & Chen, 2012).

A growing literature suggests that the benefits of self-compassion may also extend to greater engagement in health-promoting behavior (for a review, see Biber & Ellis, 2019) such as sticking to a diet (Adams & Leary, 2007), quitting smoking (Kelly et al., 2009), or starting a fitness regimen (Magnus et al., 2010).

If a compassionate motivation promotes functional processes (i.e., acceptance, decentering or reappraisal), and performing healthy and prosocial behaviors, so far, no study has investigated why or how compassion training increases prosocial behavior. Therefore, research is needed into identifying the underlying processes that mediate these effects.

9. Discussion

The purpose of this study was to use a consensual definition of compassion to identify potential mediators of effectiveness of compassionate interventions that might explain their transdiagnostic application. Indeed, if compassion training is considered as a transdiagnostic intervention (e.g., Kirby et al., 2017; MacBeth & Gumley, 2012), evaluation of its effectiveness on specific psychological processes has not been systematic.

A consensus emerges that cognitive and emotional processes are involved. Studies have focused on effects on rumination and self-criticism (e.g., Ferrari et al., 2019), or acceptance and cognitive reappraisal (Wong & Yeung, 2017). Indeed, the link between self-compassion and adaptive cognitive processing has been demonstrated in empirical studies. For instance, self-compassion has been found to be associated with more acceptance, more positive cognitive reframing, and more meaning in life (Phillips & Ferguson 2012). Moreover, self-compassion has been found to be associated with more positive thinking and less negative or irrational thoughts (Arimitsu & Hofmann, 2015; Leary et al., 2007). Indeed, self-compassionate individuals tend to ruminate or worry less (Krieger et al., 2013b; Neff et al., 2007; Raes, 2010; Smeets et al., 2014). The involvement of cognitive processes can also explain the effect of CBIs on ER. For example, the study of Allen and Leary (2014) showed that self-compassionate individuals tend to have more positive thoughts related to their experience, which in turn is associated with better emotional outcomes.

However, other processes that we have presented have not been explicitly analysed in CBIs in relation to mental health promotion. For example, decentering is a process that has been much studied in mindfulness meditation practices (for a meta-analysis see, Johannsen et al., 2022), but not specifically in compassion training practices. From a theoretical point of view, because of the overlap between the components of self-compassion and mindfulness, it is

difficult to attribute the activation of this process to compassion specifically. From a psychometric point of view, the most used scale in studies is that developed by Neff (2003), which assesses self-compassion and its six dimensions in which mindfulness is included. Thus, future studies should evaluate the effect of CBIs with other instruments that assess compassion only, and do not include mindfulness-specific dimensions. The study of processes specific to CBIs is also difficult because of the heterogeneity of the interventions. Indeed, interventions can mix mindfulness practices with compassion-based meditation or compassion-based imagery. Comparing the effects of different practices might shed light on the process that are specifically mobilized as the mediator of change.

Finally, the definition of the components of compassion is bound to evolve. The definition of the five dimensions of compassion proposed by Strauss et al. (2016) on which we based our identification of the processes has limitations. The study conducted by Gu et al. (2017) showed that the “tolerating uncomfortable feelings” factor may be problematic and compassion may be better represented by four rather than five elements. It is therefore possible that future studies could clarify the dimensions representing compassion, which will also improve the study of the processes involved.

At last, many studies suggested that self-compassion may improve mental health by promoting ER processes (e.g., Berking & Whitley, 2014). It seems that self-compassion helps to reduce emotional dysregulation (Finlay-Jones et al., 2015), and is correlated with the use of more functional regulation strategies (i.e., cognitive reappraisal and acceptance, Inwood & Ferrari, 2018). CBIs also develop more functional ER (Pauksik et al., 2022). Compassion could thus be considered as a motivating mindset to care for and engage with difficulties and to develop ER skills and facilitate the use of functional ER strategies (Finlay-Jones, 2017; Prentice et al., 2021). Future studies should identify precisely how compassion, motivation and ER are linked and how they interact with each other.

10. Conclusion

Based on the definition proposed by Strauss and colleagues (2016), we attempted to identify potential processes that could be responsible for the effect of compassion-based intervention on psychopathological disorders for each of the five dimensions they identified. This review presents several processes involved in compassion based practices and aims to offer a first processual perspective on compassion-based interventions.

This initial review was a preliminary step to the next research. By following a processual and transdiagnostic approach, it aimed to understand the processes of the sub-dimensions of compassion. It identified potential processes that could explain the beneficial effects of compassion on many mental health indicators. However, this review mainly reveals the lack of data regarding the processes mobilized in compassion-based practices as well as the overlap between the practices and measures of mindfulness and self-compassion. Nevertheless, this review highlights evidence that many ER processes are involved in the effectiveness of compassion-based practices. This review also identified the lack of research and assessment tools to measure compassion and its three sub-dimensions. Therefore, the next studies presented in this thesis will assess only one sub-dimension of compassion, self-compassion, using the gold standard scale to measure it: the Self-Compassion Scale (Neff, 2003).

Chapter 2: Trait-mindfulness, self-compassion and rumination type predict mental health during lockdown: A longitudinal study

Marine Paucsik¹, Rebecca Shankland^{2,3}, Christophe Leys⁴, Ilios Kotsou⁴ & Céline Baeyens¹

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¹Univ. Grenoble Alpes, LIP/PC2S, 38000 Grenoble, France

²Univ. Lumière Lyon 2, DIPHE, 69676 Bron Cedex, France

³Institut Universitaire de France

⁴University Libre de Bruxelles, Brussels, Belgium

1. Résumé

Cette étude longitudinale visait à évaluer le rôle prédictif et protecteur de la pleine conscience, de l'auto-compassion et des formes de ruminations sur les symptômes d'anxiété et de dépression lors du premier confinement en France pendant la période de pandémie du Covid-19. Les résultats des analyses de corrélations ont montré que la pleine conscience était significativement et positivement corrélée à l'auto-compassion et les ruminations concrètes, et négativement corrélée aux ruminations abstraites, à l'anxiété et à la dépression. Les analyses de médiation ont montré que la relation entre la pleine conscience et l'anxiété était partiellement médiée par l'auto-compassion et les ruminations concrètes et abstraites. Ainsi, la pleine conscience, l'auto-compassion et les ruminations concrètes se sont révélées être des facteurs de protection pendant le confinement.

Mot clés : Auto-compassion; Mindfulness; Ruminations; Confinement; Santé mentale.

2. Abstract

This longitudinal study aimed to assess the predictive and protective role of trait-mindfulness, self-compassion, and ruminations form on anxiety and depression symptoms during the first lockdown in France. Results of the correlations showed that trait-mindfulness was significantly and positively correlated with self-compassion and concrete ruminations and negatively correlated with abstract ruminations, anxiety, and depression. Mediation analyses showed that the relation between trait-mindfulness and anxiety was partially mediated by self-compassion and concrete and abstract ruminations. Trait-mindfulness, self-compassion and concrete ruminations were shown to be protective factors during the lockdown.

Keywords: Self-compassion; Mindfulness; Rumination; Lockdown; Mental health

3. Introduction

The lockdown related to the COVID-19 epidemic represented a difficult and anxiety-provoking period for the general population (Brooks et al., 2020; Ho et al., 2020; Huang & Zhao, 2020; Wang et al., 2020). The results of several research have shown that living in self-isolation induces negative emotional states such as anxiety, depression, but also other states of confusion, despair, and even suicidal (Guan et al., 2020; Peng et al., 2020). One of the reasons for these findings may be the deprivation of external sources of emotional regulation such as social relationships (Zaki & Craig, 2013). Many individuals then found themselves suddenly alone with themselves, their emotions, and thoughts, sometimes without knowing what to do with them. Studies have shown that mindfulness can be a valuable resource in dealing with these difficulties and uncertainties of the situation by allowing them to improve their emotional regulation and reduce symptoms of anxiety and depression (Conversano et al., 2020; de Abreu Costa et al., 2019; Zheng et al., 2020). Several processes can explain the effectiveness of mindfulness on mental health and well-being such as the reduction of abstract ruminations and the development of self-compassion through caring, concrete and useful thought patterns (Heeren & Philippot, 2011; Neff & Dahm, 2015). Specifically, mindfulness practice and state reduce abstract ruminations, a transdiagnostic process identified by research as responsible for the development and maintenance of a range of psychopathological disorders (Deyo et al., 2009; Watkins, 2009). Mindfulness also increases self-compassion, which is associated with greater mental health and resilience (Birnie et al., 2010; Cousineau et al., 2019; Kemper et al., 2015; Soysa & Wilcomb, 2015). Thus, previous participation in a mindfulness-based program or high levels of mindfulness trait would contribute to a more adjusted and supportive way of relating to self and predict better mental health during confinement. Overall, studies conducted during COVID-19 revealed that trait-mindfulness played an important mental health protective role during the lockdown (Conversano et al., 2020). However, the studies did not evaluate the

effects of participating in a mindfulness-based program prior to the lockdown period nor the processes mediating mindfulness effectiveness.

In this study, we hypothesized that, during the lockdown, compared to individuals who had not completed a mindfulness-based program, participants who had followed such a program would have lower levels of anxiety and depression (H1). Second, we hypothesize that, compared to individuals who had not completed a mindfulness-based program, participants who had followed such a program would show higher levels of trait-mindfulness, self-compassion and concrete ruminations, and lower levels of abstract ruminations (H2). The third hypothesis was that self-compassion and type of ruminations would mediate the relation between trait-mindfulness at T1 and anxiety and depression at T2 (H3).

4. Method

1. Transparency and openness

This study's design and its analysis were pre-registered on Open Science Framework (OSF, https://osf.io/snhgr/?view_only=7f1fb6221b5f4aa29463417b296388d1). All data and research materials are available on the OSF Project. This study was approved by the local university ethical committee

2. Participants

Participants were recruited through an internet announcement posted from May 1 to 15, 2020. Individuals who took part in the study were then asked to give their consent to continue the study. The sample at Time 1 consisted of 210 French participants (190 women, 20 men). Participants were aged 18 to 79 years ($M = 48$, $SD = 12.5$); 45.7% lived with a partner, 54.3% were single; 51.5% had a high level of education (at least a master's degree). Among the

participants, 72.7% had already followed a mindfulness program. 132 participants agreed to complete the second phase of the survey, which ran from June 11 to 26.

3. Materials

All participants completed the following online questionnaires preceded by sociodemographic information.

Anxiety and depression. Anxiety and depression were assessed using the HADS, Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). The HADS comprises fourteen items: seven items ($\alpha = .81$) assessing anxiety (HADS-A) and seven items ($\alpha = .70$) measuring depression (HADS-D).

Mindfulness. Mindfulness was assessed using the Mindfulness Attention Awareness Scale which is a 15-item single dimension measure attention and awareness in daily life using a 6-point Likert (Jermann et al., 2009). Internal consistency was high (Cronbach's alpha = .90).

Self-compassion. Self-compassion was measured using the 12-item Self-Compassion short form (SCS-SF, Raes et al., 2011). Each item was rated on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). The SCS-SF demonstrated good internal consistency ($\alpha = .86$).

Rumination. Rumination was assessed by the Mini-CERTS (Douilliez et al., 2014) which evaluates abstract analytical thinking ($\alpha = .82$) and experiential concrete thinking ($\alpha = .78$). This scale is composed of 16 items rated on a scale from 1 to 4 (1= almost never, 4= almost always). In addition to demographic information, participants were also asked to indicate whether they had participated in a mindfulness-based program.

5. Results

4. Preliminary analyses

First, t-test showed no difference on our variables between the participants who responded only to the first assessment and those who responded to both.

5. Effects of having participated in a mindfulness-based program before the lockdown

Mixed ANOVAs were performed to determine if there were significant differences between the individuals who had participated in a mindfulness-based program before lockdown, and those who had not on anxiety and depression (H1), and on trait-mindfulness, self-compassion and rumination type (H2). The results only showed a statistical effect of group on trait-mindfulness at T1: participants who had followed a mindfulness-based program before the lockdown reported significantly higher levels of trait-mindfulness, $F(1, 130) = 4.28 p < .05$.

6. The mediating role of self-compassion and rumination type

Before testing the mediating role of self-compassion and rumination type, correlation analyses were performed between the variables at T1 and T2 (see Table 1). At T1 and T2, the analyses showed that trait-mindfulness was positively correlated with self-compassion and concrete ruminations, and negatively correlated with abstract ruminations, anxiety and depression. The results also showed that self-compassion and concrete ruminations were negatively correlated with anxiety and depression, and abstract ruminations was positively correlated with anxiety and depression at T1 and T2.

As the variables were significantly correlated in the expected directions, the mediation model was tested. However, as self-compassion and abstract ruminations were highly correlated, we tested the collinearity between these two variables. The results showed a high

collinearity between self-compassion at T2 (VIF = 2.22) and abstract ruminations at T2 (VIF = 2.24).

Table 1

Pearson's correlations between the measures at T1 and T2

Pearson's r	T1					
	1	2	3	4	5	6
1. MAAS	-					
2. SCS	.643***	-				
T1 3. HADS-A	-.588***	-.547***	-			
4. HADS-D	-.284***	-.393***	.614***	-		
5. MINI-C	.298***	.333***	-.224**	-.408***	-	
6. MINI-A	-.685***	-.463***	.670***	.331***	-.163	-
1	.824***	.577**	-.513***	-.279**	.276**	-.601***
2	.567***	.822***	-.556***	-.389**	.283**	-.597***
T2 3	-.575***	-.495***	.795***	.327***	-.177*	.575***
4	-.314***	-.289***	.390***	.552***	-.175*	.338***
5	.251**	.245**	-.308***	-.405***	.755***	-.13
6	-.595***	-.556***	.556***	.243**	-.099	.710***

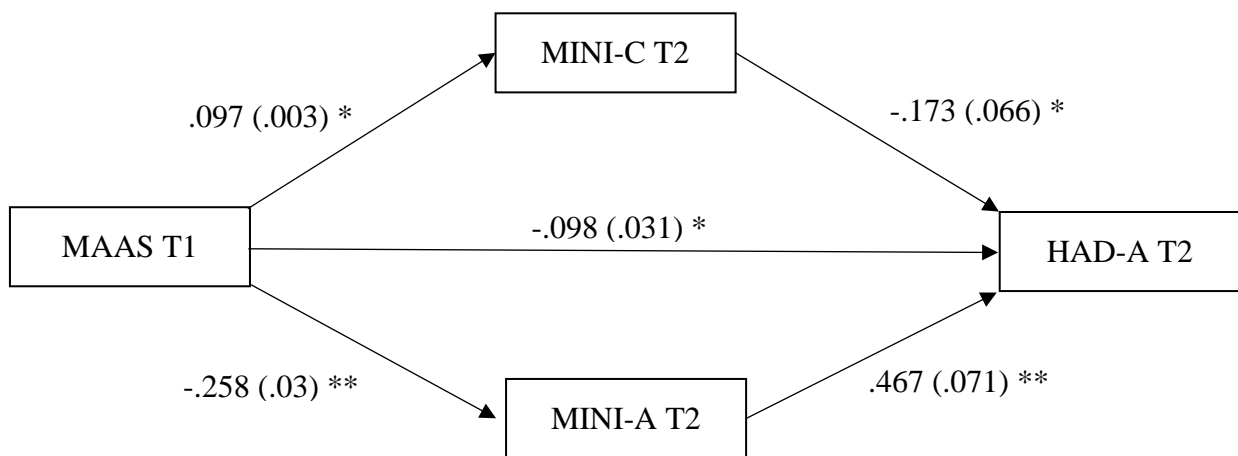
Notes. MAAS = Mindful Attention Awareness Scale, SCS = Self-Compassion Scale, HADS-A = Hospital Anxiety and Depression Anxiety Subscale, HADS-D = Hospital Anxiety and Depression Subscale, MINI C = Mini-CERTS experiential concrete thinking, MINI A = Mini-CERTS abstract analytical thinking. * indicates $p < .05$, ** $p < .01$, *** $p < .001$.

Therefore, four different mediation models were tested: a model with self-compassion at T2 as a mediator of the effect of mindfulness at T1 on anxiety at T2 and another with abstract and concrete ruminations at T2 as a mediator of the effect of mindfulness at T1 on anxiety at T2 whose results are presented in Figure 1. Two other models with mindfulness at T1 and self-compassion and types of ruminations as mediators were tested on depression.

Results showed that the relation between mindfulness and anxiety was partially mediated by self-compassion with the following indirect effect: MAAS T1 x SCS T2 x HAD-A T2 = $-.09 (.02)$, $p < .001$. The second mediation analysis showed that the effect of mindfulness on anxiety was also partially mediated by abstract and concrete ruminations. The analysis showed the following indirect effects: MAAS T1 x MINI-A T2 x HAD-A T2 = $-.12(.02)$, $p < .001$, MAAS T1 x MINI-C T2 x HAD-A T2 = $-.016(.008)$, $p < .05$. The two other mediation models on depression could not be performed because mindfulness at T1 did not significantly predict depression at T2 ($p = .63$).

Figure 1

The mediating role of rumination type in the relation between mindfulness and anxiety



Notes. N = 132. MAAS mindfulness, MINI-C concrete Ruminations, MINI-A Abstract Ruminations, and HAD-A Anxiety.

* $p < .01$, ** $p < .001$,

6. Discussion

The main goal of this study was to evaluate, during the lockdown, the protective role of having followed a mindfulness-based program. The only significant difference between

participants who had followed a mindfulness-based program and those who had not was the level of trait-mindfulness at Time 1. The lack of difference between these groups on anxiety and depression symptoms could be explained by the fact that the moderating role of the date of completion of the mindfulness-based programs was not assessed. Some participants may have followed such a program many years before the lockdown and stopped practicing since then. Furthermore, participants may have high mindfulness scores without having followed a mindfulness-based program. The assessment of trait-mindfulness thus appeared to be more relevant than the assessment of having followed a mindfulness-based program. Indeed, the correlation analyses showed that trait-mindfulness was significantly positively correlated with self-compassion and concrete ruminations and significantly negatively correlated with anxiety, depression, and abstract ruminations, which they also predicted over time. Furthermore, the mediation analyses showed that the relation between trait-mindfulness and anxiety was partially mediated by self-compassion, abstract and concrete ruminations. Mindfulness thus appeared to be a protective factor against anxiety during the lockdown period, in particular because it increases self-compassion and concrete ruminations and reduces abstract ruminations. These results were consistent with previous research showing the effects of trait-mindfulness (e.g., Mesmer-Magnus et al., 2017).

7. Limitations and conclusion

Regarding the limitations, this research was only based on self-reported questionnaires. Moreover, future research could use other types of measures such as Momentary Ecological Assessment (EMA) to quantify mood and behavior in natural environments. Furthermore, it would be useful to capture different dimensions of mindfulness by using multidimensional scales such as the Five Facets Mindfulness Questionnaire (FFMQ, Baer et al., 2008) in order to assess the dimensions of mindfulness which most protect from mental health problems in times

of crisis. Future research should also record the completion dates of the mindfulness-based program. Despite these limitations, this research advances the understanding of protective factors during the lockdown. From a theoretical point of view, the results showed that self-compassion, concrete and abstract ruminations represent protection factors during the lockdown which can be developed by enhancing trait-mindfulness. In clinical practice, these results encourage to develop interventions targeting these protective factors, particularly when going through periods of uncertainty such as the one related to the COVID-19 epidemic. Allowing people to relate to themselves in a caring, attentive and supportive way could enable them to take care of themselves and their loved ones (e.g. Gutiérrez-Hernández et al., 2021; Schnepfer et al., 2020). Thus, relevant interventions that can be deployed could be based on mindfulness and compassion practices as proposed by programs grounded in Compassion Focused Therapy (e.g. Leaviss & Uttley, 2015) or the Mindful Self-Compassion program (Neff & Germer, 2013).

This study underlined the protective role of mindfulness through its effect on self-compassion and ruminations. Self-compassion and concrete ruminations appeared to be protective factors against anxiety symptoms during a crisis period, as opposed to abstract ruminations. This study calls for the development of interventions that develop these factors to preserve mental health of individuals in times of health crisis. However, populations were more vulnerable to the effects of multiple lockdowns and uncertainty during the Covid-19 pandemic. The next study therefore used the same design and measures but targeted a particularly at-risk population during this pandemic: the parents.

Chapter 3: Self-Compassion and Rumination Type Mediate the Relation between Mindfulness and Parental Burnout

Marine Paucsik¹, Agata Urbanowicz¹, Christophe Leys², Ilios Kotsou², Céline Baeyens¹ & Rebecca Shankland^{3,4}

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¹Univ. Grenoble Alpes, LIP/PC2S, 38000 Grenoble, France

²University Libre de Bruxelles, Brussels, Belgium

³Univ. Lumière Lyon 2, DIPHE, 69676 Bron Cedex, France

⁴Chair of Economic Peace, Mindfulness, and Well-Being at Work, Grenoble Ecole de Management, 38000 Grenoble, France

1. Résumé

Les confinements liés au COVID-19 ont augmenté les défis quotidiens auxquels sont confrontés les parents, et peuvent ainsi avoir augmenté le risque de burnout parental. Il est donc essentiel d'identifier les facteurs de protection du burnout parental. Cette étude visait à évaluer le rôle protecteur de plusieurs facteurs pouvant être développés par les pratiques de pleine conscience : la pleine conscience, l'auto-compassion et les ruminations concrètes par rapport aux ruminations abstraites. Au total, 459 parents ont rempli des questionnaires auto-rapportés ($M_{\text{age}} = 40$; 98,7% de femmes) et ce, à deux temps de mesures pour évaluer le rôle prédictif de la pleine conscience, de l'auto-compassion et du type de rumination sur l'épuisement parental, et le rôle médiateur de l'auto-compassion et du type de rumination dans la relation entre la pleine conscience et l'épuisement parental. Les résultats ont montré que la pleine conscience, l'autocompassion et le type de rumination au temps 1 prédisaient les niveaux de burnout parental au temps 2. L'autocompassion (effets indirects : $b = -22$, IC 95% = [-38, -05], $p < 0,01$), les ruminations concrètes (effets indirects : $b = -20$, IC 95% = [-32, -09], $p < 0,001$), et les ruminations abstraites (effets indirects : $b = -0,54$, IC 95% = [-71, -37], $p < 0,001$) ont partiellement médié la relation entre la pleine conscience et l'épuisement parental. Ces résultats montrent que la pleine conscience, l'autocompassion et les ruminations concrètes (vs. abstraites) peuvent aider à prévenir l'épuisement parental dans le contexte de la pandémie de COVID-19. Ces résultats contribuent au domaine de la recherche sur la prévention de l'épuisement parental et permettront de développer des approches efficaces de promotion de la santé mentale chez les parents.

Mots clés : Confinement; Mindfulness; Burnout parental; Ruminations; Auto-compassion

2. Abstract

The COVID-19 lockdown increased the day-to-day challenges faced by parents, and thereby may have increased parental burnout risk. Therefore, identifying parental burnout protection factors is essential. This study aimed to assess the protective role of the following factors which can be increased through mindfulness practice: trait mindfulness, self-compassion, and concrete vs. abstract ruminations. A total of 459 parents (M_{age} = 40; 98.7% female) completed self-reported questionnaires at two-time points to assess the predictive role of mindfulness on parental burnout, self-compassion and rumination type, and the mediating role of self-compassion and rumination type in the relation between mindfulness and parental burnout. Results showed that trait mindfulness, self-compassion, and rumination type at Time 1 predicted levels of parental burnout at Time 2. Self-compassion (indirect effects: $b = -22$, 95% CI = $[-38, -05]$, $p < 0.01$), concrete ruminations (indirect effects: $b = -20$, 95% CI = $[-32, -09]$, $p < 0.001$), and abstract ruminations (indirect effects: $b = -0.54$, 95% CI = $[-71, -37]$, $p < 0.001$) partially mediated the relation between trait-mindfulness and parental burnout. These findings showed that trait mindfulness, self-compassion, and concrete (vs. abstract) ruminations may help prevent parental burnout in the context of the COVID-19 pandemic. These results contribute to the field of research on parental burnout prevention and will allow for the development of effective approaches to mental health promotion in parents.

Keywords: Lockdown; Mindfulness; Parental burnout; Ruminations; Self-compassion

3. Introduction

The lockdown related to the COVID-19 pandemic has been shown to be a challenging and anxiety-provoking period for the general population (Brooks et al., 2020; Huang & Zhao, 2020; Xiong et al., 2020). This situation may have been even more challenging for parents and may have represented a risk factor for parental burnout for parents locked down with children. An increasing number of research studies have focused on what is now called parental burnout, not only in specific parenting situations but also in the general population (Lindström et al., 2011; Mikolajczak & Roskam, 2020; Roskam et al., 2018). Parents can develop burnout if they don't have the resources to deal with the daily challenges of parenting (Roskam et al., 2018; Roskam et al., 2017). More specifically, parental burnout has been conceptualized as having four dimensions: exhaustion in one's parenting role, contrast with previous parental self, feelings of being fed up with one's parenting role, and emotional distancing from one's children (Roskam et al., 2018). Parental burnout is thus a multidimensional syndrome which occurs during prolonged exposure to a stressful situation (Hallsten, 2005). The period of the COVID-19 pandemic can be considered as a prolonged stressful situation due to social and physical isolation, risk of unemployment, financial pressure, and difficulties balancing work and family life while schools were closed, and is therefore likely to increase parental burnout risks (Fontanesi et al., 2020; Griffith, 2020; Marchetti et al., 2020). In this context, the question of the predictive and protective factors of parental burnout appears to be essential. For instance, research has shown that lack of balance between parenting strains and resources could result in parental burnout (Mikolajczak & Roskam, 2018). In that sense, identification of protective factors could substantially contribute to the prevention and reduction of parental burnout by decreasing the deleterious effects of stress during the lockdown.

Numerous studies have shown that mindfulness meditation effectively improves emotion regulation and reduces stress, anxiety and depressive symptoms (de Abreu Costa et al.,

2019). Mindfulness refers to paying attention to the experience of the present moment and developing a non-judgmental acceptance of it. Thus, mindfulness involves learning to be aware of cognitive and physical signals of high stress levels and to break the detrimental downward spiral that has been identified in past research (Joo et al., 2010; Keng et al., 2011; Kuyken et al., 2010). This ability can be trained through formal practices (Jha et al., 2007; Semple, 2010) which are usually found in mindfulness meditation protocols such as Mindfulness Based Cognitive Therapy (MBCT, Segal et al., 2013) or Mindfulness Based Stress Reduction (MBSR, Kabat-Zinn, 1992). However, recent research shows that mindfulness as a trait can also be developed through informal practices (Shankland et al., 2021) facilitating its integration in everyday life. Mindfulness practices can also develop mindfulness as a trait (Kiken et al., 2015). Thus, it seems important to assess mindfulness as a trait in order to have an accurate measure of this skill. Trait mindfulness has been shown to be effective in reducing anxiety and depression symptoms in the context of the COVID-19 pandemic (Dillard & Meier, 2021; Zheng et al., 2020). It is also likely to represent an effective protection factor against parental burnout as shown in Anclair et al.'s study in 2018, which evaluated the impact of mindfulness intervention on parental burnout. Indeed, trait mindfulness has been shown to contribute to greater mental health, resilience, and other essential qualities for parenting such as empathy and parenting self-efficacy (Cousineau et al., 2019). Thus, mindfulness appears to play an important role in parenting although other studies have shown its importance in the quality of romantic and family relationships (Brown et al., 2007; Fall & Shankland, 2020). Trait mindfulness has also been shown to reduce ruminations associated with states of discomfort (Deyo et al., 2009), and to develop self-compassion which is associated with greater mental health and resilience (Birnie et al., 2010; Cousineau et al., 2019; Kemper et al., 2015; Soysa & Wilcomb, 2015). Indeed, many studies have shown the mediating role of self-compassion and rumination between mindfulness and mental health (Keng et al., 2012; Svendsen et al., 2016). Self-

compassion is described as the ability to address oneself with kindness, warmth, and benevolence (Neff, 2003a) and has been shown to reduce anxiety and depression symptoms (Van Dam et al., 2011). In addition, self-compassion helps to reduce self-criticism and perfectionism, dimensions involved in parental burnout (Sorkkila & Aunola, 2020). Therefore, self-compassion may play a protective role against parental burnout (Mikolajczak & Roskam, 2018). Conversely, research has shown that ruminations increase anxiety and depression symptoms (McLaughlin & Nolen-Hoeksema, 2011; Nolen-Hoeksema, 2000). Evidence suggests that the type of ruminations (abstract or concrete) has a different impact on anxiety and depression symptoms (Watkins & Moulds, 2005): abstract ruminations contribute to unconstructive, indistinct, and unclear negative repetitive thoughts, while concrete ruminations represent constructive thoughts focused on one's experience of the present moment, and are distinct, specific to a situation, unequivocal, clear and singular (Watkins & Moulds, 2005). Concrete ruminations are therefore considered to be helpful to cope with difficulties (Douilliez et al., n.d.). Thus, the type of rumination, abstract or concrete, is likely to mediate the relationship negatively and positively between mindfulness and parental burnout. Finally, self-compassion and ruminations two processes associated with respectively lower and higher levels of perfectionism, which is a risk factor for parental burnout (Moreira & Canavarro, 2018; Sorkkila & Aunola, 2020).

Based on the results of previous studies showing the role of mindfulness on parental stress (Gouveia et al., 2016) and the processes at play in mindfulness (Svendsen et al., 2017), the present study aimed to assess the protective role of trait mindfulness and mindfulness practice against parental burnout during the lockdown period, and the mediating role of the following psychological process: self-compassion, concrete ruminations, and abstract ruminations. In order to test this mediation model based on the results of past studies (Frostadottir & Dorjee, 2019; Gouveia et al., 2016; Svendsen et al., 2017), we made several

assumptions. Before testing our main hypotheses, we wanted to perform a preliminary analysis to verify that mindfulness practice enhances trait mindfulness at T1 and T2. The first and main hypothesis was that trait mindfulness at Time 1 would predict lower parental burnout scores at Time 2. The second hypothesis stated that trait mindfulness would predict higher levels of self-compassion and concrete ruminations, and lower levels of abstract ruminations at Time 2. The third hypothesis stated that self-compassion and concrete ruminations would negatively predict parental burnout, and that abstract ruminations would positively predict parental burnout. Finally, the fourth hypothesis was that the relationship between mindfulness and parental burnout would be mediated in parallel by increased self-compassion and concrete ruminations and by decreased abstract ruminations. By testing these hypotheses, this study will contribute to recent research on parental burnout in order to specify the risk and protective factors. The identification of these factors will also allow the implementation of preventive interventions for parents.

4. Materials and methods

1. Participants

The longitudinal design of the current study involved the completion of a survey at two-time points separated by one month (May and June 2020). To obtain an effect for multiple linear regression and mediation analyses with a medium effect size ($d = .25$) and acceptable power (i.e., .8; with alpha set at .008 with Bonferroni corrections), the calculated sample size required was 408. Sensitivity analyses ran on G*Power (Erdfelder et al., 1996) indicated that with these parameters, it would be possible to detect effect sizes of $d = .23$ if they existed. A total of 1,202 participants were recruited via different websites for parents from 1–15 May 2020. Eligibility criteria required participants to be: (1) aged 18 years or older; (2) fluent in French; and (3) locked down with at least one child below the age of 18, and (4) certify having read the

informed consent and accepted to take part in the study. A total of 737 responses were discarded as they were incomplete.

2. Procedure

This study was approved by the ethical committee of the local university which issued favorable approval number: CER Grenoble Alpes-Avis-2020-05-01-01. Participants were recruited through an announcement posted on parenting websites. After having read the information sheet and accepted the informed consent, all participants were assigned with a unique identification number allowing them access to an online questionnaire. The informed consent allowed participants to withdraw at any time without having to justify their withdrawal. They were also assured that the data would remain anonymous. To avoid selection bias, participants were not informed that the study focused on parental burnout. The study was presented as a study on “psycho-logical protective factors during the lockdown”. At the end of the first questionnaire, participants could enter their email address on a separate link disconnected from the questionnaire in order to be re-contacted one month later for the second measure. The second evaluation consisted of the same measures as the first evaluation. Participants did not receive any financial compensation for their participation. The online questionnaire required the answers to all questions to limit missing data.

3. Measures

The online questionnaire consisted of sociodemographic questions and validated scales measuring parental burnout, trait mindfulness, self-compassion, compassion, and rumination type.

Sociodemographic variables: Participants were asked their age, gender, level of education, family and work situations during the lockdown, the number of children and the number of children living with them during the lockdown, and the age of the children.

Parental Burnout. Parental burnout was assessed using the French version of Parental Burnout Assessment (PBA) (Roskam et al., 2017). PBA is a self-reported questionnaire consisting of four subscales: (a) emotional and physical exhaustion in one's parental role (9 items); (b) contrast with former parental self (i.e., the feeling of not being a good parent anymore; 6 items); (c) feelings of being fed up in one's parental role (5 items); and (d) emotional distancing from one's child (3 items). To illustrate the items were e.g., *I feel tired when I get up in the morning and have to face another day with my children* (exhaustion in the parental role); *I feel as though I've lost my direction as a dad/mum* (contrast in parental self); *I can't stand my role as a father/mother any more* (feeling of being fed up); and *I do what I'm supposed to do for my child(ren), but nothing more* (emotional distancing from the child). The questionnaire consisted of 22 items evaluated on a 7-point Likert scale ranging from: never (0), a few times a year or less (1), once a month or less (2), a few times a month (3), once a week (4), a few times a week (5), daily (6). The overall parental burnout score was obtained by adding the scores for each dimension. Higher scores indicate higher frequency of parental burnout symptoms. PBA has particularly good psychometric properties [5]. In the current study, Cronbach's alpha was excellent across the entire scale ($\alpha = .98$), with $\alpha = .96$ for exhaustion in one's parental role, $\alpha = .94$ for the contrast in parental self, $\alpha = .95$ for the feeling of being fed up in one's parental role, and $\alpha = .83$ for emotional distancing from the child.

Mindfulness. Mindfulness was assessed using the French version of Mindful Attention and Awareness Scale (MAAS) which measures the frequency of mindful states in day-to-day life (Brown & Ryan, 2003). The scale was designed to measure mindfulness as attention focused on the present moment and awareness in everyday experience. The scale consisted of 15 items

(e.g., I break or spill things because of carelessness, not paying attention, or thinking of something else; I rush through activities without being really attentive to them). The MAAS is considered applicable regardless of an individual's personal experience of meditation (Park et al., 2013). The MAAS uses both general and situation-specific statements to assess mindfulness and is scored on a 6-point Likert scale rating from 1 (almost always) to 6 (almost never). After reversing the items, a global mean score is calculated. In the present study, the scale demonstrated good internal reliability with a Cronbach's alpha of .86.

Self-compassion. Self-compassion was measured with the French version of the Self-Compassion Short Form Scale (SCS-SF, Neff, 2003). SCS-SF is a 12-item instrument with six subscales assessing elements of self-compassion (i.e., self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification). Self-kindness refers to the tendency to extend kindness and understanding toward oneself when feeling emotional pain or stress (e.g., *I try to be understanding and patient towards those aspects of my personality I don't like*). Self-judgment reflects the tendency to be self-critical, disapproving, and intolerant toward one's own flaws and difficult experiences (e.g., *I'm disapproving and judgmental about my own flaws and inadequacies*). Common humanity is a capacity of recognition that feelings of inadequacy, emotional pain, and failure are universal human experiences (e.g., *I try to see my failings as part of the human condition*). Isolation dimension measures feelings of loneliness, separation, and disconnection from others at times of failure or distress (e.g., *When I'm feeling down, I tend to feel like most other people are probably happier than I am*). Mindfulness refers to holding negative thoughts and emotions in balanced awareness, with an open and accepting stance toward difficult feelings and situations (e.g., *When something painful happens I try to take a balanced view of the situation*). Overidentification refers to the tendency to become excessively immersed or consumed by negative feelings (e.g., *When I fail at something important to me I become consumed by feelings of inadequacy*). Experienced meditators have been shown to

score higher than nonmeditators (Neff, 2003b). As the Self-Compassion scale has a partial overlap with the MAAS, we conducted our analyses only on the four sub-dimensions of the SCS-SF: self-kindness, self-judgment, common humanity and isolation. In this study, the scale reliability was good with a Cronbach's alpha of .87 for the total scale and of .82 for the two subscales kindness and common humanity.

Rumination type. Abstract and concrete ruminations were assessed using the French version of the Mini-Cambridge-Exeter Repetitive Thinking Scale (Mini-CERTS). This scale was developed and validated by Barnard and collaborators (Barnard et al., 2007) and measures two dimensions of repetitive thinking: “abstract, analytical thinking” (AAT; e.g., *My thinking tends to get stuck in a rut, involving only a few themes*) and “concrete, experiential thinking” (CET; e.g., *I can grasp and respond to changes in the world around me without having to analyze the details*). The Mini-CERTS is a 16-items instruments scored on a 4-point Likert scale varying from 1 (almost never) to 4 (almost always). The French version of the questionnaire was validated (Douilliez et al., 2014). In the present study, the scale presented good internal reliability respectively for the abstract ruminations dimension ($\alpha = .76$), and the concrete ruminations dimension ($\alpha = .79$).

4. Data analysis

Data were analyzed using JAMOVI Version 1.2.27 (The Jamovi Project, 2020). Correlations between the variables involved in the mediation analyses were computed. Pearson's *r* correlations were used for continuous variables and ANOVAs were used for categorical variable.

Missing values analysis found that 58.8% of data was missing at T2 (ranging from 56 to 61.6% missingness at the variable level). Seven hundred and thirty-seven individuals failed

to complete the second measurement. Little's MCAR test yielded non-significance, [Little's MCAR test $\chi^2(618) = 661, p = .11$], indicating that the missing data were missing completely at random. Analyses were therefore performed using only complete available data (N=465).

Before testing our main hypotheses, we carried out a preliminary analysis to check whether mindfulness practice was significantly related with trait mindfulness scores. To evaluate the practice of mindfulness, participants were asked to rate their mindfulness practice on a scale ranging from: 0 (never, no practice), 1 (sometimes, 1-2 times a week), or 3 (often, more than 3 times a week or several times a day). A two factorial analysis of variance (ANOVA) was performed to test the difference in trait mindfulness scores depending on the time spent practicing mindfulness per week.

Our preliminary analysis of whether mindfulness practice enhance trait mindfulness at T1 and T2 was tested with two repeated measures ANOVA.

To test the first hypothesis according to which trait mindfulness at T1 would predict lower levels of parental burnout at T2, a linear regression analysis was performed assessing the relation between mindfulness at T1 and parental burnout at T2.

To test the second hypothesis stating that trait mindfulness at T1 would predict higher levels of self-compassion and concrete rumination and lower level of abstract ruminations at T2, several linear regression analyses were performed. We used the same analyses to test the hypothesis stating that self-compassion and concrete ruminations would negatively predict parental burnout, and that abstract ruminations would positively predict parental burnout.

Finally, to test the fourth hypothesis which postulates that the relationship between mindfulness and parental burnout would be mediated in parallel by the decrease of abstract ruminations and the increase of concrete ruminations and self-compassion, we applied a parallel mediation model with causal step method described by Baron and Kenny (1986), with

mindfulness as the independent variable, parental burnout as the dependent variable and self-compassion and abstract and concrete ruminations as parallel mediating variables.

5. Results

1. Sample characteristics

The final sample who had responded to both questionnaires consisted of 459 participants, with a majority of women (98.7%), aged between 25 and 59 ($M = 40$, $SD = 6.75$). Among the participants, 104 of the parents were single (22.3%) and 355 were couples (77.4%). Of these, 138 had one child at home during COVID-19, 234 participants had two, 65 had three, 14 had four and eight had five or more children. One participant had a Junior high school certificate (0.2%), 13 had a vocational certificate (2.8%), 54 had a high school degree (11.8), 162 had a bachelor's degree (35.3%), 131 had a master's degree (28.5), and 98 had a postgraduate degree (21.4%). Most of the participants were working, 173 were doing their work at home (48.8%) and 102 were working at their workplace (28.7%). During the study, 80 participants (22.5%) did not work. Finally, 158 participants had no practice of mindfulness meditation (34.4%), 206 practiced occasionally (44.8%), and 95 practiced regularly (20.8%).

2. Descriptive Statistics at Time 1

Descriptive statistics for trait mindfulness (MAAS), parental burnout (PBA), self-compassion (SCS), and abstract and concrete ruminations (MINI-A and MINI-C) are presented in Table 1. All the variables were consistently correlated in the expected directions: trait mindfulness was negatively correlated with parental burnout and abstract ruminations, and positively correlated with self-compassion and concrete ruminations. Self-compassion was also negatively correlated with parental burnout and abstract ruminations, and positively correlated

with trait mindfulness and concrete ruminations. Abstract ruminations were positively correlated with parental burnout and negatively correlated with concrete ruminations, self-compassion, and trait mindfulness. Concrete ruminations were negatively correlated with parental burnout and abstract ruminations and positively correlated with trait mindfulness and self-compassion.

Table 1

Descriptive statistics and correlations (Pearson's r) among the study variables at Time 1.

Variable	n	M	SD	1	2	3	4	5
1. Trait mindfulness	459	55.8	8.94	—				
2. Parental burnout	459	40.5	34.9	-0.471 *	—			
3. Self-compassion	459	22.4	6.04	0.584 *	-0.462 *	—		
4. Abstract ruminations	459	17.8	4.28	-0.466 *	0.588 *	-0.571 *	—	
5. Concrete ruminations	459	16.4	3.61	0.347 *	-0.503 *	0.477 *	-0.432 *	—

Notes. Descriptive statistics and correlations (Pearson's r) among the study variables at Time 1. M = Mean, SD = Standard deviation, 1 = Trait mindfulness, 2 = Parental burnout, 3 = Self-compassion, 4 = Abstract ruminations, and 5 = Concrete ruminations. * $p < 0.001$. The data were analysed with Jamovi.

The average score for mindfulness was in the middle range, the average parental burnout score was higher than in a reference sample, more precisely it corresponded to a low risk of burnout (Roskam et al., 2017). The average score for self-compassion was lower than the average score observed in the general population (Raes et al., 2011), and the average score for both concrete and abstract ruminations were in the middle range.

3. Descriptive Statistics at Time 2

Correlation analyses at Time 2 showed similar correlations to those at Time 1 (see Table 2). Trait mindfulness was negatively correlated with parental burnout and abstract ruminations and positively correlated with self-compassion and concrete ruminations. Self-compassion was also negatively correlated with parental burnout and abstract ruminations and positively correlated with trait mindfulness and concrete ruminations. Abstract ruminations were negatively correlated with concrete ruminations, self-compassion, and trait mindfulness and positively correlated with parental burnout. Concrete ruminations were positively correlated with trait mindfulness and self-compassion and negatively correlated with parental burnout and abstract ruminations.

Table 2

Descriptive statistics and correlations (Pearson's r) among the study variables at Time 2.

Variable	n	M	SD	1	2	3	4	5
1. Trait mindfulness	459	55.6	8.84	—				
2. Parental burnout	459	35	32.8	-0.525 *	—			
3. Self-compassion	459	22.8	6.18	0.499 *	-0.489 *	—		
4. Abstract ruminations	459	15.7	3.71	-0.491 *	0.567 *	-0.575 *	—	
5. Concrete ruminations	459	18	3.75	0.403 *	-0.445 *	0.484 *	-0.324 *	—

Notes. Descriptive statistics and correlations (Pearson's r) among the study variables at Time 2. M = Mean, SD = Standard de- viation, 1 = Trait mindfulness, 2 = Parental burnout, 3 = Self-compassion, 4 = Abstract ruminations, and 5 = Concrete ruminations. * $p < 0.001$. The data were analysed with Jamovi.

4. Mindfulness Practice Effect on Trait Mindfulness at T1 and T2

Two repeated measures ANOVAs were conducted to analyze the mean group differences of trait mindfulness according to the three levels of practice: never, some-times, and often. We observed a main effect of the level of practice on trait mindfulness at T1, $F(2, 459) = 7.72, p < 0.001, \eta^2_p = .03$, and at T2, $F(2, 459) = 12.6, p < .001, \eta^2_p = .05$.

5. The Role of Trait Mindfulness on Parental Burnout, Self-Compassion and Rumination Type

The relation between trait mindfulness, parental burnout, self-compassion, and abstract and concrete ruminations over time were analyzed using multiple linear regression analyses. Results showed that mindfulness significantly predicted parental burnout, $F(1, 457) = 85.1, p < .001$, with a R^2 of .16, self-compassion, $F(1, 457) = 140, p < .001, R^2 = .23$, abstract ruminations, $F(1, 457) = 96.2, p < .001, R^2 = .17$, and concrete ruminations, $F(1, 457) = 62.4, p < .001, R^2 = .12$.

6. The Role of Self-Compassion and Rumination Type on Parental Burnout

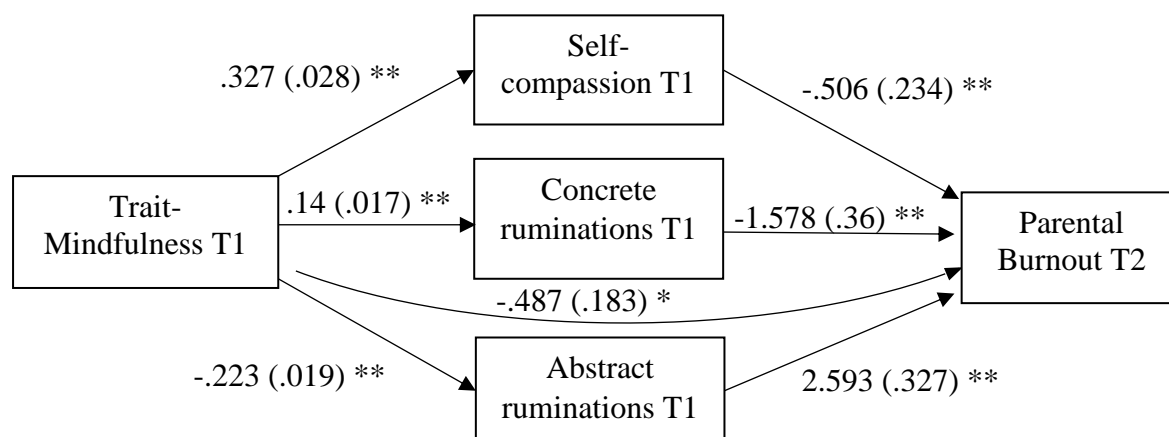
The results of linear regression analysis showed a significant and negative relation of self-compassion at T1 and parental burnout at T2, $F(1, 457) = 106, p < .001, R^2 = .19$, a significant and positive relation between abstract ruminations at T1 and parental burnout T2, $F(1, 457) = 177, p < .001, R^2 = .28$, and a significant and negative relation of concrete ruminations at T1 and parental burnout at T2, $F(1, 457) = 92.8, p < .001$, with an R^2 of .17.

7. The Mediating Role of Self-Compassion and Rumination Type on the Relationship Between Trait-Mindfulness and Parental Burnout

As the variables were significantly correlated in the expected directions, we finally tested our fourth hypothesis regarding the mediation model. The results are pre-sented in Figure 1. The mediation analysis showed that the effect of trait mindfulness on parental burnout was partially mediated by self-compassion, abstract ruminations, and concrete ruminations. The analysis showed the following indirect effects: MAAS T1 \times MINI-C T1 \times PBA T2 = $-.22$ (.058), $p < .001$, MAAS T1 \times MINI-A T1 \times PBA T2 = $-.570$ (.089), $p < .001$, MAAS T1 \times SCS T1 \times PBA T2 = $-.165$ (.089), $p < .05$.

Figure 1

The self-compassion and rumination type mediation model of the relationship between mindfulness and parental burnout



Note. N = 459. Standardized regression coefficients for the relationship between trait-mindfulness, self-compassion, concrete ruminations, abstract ruminations and parental burnout. Standards errors are in brackets. * $p < .01$, ** $p < .001$. The data were analysed with Jamovi.

6. Discussion

The main objective of this study was to test the predictive and protective role of mindfulness, self-compassion, and concrete ruminations on parental burnout during COVID-19 lockdown. Consistent with previous research, the results were in line with our first hypothesis: mindfulness was negatively related to parental burnout (Anclair et al., 2018). These findings are consistent with a growing literature on the relation between mindfulness and parental burnout (Bögels et al., 2014; Cousineau et al., 2019; Neece, 2014; Parent et al., 2016). Indeed, mindfulness has been associated with lower levels of stress, anxiety and depression among parents (Corthorn & Milicic, 2016; Gouveia et al., 2016), with higher levels of emotion regulation (Gershby et al., 2017), more effective conflict management (Turpyn & Chaplin, 2016), and, more generally, with better family relationships (Bogels & Emerson, 2019; Harnett & Dawe, 2012). Furthermore, in accordance with our second hypothesis, mindfulness was shown to increase self-compassion (Bishop et al., 2004) and decrease dysfunctional ruminations (Raes & Williams, 2010). As tested with our third hypothesis, these factors appear to impact parental burnout. While self-compassion and concrete ruminations seem to prevent it, abstract ruminations seem to be a risk factor. Mindfulness thus seems to influence several psychological processes (Svendsen et al., 2016) that have an impact on parental burnout that we were able to test through our fourth hypothesis with our mediation model. The mediation model showed that the effect of trait-mindfulness was partially mediated by self-compassion and rumination type. The results also showed that these two mediating processes did not fully explain the effect of mindfulness on parental burnout. Indeed, it seems that mindfulness involves other factors that may have an effect on parental burnout, such as acceptance (i.e., a non-judging/non-attached view of experiences), or emotion regulation, other dimensions identified as mediators of mindfulness (Freudenthaler et al., 2017; Hill et al., 2008; Kotsou et al., 2018; Sorkkila & Aunola, 2020), and have been identified as protective factors for parental burnout (Prihidko et

al., 2020; Sorkkila & Aunola, 2020). Some limitations must be considered. First, the sample was composed of over 98% women which limits the external validity of the study. Further research on a population of fathers is needed to generalize these findings. This is a problem frequently encountered in studies on parental burnout and that future research should therefore be vigilant on this aspect (Le Vigouroux et al., 2017; Roskam et al., 2017). Second, the assessment was based only on self-reported questionnaires, which may have biased the results due to a response bias related to social expectations. Third, prior to the analysis of our hypotheses, we had tested the effect of having participated in a mindfulness program before the lockdown on parental burnout, self-compassion and ruminations. However, the results did not show significant differences between those who had followed a pro-gram and those who had not. This may imply that individuals who had already followed a program may not have practiced sufficiently yet to make on difference com-pared to other parents. Future studies should evaluate more specifically the impact of mindfulness practices on these different variables.

Finally, research on the evaluation of the protective factors of parental burnout should be continued in order to complete the model which was tested in this research, and which could be completed in the future by the assessment of acceptance which seems to play a major role in the effectiveness of mindfulness as well as in parental well-being.

The identification of these protection factors will help develop effective interventions specific to the needs of parents. Indeed, currently few interventions have been validated in the field of parental burnout prevention (Brianda et al., 2020). The results of this study could inform the creation of interventions targeting the risk factors such as abstract ruminations which contribute to parental perfectionism (Flett et al., 2016; Sorkkila & Aunola, 2020) and maintain high depression, stress, and anxiety (Michl et al., 2013), as well as protection factors. The results of this study highlighted the role of self-compassion and concrete rumination in

preventing parental burnout. These dimensions not only reduce parental perfectionism (Potter et al., 2014), but also constitute essential resources to cope with difficulties (Coyne et al., 2020; Neff & McGehee, 2010), while taking care of oneself and one's family (Gouveia et al., 2016). Indeed, they are all the more useful when we are going through major difficulties such as those related to the psychosocial and mental health consequences of the pandemic (Fiorillo & Gorwood, 2020). While parents are subject to significant uncertainties about their own personal lives, their children's lives, and the future in general, as shown in a study by Li and colleagues (J. Li et al.), concrete ways of thinking and greater caring and understanding of their difficulties would enable them to better cope with these stressors. They could therefore also be targeted in future interventions to prevent and reduce parental burnout. These interventions could be based on mindfulness meditation, which has been shown to be effective in reducing abstract ruminations and increasing self-compassion (Svendsen et al., 2017). Its interventions have also been shown to be effective in reducing depression, anxiety, or insomnia, which one in three to six people in the world's population seem to be affected by and which the various lockdowns during COVID-19 may have reinforced (Ghebreyesus, 2020; Gorwood & Fiorillo, 2020). However, it will be necessary to study specifically the means that help parents practice mindfulness in everyday life while their days are already extremely busy.

7. Conclusion

While parental burnout is an increasingly studied problem, research evaluating its determinants and practices to prevent and reduce it is ongoing. The results of this study allow us to begin to identify the protective factors of parental burnout. Among them, mindfulness seems to be an essential determinant, especially because it promotes a more self-compassionate posture and helps to reduce abstract ruminations. However, the limitations of this study invite us to reproduce this research and to continue to identify the processes that mediate the effect of

Chapter 3: Self-Compassion and Rumination Type Mediate the Relation between Mindfulness and Parental Burnout

mindfulness on parental burnout. Finally, while the need for targeted interventions is essential to promote mental health in times of Covid-19 (Holmes et al., 2020), the findings of this study promote the implementation of interventions based on mindfulness and self-compassion practices to prevent parental burnout. These interventions could be based on the Mindful Self-Compassion program (MSC, Neff & Germer, 2013) or on Compassionate Mind Training (CMT, Gilbert & Procter, 2006), two protocols based on mindfulness practices and developing self-compassion.

This study showed that self-compassion was a protective factor for parental burnout during the COVID-19 period. By developing this factor through self-compassion and/or mindfulness-based interventions, it will be possible to prevent and decrease parental burnout during periods of crisis. Accordingly, both previous studies showed that self-compassion can be considered as a protective factor mediating the effect of mindfulness on mental health. Consequently, the following study will specifically focus on this factor alongside another protective factor on a population also at risk during the COVID-19 pandemic: the PhD students.

Chapter 4: Self-compassion and savoring buffer the impact of the first year of the COVID-19 on PhD students' mental health

Marine Paucsik¹, Christophe Leys², Gabriel Marais³, Céline Baeyens¹ & Rebecca Shankland^{4,5}

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¹University Grenoble Alpes, LIP/PC2S, F-38000 Grenoble, France

²Univ. Libre de Bruxelles, Brussels, Belgium

³Univ. Lyon 1, CNRS, Laboratoire de Biométrie et Biologie Evolutive

⁴Univ. Lumière Lyon 2, Laboratory DIPHE (Development, Individual, Processes, Handicap, Education), 69676 Bron, France

⁵Institut Universitaire de France

1. Résumé

Les doctorants sont confrontés à de nombreux défis qui ont été renforcés par les confinements du COVID-19. Nous avons évalué l'impact de cette situation sur la dépression, l'anxiété, le stress, le bien-être et l'engagement des doctorants pendant un an. Nous avons également étudié le potentiel rôle protecteur de l'auto-compassion et de la capacité à savourer sur la santé mentale, le bien-être et l'engagement doctoral. Un total de 134 doctorants de plusieurs universités françaises ont répondu aux trois temps de mesure de cette étude longitudinale. Les résultats ont montré une augmentation significative de la dépression, de l'anxiété et du stress, ainsi qu'une diminution significative du bien-être et de l'engagement doctoral au cours de la première année de la pandémie. L'auto-compassion et la capacité à savourer ont permis de prédire des niveaux plus faibles de dépression, d'anxiété et de stress, ainsi que des niveaux plus élevés de bien-être au cours du temps. Le fait de savourer seul a permis de prédire un engagement plus élevé dans le temps des doctorants. Cette étude révèle l'impact significatif de l'année de pandémie sur la santé mentale des doctorants, ainsi que la pertinence de l'auto-compassion et de la capacité à savourer comme ressources psychologiques pour faire face à l'adversité.

Mots clés: Pandémie du COVID-19; Santé mentale; Doctorants; Savoring; Auto-compassion; Bien-être

2. Abstract

Doctoral students face many challenges that were reinforced by COVID-19-related lockdowns. We assessed this impact over one year on doctoral students' depression, anxiety, stress, well-being, and doctoral engagement. We also investigated the potential protective role of self-compassion and savoring on mental health, well-being, and doctoral engagement. A total of 134 PhD students from several French universities responded to the three-time points of this

longitudinal study. The results showed a significant increase in depression, anxiety and stress and a significant decrease in well-being and doctoral engagement during the first year of the pandemic. Self-compassion and savoring predicted lower levels of depression, anxiety, and stress, and higher levels of well-being over time. Savoring alone predicted higher doctoral engagement over time. This study reveals the significant impact of the pandemic year on the mental health of doctoral students, and the relevance of self-compassion and savoring as psychological resources to cope with adversity.

Keywords: COVID-19 pandemic; Mental health; PhD students; Savoring; Self-compassion; Well-being

3. Introduction

The lockdowns caused by the COVID-19 pandemic in France represented an important challenge for doctoral students who are already at risk for mental health problems (e.g., Hazell et al., 2020; Marais et al., 2019; Storrie et al., 2010). The situation especially increased the difficulties that PhD students face during their thesis. Indeed, if students are motivated when they begin the process (Stubb et al., 2010), research also shows that it is a difficult emotional experience which can generate high levels of stress, exhaustion, and depression (Kurtz-Costes et al., 2006; Toews et al., 1993; Toews et al., 1997). PhD students need to adapt to the academic world (Juniper et al., 2012), to the work environment such as the quality of the workspace, the facilities, and the relationships (Caesens et al., 2014; Juniper et al., 2012), maintain a work-life balance (Juniper et al., 2012), while keeping motivation high to stay engaged in the dissertation for at least three years (Caesens et al., 2014). All these emotional and academic challenges affect their mental health and make them more vulnerable (Storrie et al., 2010). More specifically, a study showed that French PhD students had high levels of stress, depression, and

anxiety (Marais et al., 2018; Haag et al., 2018), and that their average well-being score was significantly lower than that of a British reference sample (Juniper et al., 2012). This population seems therefore at risk of anxiety and depression disorders.

Recent studies have also revealed the impact of the COVID-19 pandemic on the mental health of the general population (for a review see Vindegaard & Benros, 2020). It has led to an increased number of psychological difficulties such as anxio-depressive disorders (Salari et al., 2020), or sleep disorders (Jahrami et al., 2021) that have impacted individuals' family, social, and professional lives (Trougakos et al., 2020). In France, all the university laboratories had to close during the first two lockdowns. The doctoral students had to set up a workplace at home, remain far from their friends and working relationships and from outside activities. Indeed, in France, curfews were established to limit the spread of the virus. These curfews started at 6 p.m., i.e., just after working hours, and ended the next morning. Many PhD students did not have the opportunity to go out. These sanitary measures changed every month, which further increased the uncertainty of the situation. Thus, the pandemic may have increased the difficulties usually encountered by PhD students by making their environment and future more insecure. This can have had a strong impact on their mental health as research has already shown correlations between dissatisfaction with the learning environment and stress, burnout, and anxiety among PhD students (Pyhältö et al., 2009). Furthermore, isolation can be a deleterious factor for the motivation and support doctoral students need, especially because they may initially feel isolated from the university community or consider the relationship with the community as complicated (Bair & Haworth, 2006; Gardner, 2010; Gardner & Barnes, 2007; Pyhältö et al., 2009). As lockdown and curfews are associated with higher risk of psychological difficulties, focusing on individual psychological processes contributing to well-being and resilience seems important. To address these challenges, there appear to be promising protective psychological factors such as self-compassion and the ability to savor past, present, or future

moments (Samios et al., 2021). These two factors have been shown to have a positive impact on individual psychological and subjective well-being, as well as on feelings of security, social connection and self-soothing (e.g., Matos et al., 2022; Samios et al., 2021; Yamaguchi et al., 2020), making them valuable resources during anxiety-provoking events like the COVID-19 pandemic.

Self-compassion refers to a kind and warm attitude toward oneself, based on self-acceptance and developed by focusing on one's resources to face the difficulties encountered (Neff, 2003). Self-compassion is characterized by three components: mindfulness, a sense of common humanity, and self-kindness. Self-compassion has been shown to reduce anxiety and depressive symptoms (Fong & Loi, 2020; Pauley & McPherson, 2010). Specifically, during the COVID-19, self-compassion was identified as a factor that reduced worry and fear, and increased well-being (Deniz, 2021; Guan et al., 2021; Li et al., 2021). However, to enhance well-being, another process named savoring may be useful, especially in times of reduced possibility to access to leisure, social relationships, and change from routines (Bryant & Veroff, 1984; Campbell, 1980; Keyes, 2002; Keyes & Haidt, 2003; Ryff, 1989).

Savoring, or the ability to recall satisfying events, to savor the present moment or to positively anticipate future events also contributes to mental well-being by encouraging the emergence and maintenance of positive emotions (Bryant, 2003). Savoring can be divided into three orientations. Anticipatory savoring involves looking forward to future events in order to generate positive feelings in the present. Reminiscent savoring involves thinking back to a pleasant event in order to generate positive emotions again. Finally, savoring the present moment occurs during a moment when one is fully aware of the pleasant and positive nature of the moment in order to intensify or prolong the positive feelings experienced (Bryant, 2003). Savoring thus involves active and positive regulation of emotions before and after they are generated, as well as the ability to reinforce and maintain these emotions (Bryant, 2003; Bryant

& Veroff, 2007). This skill is still little explored, although some studies have already shown its effects on well-being (Jose et al., 2012), resilience (Smith & Hanni, 2017) or depression (Chen & Zhou, 2017). Few studies have investigated its benefits during the COVID-19- pandemic. Their results revealed the protective role of savoring on the decrease in positive affect experienced during the pandemic (Romm et al., 2021) and its predictive and protective role on COVID-related worries (Deng et al., 2021) . The “savouring” ability could therefore improve coping with lockdown by counteracting the tendency of dreading what will happen next.

In an increasing number of studies outline the benefits of self-compassion and savoring on mental health in an unselected sample (e.g., Kahrilas et al., 2020; MacBeth & Gumley, 2012), few studies have specifically focused on doctoral students, even though these strategies could be important protective variables on their own difficulties. The purpose of this study was therefore to assess the impact of the three lockdowns on PhD students’ mental health and engagement during their thesis, and to evaluate the protective role of self-compassion and savoring on depression, anxiety and stress. The main hypothesis was that depression, anxiety and stress scores would increase six months and one year after the first lockdown, while well-being and PhD engagement would decrease. The secondary hypothesis was that self-compassion and savoring at the start of the first lockdown would predict lower levels of depression, anxiety and stress symptoms, and higher levels of well-being and PhD engagement six months and one year after.

4. Materials and methods

1. Procedure

This study has been pre-registered on Open Science Framework (OSF; Paucsik et al., 2020) and was approved by the local university ethics committee (approval number: CER

Grenoble Alpes-Avis-2020-05-01-01). Informed consent was given at the three measurement times of this online longitudinal study which collected data on three occasions at six-month intervals during the year 2020 and 2021. The study began on May 4, 2020, during the first lockdown in France. The second measurement time was on November 9, 2020, during the second lockdown and the last measurement time was on May 3, 2021, at the end of the last lockdown in France.

After giving their consent to participate, participants were assigned a unique identification number to access anonymously online questionnaires for each of the three assessment times, each of them including the same measures (see below). Participants received no financial compensation for their participation.

This research was carried out among PhD students in France. To obtain an effect for the multiple linear regression analyses with an average effect size (.62, i.e., Conrad et al., 2021; Hazell et al., 2020) and acceptable power (i.e., with alpha set at .016 with Bonferroni corrections), the sample size required was 131. Sensitivity analyses performed on G*Power indicated that with these parameters, effect sizes of $d = .6$ could be detected if they existed. We expected a high rate of dropouts based on the combination of the risk of dropout in online studies and in longitudinal studies, combined with the risk of student dropouts from the doctoral program (Bolger et al., 2012; Litalien & Guay, 2015; Marais et al., 2017). Indeed, in France, 10 to 60% of doctoral students drop out without completing their doctorate (Mogu rou, Murdoch, & Paul, 2003).-Therefore, we aimed at including at least four times the number of participants needed, that is 533 PhD students.

The study was posted online through networks of PhD students as well as through 49 French universities that agreed to participate in the study.

2. Participants

A total of 568 participants were recruited for the first survey session. Eligibility criteria required that the participants were: 1) at least 18 years old; 2) currently enrolled in a doctoral program and affiliated with a French university; 3) fluent in French; and 4) certifying having read the informed consent and agreed to participate. The original sample included 343 females, 222 males, and 3 other-identified participants with an average age of 28.2 (SD=5.82; age range: 22 years - 71 years). Of these 568 participants, 134 (23.6%) of the participants responded to all three stages of the survey and were included in the analyses. This number of dropouts is identical to that observed in online longitudinal studies (e.g., Pierce et al., 2020; Planchuelo-Gómez et al., 2020; Wang et al., 2020). The flow chart of the different phases of the study with the number of participants at each stage is presented in Figure 1 and demographic characteristics are presented in Table 1. The final sample consisted of PhD students aged between 22 and 52 ($M = 27.8$, $SD = 4.96$) with a majority of women (69.4%). Among the participants, 29.9% were in the first year of their thesis, 31.3% in the second year, 23.1% in the third year, and 15.7% in the fourth year or more, and more than half of them were funded. Participants who completed the entire study (i.e., the three waves of measures) did not differ at baseline from participants who completed only one or two waves of the survey on age - $t(566) = -1.08$, $p > .28$, $\eta^2 = .002$, gender - $t(566) = -1.1$, $p > .26$, $\eta^2 = .002$, grant - $t(566) = -0.44$, $p > .65$, $\eta^2 = .0004$, depression - $t(544) = -.78$, $p > .43$, $\eta^2 = .001$, anxiety - $t(544) = -1.02$, $p > .3$, $\eta^2 = .002$, stress - $t(544) = -1.35$, $p > .17$, $\eta^2 = .003$, PhD engagement - $t(479) = .06$, $p > .94$, $\eta^2 = 0$, self-compassion - $t(516) = -.95$, $p > .33$, $\eta^2 = .002$, and savoring - $t(486) = 1.85$, $p > .06$, $\eta^2 = .007$.

Figure 1

CONSORT flow chart of survey study participants

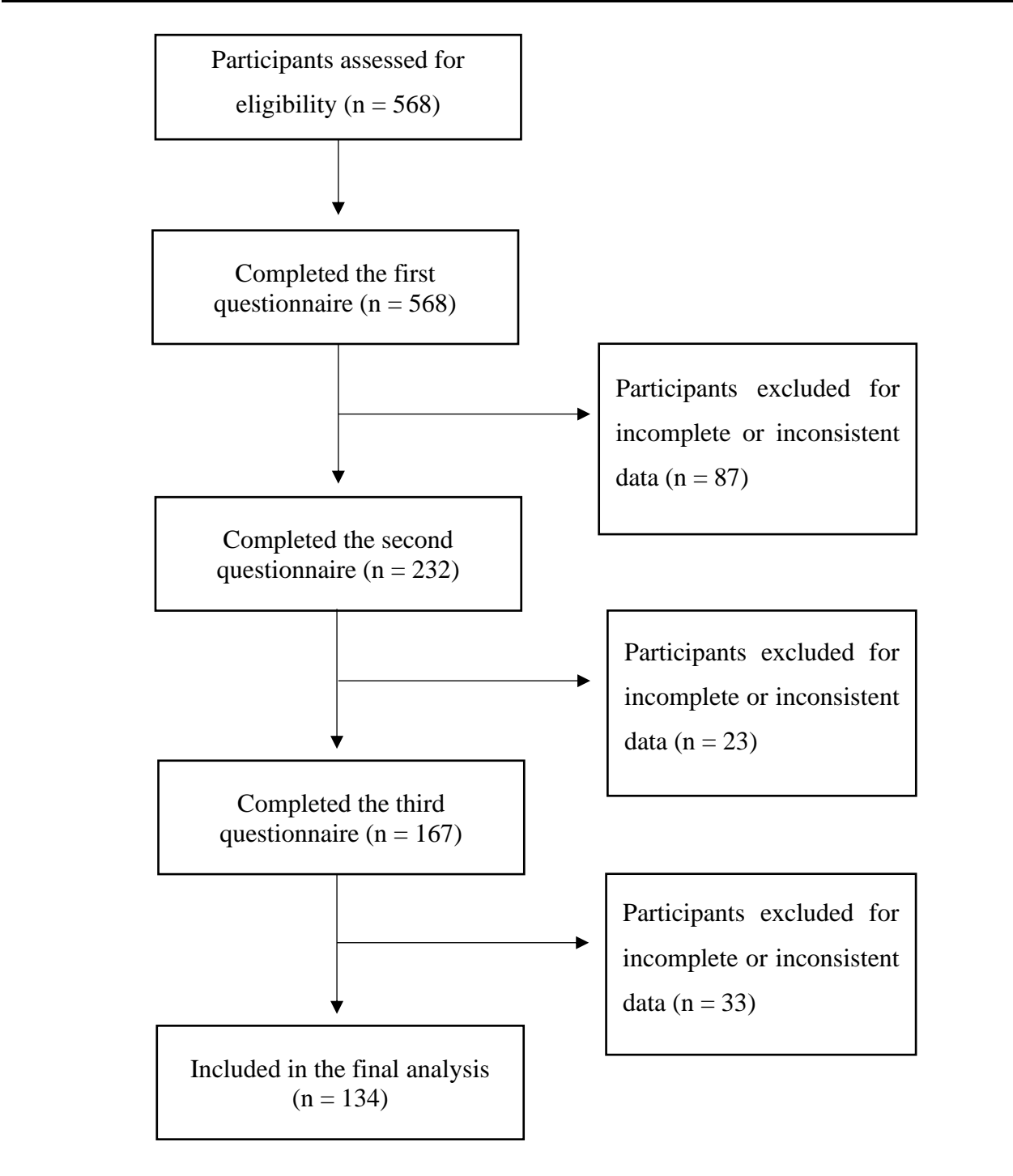


Table 1*Participants' sociodemographic characteristics*

Baseline characteristics	N	%
Gender		
Female	93	69.4
Male	41	30.6
Personal living situation		
Alone	30	22.4
In couple	55	41
In a shared flat	21	15.7
With their family	28	20.9
Type of housing		
Apartment without terrace or balcony	31	23.1
Apartment with terrace or balcony	59	44
House without terrace or garden	2	1.5
House with terrace or garden	42	31.3
University		
University Grenoble Alpes	81	60.5
University of Toulouse	25	18.7
Other	28	20.8
Thesis year		
1st	40	29.9
2nd	42	31.3
3rd	31	23.1
4th or more	21	15.7
Thesis grant		
Yes	109	81.3
No	25	18.7
Field of research		
Economy	4	2.00
Law and political sciences	5	3.73
Sciences	41	30.60
Human and social sciences	49	36.57
Engineering sciences	23	17.16
Medical studies	2	1.49
Arts	6	4.48
Langues and literature	4	2.99

Note. Data were collected during the first lockdown in France

3. Measures

All the answers were recorded from the Qualtrics platform. The order of the questionnaires was the same and participants had to answer all the questions, to reduce missing data.

Sociodemographic Characteristics. Respondents reported demographic characteristics including their age, self-identified gender (man, women or other), their marital status, their place and condition of living, their university, the year of enrollment (1st, 2nd, 3rd, 4th or more), and the presence or not of a grant during their thesis.

Depression, Anxiety and Stress. Symptoms of depression, anxiety, and stress were assessed using the French version of the Depression, Anxiety and Stress Scale (DASS-21, Lovibond & Lovibond, 1995). The DASS-21 is a self-administered questionnaire that measures the severity of depression (e.g., I couldn't seem to feel anything positive), anxiety (e.g., I worried about situations in which I might panic and make a fool of myself), and stress (e.g., I had trouble calming down) during the past week. Each item is scored from 0 (did not apply to me at all in the past week) to 3 (applied to me very often or most of the time in the past week). Reliability was checked by Cronbach's α for the measurement items of the three subscales. They were .88 for depression, .84 for anxiety, and .88 for stress at the first measure, .87 for depression, .80 for anxiety and .87 for stress at the second measure and .89 for depression, .82 for anxiety and .87 for stress at the last one.

Well-being. Well-being was measured with the French version of the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS, Tennant et al., 2007). This self-administered instrument covers both affective constructs, including the experience of happiness (e.g., *I've been feeling cheerful*), and constructs representing psychological functioning and self-realization (e.g., *I've been feeling good about myself*). The WEMWBS comprises 14 items related to the previous

two weeks, with responses on a 5-point Likert scale ranging from 1 (never) to 5 (always), and a total scale score is calculated by summing the 14 individual item scores. The minimum score is 14 and the maximum is 70. Reliability was verified by Cronbach's α for measure items and was .86 for the first measure, .91 for the second, and .88 for the third.

PhD engagement. The French version of the *Utrecht Work Engagement Scale* for students (UWES-9S) developed by Schaufeli et al. (2006) was used to measure study engagement. The questionnaire was slightly modified to make it clear that we were measuring doctoral engagement and not any other training that followed by PhD students. In the questionnaire, the term "study" was thus replaced by "thesis". The 9-item questionnaire is rated on a six-point Likert-type agreement scale ranging from 0 (never) to 6 (always). It measures the three components of study engagement: vigor (e.g., "*When I am doing my work as a student, I feel bursting with energy*"), dedication (e.g., "*I am proud of my studies*"), and absorption (e.g., "*I get carried away when I am studying*"). Reliability was verified by Cronbach's α for measure items and was .91 for the first measure, .92 for the second, and .90 for the third.

Self-compassion. Self-compassion was measured with the French version of the Self-Compassion Short Form Scale (SCS-SF, Neff, 2003b). The SCS-SF is composed of six subscales with a total of 12 items. The six-sub scales assess self-compassion (i.e., self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification). Self-kindness refers to the tendency to extend kindness and understanding toward oneself when feeling emotional pain or stress (e.g., "*When I'm going through a very hard time, I give myself the caring and tenderness I need*"). Self-judgment reflects the tendency to be self-critical, disapproving, and intolerant toward one's own flaws and difficult experiences (e.g., "*I'm intolerant and impatient toward those aspects of my personality I don't like*"). Common humanity is an ability to recognize that difficult emotional feelings or inadequacy and failure

are universal human experience (e.g., *I try to see my failings as part of the human condition*). Isolation dimension measures feelings of loneliness, separation, and disconnection from others at times of failure or distress (e.g., *When I fail at something that's important to me, I tend to feel alone in my failure*). Mindfulness is about adopting an attitude of acceptance and openness to experience whatever unpleasant thoughts or emotions are present (e.g., *When something painful happens I try to take a balanced view of the situation*). Overidentification refers to the tendency to become excessively immersed or consumed by negative feelings (e.g., *When I'm feeling down, I tend to obsess and fixate on everything that's wrong*). In this study, the scale reliability was good with a Cronbach's alpha of .84 for the total scale at the first measure, .84 for the second, and .84 for the third.

Savoring. Savoring was assessed with the French version of the Savoring Beliefs Inventory (SBI, Golay et al., 2018). The inventory is a self-assessment questionnaire composed of 24 items to evaluate attitudes toward savoring positive experience within three temporal orientations: the past (reminiscence), the present moment (present enjoyment), and the future (anticipation). Each of these three subscales is represented by 8 items. Each item is rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The total score of the SBI is calculated by subtracting the total score of negative items from the total score of positive items. The three subscales are calculated in the same fashion. The Anticipating pleasure subscale measures savoring a future positive event beforehand (e.g., *Before a good thing happens, I look forward to it in ways that give me pleasure in the present*). The Present moment pleasure subscale measures enjoying positive events when they occur (e.g., *I know how to make the most of a good time*). Finally, the Reminiscing pleasure subscale measures recalling past positive events after they have occurred (e.g., *I enjoy looking back on happy times from my past*). Reliability was verified by Cronbach's α for measure items and was .92 for the first measure, .93 for the second, and .93 for the third.

4. Data analysis plan

Data were analyzed using JAMOVI Version 1.2.27 (The Jamovi Project, 2020). First, one-way ANCOVA and bivariate correlations were conducted to investigate associations between demographic and outcomes variables. We had planned to perform a Games-Howell multiple comparison correction when the ANOVAs were significant to control for alpha risk. To investigate our main and second hypothesis, we performed several one-way and repeated measures ANOVAs. For the oneway ANOVA, we conducted the Welch ANOVA by default (Delacre et al., 2020). For the repeated measures ANOVA, Greenhouse-Geisser corrections were applied when sphericity test was significant. Given the sample size, we kept the parametric solution even when the assumption of normality was not met since parametric test stays robust enough (Leys & Schumann, 2010).

5. Results

1. Descriptive statistics and correlations at baseline

We conducted oneway ANCOVAs with gender, personal living situation, type of housing, thesis year and grant at baseline set as covariate with depression, anxiety, stress, wellbeing, engagement and self-compassion and savoring set a dependent variable. Concerning the type of housing, we grouped the persons living in a house without a terrace or garden ($N=2$) with those having a terrace and garden ($N=42$). The results did not show a significant effect of gender, personal living situation, type of housing and thesis year and grant on all the outcomes. Bivariate correlations between age, depression, anxiety, stress, well-being, engagement, savoring and self-compassion at baseline are presented in Table 2.

Table 2

Pearson's correlations between the measures at baseline

	M(SD)	1	2	3	4	5	6	7	8
1. Age	27.8 (4.96)	-							
2. Depression	7.17 (4.42)	.153	-						
3. Anxiety	3.69 (3.76)	.000	.608***	-					
4. Stress	7.25 (4.37)	.011	.634***	.721** *	-				
5. Well-being	45.6 (7.59)	.231 **	-.673***	.314** *	.437* **	-			
6. Engagement	27.4 (10.8)	.149	-.308***	-.023	-.044	.371** *	-		
7. Self-compassion	33.9 (7.83)	.131	-.461***	.344** *	.381* **	.517** *	.078	-	
8. Savoring	125 (22.35)	.065	-.457**	.330** *	.287* **	.481** *	.067	.528 ***	-

Notes. $n = 134$; ** $p < .01$, *** $p < .001$

2. Evolution of mental health, well-being, PhD engagement, self-compassion and savoring during the three lockdowns in France

As shown in Table 3, the results of repeated measures ANOVAs showed a significant increase in symptoms of depression, anxiety, and stress as well as a significant decrease in engagement and savoring over time, with small to large effect sizes. The results showed that self-compassion remains stable over time. Post-hoc analyses showed that depression and anxiety scores increased significantly between the first and third and the second and third lockdown and stress scores increased significantly between the first, second and third lockdowns. Results also showed that engagement and savoring significantly decreased between the first, second and third lockdown. During the first lockdown, 9.5% of the PhD students presented symptoms of severe to very severe depression, and this increased to 34.8% after the

third lockdown. Concerning anxiety, 14.7% had severe to very severe anxiety symptoms during the first lockdown, and this increased to 23.5% after the third lockdown. Finally, 13.4% had severe to very severe stress symptoms during the first lockdown, and this increased to 22.7% after the third lockdown.

As age was correlated with well-being, we included this covariate in the following well-being analyses. Results showed that well-being decrease during the three lockdown by controlling age, $F(2,178.4) = 5.09, p < .01, \eta^2_p = .04$.

To explore interaction between age and time on well-being, we computed two new variables: one linear contrast of time for well-being (-1,0,1) and a quadratic contrast of time on well-being (-1, 2, -1). The results showed that age significantly predict the linear contrast $\beta = -.483$ (SE = .157), $p = .003$, but not the quadratic contrast ($p = .933$). This means that wellbeing decreases with age.

Table 3

Mental health and well-being outcomes during the three lockdowns in France

Outcomes	Lockdown 1 M(SD)	Lockdown 2 M(SD)	Lockdown 3 M(SD)	ANOVA
Depression	7.17 (4.42) ^a	7.59 (4.79) ^a	8.70 (5.15) ^b	$F(2, 256) = 10.7, p < .001, \eta^2_p = .07$
Anxiety	3.69 (3.76) ^a	4.02 (3.65) ^a	4.72 (4.24) ^b	$F(2, 256) = 8.07, p < .001, \eta^2_p = .05$
Stress	7.25 (4.37) ^a	7.78(4.53) ^b	9.19 (4.92) ^c	$F(2, 256) = 17.9, p < .001, \eta^2_p = .12$
Engagement	27.4 (10.8) ^a	28.2 (10.6) ^a	23.6 (13) ^b	$F(2, 246) = 10.8, p < .001, \eta^2_p = .08$
Self-compassion	33.9 (7.83) ^a	34.3 (8.08) ^{ab}	33.2 (7.98) ^{ac}	$F(2, 250) = 2.88 p > .05, \eta^2_p = .02$
Savoring	125 (22.5) ^a	125 (22.8) ^a	121 (30.9) ^b	$F(2, 248) = 3.98 p < .05, \eta^2_p = .03$

Notes. The a, b and c indices are based on two-by-two post-hoc comparisons. Different letters in the same line indicate significant statistical differences.

3. Impact of self-compassion and savoring on mental health, well-being and PhD engagement

To test our second hypothesis, we conducted two repeated measures ANCOVAs with self-compassion and savoring at T1 set as covariate with the three time-points set as intrasubject independent variable and depression, anxiety, stress, wellbeing, doctoral engagement, set as dependent variables.

The results of the repeated measures ANOVAs showed a significant effect of self-compassion on depression across time, $F(1,127)= 33.3, p < .001, \eta^2_p = .20$, as well as on anxiety, $F(1,127)= 33.7, p < .001, \eta^2_p = .20$, on stress, $F(1,127)= 30.2, p < .001, \eta^2_p = .19$, and on well-being, $F(1,127)= 45.4, p < .001, \eta^2_p = .27$. However, the results did not show a significant effect of self-compassion on doctoral engagement.

Concerning savoring, there was a significant effect on depression $F(1,127)= 41.3, p < .001, \eta^2_p = .24$, anxiety, $F(1,127)= 27.7, p < .001, \eta^2_p = .17$, stress, $F(1,127)= 17, p < .001, \eta^2_p = .11$, well-being, $F(1,122)= 43.1, p < .001, \eta^2_p = .26$, and on doctoral engagement $F(1,122)= 5.43, p < .05, \eta^2_p = .04$. These results revealed that the higher the PhD students' self-compassion and savoring scores, the lower their symptoms of depression, anxiety, and stress and the higher their well-being levels after one year. Furthermore, these results showed that the higher the PhD students' ability to savor present, past or future life events, the more engaged they were in their PhD work during the year.

6. Discussion

In line with studies evaluating the impact of the COVID-19 pandemic on the mental health of individuals and PhD students (e.g., Byrom et al., 2020; Hazell et al., 2020; Jackman et al., 2021), this study evaluated the impact of one year of the pandemic in France on the mental

health of PhD students and the role of two protective factors: self-compassion and savoring. Based on survey data obtained during the first, second and third lockdown in France, our findings demonstrate the impact of the COVID-19 pandemic on the mental health and well-being of PhD students. Consistent with the literature, depression, anxiety, and stress scores were elevated during the first lockdown and increased significantly during the subsequent lockdowns (Essadek & Rabeyron, 2020; Grubic et al., 2020). If we compare our results to studies using the DASS21 as a reference scale we can observe that our results are superior to those of other populations measured before the COVID-19 (Norton, 2007; Zanon et al., 2021) or during the COVID-19 (Planchuelo-Gómez et al., 2020; Vaughan et al., 2020). Indeed, after the third lockdown, 34.8% of the PhD students suffered from severe to very severe depression, 23.5% reported severe to very severe anxiety symptoms, and 22.7% suffered from severe to very severe stress symptoms. These scores are significantly higher than those observed on a similar population during other periods (Ibrahim et al., 2013; Verger et al., 2010).

Regarding well-being, our results revealed a significant effect time and of age. Indeed, our results show that well-being decreases with the age of the PhD students. The evolution of well-being with age has already been shown in multiple studies (Blanchflower & Oswald, 2008; Springer et al., 2011; Stone et al., 2010). However, as multiple studies show, we expected to find a quadratic effect of age on well-being. Indeed, well-being tends to decrease at its maximum in middle age and to be more important during the first and last years of life (Blanchflower & Oswald, 2008). In our study, our results reveal a linear effect of age on well-being, which can be explained by the age of our population between 22 and 52 years. Studies show that it is precisely during this period that well-being tends to decrease before increasing again. In this age group, individuals with children are more likely to have had them at home, especially during lockdowns when they had to continue to manage their work and other domestic tasks, which may have contributed to higher levels of burnout (Brooks et al., 2020).

In addition, research shows that having children under the age of five is a risk factor for parental burnout (Mikolajczak et al., 2018). All these elements - even though not exhaustive - could thus explain the effect of age on well-being in our population. To date, longitudinal research on the evolution of well-being over the life course is still necessary to better understand and identify these factors (Blanchflower & Oswald, 2008).

Finally, all three lockdowns also negatively and significantly impacted PhD students' engagement in their doctoral thesis, especially after the third lockdown compared to the first and second ones. These results are consistent with other research that has evaluated the impact of lockdowns on work engagement (Pulido-Martos et al., 2021).

In addition, the COVID-19 pandemic has profoundly impacted the research community and increased the challenges commonly faced by PhD students (Sharma et al., 2020). For example, while doctoral students typically have only three years to complete their work, a delay in obtaining rapid ethical approval to conduct research was observed during the pandemic (X. Ma et al., 2020). Furthermore, perceived job control may have been highly impacted during the epidemic, and thus have contributed to the decrease in motivation of doctoral students over the year, and in well-being, as past research has shown that researchers' well-being is associated to perceived job control (Guthrie et al., 2017). All these elements support the importance of focusing on the well-being of doctoral students and assessing their psychological resources to cope with these difficulties. This is why this research also focused on two promising protective factors: self-compassion and savoring.

In line with other studies (Gutiérrez-Hernández et al., 2021; Mohammadpour et al., 2020), our study revealed that self-compassion played a protective role against the deleterious effects of lockdowns on symptoms of depression, anxiety, and stress, and on well-being. Furthermore, levels of self-compassion were not impacted by the lockdowns: the scores remained stable over time during the 12 months following the first lockdown. These results

suggest that self-compassion might be a trait that is quite stable over time and which allows to cope with difficulties by promoting an adaptive down regulation of negative emotion (Leary et al., 2007; Waring & Kelly, 2019), reducing the risk of depression (e.g., MacBeth & Gumley 2012; Raes, 2011; Van Dam et al. 2011), anxiety (Neff 2003b), and use of dysfunctional emotional regulation strategies such as rumination or suppression thought (Neff & Vonk, 2009).

Regarding savoring, our results showed that it predicted lower levels of symptoms of depression, anxiety and stress, and greater well-being and PhD engagement. Contrary to self-compassion, savoring allows for an active up-regulation of positive emotions before and after an event, and enhances positive emotions in the present moment (Bryant, 2003; Bryant & Veroff, 2007). In line with past research, savoring was associated with greater well-being (Bryant, 2003; Quoidbach et al., 2010), and also helped decrease symptoms of depression and anxiety (Chiu et al., 2020; Irvin et al., 2020; Straszewski & Siegel, 2018). However, our results also showed that savoring significantly decreased over time. These results can be explained by the successive lockdowns, which involved closing the laboratories and teleworking, thus reducing social interactions, and thus perceived social support (Pulido-Martos et al., 2021). Indeed, previous research has shown the important role of social support on savoring by allowing the sharing of positive experiences and emotions (Feeney & Collins, 2015; Wilson et al., 2020). Other variables could explain these results, such as hopelessness for example, but no research has yet been conducted on this topic.

Although our results shed light on the influence of repeated lockdowns on PhD students, some limitations need to be considered. First, we did not consider enough sociodemographic factors that could moderate the results, such as the professional situation of PhD students, as some of them work in parallel with their thesis, or the family situation, as some PhD students also had to take care of their children while teleworking, which represents another potential burden (Griffith, 2020; Hessami et al., 2020; Vigouroux et al., 2021). Having a history of

psychiatric difficulties is also a vulnerability factor identified (for a review, see Vindegaard & Benros, 2020) that was not investigated. Finally, research showed that individuals who contracted the COVID-19 or knew someone infected by the COVID-19 were also at risk for mental health problems (Browning et al., 2021).

Second, the study was based on self-reported measures which can be biased (e.g., social desirability), and raises concerns about shared method variance (Podsakoff et al., 2003). It would be relevant to use complementary physiological and ecological measures. For example, measures targeting emotional regulation with experience sampling methods (ESM) would provide a clearer understanding of the impact of self-compassion and savoring on symptoms of depression, anxiety, and stress, and on well-being. These measures would therefore provide a more accurate assessment of how self-compassion and savoring promote emotional regulation and how this contributes to better daily functioning (Inwood & Ferrari, 2018; Svendsen et al., 2016).

Finally, these findings support group-based self-compassion and savoring interventions for PhD students to create supportive interpersonal contexts in which PhD students can share their difficulties and identify with peers, thereby enhancing their level of self-compassion and promoting greater resilience in the face of adversity (Waring & Kelly, 2019). These interventions can also take place online as recent research showed that online interventions also decrease psychological distress and increase positive emotion sharing, resilience, and the various factors they target such as self-compassion or savoring (Brouzos et al., 2021; Finlay-Jones et al., 2017; Yu et al., 2020).

7. Conclusion

Although levels of depression, anxiety and stress among PhD students significantly increased during the year of the pandemic in France, this research sheds light on the importance

of fostering protective mental health factors such as self-compassion and savoring. As previous research has shown, together, these two factors allow for flexible regulation of negative and positive emotions, promoting better coping strategies to deal with difficult events. The present research contributes to the previous findings. It reveals the importance of developing the ability to savor and experience self-compassion in times of crisis. The results of this study also shed light on the protective role of self-compassion by revealing its stability over time, even in the face of adversity, making it an important and promising psychological resource to develop.

This study showed that self-compassion was a protective factor for symptoms of depression, anxiety, and stress in PhD students during the Covid-19 pandemic. The results of this study also revealed that self-compassion also was a stable protective factor over time. Unlike savoring, self-compassion remains stable over one year despite three lockdowns. These results further support the usefulness of the development of this protective factor which, despite a context of uncertainty and fear, as it appears to preserve mental health.

Rational from the first to the second part

Results of the studies presented in this first part showed that, given the limited number of studies on compassion in clinical research, there are currently few studies that provide an understanding of the processes by which compassion is effective. Recent theoretical models are emerging that attempt to define compassion (Strauss et al., 2016). However, more studies are needed to empirically test the different dimensions of compassion and to propose standardized assessment tools to capture them. To date, self-compassion remains the most evaluated dimension in studies and is the subject of a reference assessment tool, Neff's self-compassion scale (2003). Our studies showed that this dimension was a protective factor for mental health in the community but also for more at-risk populations (Study 2, 3 and 4). Our results are consistent with studies on which we have collaborated, and which were conducted on larger samples and from other countries (Matos et al., 2021, 2022). Results of these studies have shown that self-compassion plays a universal protective role on mental health and leads to greater resilience face of adversity.

These studies therefore highlight the need to implement evidence-based interventions to develop this factor while evaluating the processes of efficacy of these interventions. Current studies suggest that emotion regulation may play an important role in the effect of self-compassion on mental health (Inwood & Ferrari, 2018). Therefore, the second part of this thesis focused on the development of self-compassion and the evaluation of compassion-based interventions by assessing their effects on emotional regulation in subclinical and clinical populations.

Part II

Enhancing compassion in a
transdiagnostic perspective

Chapter 5: Do compassion-based interventions enhance emotional regulation? A meta-analysis

Marine Paucsik¹, Céline Bodelet², Noémie Niveau¹, Rebecca Shankland^{3,4} &
Céline Baeyens¹

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¹Univ. Grenoble Alpes, Univ. Savoie-Mont-Blanc, LIP/PC2S, 38000 Grenoble, France

²Univ. Claude Bernard Lyon 1, RESHAPE, 69373 Lyon Cedex, France

³Univ. Lumière Lyon 2, DIPHE, 69676 Bron Cedex, France

⁴Institut Universitaire de France

1. Résumé

La régulation émotionnelle (RE) est un enjeu majeur en psychothérapie. Identifiée comme étant un processus fonctionnel transdiagnostique, son développement est possible grâce à différentes pratiques psychothérapeutiques. Parmi les interventions qui existent, les interventions basées sur la compassion (IBCs) semblent prometteuses. La présente méta-analyse a étudié l'efficacité des IBCs par rapport à des groupes contrôles sur la RE. Cette méta-analyse a inclus 6 études avec 275 participants dans le groupe d'intervention et 271 dans le groupe de contrôle. L'âge moyen des participants était de 32.8 ans. La taille de l'effet global des IBCs sur la RE était de $g = .3, p < .001$, bien qu'il y ait une hétérogénéité modérée entre les études concernant les tailles d'effet. Les résultats "une analyse de modulation utilisant un modèle à effets mixtes sur le type de RE ont montré une petite taille d'effet des interventions sur les stratégies de RE fonctionnelles ($g = .34, p = .003$) et un impact non significatif des interventions sur les stratégies de RE dysfonctionnelles a été observé ($g = -.24, p = .13$). En conclusion, nos résultats montrent que les IBCs sont efficaces pour développer la RE bien que plusieurs limites aient été identifiées.

Mots-clés : Compassion; Régulation émotionnelle; Méta-analyse; Processus psychologiques; Auto-compassion

8. Abstract

Emotion regulation (ER) is a major issue in psychotherapy. Identified as a transdiagnostic dysfunctional process, its development is nevertheless possible. Among the interventions that exist, compassionate interventions seem promising. The present meta-analysis investigated the efficacy of CBIs compared to control group on emotion regulation.

The search resulted in 6 studies with 275 participants in intervention and 271 in control group. The mean age of participants was 32.8 years. The overall effect size of the CBIs on ER was $g = .3$, $p < .001$, although there were a moderate heterogeneity among the studies regarding effect size. Results of a moderator analysis using a mixed-effects model on the type of ER showed a small effect size of interventions on functional ER ($g = .34$, $p = .003$) and a non-significant impact of the interventions on dysfunctional ER was observed ($g = -.24$, $p = .13$). In conclusion, the efficacy of CBIs in emotion regulation was supported even if several limits were identified.

Keywords: Compassion; Emotional regulation; Meta-analysis; Emotion regulation skills; Self-compassion

1. Introduction

Emotional regulation

Emotional regulation (ER) is a passionate topic for many researchers in psychology. Our emotions allow us to adapt to our environment, to react to different events and contribute to our psychological and physiological well-being (DeSteno et al., 2013; Hu et al., 2014). However, emotions are not always helpful. They can hurt us as well as help us (Parrot, 1993). When difficulties in regulating our emotions appear, they can participate in the development, maintenance or enhancement of psychopathological disorders (Aldao et al., 2010). ER refers to the processes that allow us to modify the type of emotions we feel, their manifestation and the way we experience and express them (Gross, 1998).

Several models of ER exist (Naragon-Gainey et al., 2017), the most former and influential models of ER is the processual model of Gross (1998). These authors propose to identify the strategies that individuals can use to modify their emotional states according to the stage of the emotional process: (a) situation selection (the choice of situations, one will be

exposed to), (b) situation modification (the change of one or more relevant aspects of the situation), (c) attentional deployment (the choice of which aspects of a situation are attended to), (d) cognitive change (the modification of one's appraisal of a situation), and (e) response modulation (the direct modification of emotion-related responses). Other models of ER have focused more specifically on ER strategies, focusing on their characteristics, function and correlates (Aldao et al., 2014, Aldao et al., 2010). Some strategies are described as functional, such as cognitive reappraisal, and others as dysfunctional, such as ruminations (Aldao & Nolen-Hoeksema, 2012b; Aldao et al., 2010). Cognitive reappraisal refers to the cognitive process by which the evaluation of a situation allows the emotional character of the situation to be reduced or increased (Gross & John, 2003). Rumination involves the process of thinking repetitively about one's feelings and problems (Gross, 1998, Nolen-Hoeksema et al., 2008). These strategies can be assessed using several scales commonly used in research as the Cognitive Emotional regulation Questionnaire (CERQ, Garnefski et al., 2001).

Alongside this model, other authors focus more on the abilities that enable individuals to regulate their emotions, such as the multidimensional model of emotion dysregulation by Gratz and Roemer (2004). These authors conceptualize ER as involving : « (a) awareness and understanding of emotions, (b) acceptance of emotions, (c) ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions, and (d) ability to use situationally appropriate ER strategies flexibly to modulate emotional responses as desired in order to meet individual goals and situational demands » (Gratz & Roemer, 2004, p. 41-42). To assess these abilities, there are specific questionnaires that can be used: the Difficulties in Emotion Regulation Scale (DERS, Gratz & Roemer, 2004), and the Emotion Regulation Skills Questionnaire (ERSQ, Berking & Znoj, 2008). The use of functional strategies and the development of ER abilities have been identified by research as playing a key role in individual mental health and more specifically in the development and maintenance of

several psychopathological disorders (Aldao & Nolen-Hoeksema, 2010; Aldao et al., 2010; Cludius et al., 2020). This is one of the reasons why ER strategies are now considered a transdiagnostic process, i.e., they are present across a range of different disorders and contribute to the development and/or maintenance of psychopathology (Cludius et al., 2020; Harvey et al., 2004). Indeed, ineffective use or underuse of cognitive reappraisal is associated with a wide range of mental disorders such as major depressive disorder or social anxiety disorder (Dryman & Heimberg, 2018). In contrast, frequent use of cognitive restructuring for ER predicts lower psychopathology (Cludius et al., 2020). For example, numerous studies have shown that individuals suffering from mood disorders tend to use fewer adaptive strategies and instead more frequently use maladaptive strategies (Aldao et al., 2010; Compas et al., 2017; Potthoff et al., 2016).

An increasing number of clinical interventions are oriented towards the evaluation and development of adaptive ER strategies in order to increase the frequency of their use and to decrease the frequency with which maladaptive ER strategies are used (McRae & Gross, 2020). Some of these cognitive and behavioral therapy are formal treatment programs and interventions that explicitly address ER such as Dialectical Behavior Therapy (DBT; Linehan, 1993), Emotion-focused therapy (EFT; Greenberg, 2002), Unified Protocol for the Treatment of Emotional Disorders (Barlow et al., 2004), or Emotion Regulation Therapy (ERT; Mennin, 2004; Mennin & Fresco, 2009). However, other interventions that do not specifically target ER such as Mindfulness Based Intervention (MBI, e.g., Arch & Craske, 2006; Hill & Updegraff, 2012; Iani et al., 2018) and more recently Compassion Based Interventions (CBIs) seem equally relevant.

Compassion-Based Interventions (CBIs)

CBIs are among the most recent interventions but show promise for developing RE (Finlay-Jones, 2017). Although some of these interventions are not exclusively based on

compassion such as the Dialectical Behavioural Therapy (DBT, Linehan, 2020), others have made it their therapeutic target. These interventions can be described as based on six different empirical models (Kirby, 2017): Compassion Focused Therapy (CFT; Gilbert, 2014), Mindful Self-Compassion (MSC; Neff & Germer, 2013), Compassion Cultivation Training (CCT; Center for Compassion and Altruism Research and Education, 2015); Cognitively-Based Compassion Training (CBCT; Pace et al., 2009), Cultivating Emotional Balance (CEB; Kemeny et al., 2012), Loving-Kindness (LKM) and Compassion Meditations (CM; e.g., Wallmark et al., 2013). Although they are based on different practices (e.g., mindfulness, visualization and/or breathing), one of the common objectives is to develop compassion, and more precisely self-compassion, a form of adaptive self-relation characterised in part by the capacity to be warm, understanding, and kind with oneself during times of difficulty (Neff, 2003).

Based on the above theoretical models, several definitions of compassion have been proposed. In CFT, compassion is defined as a form of motivation to develop “the sensitivity to suffering in self and others, with a commitment to try to alleviate and prevent it” (Gilbert, 2014, p.19). Therefore, this model provides a dynamic approach to compassion that can be directed from: (1) self-to-other (i.e., compassion for others), (2) other-to-self (i.e., compassion from others), and (3) self-to-self (i.e., commonly referred as self-compassion) (Gilbert, 2014). Kristin Neff’s work focuses more on the dimension of self-compassion which she defines according to three components : (a) mindfulness, (b) common humanity, and (c) kindness (Neff, 2003). This definition has led to the development of a reference scale for assessing the three components of self-compassion : the Self-Compassion Scale (SCS, Neff, 2003). All these interventions enhancing compassion or only self-compassion show positive results in the field of mental health (for reviews see Ferrari et al., 2019; Kirby et al., 2017). Indeed, most of them allow to decrease anxiety symptoms and increase well-being and life satisfaction (Ferrari et al., 2019;

Kirby et al., 2017). These benefits could be explained by their effects on ER, as suggested by Finlay-Jones (2017) and Inwood and Ferrari (2018). Their work provided preliminary evidence that ER can mediate the effect of self-compassion on mental health, and offered initial support for an ER model of self-compassion. Specifically, it appears that self-compassion relates to specific ER strategies such as cognitive reappraisal, and more general ER abilities such as tolerance of uncomfortable emotions (Finlay-Jones, 2017; Inwood & Ferrari, 2018).

The practices developing compassion and self-compassion invite to engage with painful emotions and to develop distress tolerance which is an attribute of compassion in CFT, rather than trying to avoid emotions (Gilbert, 2009; Neff et al., 2007). However, most studies that have assessed the mediating role of ER in the relationship between self-compassion and mental health indicators were based on observational designs, whether correlational or longitudinal. Only a few intervention studies have evaluated the impact of CBIs on ER. The purpose of this meta-analysis thus was to analyse the role of ER in CBIs through the analysis of interventional research in this field. This will allow researchers and clinicians to clarify the role of self-compassion in ER and to further document the evidence of the effectiveness of these interventions.

Aims

Despite meta-analyses evaluating the effects of self-compassion (e.g., Ferrari et al., 2019; MacBeth & Gumley, 2012; Phillips & Hine, 2019; Zessin et al., 2015), the mechanisms of effectiveness of compassion-based interventions still need to be clarified. One potential mechanism of effectiveness appears to be ER, although this has not been the focus of systematic review or meta-analysis to date. Therefore, the purpose of this meta-analysis was to review CBI studies that have assessed ER using self-report scales, controlled and randomized controlled design.

More specifically, this meta-analysis had three main objectives. The first objective was to evaluate the effect of CBIs using a meta-analysis technique on ER by assessing the effects on global ER and by distinguishing functional and dysfunctional ER strategies. We hypothesized that CBIs would increase ER abilities and functional strategies and decrease the use of dysfunctional ER strategies. The second objective of this meta-analysis was to evaluate the effect of these CBIs on other mental health variables such as self-compassion, depression, anxiety and stress symptoms. Regarding this second objective, we expected that CBIs would increase self-compassion and decrease anxiety and stress symptoms. Finally, a third objective was to conduct moderator analyses to examine the impact of type of intervention, type of control group, and duration of intervention. In that sense, we hypothesized that CFT interventions would have stronger effects on ER than other CBIs, that protocols using active control groups would have smaller effects than those using inactive control groups, and that the longer the intervention, the greater the effect on ER.

2. Method

1. Protocol and registration

The meta-analysis protocol was prospectively registered in PROSPERO under the registration number: CRD42020177485 and pre-registered on OSF: osf.io/4863s. This meta-analysis was carried out following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). This review was conducted on July 20th, 2021, and updated in December 2021.

2. Inclusion/Exclusion Criteria

To construct the eligibility criteria, we followed the PICO method (Richardson et al., 1995). To be included in the meta-analysis, studies had to meet the following criteria: (a) Participants: adults who have or have not had clinical or subclinical mental health disorders as assessed by formal clinical diagnosis or by a validated self-report measure; (b) Interventions: studies must have assessed the efficacy of CBIs, conducted by a trained clinician or through self-help exercises; (c) Comparators: studies must have used a control condition (i.e., active intervention or waitlist or treatment/care); (d) Outcomes/measures: studies must include at least one standardized measure of ER and of compassion, self-compassion (or self-criticism), and stress, anxious and depressive symptoms; (e) Design: We selected controlled trials and randomised controlled trials (RCT); (f) Language and date: No year or language restrictions were applied; (g) Studies exploring non-compassion-based interventions were excluded as well as studies based on editorials; opinion pieces; reports published as meeting abstracts only where insufficient details were reported to allow inclusion; book chapters; studies that did not present data for the included outcomes. In addition, for studies to be included in the meta-analysis, they were required to submit the data necessary to calculate the effect sizes of the observed differences. When these data were not present, we contacted the authors to obtain them.

3. Search strategies

Several strategies were employed to obtain relevant studies. First, the following databases were searched: MEDLINE (Pubmed), EMBASE (Science Direct), PsycInfo, CENTRAL (The Cochrane Library), Web of Science, Bandolier, Clinical Trials.gov, Current Controlled Trials, and Cochrane Central Register of Controlled Trial, and OSF. We included unpublished studies and dissertations in our search to minimize publication bias (Ferguson &

Brannick, 2012). To this end, we investigated the following platforms: Thesis Global and ProQuest Dissertations. We also emailed on multiple occasions active compassion researchers for unpublished papers or dissertations. The search was conducted on July 20th, 2021, and updated in December 2021. Following this update, two additional articles were included in the meta-analysis. English was the language selected and the following fields were searched for in all the fields: “compassion”, “loving kindness” AND “emotion regulation”, “emotion dysregulation” AND “depression”, “anxiety”, “stress”. Studies were screened by the first author based on title and abstract. Abstracts and full-text articles were then examined by the first and fourth authors to determine if studies met inclusion criteria. Any uncertainties regarding eligibility for inclusion were resolved by discussion between the first, fourth and fifth authors.

The searches revealed a total of 8858 papers of which 2474 duplicated papers that were removed, resulting in 6384 unique papers. Following the eligibility process, 6378 papers were excluded based on title, abstract or full article as they did not meet criteria or were based on the same samples. Figure 1 presents the identification and selection process based on the PRISMA flowchart.

4. Data extraction

A standardized form was used to extract data from full-texts, and data were extracted by one investigator (MP) and a fifth investigator (CB) checked and completed the standardized form. Data extracted are shown in Table 1 and 2. For the meta-analysis, we extracted outcome data for ER and for self-compassion, depression, anxiety, and stress when reported. We extracted means and SDs pre- and post-treatment and sample sizes in the intervention and control groups. We accepted any standardised measure of ER, ER difficulties or emotion dysregulation. To date, there are several instruments for assessing these constructs. One of the

most widely used scales is the Difficulties in Emotion Regulation Scale (DERS, Gratz & Roemer, 2004) to assess ER abilities. To assess ER strategies, two scales are commonly used: the Emotion Regulation Questionnaire (ERQ, Gross & John, 2003) and the Cognitive Emotion Regulation Questionnaire (CERQ, Garnefski & Kraaij, 2007). However, given the number of results, we also included measures with ER as a sub-dimension such as the San-Diego Wisdom scale (SD-WISE, Jeste et al., 2021) and the Meta-Mood Scale (Salovey et al., 1995). None of the studies included in this meta-analysis used the DERS.

The ERQ is a 10-item instrument that assesses two ER strategies (Gross & John, 2003): cognitive reappraisal (e.g., "*When I want to feel less negative emotion, I change the way I see the situation*") and expressive suppression (e.g., "*When I feel negative emotions, I avoid expressing them*"). Each item is paired with a seven-point scale ranging from 1 = not at all to 7 = completely.

The CERQ identifies nine different types of cognitive ER strategies (Garnefski & Kraaij, 2007): Self-blame (i.e., feeling responsible for the negative event, e.g., "*I am blamed for it*"), Acceptance (i.e., having accepting thoughts, e.g., "*I think I need to accept that this happened*"), Focus on thought (i.e., having recurrent thoughts about the feelings and thoughts associated with the negative event, e.g., "*Thinking about experience*"), Positive refocusing (i.e., thinking about happy and pleasant events instead of the negative event, e.g., "*Thinking about nicer experiences*"), Refocus on planning (i.e., thinking about how one could handle the negative event, e.g., "*Thinking of what I can do best*"), Positive reappraisal (i.e., looking for positive aspects of the situation in terms of personal development, e.g., "*Thinking about positive sides of situation*"), Putting the negative event into perspective (i.e., putting it into perspective by comparing it with other events, e.g., "*Thinking that it could be much worse*"), Catastrophizing (i.e., having thoughts that amplify the negative aspects of the event, e.g., "*My experience is worse than others experience*"), and Other-blame (i.e., blaming others for the

negative event, e.g., “*Others are to blame for it*”). These strategies can be grouped into adaptive ER strategies (i.e., acceptance, positive focus, action focus, positive reappraisal, and perspective taking) and non-adaptive emotional regulation strategies (i.e., self-blame, rumination, dramatization, and blame others). The CERQ contains 36 items rated from 0 to 5 on a Likert scale, where 0 is never and 5 is always.

The SD-WISE is a 24-item measure on a five-point Likert scale. This scale aim to assess levels of wisdom based on its neurobiological model into six subscales that measure: (a) social advising (e.g., “*I am good at perceiving how others are feeling*”), (b) decisiveness (e.g., “*I have trouble making decisions*”—reverse scored), (c) emotional regulation (e.g., “*I am able to recover well from emotional stress*”), (d) insight (e.g., “*I take time to reflect on my thoughts*”), (e) prosocial behavior (e.g., “*I treat others the way I would like to be treated*”), and (f) tolerance for divergent values (e.g., “*I enjoy learning things about other cultures*”). Total wisdom scores and subscale scores are calculated by summing the scores of the items.

The Trait Meta-Mood Scale is a 30-items instrument assessing the ability to reflect upon and manage the emotions. It consists of three subscales to measure different aspects of ER: (a) attention (i.e., the degree of attention devoted to personal feelings, e.g., “*I don’t pay too much attention to my feelings*”) (b) clarity (i.e., the clarity of feelings experienced, e.g., “*I am usually very clear about my feeling*”); and (c) repair (i.e., the ability to regulate mood states, e.g., “*Although I am sometimes sad, I have a mostly optimistic outlook*”). Participants rated themselves on a 5-point scale from 1 (strongly disagree) to 5 (strongly agree), with higher scores indicating better ER abilities.

Figure 1

PRISMA Flow diagram for the selection process

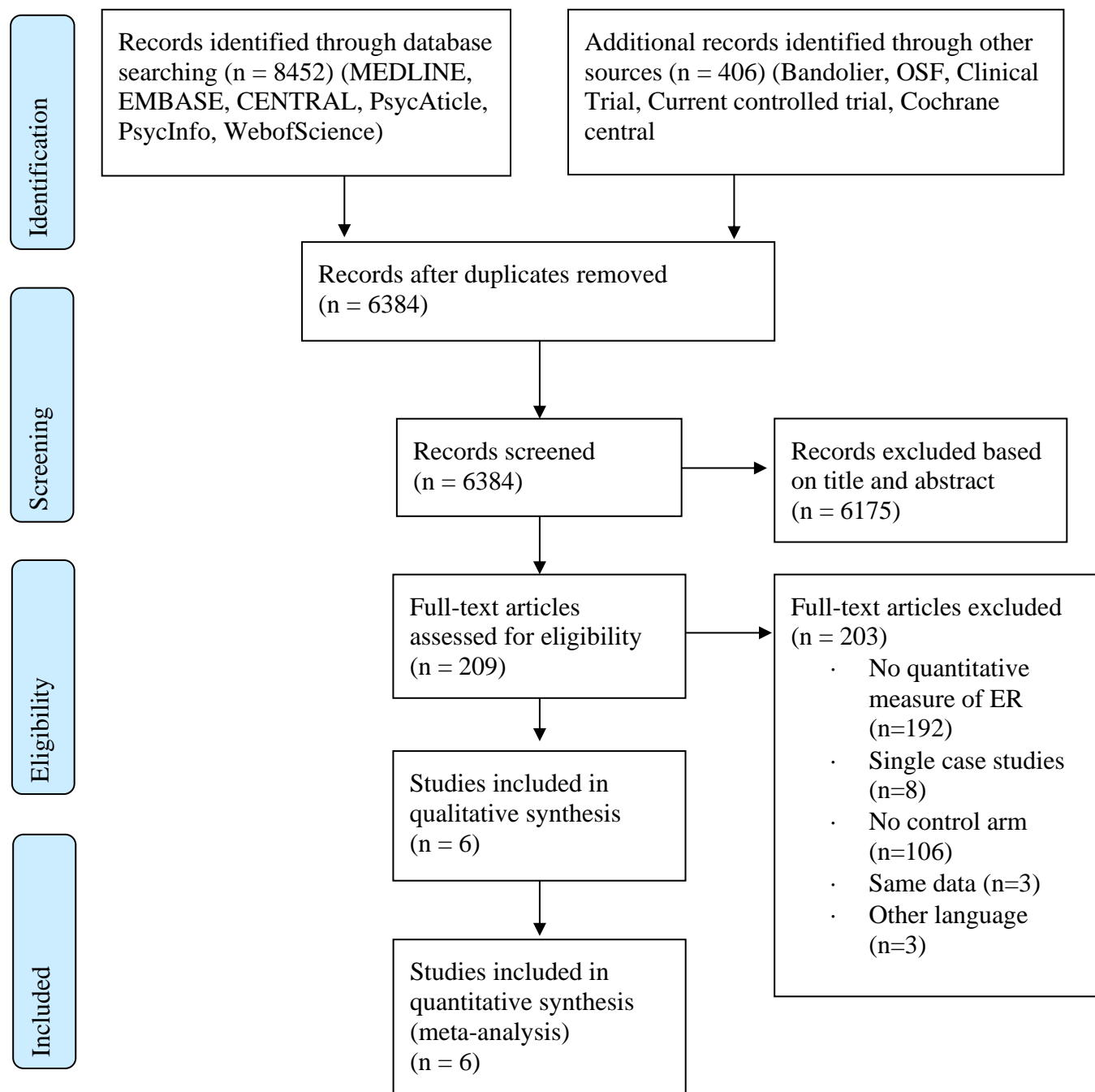


Table 1*Study characteristics*

Study	Sample characteristics	Mean age (SD)	Included in analyse	Intervention	Mode of delivery	Length of intervention	Control group	Emotion regulation scale	Measurement timings
Al-Refae et al., 2021	Adult from the community	25.24 (8.74)	162	Serene program (MSC + cognitive restructuring)	Self-help app	4 weeks	Wait-list	emotional regulation subscale of SD-WISE	Pre and post intervention
Hansen et al., 2021	Informal caregiver	52.6 (12.5)	161	CCT	Face to face group delivery	8 weeks (1 session of 120min per weeks)	Wait-list	ERQ	Pre and post intervention and 2-, 3-, and 6-month follow-up
Hasselberg & Rönnlund (2020)	Young Adults	22.3 (1.8)	56	Mindfulness and compassion for stressed youth (MSC)	Self-help web based program and ap	2 weeks (one practice per day 5 day a week)	Wait-list	ERQ	Pre and post intervention
Jazaieri et al., 2013	Middle-aged adults from the community	43.08 (12.15)	50	CCT	Face to face group delivery	8 weeks (1 session of 120min per weeks)	Wait-list	ERQ	Pre and post intervention
Torbati et al., 2020	Adult with addiction	33	40	CFT	Face to face group delivery	10 weeks (1 session of 90min per weeks)	TAU	CERQ	Pre and post intervention
Wong & Mak, 2016	Students	20.5 (1.43)	65	Self-compassion journal practice	Online writing sessions	3 days (each day)	Control writing	Meta-Mood Scale	Pre-intervention and 1- and 3-months follow-up

Notes. MSC: Mindful Self compassion; CFT: Compassion Focused Therapy; CCT: Compassion Cultivation Training; CERQ: Cognitive Emotion regulation Questionnaire; ERQ: Emotion regulation Questionnaire.

Table 2*Effect sizes for emotion regulation*

Study	Scale used	Pre-score Experimental Group: Mean (SD) of emotion regulation	Post-score Experimental Group: Mean (SD) of emotion regulation	Pre-score Control Group: Mean (SD) of emotion regulation	Post-score Control Group: Mean (SD) of emotion regulation	Statistical test	<i>p</i> value	Effect size (<i>d</i>)
Al-Refae et al., 2021	SD-WISE suscale regulation	11.44 (3.02)	12.25 (2.76)	11.44 (3.00)	11.47 (3.00)	ANOVA	*	.28 (<i>d</i>)
Ghodrati- Torbaty et al., 2020	CERQ	67.85 (8.75)	75 (11.87)	69.05 (9.03)	69.3 (7.56)	ANCOVA	**	.23 (η_p^2)
Hasselber g & Rönnlund (2020)	ERQ- reappraisal	3.55(0.95)	3.90(1.19)	3.64 (1.06)	3.52(1.07)	Mixed linear modelling	*	.43 (<i>d</i>)
	ERQ- suppression	3.63(1.49)	3.45(1.37)	3.55-1.53)	2.98(1.40)	Mixed linear modelling	NS	.13 (<i>d</i>)
Hansen et al., 2021	ERQ reappraisal	25.57 (7.23)	29.71 (6.17)	24.54 (6.71)	24.32 (7.02)	Structural equation model	***	0.87 (<i>d</i>)
	ERQ suppression	12.68 (5.18)	11.37 (3.80)	12.1 (4.34)	12.38 (5.53)	Structural equation model	*	.42 (<i>d</i>)
Jazaieri et al., 2013	ERQ expressive suppression frequency	40.31 (10.89)	34.27 (11.38)	39.14 (11.56)	38.45 (12.34)	ANOVA	*	.07 (η_p^2)
	ERQ expressive suppression self-efficacy	32.63 (11.19)	29.38 (10.46)	31.10 (12.46)	33.28 (10.20)	ANOVA	*	.06 (η_p^2)

Part II: Enhancing compassion in a transdiagnostic perspective

Wong & Mak, 2016	ERQ cognitive reappraisal frequency	39.46 (9.78)	40.33 (8.44)	41.03 (6.32)	41.69 (7.38)	ANOVA	NS	--
	ERQ reappraisal self-efficacy	35.44 (11.10)	38.54 (9.76)	36.66 (11.56)	35.97 (10.57)	ANOVA	NS	--
	Meta-Mood Scale Attention	3.66 (0.37)	3.62 (0.42)	3.62 (0.40)	3.59 (0.43)	ANOVA	NS	--
	Meta-Mood Scale Clarity	3.66 (0.37)	3.62 (0.42)	3.62 (0.40)	3.59 (0.43)	ANOVA	NS	--
	Meta-Mood Scale Repair	3.66 (0.37)	3.62 (0.42)	3.62 (0.40)	3.59 (0.43)	ANOVA	NS	--

Notes. CERQ : Cognitive Emotion regulation Questionnaire, ERQ : Emoiton regulation Questionnaire, NS, Not significant, * = $p \leq .05$, ** = $p \leq .01$, *** = $p \leq .001$.

For self-compassion, we planned to accept any standardized measure: either the Self-Compassion Scale (SCS, Neff, 2003), or its short form (SCS-SF, Raes et al., 2011), and the Compassion Scale (CS, Pommier et al., 2020). However, as none of the articles included in the study used the CS, we will only present the SCS here. The long and short version of the SCS assess six sub-dimensions of compassion: self-kindness (e.g., *When I'm going through a very hard time, I give myself the caring and tenderness I need*), self-judgment (e.g., *"I'm disapproving and judgmental about my own flaws and inadequacy"*), common humanity (e.g., *"I try to see my failings as part of the human condition"*), isolation (e.g., *"When I fail at something that's important to me, I tend to feel alone in my failure"*), mindfulness (e.g., *"When something painful happens I try to take a balanced view of the situation"*) and over-identification (e.g., *"When I'm feeling down I tend to obsess and fixate on everything that's wrong"*). All items are rated on a Likert scale ranging from 0 (almost never) to 6 (almost always).

Finally, concerning the tools assessing depression, anxiety or stress, we planned to accept several standardized instruments such as the Hospital Anxiety and Depression Scale (HAD, Zigmond & Snaith, 1983); the Depression, Anxiety and Stress Scale (DASS21, Lovibond & Lovibond, 1995), the Beck Depression Inventory (BDI30, Beck et al., 1988), the Centre for Epidemiological Studies Depression Scale (CES-D, Roberts & Vernon, 1983), The Patient Health Questionnaire (PHQ9, Spitzer, 1999), or the Perceived Stress Scale (PSS, Cohen et al., 1983). Studies included in the meta-analysis only used the DASS21, the CES-D and the PPS so we described only these scales.

The DASS21 is an instrument that screens for depression, anxiety and stress (Lovibond & Lovibond, 1995). It is presented in the form of a self-report questionnaire to be completed during the past week. It consists of 21 items rated from 0 to 3. Seven questions relate to depression (e.g., *"I couldn't seem to experience any positive feeling at all"*), seven to anxiety

(e.g., “*I felt I was close to panic*”) and seven others to stress (e.g., “*I found it hard to wind down*”). This makes it possible to obtain three scores (maximum score for each score = 21).

The CES-D scale is a short self-report scale designed to measure depressive symptomatology in the general population. This scale measures current levels of depressive symptomatology, with emphasis on the affective component, depressed mood (e.g., “*I felt sad*”). Participants rated themselves on a 4-point scale from 0 (rarely or none of the time) to 3 (most or all of the time).

The PSS assesses the extent that individuals believe their lives are overloaded, unpredictable, and uncontrollable (e.g., “*In the last month, how often have you found that you could not cope with all the things that you had to do?*”). Participants rated the items on a 5-point Likert scale (0 = *never*, 4 = *very often*), with higher scores indicating higher perceived stress.

5. Risk of Bias Within Studies

The PRISMA statement recommends that systematic reviews and meta-analyses include methods for assessing risk of bias within studies (Moher et al., 2009). To address this requirement, we used two standardized risk-of-bias tools: the CONSORT checklist (Moher et al., 2010), and the Risk Of Bias 2 (RoB2, A revised Cochrane risk-of-bias tool for randomized trials, Sterne et al., 2019). The two tools were completed by the first and last authors independently and cross-checked with a 95% agreement. The quality of reporting was assessed with the CONSORT checklist for nonpharmacologic studies (Moher et al., 2010). The CONSORT is a checklist of the 25 items that must be reported in a randomized Clinical trial report in order to improve the quality of RCTs reporting and to allow study replication (Plint et al., 2006). The checklist assesses the risk of bias based on the information contained in the

articles that enables to evaluate the quality of information reported. This checklist assesses the information following six sections: (1) title and abstract, (2) introduction, (3) method, (4) results, (5) discussion and (6) additional information. Each dimension is composed of several items (e.g., for the Introduction, "description of trial design such as parallel or factorial, including allocation ratio"). Each item was judged as *yes*, *no*, *NE* (i.e., not enough information to evaluate), or *NA* (i.e., Not applicable). An overall score was calculated as a percentage risk of bias for each study. Thus, a high percentage corresponds to a low risk of bias while a low percentage corresponds to a high risk of bias.

The RoB 2 (Sterne et al., 2019) was used to assess the risk of bias in a single estimate of an intervention effect reported from a randomised trial. The effect assessed is a comparison of two interventions, which we refer to as the experimental and comparator interventions, for a specific outcome or endpoint. The RoB 2 is structured into five bias domains: (1) Bias arising from the randomisation process, (2) bias due to deviations from intended interventions, (3) bias due to missing outcome data, (4) bias in measurement of the outcome and (5) bias in selection of the reported result. Each item of the five sections can be rated on 5 responses: *yes*, *probably yes*, *probably no*, *no*, and *no information*. This allows us to estimate the risk of bias for each dimension and then for the entire study. This risk can be "low risk" of bias, "high risk" of bias, or "some concern" of bias.

6. Risk of Bias Across Studies

To evaluate the Risk of Bias Across Studies, we followed the recommendations of Sterne and Egger (2001). We constructed a funnel plot with standardized mean differences as the *x* axis and standard errors as the *y* axis. A symmetrical plot showed an absence of bias, and an asymmetrical plot can show a presence of a specific form of bias – publication bias (but it can also be caused by selection bias, true heterogeneity, data irregularities, artefact or chance)

(Egger et al., 1997; Sterne & Egger, 2001). We adopted the convention of plotting intervention effects on the horizontal axis and the measure of study size on the vertical axis. For the funnel plot, we planned to use a regression method (Egger et al., 1997). To avoid the potential inflation of the Type I error rate, we wanted to use these methods only if there is a clear variation in study sizes, with one or more trials of medium or large size. In this case, we planned to perform trim and fill analyses to correct for the potential funnel plot asymmetry by computing a correct effect size estimate (Duval & Tweedie, 2000). This method enables to estimate and adjust the number and outcomes of missing studies in meta-analysis. Finally, we wished to use Orwin's (1983) failsafe N to determine the number of studies with null results (set at $d = 0$) needed to reduce the effect size to the smallest meaningful effect size (chosen as $d = .10$). We planned to use this methods with cautious because of its misinterpretation and misuse (Rothstein et al., 2005). However, due to the small amount of data, we were able to perform a funnel plot but were unable to test for skewness and perform the planned additional analyses.

7. Data Analyses

All analyses were performed using the R-studio software (version 3.4.4. for Windows). Effect sizes are expressed as Hedges' g (Hedges & Olkin, 1985). A standardized mean difference (SMD) for each group (experimental and control) was computed using the method of Morris (2008) by subtracting the baseline score from the score obtained at the end of the intervention and dividing the result by the pre-test standard deviation. Then, effect sizes were calculated by subtracting the SMD for the control group from the SMD for the experimental group. In addition, a correction of the g index was applied given the presence of small samples in the present meta-analysis. Thus, the adjusted g is calculated as follows: $g_{adj} = g - 3g/4(n_{\text{Experimental Group}} + n_{\text{Control group}} - 9)$ (Hedges & Olkin 1985). Effect size less than .2 represents a zero effect. A small effect size corresponds to an effect size of .2. A medium effect

size is .5. Finally, a large effect size is .5 (Hedges & Olkin 1985). The effect size independence problem was adjusted with the shifting unit method (Cooper, 1989). Multiple effect sizes obtained for the same sample were systematically averaged within each unit of analysis (Hedges & Olkin, 1985). Confidence intervals (95% IC) were reported to estimate the precision of the effect sizes (Szumilas, 2010). We set a conservative estimate of .7 as the pre-post correlation (ρ) for the distribution of effect sizes (Dunlap et al., 1996; Rosenthal & Rubin, 1991). Random-effects models were run on overall analyses for each outcome because the assumed assumption was that there was variability between individual effect sizes due to sampling errors in the studies and unmeasured random factors (Valentine et al., 2010). A mixed-effects model was run to perform the moderation analysis of the effect of interventions according to the type of ER. Chi-square tests were performed providing a Q statistic and including a p -value with a significance level at .05. An I^2 test was calculated, suggesting either: (a) moderate heterogeneity if the I^2 varied between 30%-60%; (b) substantial heterogeneity, if the I^2 was between 50%-90%; (c) considerable heterogeneity if the I^2 was between 75%-100% (J. P. T. Higgins et al., 2022). However, it should be noted that the I^2 is often biased in analyses with fewer than seven studies (Von Hippel, 2015).

To calculate the overall effect size of CBIs on ER, mathematical symbols of the data for the studies using a dysfunctional regulation scale were reversed. Then, for studies using both functional and dysfunctional ER scales, an effect size was calculated, which corresponded to the average of the two types of scales. Consequently, only one effect size per study was used. Analyses were performed if they involve at least three independent effect size (Higgins et al., 2003). As a result, our hypothesis regarding the effect of interventions on anxiety could not be executed because only two studies were included.

3. Results

1. Description of the Studies Included

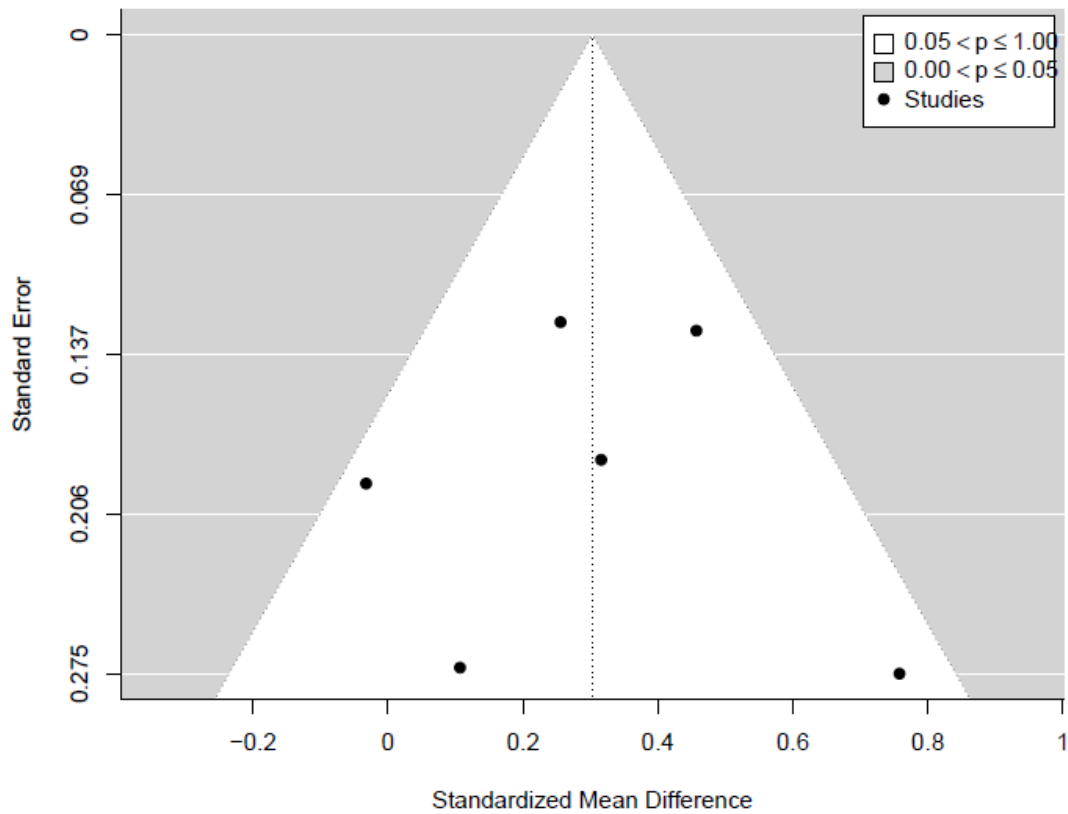
Only six studies met the inclusion criteria, and all were from journal articles. However this is the median number observed in meta-analyses (e.g., Davey et al., 2011; Ioannidis et al., 2007). The six studies reported 30 individual effect sizes from 6 independent samples, ranging in size from 40 to 162 participants ($N_{total} = 584$; experimental group = 275 vs. control group = 271). Overall, the studies included 429 women (73.46%). Participants had a mean age ranged from 20.5 years to 52.6 years ($M_{age} = 32.8$ years, $SD_{age} = 12.8$ years). Only one study involved a clinical sample, the five others involved nonclinical samples. Of the studies, three used interventions based on Neff and Germer's approach (Neff & Germer, 2013) and three used Gilbert's approach (i.e., CCT; Gilbert, 2014). None of the studies assessed emotional abilities. All of them used questionnaires evaluating functional ER strategies (i.e., cognitive reappraisal) and three evaluated a dysfunctional strategy (i.e., expressive suppression). Concerning the scales used, three of the studies used the ERQ (Hansen et al., 2021; Hasselberg & Rönnlund, 2020; Jazaieri et al., 2013), one used the CERQ (Torbaty et al., 2020), another the Meta-mood Scale (Wong & Mak, 2016) and the last the ER subscale of SD-WISE (Al-Refae et al., 2021). A total of three interventions indicated a significant impact on functional ER (Al-Refae et al., 2021; Hasselberg & Rönnlund, 2020; Torbaty et al., 2020) while two interventions showed no impact of interventions on functional ER measures (Jazaieri et al., 2013; Wong & Mak, 2016). Regarding studies measuring dysfunctional ER, two interventions had a significant impact of the intervention on the measure (Hansen et al., 2021; Jazaieri et al., 2013) while one intervention showed no impact on the dysfunctional ER measure (Hasselberg & Rönnlund, 2020).

2. Risk of Bias within Studies

Results of the CONSORT checklist tools indicated that one study was assessed as having a low risk of bias, i.e., with a percentage greater than or equal to 71.43, and that five studies were identified as having a moderate risk of bias, i.e., with a percentage between 42.86 and 71.43%. Cohen's kappa coefficient indicated a substantial agreement between authors ($K=.77$, CI 95% [.69, .84], $p < .001$; Landis & Koch, 1977). Results of the RoB2 showed that two studies presented high risk of bias, three presented some concerns and one presented low risk of bias. Cohen's kappa coefficient indicated perfect inter-authors agreement ($K=1$, CI 95% [1, 1], $p < .001$).

3. Risk of Bias Across Studies

Given the small number of studies per outcome (i.e., $k < 10$), performing Egger's test to test for funnel plot skewness could not be executed (Sterne et al., 2011). Consequently, for the analysis of publication bias, only a visual inspection of the funnel plot was possible (Figure 2). The funnel plot suggests a symmetrical distribution of effect sizes, this could indicate the absence of publication bias or that small studies are unlikely to overestimate their effect size. However, further analyses would have been necessary to confirm or not this visual analysis, but the number of publications does not allow it.

Figure 2*Funnel plot of Effect Size versus Standard Error*

4. Intervention Effects on Emotional Regulation

The overall effect size of the CBIs on ER was .3 ($k = 6$; $g = .3$, 95% CI [.12, .48], $Z = 3.31$, $p < .001$; Figure 3). The results showed that the interventions significantly impacted ER among the experimental groups compared to the control groups. In addition, moderate heterogeneity was observed ($Q(5) = 7.9$, $p = .16$, $I^2 = 36.73\%$). A moderator analysis using a mixed-effects model was performed on the type of ER (Borenstein et al., 2021). The results showed a small effect size of interventions on functional ER ($k = 6$; $g = .34$ (95% CI [.12, .57]),

$Z = 3.01, p = .003$) indicating a significant and positive impact of the interventions on the functional ER of the experimental groups compared to the control groups. However, a non-significant impact of the interventions on dysfunctional ER was observed ($k = 3, g = -.24, 95\%$ CI $[-.07, .559], Z = -1.51, p = .13$). Q_B statistic, which is analogous to an F-test (ANOVA), indicated that the individual effect sizes associated with the two types of ER did not significantly differ in their means, $Q_B(1) = 0.26, p = .608$. However, this analysis suffered from a low statistical power (causing mean effect size by ER type to be either underestimated or overestimated) and highlighted a substantial heterogeneity between estimates, $Q(7) = 16.54, p = .021, I^2 = 57.67\%$.

5. Intervention Effects on Other Mental Health Outcomes

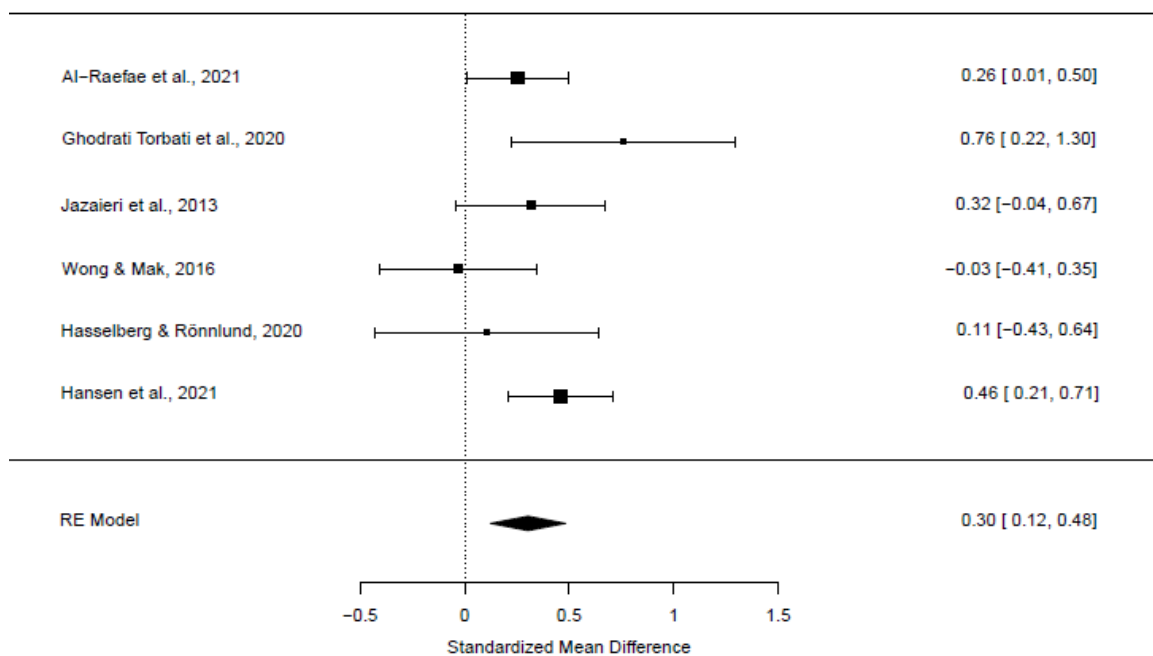
Secondary hypotheses were then examined, including measures of self-compassion, depression, anxiety, and stress. Analyses indicated a significant impact of the interventions on self-compassion with a mean effect size of $.51 (k = 5, g = .51, 95\%$ CI $[.296, .734], Z = 4.6, p < .001; Q(4) = 8.3, p = .08, I^2 = 51.82\%$). The results showed that the interventions had no significant effect on depression ($k = 3, g = -.26, 95\%$ CI $[-.58, .06], Z = -1.6, p = .11; Q(2) = 7.13, p = .03, I^2 = 71.95\%$). Nonetheless, a significant impact on the stress measure was observed. The results indicated an inverse effect size ($k = 4, g = -.39, 95\%$ CI $[-.69, -.09], Z = -2.56, p = .01; Q(3) = 8.89, p = .03, I^2 = 66.25\%$). As mentioned earlier, because of a lack of independent effect sizes ($k < 3$), the planned analysis on the effects of interventions on anxiety was not performed.

6. Moderator analysis

Given the number of studies included for this meta-analysis, the third objective of this study could not be achieved. Further studies are needed to assess the impact of type of intervention, control group and duration of intervention on ER.

Figure 3

Forest Plot of the overall effect size of the CBIs on ER compared with controls.



4. Discussion

Several meta-analyses have examined the effects of CBIs on a range of psychosocial outcomes and showed positive effects on several mental health indicators in clinical and non-clinical populations (Ferrari et al., 2019; Kirby, Tellegen, et al., 2017). The challenge today is to understand the transdiagnostic processes involved in their effectiveness as can be the case

with ER. The evaluation of transdiagnostic processes is a recent framework included in research on ER. This may explain why only six studies were identified and included in this meta-analysis emphasizing the importance of pursuing interventional studies on the effect of CBIs on compassion.

The results showed that there appears to be an effect of CBIs on ER and specifically on the functional strategies of ER such as cognitive reappraisal. Our results reveal a significant effect of CBIs on ER (overall $g = .3$). According to Cohen's criteria (1992), this overall effect size is small and is associated with moderate heterogeneity in observed effect sizes. Although these results should be considered with some caution in light of the main limitation of this study concerning the number of studies included, these results are consistent with previous studies with cross-sectional designs which showed that self-compassion shared a direct and positive relationship with cognitive reappraisal (e.g., Diedrich et al., 2014; Sirois et al., 2019). Indeed, previous studies have shown that self-compassionate individuals tend to cognitively reappraise challenges and difficult emotional situations as less stressful and upsetting, which allows them to downregulate their negative emotions (Finlay-Jones, 2017). CBIs would therefore allow individuals to engage more in functional ER strategies such as cognitive reappraisal. However, besides the low statistical power and heterogeneity observed in our analyses, our results do not suggest a significant effect on dysfunctional ER strategies.

Our results are not entirely consistent with what has been observed in previous studies (e.g., Bakker et al., 2019). For example, the study by Bakker and colleagues explored the impact of self-compassion on depression via the moderation of several functional and dysfunctional ER strategies. Their results show that only brooding ruminations, experiential avoidance and acceptance appear to mediate the relationship between self-compassion and depression. However, their results showed a significant pathway between self-compassion and cognitive reappraisal, but the effect of cognitive reappraisal on depressive symptoms was not significant.

Cognitive reappraisal would therefore not be a key strategy for the effect of self-compassion on the reduction of depressive symptoms. These antagonistic results remain to be explored, especially since the results of our meta-analysis do not reveal any effect of CBIs on depressive symptoms. Indeed, if CBIs allow to increase ER by developing more functional ER strategies, and by decreasing dysfunctional strategies, future studies are needed to evaluate which specific strategies they help to develop or reduce. Future studies should identify which strategies of ER are developed by CBIs and their role on the targeted symptoms. Importantly, the effect of CBIs on functional ER strategies found in our meta-analysis is small and could be explained by the lack of data regarding other indicators of ER. Several tools exist that assess one or more of these facets. For example, the framework of emotional strategies and the framework of emotional abilities are purported to measure distinct facets of ER (Bardeen & Fergus, 2014). However, our research did not identify any studies that used scales assessing ER abilities such as the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) or the Emotion Regulation Skills Questionnaire (Grant et al., 2018). Yet, it is precisely deficits in ER abilities that have been shown to be implied in the development and maintenance of a wide range of psychological difficulties and disorders (Berking et al., 2008). In addition, some cross-sectional and longitudinal studies have already shown that self-compassion increases these abilities (for a meta-analysis see, Inwood & Ferrari, 2018). For example, the study of Finlay-Jones et al. (2015) showed that self-compassion indirectly impacts stress via a reduction in ER difficulties. Their results suggest that people with self-compassion have more ER abilities, such as acceptance of painful emotions, and have fewer difficulties in ER. Finally, our results showed a significant effect of CBIs on self-compassion, with a medium effect size ($g = .51$, Cohen, 1992). These results are in line with previous meta-analysis showing moderate effect sizes of the effect of CBIs on self-compassion (for a meta-analysis see, Ferrari et al., 2019; Kirby et al., 2017). Our results concerning the effects of CBIs on stress are also in line with the results of previous

studies although our effect size is smaller than those identified in those studies (Ferrari et al., 2019). Finally, our results do not show significant effects of CBIs on depressive symptoms with, which is inconsistent with the body of evidence in the literature. For example, meta-analyses by Kirby and colleagues (2017) and Ferrari and colleagues (2019) revealed moderate effect size regarding the effect of CBIs on depression. However, these meta-analyses include 21 and 27 CBIs RCTs respectively and tests for heterogeneity were not significant for depression in the study of Kirby et al. (2017). The absence of results concerning the effect of CBIs on depression in our study can be explained by the fact that only three of the six studies included in our meta-analysis measured depression, including two studies that used the DASS21 and one study that used the CES-D. Therefore, our results do not reflect what can be observed in the literature and we invite readers to refer to previous meta-analyses that specifically selected RCTs that evaluated this outcome. Nevertheless, these results reveal that, while many studies evaluate the effect of CBIs on symptomatic outcomes, few focus on mediating processes such as ER. Future studies could therefore incorporate the evaluation of mediating variables to understand more precisely the processes involved in the efficacy of CBIs.

5. Limitations

There are several limitations that need to be considered in this meta-analysis. First, although some authors agree that two studies may be enough to conduct a meta-analysis (Valentine et al., 2010), this quantitative review is limited by the number of studies included. The use of rigorous criteria forced us to include only RCTs and to exclude 114 studies without control arm or with a single case design. Our research criteria regarding ER also restricted the identification of studies that evaluated specific ER strategies such as ruminations or cognitive reappraisal. Future meta-analyses may use keywords that include specific functional and dysfunctional ER strategies and include a wider range of studies. Second, our database searches

were limited to English articles, which also led us to exclude one study that met our other criteria (Rahmani et al., 2020). Third, of the six included studies, five used an inactive TAU or waitlist control group and only one used an active control group, which may have overestimated efficacy compared with other active control conditions (Boot et al., 2013; Lindquist et al., 2007). The absence of active control group does not allow for the conclusion that CBIs allow for the development of self-compassion or RE through the use of specific practices such as compassionate imagery, compassionate meditations, or soothing breathing rhythm. Future studies should be based on a design using active control groups, i.e., containing the nonspecific properties of the intervention (Lindquist et al., 2007). Fourth, our search criteria for this meta-analysis were restricted to self-report measures of ER; which excluded other studies that used other types of ER measures such as physiological measures (Rough et al., 2019; Seeley et al., 2015). This limitation can be overcome by future studies as discussed in the future directions section. A further limitation of this review was that we were unable to assess for the effect of specific moderators (e.g., intervention type and length and the control group form) given the small number of studies include. However, these analyses remain a major issue for clinical research, as they allow for the refinement of the evaluation of these interventions and a better understanding of the setting in which they are most effective.

6. Futures directions

The results of this meta-analysis suggest that CBIs allow for the development of functional ER strategies. However, we would like to address several considerations that may improve the quality of future meta-analysis and interventional studies. These future studies may benefit from recent modelling of ER. For example, a growing number of researchers are no longer interested in the functional or dysfunctional value of ER strategies but rather in the way they are used in a flexible way (Chen & Bonanno, 2021). A flexible ER would depend on three

components: (a) the ability to evaluate contextual demands, or context sensitivity; (b) the availability of a range of strategies that may be implemented to meet those demands, or repertoire; and (c) the capacity to monitor the efficacy of a chosen strategy and modify as needed, or feedback responsiveness (Bonanno & Burton, 2013). The recent study of Chen and Bonanno highlighted different profiles of flexible ER according to the level of abilities on these components and which would have an impact on the depressive and anxious symptoms (S. Chen & Bonanno, 2021). Future studies on the efficacy of CBIs could be based on these profiles and components to better understand how these practices develop ER.

These future studies may also diversify their methods of assessing ER. Indeed, although questionnaires remain among the most common tools used in clinical settings to assess ER, they consider ER as a trait (i.e., a relatively stable and trans-situational tendency of an individual; Colombo et al., 2020). Alternatives to these assessment tools may be found through ecological momentary assessment (EMA, Shiffman et al., 2008), “a procedure that makes it possible to collect repeated inputs of thoughts, feelings, and behaviors close in time to the experience and in real-life contexts” (Colombo et al., 2020, p. 31). These assessment methods may include other types of measures that assess ER such as physiological measures (Raugh et al., 2019; Seeley et al., 2015), for example heart-rate variability (HRV). The HRV appears to be an objective measure proposed as an index of ER capacity (Visted et al., 2017). Indeed, several studies have shown that compassion is positively linked with HRV, although the reliability of the results of these studies remains too weak (for a meta-analysis see, Di Bello et al., 2020).

Finally, this meta-analysis highlighted several types of CBIs that in the future can be evaluated together to identify what distinguishes them. Indeed, not all CBIs are based on the same theoretical models, do not use the same practices or combinations of practices, or the same delivery format (for a meta-analysis see Kirby et al., 2017). The moderation analyses planned for this purpose in this study could not be carried out due to a lack of studies and are still

necessary to better understand the effects of these interventions and, above all, to identify the format in which they are most effective and among which public. Thus, future studies are needed to assess whether differences in theoretical frameworks, practices or combinations of practices also produce distinct effects or mobilize different processes according to the mental health indicators being assessed.

7. Conclusion

Our meta-analyse extends prior reviews and meta-analyses on compassion by introducing the effect of CBIs on ER. The limited number of articles included in this meta-analysis reflects the state of the literature on the subject and calls for future studies to assess the effect of CBIs on ER. The results of this meta-analysis encourage to conduct further intervention studies based on robust methodologies using active control groups and other intervention to control non-specific effects and to evaluate the specificity of these interventions compared to other interventions such as CBT. In line with past research, we can conclude that compassion-based practices can help develop ER. Future studies will certainly enable to discover how and on which aspects of ER they act more specifically.

This meta-analysis showed that, to date, only few studies have evaluated the effect of compassion-based interventions on emotional regulation. It also revealed the heterogeneity of the interventions, and the lack of robustness regarding the quality of the studies. These results led us to conduct the following studies that evaluate the effect of a compassion-focused program on mental health indicators and emotional regulation in subclinical and clinical populations. For the first interventional study, we conducted a preliminary study to evaluate the psychometric qualities of the assessment tools that we created and that were necessary for the design we planned to use.

Chapter 6: Psychometric properties of visual analogue scales assessing emotional processes

Marine Paucsik¹, Rebecca Shankland^{2,3} & Céline Baeyens¹

Manuscript in preparation

¹ Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, LIP/PC2S, 38000 Grenoble, France

²Univ. Lumière Lyon 2, DIPHE, 69676 Bron Cedex, France

³Institut Universitaire de France

1. Résumé

Les recherches cliniques ont besoin d'outils d'évaluation courts et faciles à utiliser. Malheureusement, la plupart des questionnaires standardisés ne sont pas adaptés à tous les contextes cliniques et à toutes les méthodologies. Les échelles visuelles analogiques (EVA) semblent être une alternative pertinente, mais peu d'échelles évaluant les symptômes cliniques ont été évaluées à ce jour. Notre étude consiste donc à tester la validité de plusieurs EVAs évaluant l'humeur, la régulation émotionnelle, la flexibilité cognitive et l'efficacité émotionnelle sur un échantillon non-clinique. Nous avons testé les propriétés psychométriques des EVAs en évaluant : (1) la validité convergente en corrélant les scores des EVAs à leurs échelles de références, (2) la validité discriminante en testant la corrélation des EVAs entre elles et entre des échelles de références, (3) l'accord des mesures avec la méthode de Bland Altman. Au total, 127 participants ont été recrutés pour l'enquête. L'échantillon était composé d'adultes âgés de 18 à 75 ans ($M = 38,5$ $SD = 13$) avec une majorité de femmes (79,7%). Les validités convergente et discriminante des échelles ont pu être vérifiées pour toutes les EVAs. Cependant, seules les échelles de stress et de régulation émotionnelle ont montré un accord fiable avec leurs échelles de référence. La conception de l'étude n'a pas permis de tester la reproductibilité et la répétabilité des EVAs. Les EVAs testées dans ces études sont des instruments simples et valides pour évaluer la dépression, le stress, l'anxiété, la régulation émotionnelle, la flexibilité cognitive et l'efficacité émotionnelle. Les études futures devraient tester la reproductibilité, la répétabilité et la validité longitudinale de ces EVAs dans des contextes cliniques afin de détecter leur sensibilité dans les dimensions qu'ils évaluent.

Mots-clés : Régulation émotionnelle; Evaluation; Echelle visuelle analogique; Humeur; Flexibilité cognitive

2. Abstract

Clinical research needs short and easy-to-use assessment tools. Unfortunately, most standardized questionnaires are not adapted to all clinical settings and methodologies. Visual analog scales seem to be a good alternative, but few scales assessing clinical symptoms have been evaluated to date. Our study therefore consists of testing the validity of several VAS assessing mood, emotional regulation, cognitive flexibility and emotional efficacy and using a cross-sectional analysis on a non-clinical sample. We tested the psychometric properties of the VAS by testing: (1) convergent validity by correlating the scores of the VAS to their respective gold-standards, (2) discriminant validity by testing the correlation of the VAS between them and between their gold-standards and, (3) measure's agreement with Bland Altman methods. A total of 127 participants were recruited for the survey. The sample consisted of adults aged between 18 and 75 ($M = 38.5$ $SD = 13$ with a majority of women (79.7%). The convergent and discriminant validities of the scales could be verified for all the VAS. However, only the stress and emotional regulation VAS showed reliable agreement with their reference scales. The design of the study could not test the reproducibility and repeatability of the VAS. The VAS tested in these studies are simple and valid instruments for the assessment of depression, stress, anxiety, emotional regulation, cognitive flexibility and emotional efficacy. Future studies should test the reproducibility, repeatability, and longitudinal validity of these VAS in clinical settings to detect changes in the dimensions they assess.

Keywords: Emotion regulation; Assessment; Visual analog scale; Mood; Cognitive Flexibility

3. Introduction

Clinical trials are increasingly difficult to conduct, with costs rising largely due to the time and resources required to conduct them (Bentley et al., 2019; Collier, 2009). More

specifically, study protocols sponsored by a public institution (hospital or University) and single center studies encountered more difficulties overall and more scientific difficulties in particular (Cullati et al., 2016). One of the reasons for its difficulties is data collection, which is the second major difficulty encountered in clinical studies (Cullati et al., 2016) and is particularly related to the loss of participants during the study. Unfortunately, attrition in randomized trials is not without consequences; it can introduce bias and reduce the power of the study, then affecting the generalizability, validity and reliability of the results (Fewtrell et al., 2008). Thus, to reduce attrition in randomized trials, several strategies have been identified, including reducing the time required to complete questionnaires (Bructon et al., 2011). Indeed, meta-analytic findings indicate participant response rates are generally lower for lengthier questionnaires (Edwards, et al. 2002; Rolstad et al. 2011). Thus, clinicians increasingly need short and efficient methods to assess symptom dimensions in both applied research and clinical settings. In addition, brief measures can be equally or more valid than longer measures of the same construct (Smith et al. 2012). Unfortunately, most standardized questionnaires are not adapted to all clinical settings and methodologies.

For example, many questionnaires exist to assess anxiety-depressive symptoms and the processes they involve, however they are often too long and not suitable for use in clinical practice or in ecological settings (Trull & Ebner-Priemer, 2009).

In addition, these questionnaires are often based on Likert scales (Gratz & Roemer, 2004; Lovibond & Lovibond, 1995). Although Likert scales are one of the most widely used evaluation scales in surveys, they have some disadvantages. Indeed, they are generally based on response categories that allow participants to select the one that best reflects their state with respect to the dimension being evaluated (Likert, 1932). They thus produce ordinal measures and leave participants with a few response options, which can not only alter the evaluation but also have a negative impact on the statistical analysis methods and the results obtained (Allen

& Seaman, 2007). In fact, these response categories will lead to specific response styles, i.e., systematic tendencies of respondents in their choice of certain response options (Paulhus, 1981). For example, respondents are more likely to choose neutral or intermediate response categories (Albaum, 1997; Greenleaf, 1992) or to provide extreme responses (Greenleaf, 1992). These response styles lead to biased responses, which prevent the true characteristics or traits of respondents from being obtained (Paulhus, 1981).

Meanwhile, visual analogue scales (VAS) are scales developed to obtain measurements with more variability, and use a line continuum instead of the five or seven categories used by Likert-type scales to measure latent traits (Flynn et al., 2004; Guyatt et al., 1987; Jaeschke et al., 1990). Researchers claimed that allowing participants to place their responses anywhere on a continuous line not only makes VAS free from the problem of determining the number of response categories, but also produces continuous- and interval-level measurement data (e.g., Myles et al., 1999; Price et al., 1983; Reips & Funke, 2008).

Compared to standard Likert-scale questionnaires, visual analogue scales provide several advantages, including simpler and more intuitive completion; a high degree of resolution; non-restriction of respondents to predefined categories; and greater sensitivity to change over time (Fähndrich & Linden, 2008; Pfenning et al., 1995). In mood disorders specifically, visual analogue scales have high reliability and validity, whilst allowing good compliance due to their simplicity (Ahearn, 1997).

More and more clinical studies are therefore using visual analog scales to assess stress, depression, anxiety or mood (Facco et al., 2011; Hornblow & Kidson, 1976; Huang et al., 2019; Lesage et al., 2012; Lingjærde & Førland, 1998; May & Pridmore, 2020; Williams et al., 2010). Indeed, the VAS has been shown to be effective in assessing various health and social outcomes such as pain intensity. (e.g., Ismail et al., 2015; Kelly, 1998; Zampelis et al., 2014),

stress (e.g., Lesage et al., 2012), quality of life (e.g., Abdel-Fattah et al., 2007; Devesa et al., 2013) and happiness (e.g., Sakamoto et al., 2017).

VASs are particularly useful when assessing a single construct with many perceptible gradations and research has shown that unipolar VASs ("Not at all Anxious" to "Extremely Anxious") are more easily understood than bipolar VASs ("Extremely Calm" to "Extremely Anxious") (Revill et al., 1976). Although a VAS may be oriented vertically, the most common form is a horizontal line. In fact, horizontal scales have been shown to produce a more uniform distribution of scores and to be more sensitive than vertical scales (Scott & Huskisson, 1976; Wewers & Lowe, 1990).

The VAS has numerous advantages over self-reported questionnaires including: minimal language requirements, ease of understanding, visual format which can be easily compared over time, minimal administration time for a clinician and minimal completion time for an individual. Their simplicity promotes high compliance and they have been shown to be reliable and valid measurements of mood symptoms (Ahearn, 1997).

Regardless of the qualitative properties of the VAS, it is essential to assess its psychometric properties. Several investigations that have assessed VAS for stress or depression have revealed interesting psychometric properties and good correlations between the VAS for stress or depression and other tools used to assess stress, such as the 14-item PSS (Lesage et al., 2012) and depression such as the HADS. These characteristics make them ideal for use in a diary format questionnaire where patients frequently record symptoms and outcomes.

This type of measure was therefore initially developed for the evaluation of "outcome variables". However, it now seems appropriate to generalize this type of measure to process measures aimed at understanding the mediating processes (or mechanisms) by which outcomes are obtained.

Over the past decade, researchers in clinical psychology have become increasingly interested in studying the role of emotion regulation (ER) in psychopathology (Cludius et al., 2020). Findings from this line of research show that psychological disorders are related to deficits in ER (for reviews see, Aldao et al., 2010; Dryman & Heimberg, 2018). Thus, it has been hypothesized that a consequence of (maladaptive) ER is an increased risk for the development and/or maintenance of psychopathology. Due to the apparent pervasiveness of ER difficulties in psychopathology, several authors have proposed that ER be considered a transdiagnostic process (Aldao et al., 2010).

The field of emotion regulation is a rapidly growing area of research. This research requires the use of reliable, short measures that can be conducted in ecological settings (Aldao, 2013; Tull & Aldao, 2015). In this specific field of research, several - relatively long - instruments exist, such as the Difficulties in Emotion Regulation Scale (DERS, Gratz & Roemer, 2004), which calculates a global score of difficulty in regulating one's emotions.

Moreover, other research suggests that improvements in emotion regulation are concomitant with improvements in cognitive flexibility and feelings of personal efficacy. Thus, this study aimed to assess the concordance of several visual analogue scales assessing stress, anxiety and depression and underlying processes such as emotional regulation difficulties, cognitive flexibility and emotional self-efficacy with their standardized measurement scales.

We expected that, all of the VAS would show adequate convergent validity compared to their corresponding standardized measurement scales. We also expect that the VAS of stress, anxiety and depression will be positively correlated with the VAS of emotional regulation difficulty and negatively correlated with the VAS of cognitive flexibility and emotional efficacy. We also hypothesized that the VAS of emotional regulation difficulty will be negatively correlated with the VAS of cognitive flexibility and emotional efficacy.

4. Methods

7. Transparency and openness

This study's design and its analysis were pre-registered on Open Science Framework (OSF, https://osf.io/pvgkm/?view_only=f074bd840e50483c86fbe5d41979de92). All data and research materials are available on the OSF Project.

8. Participants

This study was conducted with the approval from the Research Ethics Committee of Grenoble Alpes University (Approval number: CERGA-Avis-2020-1) and in accordance with the Declaration of Helsinki. This is a cross-sectional analysis prior to a single case study conducted in a subclinical population (Paucsik et al., 2021). Informed consent was given at the three measurement times of this online longitudinal study which collected data on three occasions at six months interval during the year 2020 and 2021. The study began on May 4, 2020, during the first lockdown in France. Eligibility criteria required that the participants be: 1) at least 18 years old; 2) fluent in French; and 3) certifying that they had read the informed consent and agreed to participate in the study. A total of 127 participants were recruited for the survey. The sample consisted of adults aged between 18 and 75 ($M = 38.5$ $SD = 13$ with a majority of women (79.7%). Among the participants, .8% had a junior high school certificate, 3.1% a vocational certificate, 11.7% a high-school degree, 32.8% a bachelor's degree, 27.3 a master's degree and 23.4% a postgraduate degree.

9. Procedure

Prior to completing the study, an information note explaining the study and the informed consent was given to participants. The informed consent allowed participants to withdraw at any time without having to justify their withdrawal. They were also assured that the data would

remain anonymous. After reading the information note and giving consent, participants were invited to complete this online study by answering several questionnaires. The online questionnaire required responses to all questions to limit missing data. Survey respondents were recruited through Snowball sampling by email.

10. Measures

Depression, anxiety, stress, emotion regulation difficulties, cognitive flexibility and emotional self-efficacy Visual Analogue Scale (VASs). In order to make short daily measures of these different dimensions, we created a single-item VAS for each of them. Each VAS consisted of asking participants their level of depression (e.g., *Indicate your average level of depression over the past week*), anxiety (e.g., *Indicate your average anxiety level over the past week*), stress (e.g., *Indicate your average stress level over the past week*), difficulty in regulating their emotions (e.g., *Indicate your level of difficulty in regulating your emotions, i.e. your difficulties in decreasing, maintaining or increasing certain emotions over the past week*), cognitive flexibility (e.g., *Indicate your ability to be cognitively flexible in difficult situations, i.e. being able to look at the situation from several angles, to step back, to think of new solutions*), confidence about their emotional skills (e.g., *Indicate how confident you were in using your emotional skills, how confident you are in identifying, understanding, using, regulating your emotions*). Participants were asked to rate the intensity and frequency of their experience over the past two weeks by making a mark on a 100 mm unmarked line.

Depression, Anxiety and Stress Scale (DASS-21, Lovibond & Lovibond, 1995). The DASS-21 is a self-administered questionnaire that measures the severity of depression (e.g., *I couldn't seem to feel anything positive*), anxiety (e.g., *I worried about situations in which I might panic and make a fool of myself*), and stress (e.g., *I had trouble calming down*) during the past week. Each item is scored from 0 (did not apply to me at all in the past week) to 3 (applied to me very

often or most of the time in the past week). Reliability was checked by Cronbach's α for the measurement items of the three subscales. They were .88 for depression, .77 for anxiety, and .83 for stress.

Emotional Regulation Difficulties Scale (DERS, Gratz & Roemer, 2004; Victor & Klonsky, 2016). The DERS is a self-reported multidimensional scale of emotional regulation skills. The DERS examines six emotion regulation difficulties: (1) unacceptance of negative emotions (e.g., *When I'm upset, I become embarrassed for feeling that way*), (2) difficulty engaging in goal-directed behaviors in the presence of negative emotions (e.g., *When I'm upset, I have difficulty getting work done*), (3) difficulty controlling impulsive behaviors in the presence of negative emotions (e.g., *When I'm upset, I become out of control*), (4) limited access to emotion regulation strategies perceived as effective (e.g., *When I'm upset, I believe that I will remain that way for a long time*), (5) lack of emotional awareness (e.g., *I pay attention to how I feel*), and (6) misunderstanding of one's emotions defined as lack of emotional clarity (e.g., *I have no idea how I am feeling*). Lower scores indicate the presence of difficulties in emotion regulation. The DERS is a quick and simple instrument to complete. THE DERS-SF (Victor & Klonsky, 2016a) is the short version and thus contains 18 items scored on a five-point Likert scale. Studies support its fidelity (high internal consistency), temporal stability, convergent validity, and predictive validity with adults (Gratz & Roemer, 2004). Reliability was verified by Cronbach's α for measure items and was .82.

The Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010). The CFI is a 20-item self-report scale designed to be a brief self-report measure of the type of cognitive flexibility necessary for individuals to successfully challenge and replace maladaptive thoughts with more balanced and adaptive thinking (Dennis & Vander Wal, 2010). It is designed to measure three aspects of cognitive flexibility with two factors : the control subscale (1) the tendency to perceive difficult situations as controllable (e.g., *When I encounter difficult*

situations, *I feel like I am losing control*), and two alternatives subscales (2) the ability to perceive multiple alternative explanations for life events and human behavior (e.g., *I consider all the available facts and information when attributing causes to behavior*), and (3) the ability to generate multiple alternative solutions to difficult situations (e.g., *I consider multiple options before making a decision*). This measure has demonstrated good internal consistency and convergent construct validity with the Cognitive Flexibility Scale (CFS; Martin & Rubin, 1995) in a student sample, a clinical sample, and a non-clinical sample (Dennis & Vander Wal, 2010, Johnco et al., 2014b). High scores on this scale indicate greater cognitive flexibility during stressful situations; low scores indicate greater cognitive rigidity associated with less cognitive flexibility during stressful situations (Dennis & Vander Wal, 2010). Reliability was verified by Cronbach's α for measure items and was .87.

The Emotional Efficiency Scale (ESE; Kirk, Schutte, & Hine, 2008). The ESE is a Likert-type scale with 32 items, eight of which represent each of the four branches of the Mayer and Salovey (1997) and Mayer et al.'s (2004) model. Items focused on (1) perceiving emotions in self and others (e.g., *Correctly identify your own positive emotions*), (2) using emotions to facilitate thought (e.g., *Use positive emotions to generate good ideas*), (3) understanding emotions and emotional knowledge in the self and others (e.g., *Understand what causes your emotions to change*), and (4) regulating emotions in the self and others (e.g., *Help another person to regulate emotions when under pressure*). For each item, participants rate their confidence in being at the present able to carry out functions described by the items on a 5-point scale in which a "1" indicates "not at all" and a "5" indicates "very". Reliability was verified by Cronbach's α for measure items and was .94.

11. Statistical analysis

Data were analysed using JAMOVI (The Jamovi Project, 2020).

Sample size

To obtain an effect for t-tests correlation analyses with an average effect size of .3 and acceptable power (i.e., with alpha set at .01 with Bonferroni corrections), the calculated sample size required was 105. Sensitivity analyses performed on G*Power indicated that with these parameters, effect sizes of $d = .6$ could be detected if they existed. Because usual drop-out rates for online studies, we aimed to include 20% more than the required number, or 128 participants.

Convergent validity

We calculated the Pearson correlation coefficient (with corresponding 2-tailed p-values) between each VAS score and the total scores of their associated “gold-standard” scales.

Discriminant validity

In order to verify the divergent validity of our VASs, we will also calculate Pearson coefficients between our VASs and the other standardized scales.

Cross-informant agreement

To determine the agreement between the VASs and their gold-standards associated, a Bland-Altman was constructed. In this graphical method, the differences between the two scores (i.e., VAS depression and DASS21 depression) are plotted against the averages of the two scores. (Bland & Altman, 1999).

5. Results

1. Convergent Validity

Scores indicate the Pearson correlation coefficient between VAS depression, VAS anxiety and VAS stress and the DASS21 scale are presented in Table 1. All correlations are significant at the $p < .001$ level. The VAS depression is strongly correlated with DASS21-

depression ($r = .724$), the VAS anxiety is strongly correlated with DASS21-anxiety ($r = .513$) and the VAS stress is also strongly correlated with DASS21-stress ($r = .643$). We also calculated Pearson correlation coefficient for other VASs. VAS difficulties in emotion regulation is strongly correlated with DERS ($r = .451$). VAS cognitive flexibility is strongly correlated with CFI ($r = .515$). VAS emotional self-efficacy is strongly correlated with ESE ($r = .401$).

Table 1

Descriptive statistics and convergent validity (Pearson's correlation) between the VAS depression, VAS anxiety, VAS Stress and DASS21

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1.VAS depression	127	8.74	7.23	—				
2.VAS anxiety	127	13.3	6.49	.468*	—			
3.VAS Stress	127	13.1	6.55	.421*	.809*	—		
4.DASS21 Depression	127	12.1	4.04	.724 *	.456*	.434*	—	
5.DASS21 Anxiety	127	10.2	3.02	.517*	.513*	.500*	.628*	—
6.DASS21 Stress	127	13.4	3.62	.463	.565*	.643*	.532*	.660*

Note. * $p < .001$

2. Discriminant validity

Scores indicate the Pearson correlation coefficient between all the VASs are presented in Table 2. The results show correlations in the direction of our assumptions. However, the correlation between VAS depression and VAS cognitive flexibility and the correlation between VAS anxiety and VAS cognitive flexibility did not correlate significantly. Scores indicate the Pearson correlation coefficient between all the VASs and the others scales are presented in Table 3. The results show correlations in the direction of our assumptions. However, the

correlation between VAS anxiety et VAS Stress and the emotion self-efficacy scale did not correlate significantly

Table 2

Descriptive statistics and divergent validity (Pearson's correlation) between al the VASs

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. VAS depression	127	8.74	7.23	—				
2. VAS anxiety	127	13.3	6.49	.468***	—			
3. VAS Stress	127	13.1	23.6	.421***	.809***	—		
4. VAS DER	127	39	4.04	.440 ***	.466***	.447***	—	
5. VAS CF	127	91	30.1	-.171	.148	-.221*	-.487***	—
6. VAS ESE	127	91.2	15.9	-.199*	-.257**	-.199*	-.507***	.491***

Notes. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3

Descriptive statistics and divergent validity (Pearson's correlation) between the VASs and the others scale

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	VAS depression	VAS anxiety	VAS Stress	VAS DER	VAS CF	VAS ESE
DASS21 depression	127	12.1	4.02	.724***	.456***	.434***	.374***	-.310***	-.318***
DASS21 anxiety	127	10.2	3.02	.517 ***	.513***	.500***	.491***	-.215*	-.342***
DASS21 stress	127	13.4	6.62	.463 ***	.565***	.643***	.582***	-.304***	-.302***
DERS	127	40.2	9.60	.300 ***	.308***	.330***	.451***	-.350***	-.457***
CFI	127	103	13.4	-.233***	-.260**	-.350***	-.413***	.515*** *	.355***
ESE	127	91.2	15.9	-.230**	-.129	-.105	-.266**	.251**	.401***

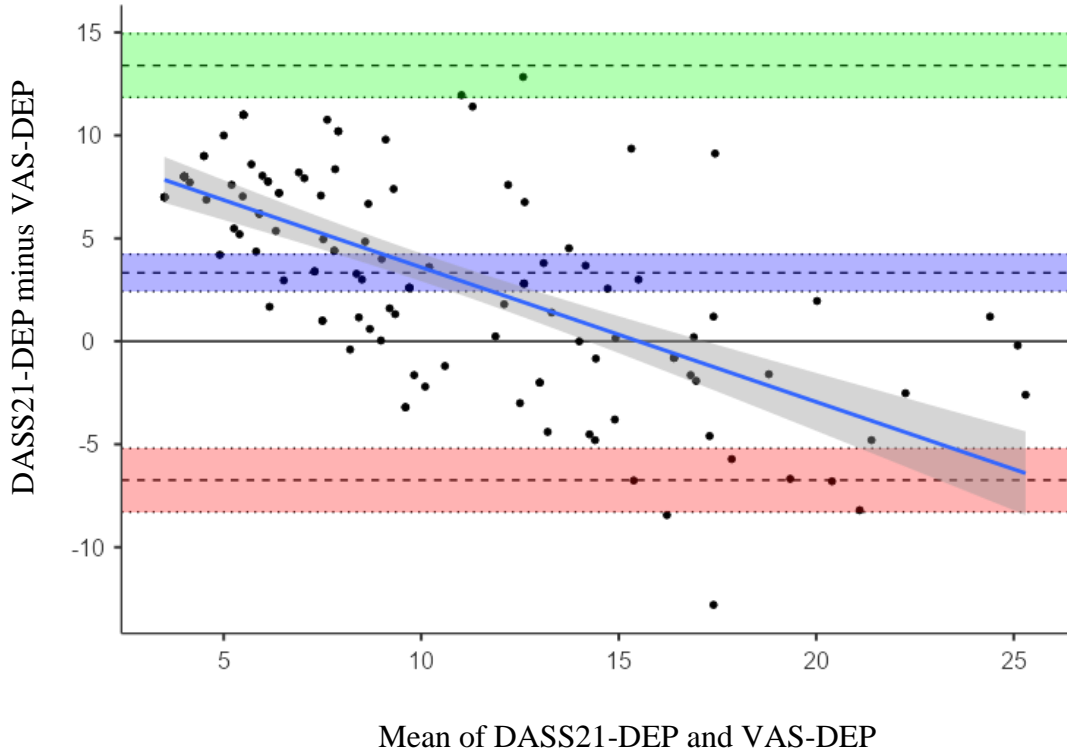
Notes. * $p < .05$, ** $p < .01$, *** $p < .001$

3. Cross-informant agreement

Figure 1 to 6 shown the mean difference between the VAS and their gold-standards scale. As shown in Figure 1, the mean difference between the VAS-DEP and the DASS21-depression is 3.33 (SD = 5.14) the DASS21-depression being higher on average. The 95% confidence interval is between 2.42 and 4.23, so there seems to be a significant underestimation with the VAS-DEP to measure anxiety. As shown in Figure 2, the mean difference between the VAS-ANX and the DASS21-anxiety is -3.04 (SD = 5.58), the DASS21-anxiety being lower on average. The 95% confidence interval is between -4.02 and -2.06, so there seems to be a significant overestimation with the VAS-ANX to measure anxiety. As shown in Figure 3, the mean difference between the VAS-STRESS and the DASS21-stress is .38 (SD = 5.05). The 95% confidence interval is between -.509 and 1.26, so there does not appear to be a significant overestimation with the VAS-STRESS to measure anxiety. As shown in Figure 4, the mean difference between the VAS-DER and the DERS is 1.59 (SD = 21.3). The 95% confidence interval is between -2.41 and 4.99, so there does not seem to be a significant overestimation with the VAS-DERS to measure emotion regulation difficulties. As shown in Figure 5, the mean difference between the VAS-CF and the CFI is 12.8 (SD = 27), the CFI being higher on average. The 95% confidence interval is between 7.56 and 16.6, so there seems to be a significant underestimation with the VAS-CF to measure cognitive flexibility. As shown in Figure 6, the mean difference between the VAS-ESE and the ESE is 11.3 (SD = 26.4), with the ESE being higher on average. The 95% confidence interval is between 6.63 and 15.9, so there seems to be a significant underestimation with the VAS-ESE of measuring emotional efficacy.

Figure 1

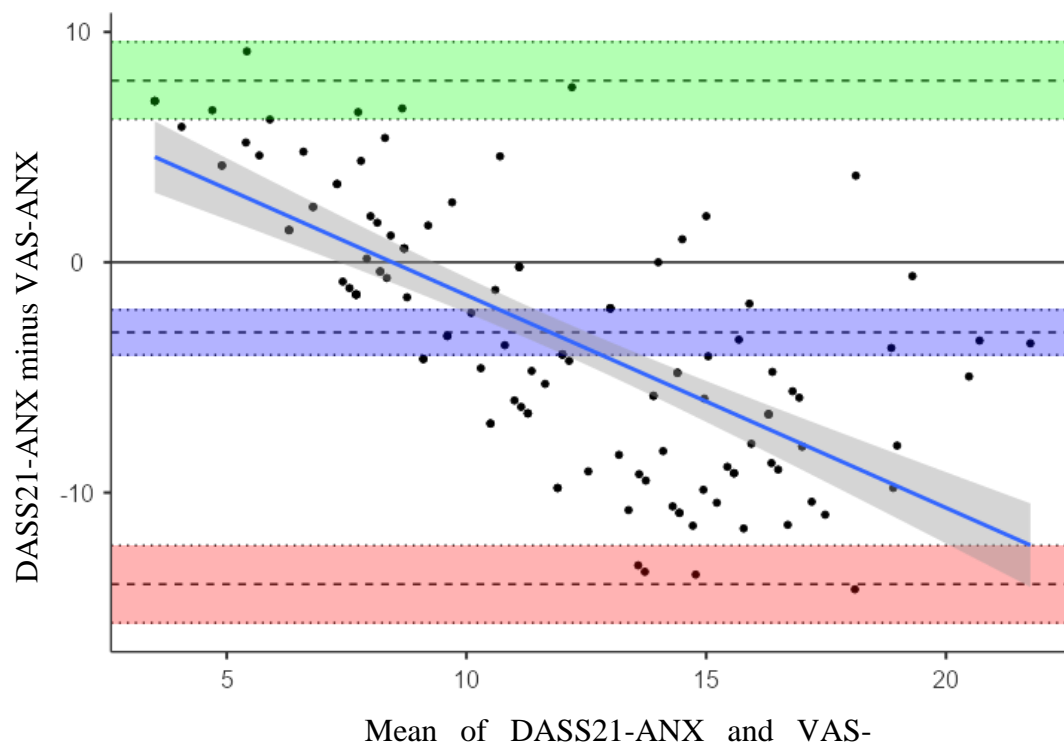
Bland-Altman plot showing the mean difference and the 95% limits of agreement between DASS21-Depression and VAS-depression



Notes. VAS-DEP = VAS depression; DASS21-DEP = DASS21-depression.

Figure 2

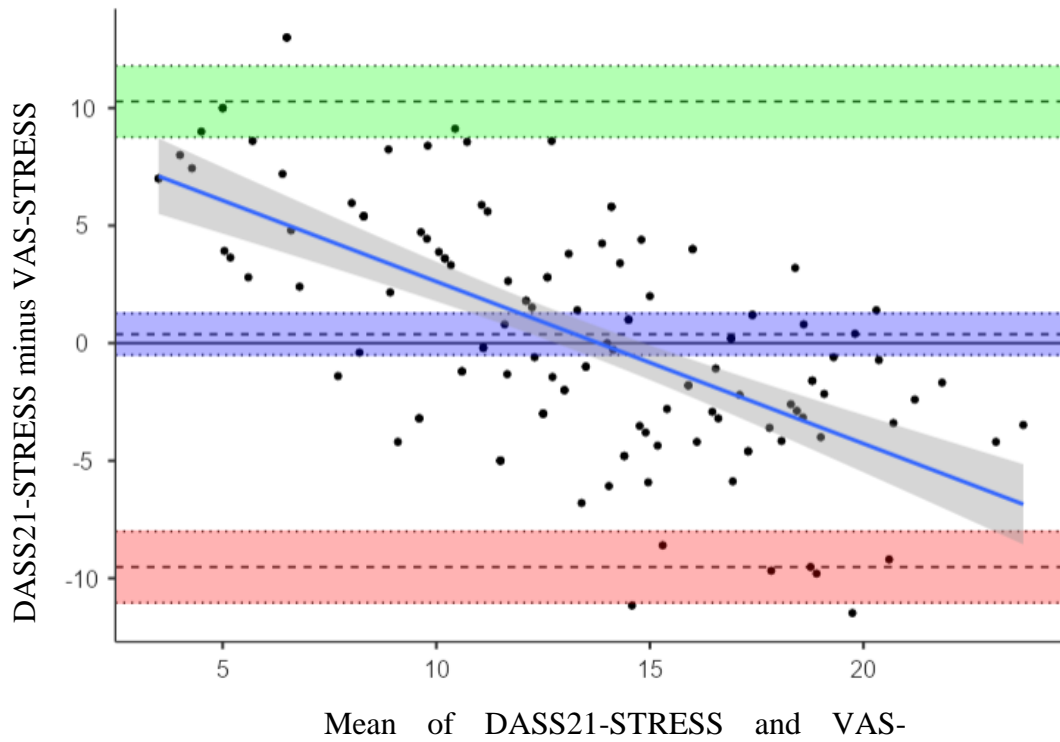
Bland-Altman plot showing the mean difference and the 95% limits of agreement between DASS21-Anxiety and VAS-Anxiety



Notes. VAS-ANX = VAS Anxiety; DASS21-ANX = DASS21-Anxiety.

Figure 3

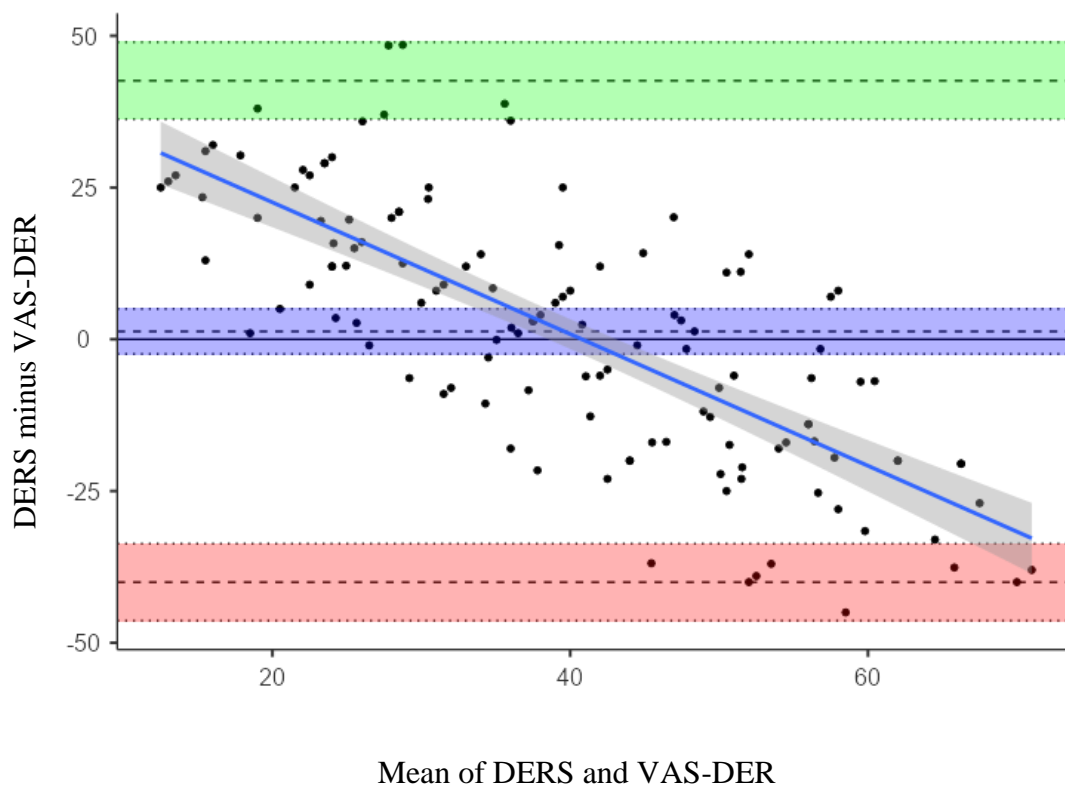
Bland-Altman plot showing the mean difference and the 95% limits of agreement between DASS21-Stress and VAS-Stress



Notes. VAS-STRESS = VAS Stress; DASS21-STRESS = DASS21-Stress.

Figure 4

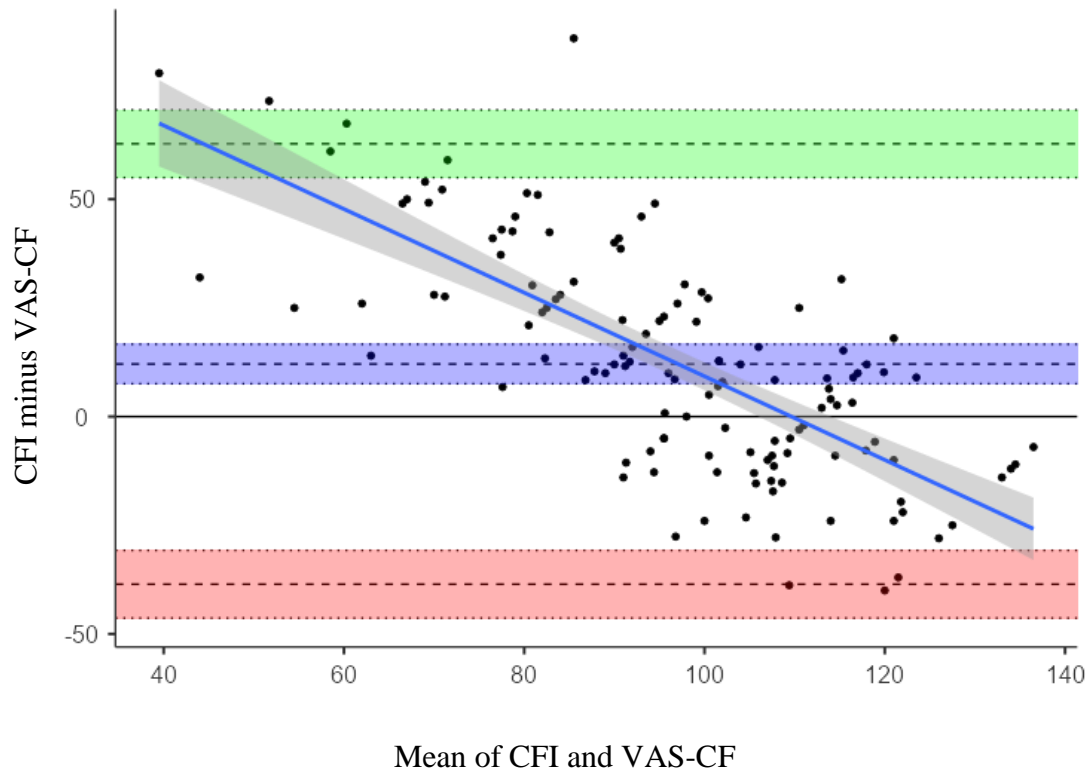
Bland-Altman plot showing the mean difference and the 95% limits of agreement between DERS and VAS-DER



Notes. VAS-DER = VAS Difficulty in emotion regulation; DERS = Difficulties in Emotion Regulation Scale

Figure 5

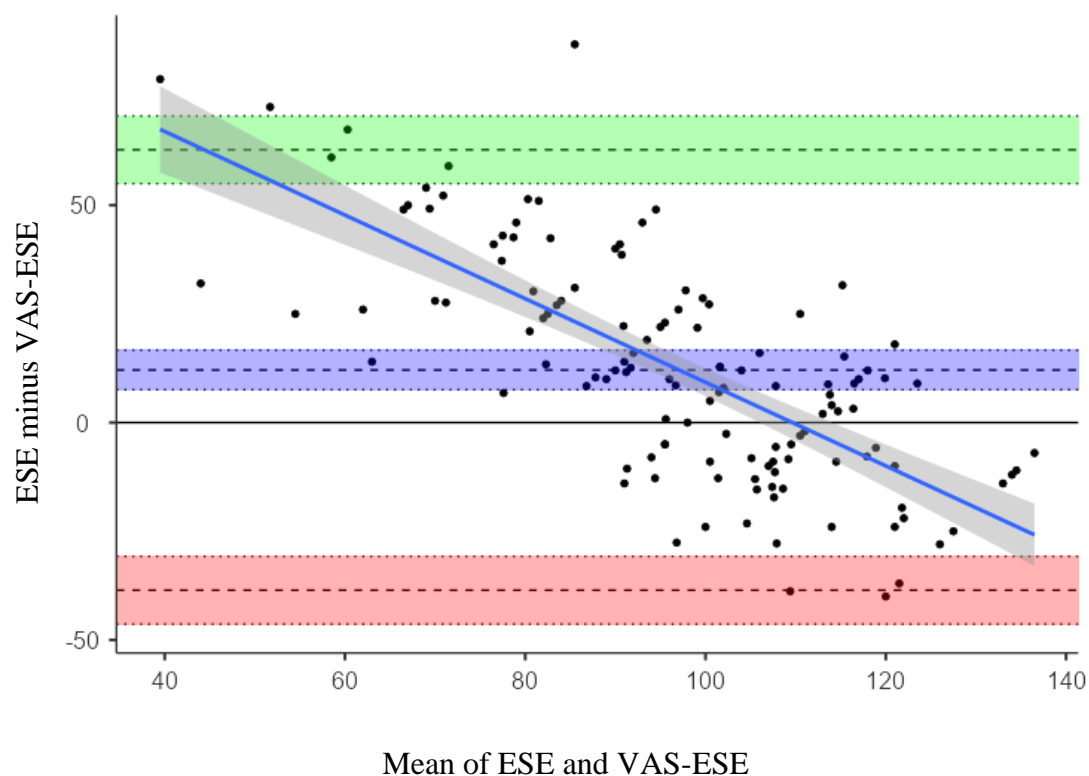
Bland-Altman plot showing the mean difference and the 95% limits of agreement between CFI and VAS-CF



Notes. VAS-CF = VAS Cognitive Flexibility; CFI = Cognitive Flexibility Inventory

Figure 6

Bland-Altman plot showing the mean difference and the 95% limits of agreement between ESE and VAS-ESE



Notes. VAS-ESE = VAS Emotion Self-efficacy; ESE = Emotional Self-Efficacy

6. Discussion

In a subclinical population of 127 participants, the Visual Analog Scales showed good psychometric properties. Our Visual Analog Scales show good convergent and divergent consistencies. However, thanks to Bland Altman's method, which brings a clinical and subjective point of view, only the VAS assessing stress and emotional regulation appear to be in coherence with their reference scales because they do not significantly overestimate or underestimate the dimensions they assess. However, our study has several limitations. First, our research involves only one measurement period. A longitudinal evaluation would allow to

evaluate the detection of changes over time in our VAS. Moreover, to evaluate repeatability or reproducibility, it is necessary to carry out two or three measurement times on the same population (Desquilbet, 2009; Walter et al., 1998). Secondly, our research was only carried out on a non-clinical population, so it would be relevant to evaluate these items again in a clinical population in order to verify that the VAS allow an accurate assessment of the severity of the symptoms. Third, we were unable to test the test-retest reliability of our scales. A replication of this study would help to overcome this limitation. Finally, the instructions of our scales could be more specific about the dimensions they assess. For example, certain terms would need to be clarified and distinguished, such as the definition of anxiety and stress and what differentiates them. It would also be interesting to test whether more precise versions of these items produce significant differences in responses.

7. Conclusion

The purpose of this study was to test the validity of 6 VAS assessing depression, anxiety, stress, emotional regulation, cognitive flexibility, and emotional efficacy. Despite their single items and the limitations of the study, VAS showed good convergent and divergent consistency allowing their use in clinical studies using repeated measures protocols.

Some methodological designs now require specific tools, such as ecological momentary assessment (EMA). However, few short and reliable instruments exist to assess specific psychological processes such as emotional regulation. The purpose of this study was to test the psychometric qualities of several indicators before using them in a study using an EMA. The Visual Analog Scales evaluated in this study showed satisfactory psychometric qualities for their use. Thus, the following study used these Visual Analog Scales to evaluate the effect of a compassion focused program in an ecological et using multiple single case design

Chapter 7: Compassion-Focused Therapy to improve emotion regulation: A multiple single case study

Marine Paucsik¹, Rebecca Shankland^{2,3}, Francis Gheysen⁴ & Céline Baeyens¹

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¹University Grenoble Alpes, LIP/PC2S, F-38000 Grenoble, France

²Univ. Lumière Lyon 2, DIPHE, 69676 Bron Cedex, France

³Institut Universitaire de France

⁴Compassionate Mind Foundation France

1. Résumé

La Thérapie Fondée sur la Compassion (TFC) permet de développer un mode de régulation basé sur un sentiment de sécurité et d'affiliation. Grâce aux pratiques de respiration apaisante et d'imagerie basée sur la compassion, la TFC devrait permettre de mieux réguler ses émotions et d'adopter une manière plus flexible de réagir aux situations. Cette étude a donc évalué l'impact d'un Programme Fondé sur la Compassion (PFC) de 12 sessions sur la régulation émotionnelle, la flexibilité cognitive, l'auto-compassion, les symptômes de stress, d'anxiété et de dépression chez quatre participants en utilisant un plan expérimental de plusieurs cas uniques. Des mesures visuelles analogiques ont été effectuées chaque semaine, de trois semaines avant le début du programme à trois semaines après la fin du programme. Des échelles standardisées ont également été administrées avant, après et trois mois après la fin du programme. Les résultats de cette étude de cas uniques ont montré que le PFC était efficace pour améliorer la régulation des émotions et l'auto-compassion, et pour réduire les symptômes de stress, d'anxiété et de dépression. L'étude n'a pas montré de résultats significatifs concernant la flexibilité cognitive. Ces résultats sont discutés à la lumière des pratiques utilisées dans ce programme.

Mots-clés : Régulation émotionnelle; Flexibilité cognitive; Auto-compassion; Etude de cas unique; Processus transdiagnostiques

2. Abstract

Compassion Focused Therapy (CFT) allows for the development of a safe and affiliated mode of regulation. In this way, thanks to breathing practices and compassion focused imagery, CFT should allow to better regulate one's emotions and to adopt a more flexible way of reacting to situations. This study therefore evaluated the impact of a 12-session Compassion Focused Program (CFP) on emotional regulation, cognitive flexibility, self-compassion, stress, anxiety, and depression symptoms on four participants using a multiple single case experimental design. Visual analog measures were completed weekly, from three weeks before the beginning of the program to three weeks after the end of the program. Standardized scales were also administered before, after, and three months after the end of the program. The results of this multiple single case study showed that CFP was effective in increasing emotion regulation and self-compassion, and in decreasing stress, anxiety, and depression symptoms. The study did not show significant results regarding cognitive flexibility. These results are discussed in light of the practices used in this program.

Keywords: Emotion regulation; Cognitive flexibility; Self-compassion; Single case design; Transdiagnostics processes.

3. Introduction

A number of studies have shown the central role of emotional regulation difficulties in the development and maintenance of many psychopathological disorders (for a review, see Sloan et al., 2017). Emotional regulation (ER) has therefore been proposed as a transdiagnostic process underlying psychopathology (Cludius et al., 2020). ER can be defined as a process by which individuals engage implicitly or explicitly to downregulate or upregulate emotional states and achieve their personal goals (Gross, 2015). More specifically, it refers to “the processes by

which individuals influence which emotions they have, when they have them, and how they experience and express these emotions” (Gross, 1998, p5). To this end, several strategies can be used such as acceptance, problem solving or reappraisal which are identified by research as adaptive strategies which promote greater mental health (for a meta-analysis, see Hu et al., 2014). However, other strategies exist, such as situational or emotional avoidance, ruminations, suppression of emotional expression or experience or self-criticism, which are themselves identified as maladaptive strategies and participate in the development and maintenance of a wide range of mental disorders such as depression, anxiety, eating disorders or borderline personality disorder (Aldao et al., 2010; Gratz et al., 2006; Whiteside et al., 2007). Nevertheless, more recent theories of ER have postulated that the effects of some of the strategies not only depend on the nature of the strategy used but also on the context in which it is employed (Bonanno et al., 2004; Cheng, 2001). This new approach implies a flexible use of regulatory strategies to meet the goals of the individual and the requirements of the situation (Aldao, Sheppes, & Gross, 2015; Aldao, 2013; Bonanno & Burton, 2013). It has been shown that being cognitively flexible is an adaptive process that allows individuals to adapt to change and new environmental demands (Armbruster et al., 2012; Ionescu, 2012).

Cognitive flexibility is understood as the human ability to adapt cognitive processing strategies to face new and unexpected conditions (Cañas et al., 2003). This ability allow to disengage from a task, to change perspectives, thinking styles, and strategies to fit the individual’s own goals and situational demand (Dajani & Uddin, 2015; Diamond, 2013). More precisely, Dennis et Vander Wal (2010) described three components of cognitive flexibility: (a) viewing challenging situations as controllable; (b) being able to perceive various alternative rationales for life events and human behavior; and (c) being able to create various alternative solutions to challenging situations. Several studies showed the importance of cognitive flexibility on how to cope with difficult emotions. For example, Johnson and colleagues (2011)

showed that cognitive flexibility is one of five traits that may play a role in greater protection against distress and psychological and behavioral health difficulties. Thus, it appears that cognitive flexibility plays an important role in how an individual will respond to emotional events. A study by Genet and Siemer showed that cognitive flexibility was associated with greater resilience to painful events and stress in adulthood (Genet & Siemer, 2011). More recently, the study conducted by Ben-Zion et al. (2018) showed that cognitive flexibility negatively predicts the severity of post-traumatic stress symptoms shortly after exposure to trauma. Thus, it appears that flexibility plays an important role by allowing the individual to more easily adapt and to regulate their emotional experiences (Hildebrandt et al., 2016). However, while flexibility predicts favorable mental health and well-being outcomes, difficulties with cognitive flexibility, also known as cognitive rigidity, are prevalent in many psychological disorders (Geurts et al., 2009; Meiran et al., 2011). Previous research has shown the impact of cognitive rigidity on many psychological disorders and can also be considered a transdiagnostic process (Morris & Mansell, 2018). As such, cognitively rigid individuals tend to persist in their behaviors despite feedback indicating that their behavior is not working toward their goal or is not adapted to the situation (Channon, 1996; Damasio & Anderson, 2003). Thus, difficulties with cognitive flexibility have been identified in many disorders such as depression (Deveney & Deldin, 2006; Meiran et al., 2011), anxiety disorders (Lee & Orsillo, 2014), eating disorders (Tchanturia et al., 2004, 2011), and obsessive-compulsive disorders (Chamberlain et al., 2006).

To increase ER skills and increase cognitive flexibility, self-compassion-based interventions have shown interesting results (Finlay-Jones, 2017; Inwood & Ferrari, 2018; Svendsen et al., 2016; Trompetter et al., 2017). Self-compassion is a way of relating to ourselves in times of suffering that is characterized by increased kindness and reduced self-judgment, more feelings of common humanity and reduced feelings of social isolation, as well as increased

attention and less overidentification with difficult thoughts and feelings (Neff, 2003). Previous research has shown that self-compassion positively impacts psychological health through adaptive ER (Finlay-Jones et al., 2015). For example, Inwood and Ferrari's work (2018) reveals that ER would be one of the mechanisms through which self-compassion acts to improve mental health.

Individuals with high levels of self-compassion tend not to suppress their emotional responses and are less reactive to events (Neff et al., 2007a, 2007b). They also experience fewer unpleasant affects and therefore do not deplete their resources trying to manage their emotions (Terry & Leary, 2011). Consistently, a number of experimental studies have corroborated the fact that practicing compassion up-regulates positive affect (Engen & Singer, 2015) and down-regulates negative affect (Arimitsu et al., 2019; Diedrich et al., 2014, 2016; Leary et al., 2007). Furthermore, if self-compassion allows to better regulate one's emotions, it also decreases the use of dysfunctional strategies. Indeed, increasing one's ability to tolerate, accept, and understand negative emotions can allow for the integration and processing of negative emotions, thus reducing the deployment of maladaptive ER strategies such as avoidance (Berking & Whitley, 2014a; Germer & Neff, 2013). Along these lines, self-compassion has been shown to be associated with improvements in depressive symptoms via adaptive ER strategies (Diedrich et al., 2017; Krieger et al., 2013; Neff, 2003). The study by Krieger and colleagues (2013) also showed that maladaptive ER strategies, cognitive and behavioral avoidance, mediate the relationship between self-compassion and depression in a sample of clinically depressed adults. In addition, compassion is also linked to lower levels of worry and rumination (Krieger et al., 2013; Raes, 2010). For example, the study by Neff and colleagues (Neff et al., 2007b) showed that a one-month intervention developing self-compassion allowed for the reduction of anxious-depressive feelings, ruminations, suppression of thoughts and other dysfunctional strategies such as self-criticism and ruminations. By acting on these

dysfunctional cognitive strategies and allowing to better adapt to situations (Neff et al., 2005), self-compassion thus seems to participate in the development of cognitive flexibility as suggested by some studies (e.g., Martin et al., 2011). However, in this study, they assessed some ER strategies but flexibility was not directly assessed. Studies that specifically assess cognitive flexibility are needed to establish whether there is a direct link with self-compassion and cognitive flexibility and if compassion focused practices enhance cognitive flexibility .

To develop self-compassion, Compassion Focused Therapy (CFT) is a recognized and effective clinical intervention. This psychotherapeutic approach was created by Paul Gilbert, who defines compassion as: “the sensitivity to suffering in self and others, with a commitment to try to alleviate and prevent it” (Gilbert, 2014a, p19). CFT is based on a model of three emotional regulation systems: (1) the threat protection system, which provides abilities to detect and respond to threat; (2) the drive and resource-seeking system, which provides information on the availability of resources and rewards; and (3) the soothing and affiliation system, which enables individuals to reassure and soothe themselves (Gilbert, 2009, 2014a). CFT emphasizes the pivotal role of our affiliation system in reducing threat-based system by allowing to feel secure and able to offer and receive care for both ourselves and others (Gilbert, 2014).

To build this affiliated system, CFT interventions are mainly based on psychoeducation, on soothing breathing practices to activate the parasympathetic system (Lin et al., 2014), and compassionate imagery practices. All these practices aim at developing an internal system of safety and soothing that is the basis of compassion. By developing this internal safety system, it is then possible to understand and respond to the distress from the perspective of a compassionate mind, which incorporates a range of compassion-based skills, attributes, and qualities (Gilbert, 2009). Self-compassion has thus been conceptualized as a transdiagnostic skill that can be developed through interventions such as CFT and facilitates ER (Berking & Whitley, 2014; Diedrich et al., 2014; Inwood & Ferrari, 2018). Developing self-compassion

would allow individuals to more flexibly regulate their emotions in response to contexts (Svendsen et al., 2016), and thus develop more cognitive flexibility (Marshall & Brockman, 2016).

To contribute to this line of research, we used an ABA multiple single case experimental design to evaluate the effect of a CFT intervention on ER, self-compassion, cognitive flexibility, as well as stress, anxiety and depression symptoms. Single Case Experimental Design (SCED) was used as a time and cost effective method to assess the effectiveness while controlling for the passage of time and repeated assessments. SCED is an intensive, prospective, controlled study of the individual, using each person as their own control to improve reliability (Morley, 2017; Morley et al., 2017). In particular, it helps to differentiate between a genuine treatment effect and natural recovery over time or other confounding factors. Although this design offers the possibility of drawing valid inferences about treatment efficacy, the requirement to collect data on large, homogeneous groups is bypassed. Thus, this type of design is well suited for testing initial feasibility and obtaining a preliminary indication of efficacy. Therefore, given the need to understand how change occurs at the individual level, we used a SCED.

We make the primary hypothesis that ER difficulties would decrease during the intervention phase and then remain stable during the follow-up phase. As secondary outcomes, we expected that cognitive flexibility and self-compassion would increase and symptoms of stress, anxiety and depression would decrease during the treatment phase and remain stable during the follow-up period.

4. Method

1. Transparency and openness

This study complies with the Single-Case Reporting guideline In BEhavioural interventions (SCRIBE, Tate et al., 2016) which can be accessed in the supplementary documents. It has received an approval from a human protection committee (Number of approval 2020.09.03 four_20.05.13.42837). It has been pre-registered on OSF (osf.io/spv9h) and on Clinical Trial (ID: NCT05113680).

2. Participants

Our sample comprised four individuals with mood disorder who had difficulties to regulate their emotions. Informed consent was obtained from all patients and no compensation was provided to the study participants. Patients were included if they met all of the following criteria : (1) Fulfilling a diagnosis of mood disorder, (2) a score above 36 on the Difficulty in Emotional Regulation Scale (DERS), i.e., at least one item of the scale (meaning an ER difficulty) is rated as being present half the time, (3) to understand, speak, and read French, (4) to have given consent to participate in the study, and (5) to have a national insurance number. Participants were excluded if they (1) had been involved in active ER intervention (involving CBT, mindfulness, or relaxation) within the last 3 months and (2) were taking anxiolytic medication where the dose had not been stable over one month prior to entering the study. A total of 6 patients were approached of which 2 declined treatment at this time. After selection and assessment, four individuals were offered to participate in the project. The 4 participants (4 women; age ranges 23-57) had studied at least until the high school level (n=2). One of the participants had a bachelor degree, and the last one had completed a thesis. Two participants were single and one participant had two children. Three were working full time and one was unemployed. All reported having always had difficulties with their emotions. All participants

completed the 12 sessions of the intervention and all the assessment across the three stages of the study.

3. Measures

Idiographic measures

The VASs were designed by the First Author and measured levels of ER difficulties, self-compassion, cognitive flexibility, depression, anxiety, and stress. VAS scores ranged from 0 to 10, where higher scores indicated higher difficulties, resources, or symptomatology. These six idiographic measures were created to fit the study design. Indeed, idiographic measurements allow for repeated measurements and visual analysis, which is essential for SCEDs (Lane & Gast, 2014; Smith, 2012). Despite these measures not being validated, a preliminary study evaluated the psychometric properties of VASs with their standardized reference scales (Paucsik et al., 2021). This study showed that the VASs had good convergent and discriminant validity. In addition, VASs are simple and time-efficient tools to complete in repeated measurement designs, and are also known to be sensitive to change in a baseline individual over short periods of time (McCormack et al., 1988; Wewers & Lowe, 1990).

Standardized processes and outcomes measures

Difficulties in emotion regulation. Difficulties in ER was assessed with the French version of Difficulties in Emotion Regulation Scale – Short Form (DERS-SF, Gratz & Roemer, 2004; Victor & Klonsky, 2016). The DERS-SF is an 18-item self-report multidimensional scale of ER skills. The DERS examines six difficulties in ER: (1) unacceptance of negative emotions (*e.g. When I'm upset, I become embarrassed for feeling that way*), (2) difficulty engaging in goal-directed behaviors in the presence of negative emotions (*e.g., When I'm upset, I have difficulty getting work done*), (3) difficulty controlling impulsive behaviors in the presence of

negative emotions (e.g., *When I'm upset, I become out of control*), (4) limited access to ER strategies perceived as effective (e.g., *When I'm upset, I believe that I will remain that way for a long time*), (5) lack of emotional awareness (e.g., *I pay attention to how I feel*, reversed items), and (6) lack of understanding of one's emotions, defined as lack of emotional clarity (e.g., *I have no idea how I am feeling*). Items are scored on a five-point Likert scale. Lower scores indicate the presence of difficulties in ER.

Cognitive Flexibility. Cognitive flexibility was assessed with the French version of the Cognitive Flexibility Inventory (CFI, Dennis & Vander Wal, 2010). The CFI is a 20-item self-report scale assessing three aspects of cognitive flexibility: (a) the tendency to perceive difficult situations as controllable; (b) the ability to perceive multiple alternative explanations for life occurrences and human behavior; and (c) the ability to generate multiple alternative solutions to difficult situations. These dimensions are assessed through two subscales: an alternative scale (e.g., *I consider multiple options before making a decision*) and a control scale (e.g., *When I encounter difficult situations, I feel like I am losing control*, reversed item). An overall flexibility score is calculated by summing the two subscales and inverting the control subscale scores. High total scores on this scale indicate greater cognitive flexibility during stressful situations; low scores indicate greater cognitive rigidity associated with less cognitive adaptability during stressful situations (Dennis & Vander Wal, 2010).

Self-compassion. Self-compassion was measured with the French version of the Self-Compassion Short Form Scale (SCS-SF, Neff, 2003b). SCS-SF is a 12-item instrument with six subscales assessing elements of self-compassion (i.e., self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification). Self-kindness refers to the tendency to extend kindness and understanding toward oneself when feeling emotional pain or stress (e.g., *I try to be understanding and patient toward those aspects of my personality I don't like*). Self-judgment reflects the tendency to be self-critical, disapproving, and intolerant toward

one's own flaws and difficult experiences (*e.g., I'm disapproving and judgmental about my own flaws and inadequacies*). Common humanity is a capacity of recognition that feelings of inadequacy, emotional pain, and failure are universal human experiences (*e.g., I try to see my failings as part of the human condition*). Isolation dimension measures feelings of loneliness, separation, and disconnection from others at times of failure or distress (*e.g., When I'm feeling down, I tend to feel like most other people are probably happier than I am*). Mindfulness refers to holding negative thoughts and emotions in balanced awareness, with an open and accepting stance toward difficult feelings and situations (*e.g., When something painful happens I try to take a balanced view of the situation*). Overidentification refers to the tendency to become excessively immersed or consumed by negative feelings (*e.g., When I fail at something important to me, I become consumed by feelings of inadequacy*). Experienced meditators have been shown to score higher than nonmeditators (Neff, 2003). As the Self-Compassion scale has a partial overlap with the MAAS, we conducted our analyses only on the four sub-dimensions of the SCS-SF: self-kindness, self-judgment, common humanity, and isolation.

Depression, Anxiety and Stress. Symptoms of depression, anxiety, and stress were assessed using the French version of the Depression, Anxiety and Stress Scale (DASS-21, Lovibond & Lovibond, 1995). The DASS-21 is a self-administered questionnaire that measures the severity of depression (*e.g., I couldn't seem to feel anything positive*), anxiety (*e.g., I worried about situations in which I might panic and make a fool of myself*), and stress (*e.g., I had trouble calming down*) during the past week. Each item is scored from 0 (did not apply to me at all in the past week) to 3 (applied to me very often or most of the time in the past week).

Expectancy. The French version of the Credibility/Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000; Coste et al., 2019) was used to assess participants' credibility and expectations of the intervention they would receive. The scale consists of six items (*e.g., How much improvement in your symptoms do you think will occur*). Four of the items are measured

on a nine-point scale ranging from 1 (“*not at all*” or “*none*”) to 9 (“*very*”). Two of the items are measured on an 11-point scale ranging from 0% to 100%. The measure score is summed and ranges from 3 to 27. Higher scores indicate participants having higher credibility or expectation of improvement because of the treatment. This scale was completed by the participant during the first measurement time, before they started the CFP.

Satisfaction with intervention. Participants’ level of satisfaction with the CFP was assessed with the Satisfaction With Therapy and Therapist Scale—Revised (STTS–R, Oei & Green, 2008). This scale is composed of 13 items assessing three sub-dimensions: (1) the patient’s level of Satisfaction with Therapy (ST, e.g., *I am satisfied with the quality of the therapy I received*), (2) the patient’s level of Satisfaction With Therapist (SWT, e.g., *The therapist listened to what I was trying to get across*) and (3) global improvement (e.g., *How much did this treatment help with the specific problem that led you to therapy ?*).

4. Procedure

This study was conducted in a clinical context. A multiple ABA SCED was employed (Kazdin, 2019). This method is a rapid and cost-effective method to assess efficacy while controlling for the time-lapse and repetition of assessments (Barlow et al., 2009). This method was combined with repeated weekly idiographic measures (Visual analog Scales, VASs) for a three-week baseline period (T1, phase A₁), a 12-week treatment period (phase B), a 3-week follow-up period (phase A₂). Using the baseline as a reference point, participants function as their own control and the primary analysis is a comparison of weekly data during the baseline, treatment and follow-up phases. This analysis is complemented by an analysis of changes in scores on standardized measures before the intervention (T1), after the intervention (T2) and three months after the intervention (T3). The design of the study and the different measures performed are presented in Figure 1.

Baseline (phase A₁)

This first phase of the research begins with baseline observations, in which the different outcomes of interest are assessed prior to the implementation of the intervention. During this phase, participants were asked to complete the idiographic measures weekly for three weeks. They also completed the first questionnaire consisting of the standardized measures during the third week.

Intervention (phase B)

The intervention was based on a program designed by the authors called Compassionate Based Program (CBP), based on the principles of CFT as described by Paul Gilbert (see Gilbert, 2010, 2014a; Gilbert & Procter, 2006). This program consists of 12 two-hour group sessions delivered by a psychologist trained in CFT and intervention. Each session included three parts (1) an exchange on the participant's experiences during between-session practices, (2) a psycho-education phase and an discussion with the participant on the theme of the session, and (3) a breathing practice or imagery exercises focused on compassion. The content of the CFP sessions is presented in Table1. Each participant received a training manual including all the psycho-educational aspects, the practice guides, the intersession practices to be carried out as well as a practice follow-up journal. After each session, they also received an audio file with the practice done during the session and the one with the practice to be done during the following days.

Figure 1

Study Design

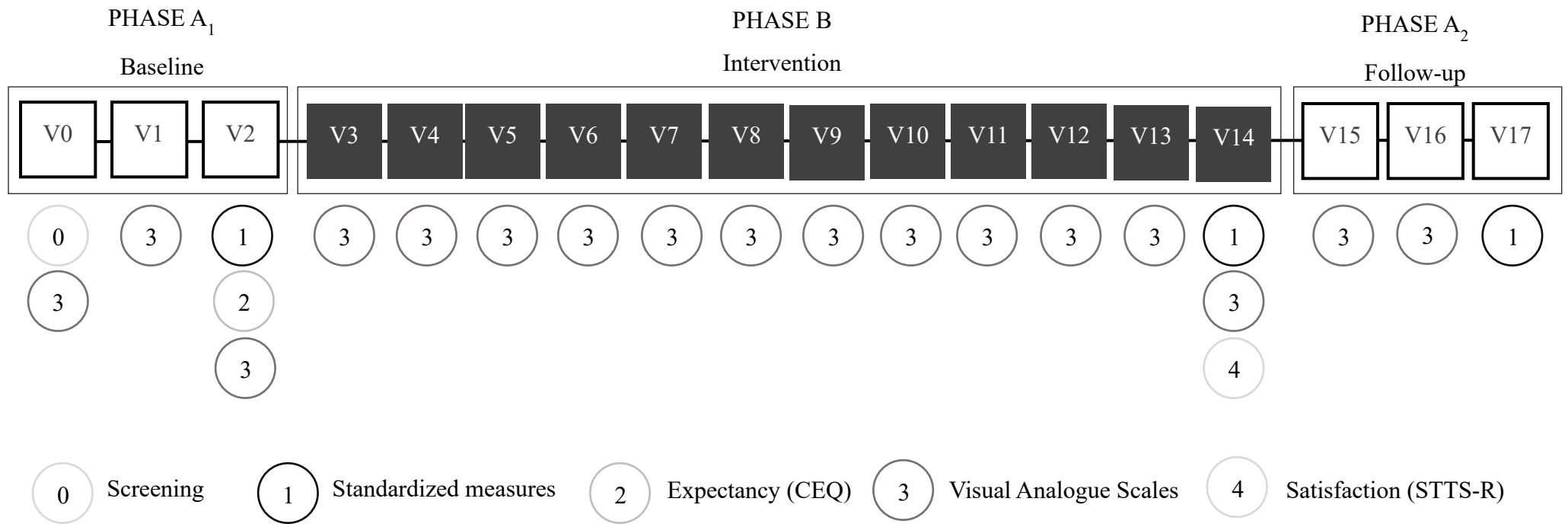


Table 1

Compassion Focused Program (CFP)

Session	Theme	Practice
Session 1	Presentation of the program and scientific basis.	Introduction to the soothing breathing rhythm and exploration of an affiliative motivation
Session 2	Discovering the emotional regulation systems	Drawing of the three circles of regulation and Soothing Breathing Rhythm
Session 3	Embracing compassion	Practice of the soothing breathing rhythm and acceptance of unpleasant emotions
Session 4	Creating internal safety space	Imagery of the safe place
Session 5	Connect to an ideal compassionate image	Compassionate imagery
Session 6	Develop your compassionate attributes	Imagery of the qualities of compassion
Session 7	Discovering your compassionate self	Imagery of the compassionate self
Session 8	Addressing and understanding self-criticism with compassion	Imagery of the critical self and the compassionate self
Session 9	Dealing with difficult emotions	Imagery of difficult emotion with compassion
Session 10	Dealing with shame and guilt	Imagery of shame and guilt with compassion
Session 11	Writing to your compassionate part	Imagery of the compassionate self and writing the compassionate letter
Session 12	Expanding your circle of compassion	Imagery of the circle of compassion

Note. The CFP was design by Paucsik, M., Gheysen, F and Delamillieure, P. in 2021.

Follow-up sessions (second phase A2)

This last phase (i.e., A₂) consisted of assessing the participants' evolution after the end of the intervention on the different dimensions tested. This phase was conducted over a period of three weeks. During the first week after the intervention, participants completed the standardized measures questionnaire once again and then completed the VAS on a weekly basis during the three weeks. We specify that the participants also completed the standardized questionnaire 3 months after the end of the intervention.

5. Treating clinicians

The experienced psychotherapist who delivered the intervention (i.e., the third author) was trained in CFT by Paul Gilbert and has been using it in his practice for years. He also helped design the intervention to fit the original model proposed by Paul Gilbert (Paul Gilbert, 2014) and to follow the key steps of CFT (Liddell et al., 2017).

6. Data analysis of the VAS

Visual analysis

Although there is no consensus regarding methods for analysis of SCEDs (Thomas R. Kratochwill et al., 2013; Maggin & Odom, 2014), we followed Manolov and colleagues who recommend a combination of visual and statistical analyses to account for design requirements and data assumptions (Manolov et al., 2014). Weekly symptoms were graphed in Excel across treatment phases and subjected to visual analysis based on four criteria as recommended in single case designs (Kazdin, 2019): a) changes in means average; b) changes in the slope or trend; d) shift in the level and d) latency of change between phases. However, most experts on single-case data analysis advocate for the use of both visual analysis and statistical analysis (Brossart et al., 2008; Brossart et al., 2014; Shadish et al., 2015). Thus, to complete the visual inspection of changes in scores and trend between baseline and treatment, non-overlap methods for analyzing the difference between phases in single-case designs were used.

Statistical Analysis

Non-overlap methods quantify the differences observed between the baseline and intervention phases of a single case study by describing the extent to which data points do not overlap between the two phases. More specifically, Parker et al. (Parker & Vannest, 2009;

Parker et al., 2011) recommend a combination of two methods for a more robust data analysis: the percentage of all non-overlapping data (PAND) and non-overlap of all pairs (NAP). The PAND reflects data non-overlap between phases and is closely related to the established effect size (Parker et al., 2007). However, PAND, can only be applied when a minimum of 20 data points are presented so we will not use this index because we only have 18 data points (Carr, 2015; Parker et al., 2007)

Non-overlap of all pairs. The NAP is an index of data overlap between each phase A₁ data point and each phase B data point, in turn (Parker & Vannest, 2009). The NAP was calculated by comparing each data point in phase A₁ with each data point in phase B and A₂ and the resulting NAP is the proportion of all comparisons with no overlap between data points (Manolov & Moeyaert, 2017; Parker & Vannest, 2009). Parker and Vannest (2009) suggest that NAP < 0.65 is equivalent to a small effect size, NAP= 0.66-0.92 is equivalent to a medium effect size, and NAP= 0.93-1.0 is equivalent to a large effect size. Thus, these indices reveal the percentage of participants' post-intervention scores that do not overlap (in the expected direction) with participants' scores during the baseline. In addition, we also calculated the percentage of data points exceeding the median (PEM), as this index is least likely to be influenced by autocorrelation (Manolov & Moeyaert, 2017).

Percentage of data points exceeding the median. In the PEM approach, the baseline median is used as a benchmark to judge change during the treatment phase against the baseline phase (H. H. Ma, 2006). The percentage of treatment phase data points above the baseline median (if increase is expected such as with self-compassion) or below the baseline median (if decrease is expected such as with depression and ER difficulties) is calculated. As criteria for interpretation, 90-100 % of treatment phase data points below the median signified a strong effect, 70-90 % a moderate effect and < 70 % a questionable or no effect (Scruggs et al., 1986).

Non-overlap – Tau-U. However, these indices do not take into account the A-phase trend, which is why we also calculated the Tau-U index in this study (Parker et al., 2011). Tau-U is the most robust non-overlap method between two phases (A and B) (Parker et al., 2011). It provides a value, ranging between [-1; 1], that specifies the degree of correlation between variables of distinct phases and allows to characterize the size of the treatment effect. Analysis was run and reported without adjustment for baseline trends. Depending on the data, it possesses statistical power of 91–115% of parametric tests (Vannest et al., 2011). All calculations were performed via the website: <http://singlecaseresearch.org/> (Vannest et al., 2011).

7. Data Analysis of Standardized Measures

The Reliable Change Index. Finally, to investigate whether there was a reliable pre to post intervention difference between the scores on standardized measures, the Reliable Change index (RC, Jacobson and Truax 1991) was calculated. RCI equal to or greater than 1.96 is statistically reliable at the $p < .05$ levels (Jacobson & Truax, 2004). For this calculation, the standard deviation and test–retest reliability of the DASS21, DERS, SCS and CFI were obtained from previous research (see Bottesi et al., 2015 for DASS21; Victor & Klonsky, 2016 for DERS-SF; Raes et al., 2011 for SCS-SF and Dennis & Vander Wal, 2010 for CFI).

5. Results

1. Credibility, expectancy and satisfaction of participants

Credibility and expectancy scores before the intervention show that the intervention made sense to participants and that they were convinced of its usefulness (P1:18, P2:19, P3:24, P4:22) and effectiveness (P1:21, P2:11, P3:18, P4:18). At the end of the intervention, participants reported high scores on the satisfaction scale toward the therapist (P1: 27, P2: 28,

P3: 27, P4: 29 - available scale ranges 6–30) as well as toward the therapy (P1: 26, P2:29, P3: 27, P4:26 - available scale ranges 6–30) (Oei & Green, 2008).

2. Data Analysis of the VAS

Weekly self-monitoring of emotion regulation difficulties, cognitive flexibility, self-compassion, depression, anxiety, and stress are shown in Fig. 2 to 5. The evolution of change in mean during the three stage's study, the NAP, PEM and Tau-U are presented in the tables 2, 3 and 4.

Table 2

Evolution of change in mean during the three stage's study

VASs	Phase	Participant 1	Participant 2	Participant 3	Participant 4
Emotion regulation difficulties	A ₁	3.6	6.3	7.3	8
	B	3.6	5.1	5.6	7.1
	A ₂	1	3.6	4.3	6
Cognitive flexibility	A ₁	6	4.6	5.3	1.6
	B	6.6	4.1	5.7	3.4
	A ₂	7.6	5.3	8	4.6
Self-compassion	A ₁	5	4.3	6	1
	B	6.8	5.1	4.9	3.6
	A ₂	7	5	8.6	5.6
Depression	A ₁	4.6	8.3	0	8
	B	3	5.3	0	5.9
	A ₂	2	4	0	5.6
Anxiety	A ₁	6.3	6.6	5.6	7
	B	4.4	5.5	4.5	7.1
	A ₂	2	4.3	1.3	3.6
Stress	A ₁	6	7.3	5.3	7.3
	B	4.3	5.4	4.3	6.8
	A ₂	2.3	4.3	1.3	5

Notes. A₁ = Baseline , B = Intervention , A₂ = Follow-up

Table 3

Non-overlapping data-analyses

Participant	1		2		3		4	
	NAP	PEM	NAP	PEM	NAP	PEM	NAP	PEM
DERS-SF	62%	53.3%	81%	73.3%	80%	80%	70%	60%
CFI	74%	66.6%	38%	66.7%	61%	60%	88%	93.3%
SCS-SF	92%	93.3%	71%	33.33%	39%	33.3%	97%	93.3%
Depression	84%	86,7%	96%	93.3%	NA	NA	74%	73.3%
Anxiety	84%	86,7%	78%	93.3%	58%	66.7%	56%	60
Stress	89%	86,7%	93%	93.3%	59%	66.7%	76%	73.3%

Notes. NAP = non-overlap of all pairs. PEM = percentage of data points exceeding the median. DERS-SF = Difficulties in Emotion Regulation Scale Short Form. CFI = Cognitive Flexibility. SCS-SF = Self-compassion Short Form.

Table 4

Tau-U on all variables for each participant

Participant	1			2			3			4		
	Tau-U	p	SEta _u	Tau-U	p	SEta _u	Tau-U	p	SEta _u	Tau-U	p	SEta _u
DERS-SF	-0.14	0.54	0.33	-0.39	0.09	0.31	-0.36	0.11	0.31	-0.24	0.29	0.32
CFI	0.30	0.19	0.32	-0.17	0.51	0.33	0.13	0.58	0.33	0.45	0.04	0.29
SCS-SF	0.51	0.02	0.29	0.28	0.25	0.32	-0.13	0.59	0.33	0.54	0.01	0.28
Depression	-0.40	0.07	0.30	-0.56	0.01	0.27	0	1	.33	-0.29	0.20	0.31
Anxiety	-0.39	0.07	0.31	-0.37	0.12	0.31	-0.09	0.71	0.33	-0.07	0.81	0.33
Stress	-0.46	0.04	0.29	-0.57	0.01	0.27	-0.10	0.67	0.33	-0.30	0.18	0.32

Notes. Tau-U, Tau-U non-overlap index between phase A and B+A'. DERS-SF = Difficulties in Emotion Regulation Scale Short Form. CFI = Cognitive Flexibility. SCS-SF = Self-compassion Short Form.

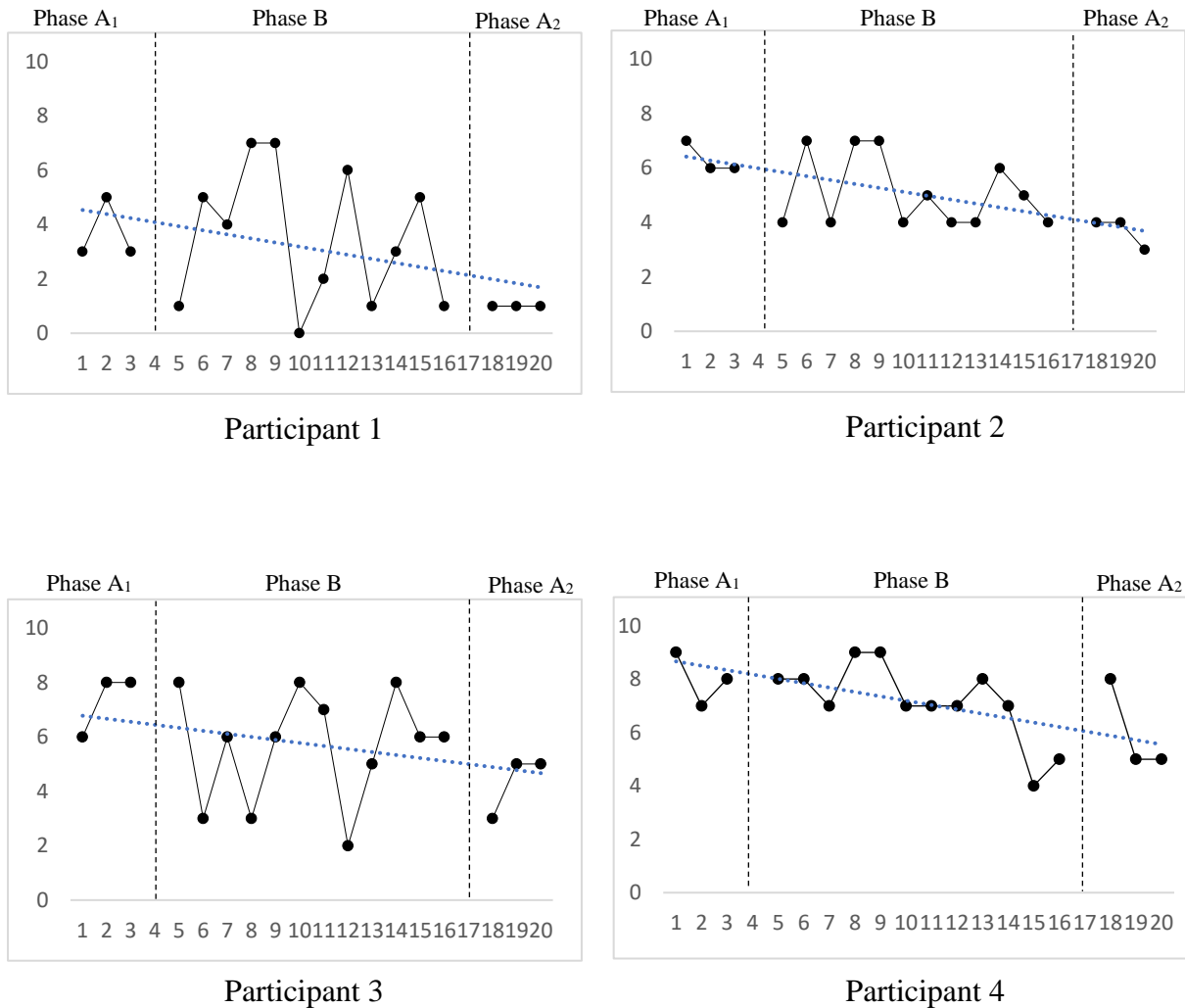
Processes Measures

Emotional regulation difficulties. Table 2 shows that the means of the ER difficulty scores in the three phases of the study decreased between phase A₁, B and A₂. We note, however, that participant 1 has identical means between phase A and B although the mean in phase A₂ is lower. The graphs presented in Figure 2 reveal descending slopes for all participants over the course of the study. However, Participant 3 showed ascending slopes during phases A₁ and A₂. The results for participants 1 and 2 plot with striking shift in their data between phase A and B. We did not observe this with the scores of participants 3 and 4, although they scored a shift between phase B and A₂. Finally, we observed that the results fluctuated greatly during the intervention phase, while maintaining certain similarities. For example, the scores of participants 1, 2 and 4 decreased after session 2 and session 5 of the intervention. These visual analyses are to be put in perspective by the non-overlapping data analyses (Table 3) which revealed moderate effects for all participants as well as with the results of the Tau-U (Table 4) which did not show a significant decrease in VAS-DERS scores during the intervention.

Cognitive flexibility. As shown in Table 2, the mean scores of participants 1, 3, and 4 increase over the 3 phases. Participant 2 mean scores decreased in phase B and then increased in phase A₂. As shown in Table 2, his average cognitive flexibility scores increased in phase A₂ and higher than in phase A₁. Overall, for all participants, the graphs presented in Figure 3 revealed ascending slopes over the three phases of the study. However, participants 2 and 3 showed descending slopes in phase A₁, which reversed in phase B and A₂. Only participant 1 showed a shift in scores between phase A and B of the study. However, there is a shift in scores for all participants between phase B and A₂. Finally, participants 3 and 4 showed a change in scores, and then a stabilization after session 6 of the intervention while the scores of the other participants were more fluctuating during the intervention. The NAP and PEM indices complement these visual analyses and suggested that the intervention had a weak effect for

Figure 2

VAS emotional regulation difficulties in participants 1 to 4.

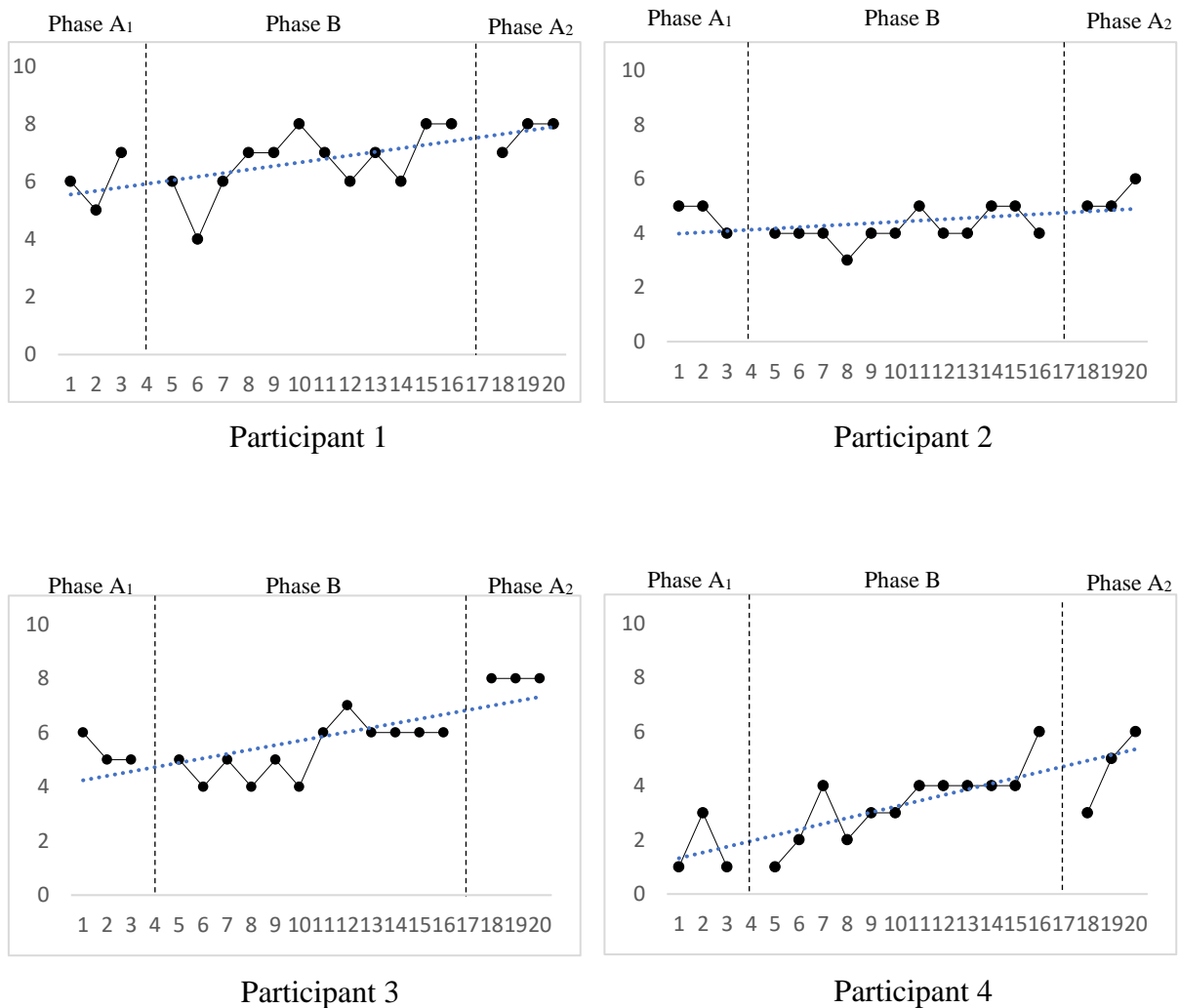


participants 2 and 3, a moderate effect for participant 1, and a strong effect on the cognitive flexibility scores of participant 4. These results are complementary to the results of the Tau-U analysis (Table 4) which showed a significant increase in cognitive flexibility for participant 4.

Self-compassion. Participants 1, 2, and 4 showed improvements in their averages in response to all three phases (see Table 2). Participant 3 did not show improvement between the 1st and 2nd phases. However, her mean score during the follow-up phase was higher than his

Figure 3

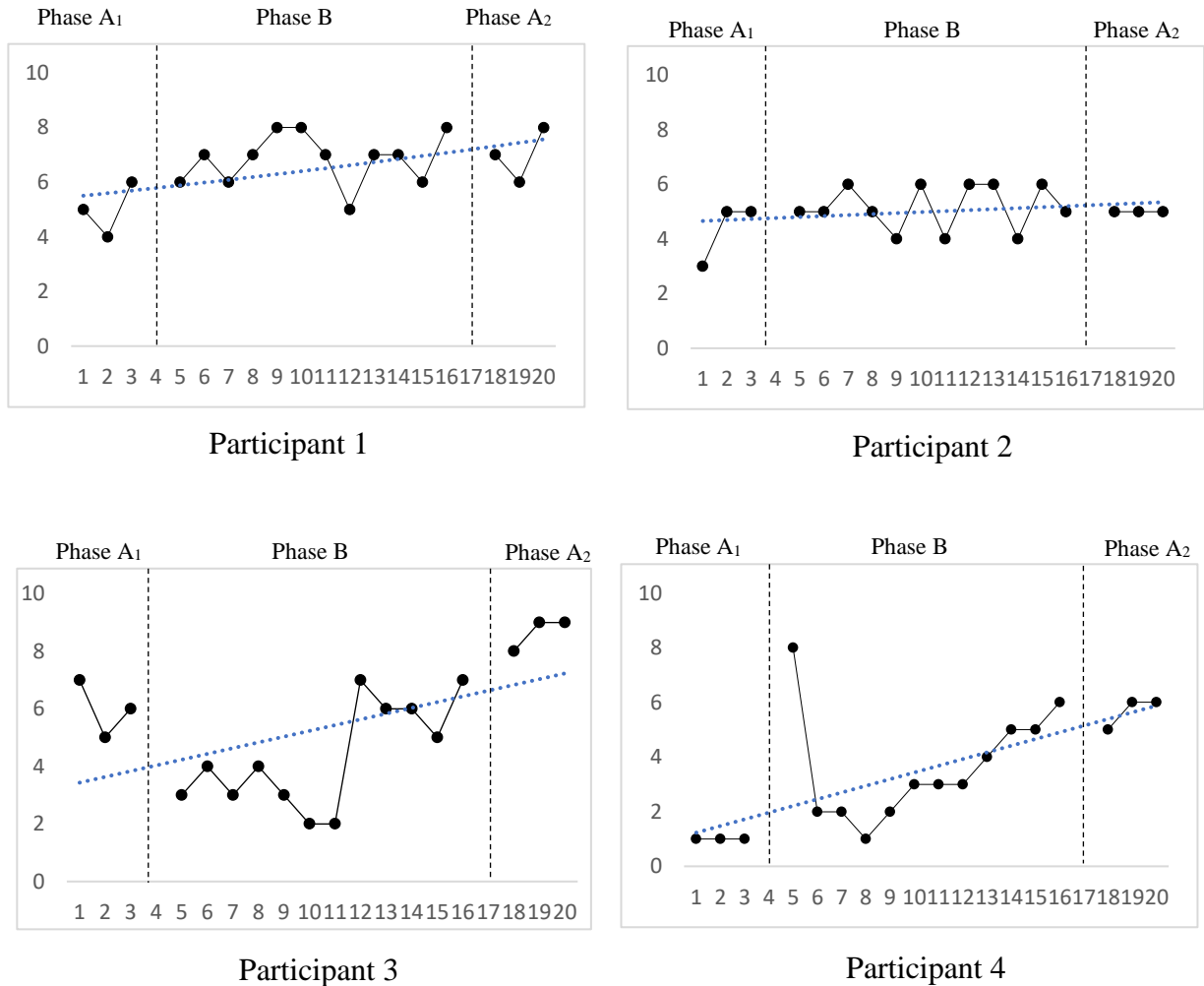
VAS cognitive flexibility in participants 1 to 4.



mean score during his baseline. As shown in the graphs in Figure 4, the scores of all four participants followed an upward slope during all three phases of the study. However, we observed that the slope of participant 2 appeared almost null, and that the results did not differ during the 3 phases. Looking at the data, we also observed substantial shifts between phases A₁, B and A₂ of the study for participants 3 and 4. Finally, the participant 4 showed a gradual evolution as the intervention progressed, with a visually observable evolution starting in session

Figure 4

VAS self-compassion in participants 1 to 4.



4 of the intervention. Participant 3 showed a significant change during the intervention starting at session 8 and continuing until the end of the follow-up period. Participant 4 showed a significant change just after the first session of the intervention and a decrease after the end of the intervention. This visual analysis was complemented by the non-overlapping data analyses (Table 3). The NAP and PEM of participants 1 and 4 were above 92%, meaning that the self-compassion scores after the intervention and during the follow-up period were higher than those

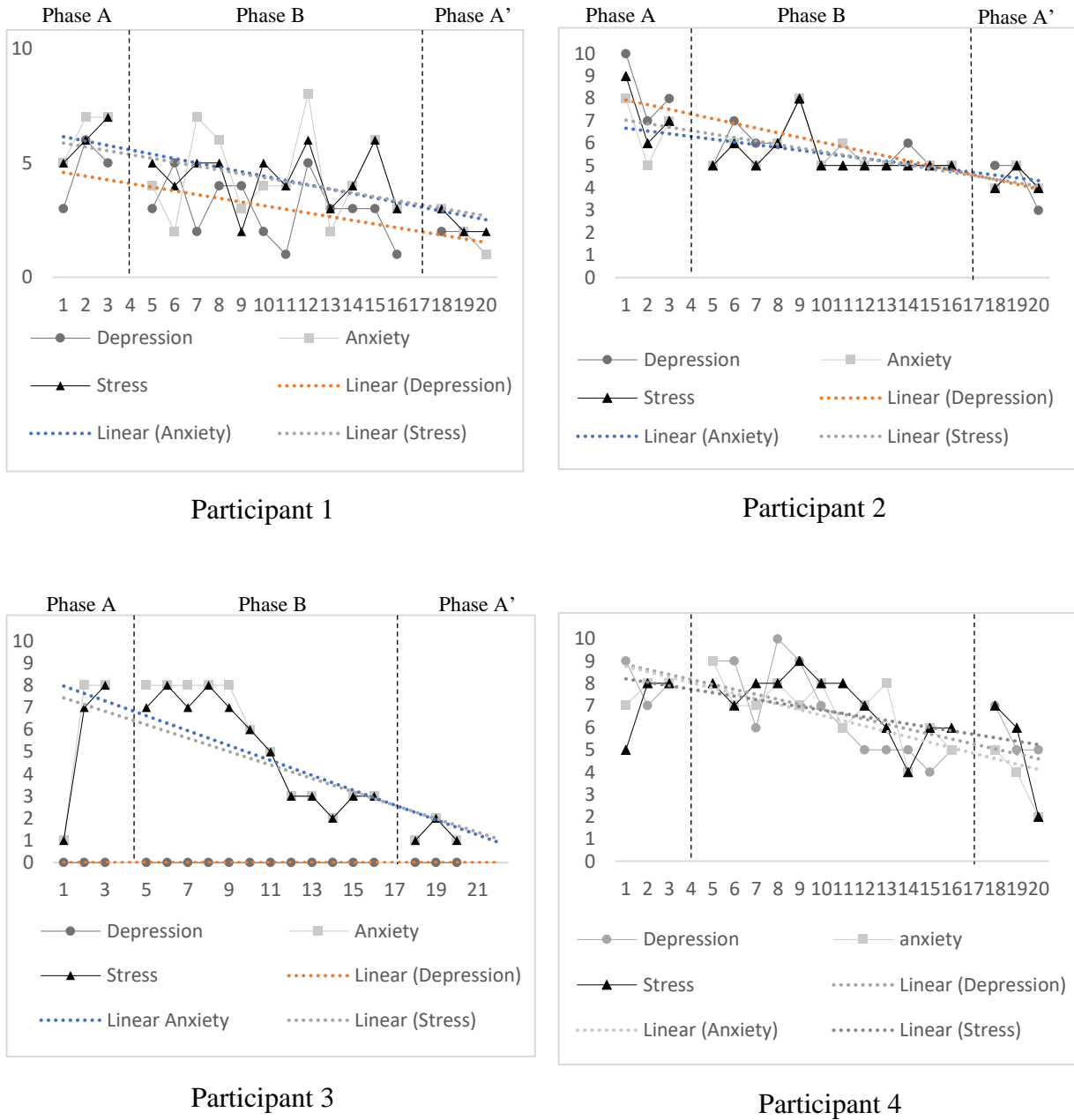
from the baseline phase. These scores reveal a strong effect of the intervention on self-compassion for participants 1 and 4, which is consistent with the results of the TAU-U which also revealed a significant effect of the intervention on self-compassion for these two participants. The NAP of the participant 2, revealed a moderate effect of the intervention on his self-compassion scores, while the PEM index reveals a weak effect. Finally, for participant 3, weak effects were observed for both indices. These results are also in line with the results of the Tau-U (Table 4) which did not reveal any significant increase in self-compassion scores for these two subjects.

Outcomes measures

Depression. Participants 1, 2 and 4 showed a decrease in mean scores between the three phases of the study (see Table 2). Participant 3, however, did not show any depressive symptoms or any change over time on this dimension. We therefore excluded him from the visual analyses for the depression dimension as well as for the interpretation of the NAP and PEM. Figure 5 represents the scores of the participants on the depression, anxiety, and stress items. The graphs allow us to observe that participants 2 and 4 present scores on descending slopes during phases A₁, B and A₂. Participant 1 shows an upward slope during the pre-intervention phase and then downward slopes during and after the intervention. Participants 1, 2, and 4 showed a shift in scores between the A₁, B, and A₂ phases, although scores fluctuated during the intervention. Non-overlapping data analyses showed that the intervention appears to have had a moderate effect on depressive symptoms for participants 1 and 4 while it appears to have had a significant impact for participant 2 whose NAP and PEM indices are above 93% (Manolov & Moeyaert, 2017; Parker & Vannest, 2009) and whose Tau-U reveals a significant decrease in depression scores in the intervention phase.

Figure 5

VAS depression, anxiety and stress in participants 1 to 4.



Anxiety. The means of the anxiety scores of all participants decrease over the three phases. As observed in Figure 5, ascending slopes are observable during phase A₁ and then descending slopes are visible in phase B and A₂. Indeed, it seems that participants' anxiety

scores tend to increase during the baseline phase and then decrease during the intervention and after the end of the intervention. Shift in scores are observable between the end of phase A₁ and the beginning of phase B for participants 1, 2 and 4. For participant 4, we observe a shift in the data between phase B and A₂. Finally, we observe that the scores fluctuate during the intervention although they tend to decrease in the last sessions and during the follow-up phase for all participants. The NAP and PEM indices allow us to complete these visual analyses and suggest that the intervention had little effect on the anxiety scores of participants 3 and 4, whereas it had a greater effect on the scores of participants 1 and 2. However, the results obtained from the Tau-U (Table 4) do not reveal significant decreases in anxiety scores for all participants.

Stress. The averages of the stress scores of all participants decrease over the three phases as shown in Table 2 and in Figure 5. Ascending slopes are observable during phase A₁, while descending slopes are visible in phase B and A₂. We also observe a shift in scores between phase A₁ and B for participants 1, 2 and 3 as well as a shift in scores between phase B and A₂ for participants 2, 3 and 4. Finally, we observed that the scores of participants 2, 3 and 4 tended to decrease and then stabilize from the 4th intervention session onwards, whereas the scores of participant 1 fluctuated more over time, although they decreased after session 11 of the intervention and until the last follow-up. This visual evidence was corroborated by the non-overlapping data analyses (Table 3) which showed a moderate effect of the intervention on participants 1, 3 and 4 and a strong effect of the intervention on the stress scores of participants 2. The results of the Tau-U analysis (Table 4) showed a significant decrease in stress for participants 1 and 2 but not for participants 3 and 4.

3. Data analysis of standardized measures

Scores of standardized measures of pre-to post intervention and follow-up period and Reliable Change Index are presented in Table 5.

Table 5

Pre and post scores, reliable change index

Participant	1	2	3	4
Depression (DASS21)				
Pre	12	15	8	18
Post	7	11	4	6
FU	3	11	2	7
RCpre-post	-2,21*	-1,77	-1,77	-5,30*
RCpre-fu	-3,98*	-1,77	-2,65*	-4,86*
Anxiety (DASS21)				
Pre	11	10	15	1
Post	15	6	5	2
FU	9	7	6	0
RCpre-post	1,81	-1,81	-4,53*	0,45
RCpre-fu	-0,91	-1,36	-4,08*	-0,45
Stress (DASS21)				
Pre	10	11	16	9
Post	9	9	6	5
FU	6	7	6	5
RCpre-post	-0,31	-0,62	-3,10*	-1,24
RCpre-fu	-1,24	-1,24	-3,10*	-1,24
Self-compassion (SCS-SF)				
Pre	25	20	17	20
Post	36	27	41	29
FU	31	31	42	33
RCpre-post	1,97*	1,25	4,30*	1,61

RCpre-fu	1,07	1,97*	4,48*	2,33*
Difficulties in emotion regulation scale (DERS)				
Pre	51	77	61	44
Post	44	63	43	49
FU	32	58	40	41
RCpre-post	-1,35	-2,69*	-3,46*	0,96
RCpre-fu	-3,65*	-3,65*	-4,04*	-0,58
Cognitive flexibility (CFI)				
Pre	102	76	57	89
Post	113	75	98	99
FU	107	77	103	100
RCpre-post	1,28	-0,12	4,78*	1,17
RCpre-fu	0,58	0,12	5,36*	1,28

Notes. Pre = pretest, Post = post measurement directly after intervention, FU = follow-up, 3 months after intervention. RC = reliable change index relating to change between Pre and FU. * $p < 0.05$

Processes Measures

Difficulties in emotional regulation. We observed that the participants' overall scores decreased after the intervention and continued to decrease three months after the end of the intervention. The ER of the individuals thus seems to have improved with the intervention, even three months after its end. The analysis of the RCI supports this improvement and showed a significant decrease in difficulties in regulating emotions after the intervention for participants 2 and 3, as well as significant differences between the pre-intervention scores and the scores obtained at follow-up for participants 1, 2 and 3. It thus seems that the intervention had immediate effects on the ER of participants 2 and 3, and in the long term on participants 1, 2, and 3.

Cognitive flexibility. As shown in Table 5, the results of the standardized scales reveal that participants 1, 3 and 4 increased their cognitive flexibility after the end of the intervention.

We also specify for participants 3 and 4, the scores continued to increase at follow-up measurement. However, the results of the RCI analysis showed that only participant 3 increased his cognitive flexibility significantly over time.

Self-compassion. Scores on the standardized self-compassion scale increased for all participants across the three measurement times. The RCI analysis reveals a significant increase in self-compassion scores for participants 1 and 3 before and after the intervention as well as a significant increase in self-compassion scores between the pre-intervention and follow-up assessments for participants 2, 3, and 4.

Outcomes measures

Depression, anxiety, and stress. Overall, we observed a decrease in depression, anxiety, and stress scores over time for all participants. The results of the RCI analysis showed that participants 1 and 4 have depression scores that decreased significantly during the three times of measurement, while for participant 3, only his follow-up score showed a significant difference with his score obtained before the intervention. Concerning anxiety and stress, only participant 3 showed a significant decrease of his scores during the three times of measurement.

6. Discussion

While many studies have shown interest in practices focused on soothing and affiliation following the CFT model of Paul Gilbert for many psychological disorders (for a meta-analysis, see MacBeth & Gumley, 2012), few have evaluated its effects directly on ER. The primary aim of this study was to evaluate the effect of a 12-week Compassion-Focused Intervention on ER difficulties in four people, using a multiple ABA design. A second aim was to evaluate the impact of this intervention on cognitive flexibility, self-compassion, depression, anxiety, and stress. Results showed preliminary but nevertheless promising evidence of clinical

effectiveness of CFT on ER difficulties. First, depression, anxiety and stress scores decreased for all participants on the visual analog scales and significantly on the standardized scales for depression for P1 and P4, and anxiety and stress for P3. Second, the intervention also appeared to have an effect on self-compassion scores, which increased on visual analog scales for all participants and significantly on standardized scales for P1 and P3 after the intervention and for P2, P3, and P4 three months after the end of the intervention. Although these results are interesting, we will further discuss the results on ER and cognitive flexibility. Results show a decrease in ER difficulties for the 4 participants with moderate significant decreases according to the results of the NAP and PEM analyses. However, the changes in ER occurred at different rates, times, and in different patterns revealing the individual variability of this change process. Specifically, participants 1 and 2 showed a rapid response to the intervention by revealing lower ER scores after the first session than their baseline. Nevertheless, these same participants showed significant fluctuations in the following sessions until they stabilized after the end of the intervention. Regarding participants 3 and 4, their responses are more gradual during the intervention with more marked changes after the end of the intervention.

However, there are some similarities in the evolution of the participants. For example, participants 1, 2 and 4 shows a marked decrease in their scores after session 6. This session is about experiencing compassion for the first time from the inside by connecting to a quality of compassion. These results are also sustained after session 7 which consists of connecting to one's compassionate self. Putting these results into perspective with the content of the program sessions, it suggested that the visualization practices of connecting to a compassionate part of oneself and observing the sensations related to this space of kindness, strength and wisdom within oneself allows participants to better manage their emotions. Another piece of information revealed by the visual analysis involves the scores of participants 1, 2 and 3 after session 10, which tend to increase again. Session 10 offers participants to connect to difficult

and painful emotions of shame and guilt and then to connect to their compassionate self. This session can therefore be emotionally difficult and uncomfortable which could explain this increase in scores shared by the three participants. Finally, the visual analyses suggest that the fluctuations of the ER scores during the intervention and their stabilization after the end of the intervention reveal that the latter does not seem to have an immediate effect but rather a short- and long-term effect. These results are reinforced by the results and analyses of the scores obtained by the DERS-SF. Indeed, two of the participants showed a significant decrease in ER difficulties immediately after the end of the intervention and three showed significant decreases between the beginning of the study and the follow-up period. The maintenance of the results and their improvement three months after the end of the intervention attest to the long-term effect of the intervention. These effects can be compared with the type of practices used in the program. Indeed, the intervention is mainly based on visualization practices. In clinical psychology, mental images are often seen as particularly powerful in their emotional effects (for a review, see Holmes & Mathews, 2010; Hackmann et al., 2011, p. 34). However, in CFT, imagery practices are used for the development of a motivation to develop affiliated motives, emotions, and competencies underpinning compassion that play important roles in ER and well-being (Gilbert, 2014, 2015, 2017a). As such, this model is well suited to provide therapeutic opportunity to those whose capacity to regulate difficult emotion has been compromised by early trauma or painful memories. However, a typical response to difficult emotions is to try to avoid them and not feel them (Feldner et al., 2003; Monestès et al., 2018). A key objective of CFT is to help individuals effectively engage with their difficult emotions and overcome this avoidance tendency. However, this work can be difficult and individuals, exposing themselves to painful emotions, may overflow to feel worse before they see improvements (Steffen, Foxx, et al., 2021). This could therefore explain inter-individual differences in the evolution of participants' ER difficulties.

The results on cognitive flexibility are surprising. Indeed, several studies have shown that self-compassion practices allow to develop another way of apprehending one's emotions, notably by regulating them through cognitive restructuring strategies (Allen & Leary, 2010; Neff, 2003). However, we only observe slight improvements in cognitive flexibility on all our measurement modalities. These results invite us to focus our attention on two aspects: the effects of the practices used in CFT and the temporality of changes in representations and ways of thinking. Concerning the effects of the practices used in CFT, many studies have shown that the practices of calming breathing and compassionate focused imagery promote a better regulation thanks to physiological effects such as the increase of cardiac variability and more globally the mobilization of the parasympathetic system (for a meta-analysis see Di Bello et al., 2020). Thus, it is possible that the practices used in CFT first have a physiological and behavioral impact before having an impact on the modification of cognitions. This first aspect is to be put with the second point we wanted to address. Cognitive flexibility is here understood as the human ability to adapt cognitive processing strategies to face new and unexpected conditions (Cañas et al., 2003). It involves many changes, including a new representation of oneself and one's way of thinking. Studies show that cognitive flexibility are intrinsically linked to attentional processes (Moore & Malinowski, 2009). Studies showed that attentional regulation can be developed through mindfulness practices, yet the practices used in this program rely solely on imagery and breathing practices. Therefore, imagery and breathing practices appear to rely on other factors to develop ER.

7. Limitations

These results should be viewed in the context of several limitations of this study. First, the baseline measurements were relatively short and lack stability, a longer baseline measurement would have been preferable. It would also have been better to use a multiple

baseline design in which the intervention starts at a random time point and data collected during the baseline phase and the intervention phase can then be compared. This kind of design makes it possible to draw causal inferences of treatment effects even though generalizability is lower than for experimental group studies (Kratochwill & Levin, 2015). In addition, randomizing the baseline length makes it possible to increase statistical power (Edgington, & Onghena, 2007). Secondly, all measurement was conducted with self-report, increasing the risk for common method variance. Other assessment methods, such as physiological measures of heart rate variability could have complemented these results (D. P. Williams et al., 2015). Furthermore, despite the use of VAS and standardized measures, ER remains difficult to ultimately assess. The use of ecological measures in future studies would more accurately capture the nuances in ER processes, their relationship to psychopathology, and how individuals use ER skills over time and across contexts (Nauphal et al., 2021). Finally, although ER is identified as a transdiagnostic process, design of the study does not allow for generalizability of our results. Indeed, it's a limitation shared by all single case studies. However, this design allows for the examination of participant data only at an individual level. Thus, although numerous studies show the efficacy of CFT on many severe psychopathological disorders (e.g., Cuppage et al., 2018), future research is needed to assess the psychological processes underlying CFT's efficacy on ER. Ultimately, randomized controlled studies would assess these processes change by comparing the practices used in CFT to other interventions that have already shown effects on ER such as mindfulness or programs focused on emotional skills development.

8. Conclusion

This study underlines the interest of using SCED to understand the process of ER change during a CFT-based intervention. Indeed, the results lead us to consider the importance of

accurately evaluating the impact of breathing and compassion focused imagery practices on ER skills and the evaluation of the processes mediating this effect. This study reveals promising effects that could be clarified by future randomized controlled studies that will allow to specify the processes of effectiveness of this therapy on ER.

The results of this multiple single-case study showed promising results of the compassion-based program. Using visual analog and standardized scales, the program showed effects on decreasing emotional regulation difficulties, symptoms of depression, anxiety and stress, and increasing self-compassion. This study also revealed the absence of concluding results on cognitive flexibility. These results led us to conduct a study using a randomized controlled design to test the effect of the intervention on the emotional regulation and mental health of individuals compared to another intervention.

Chapter 8: Reducing Emotion Dysregulation: A Randomized Controlled Trial comparing Online Compassion focused Therapy with an Emotional Competencies Program

Marine Paucsik¹, Céline Baeyens¹, Damien Tessier² & Rebecca Shankland^{3,4}

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¹Univ. Grenoble Alpes, LIP/PC2S, 38000 Grenoble, France

²Univ. Grenoble Alpes, SENS, 38000 Grenoble, France

³ Univ. Lumière Lyon 2, DIPHE, 69676 Bron Cedex, France

⁴ Institut Universitaire de France

1. Résumé

Objectifs. Cette étude contrôlée randomisée visait à évaluer les effets de deux interventions sur la régulation des émotions, les symptômes de dépression, d'anxiété et de stress, le bien-être, l'autocompassion et les compétences émotionnelles. Cette étude avait également pour objectif d'évaluer le rôle médiateur de la régulation émotionnelle sur l'effet des deux interventions sur les symptômes de dépression, d'anxiété et de stress.

Méthode. Cent soixante-dix-neuf personnes ayant des difficultés de régulation des émotions ont été assignées au hasard à un programme de 12 semaines axé sur la compassion (CFP), à un programme de compétences émotionnelles (ECP) ou à une condition contrôle sur liste d'attente (WL). Les participants ont rempli des mesures avant et après l'intervention et trois mois après la fin de l'intervention..

Résultats. Les résultats ont montré que (1) la crédibilité perçue, les attentes et la satisfaction ne différaient pas entre les deux interventions, (2) les deux interventions réduisaient les difficultés de régulation émotionnelle, les scores de dépression, d'anxiété et de stress, et amélioraient le bien-être, l'autocompassion et les compétences émotionnelles ; (3) l'ECP était plus efficace pour améliorer le bien-être que le CFP ; (4) le CFP était plus efficace pour améliorer les compétences émotionnelles que l'ECP, et (5) les difficultés de régulation émotionnelles médiatisaient l'effet des interventions sur la dépression, l'anxiété et les symptômes de stress.

Conclusions. Les résultats offrent un soutien préliminaire sur l'utilité du CFP et de l'ECP en ligne pour réduire la dysrégulation émotionnelle, les symptômes de dépression, d'anxiété et de

stress et pour augmenter le bien-être, l'auto-compassion et les compétences émotionnelles. Les résultats sont discutés quant à l'importance de la régulation des émotions pour la santé mentale.

Aspects cliniques :

- Les personnes ayant des difficultés de régulation des émotions perçoivent le PFC et le PEC comme crédibles et susceptibles de les aider.
- Le PFC et le PEC en ligne sont des interventions efficaces pour réduire la dysrégulation des émotions.
- Les pratiques fondées sur la compassion sont plus efficaces pour développer les compétences émotionnelles.
- Les pratiques fondées sur la compassion et les pratiques liées aux compétences émotionnelles réduisent les symptômes de dépression, d'anxiété et de stress car elles ciblent un processus commun : la dysrégulation des émotions.

Mots-clés : Compassion; Autocompassion; Régulation émotionnelle; Processus psychologiques; Santé mentale

2. Abstract

Objectives. The present randomized controlled study aimed to evaluate the effects of two interventions on emotional regulation, depression, anxiety and stress symptoms, well-being, self-compassion, and emotional competencies. This study also aimed to evaluate the mediating role of emotion regulation on the effect of both interventions on symptoms of depression, anxiety and stress.

Design. One hundred and seventy-nine individuals with emotion regulation difficulties were randomly assigned to a 12-weeks Compassion Focused Program (CFP), an Emotional Competencies Program (ECP) or a Waitlist control condition (WL).

Methods. Participants completed pre-, post- and three months follow-up measures of each outcome.

Results. Results showed that (1) perceived credibility and expectancy and satisfaction did not differ between the two interventions, (2) both interventions reduced emotion regulation difficulty, depression, anxiety and stress symptoms, and enhanced well-being, self-compassion and emotional competencies; (3) ECP was more effective to enhance well-being than CFP; (4) CFP was more effective to enhance emotional competencies than ECP, and (5) Emotion regulation difficulty mediated the effect of the interventions on depression, anxiety and stress symptoms.

Conclusions. Findings offer preliminary support for the usefulness of online CFP and ECP to reduce emotion dysregulation, symptoms of depression, anxiety, and stress and to increase well-being, self-compassion and emotional competencies. Results are discussed regarding the importance of emotion regulation for mental health.

Practitioner points

- Individuals with emotion regulation difficulties perceive CFP and ECP as credible and as likely to help them
- Online CFP and ECP are effective interventions to reduce emotion dysregulation
- Compassion practices are more effective to develop emotion competencies
- Compassion based practices and emotion competencies practices reduce depressive, anxiety and stress symptoms because it targets a common process: emotion dysregulation

Keywords: Compassion; Self-compassion; Emotional regulation; Psychological processes; Mental health

3. Introduction

One of the main targets in psychotherapy is emotional regulation (ER, Berking et al., 2008). ER can be defined as a process that individuals engage in implicitly or explicitly to downregulate or upregulate emotional states and achieve personal goals (Gross, 2015). Specifically, it refers to all automatic or intentional attempts to modify the type of emotion, its duration, intensity, or manifestation (Gross, 1998; Gratz & Roemer, 2004). Several regulation strategies have been identified in research such as cognitive reappraisal, acceptance, ruminations, or emotional suppression (Brockman et al., 2017). Some strategies, however, have been identified by research as more functional than others (e.g., Hu et al., 2014). However, recent models of ER postulate that the effectiveness of ER depends not only on the type of strategies used but also on the context in which the individual finds him or herself and the goals he or she is aiming for in the short and long term situation (Aldao & Nolen-Hoeksema, 2012; Bonanno et al., 2004). Thus, rather than talking about functional or dysfunctional strategies, it seems that flexible ER is more efficient in terms of short- and long-term well-being (Kobylińska & Kusev, 2019). Indeed, the environment we live in is constantly changing. We must constantly adapt to it, which includes regulating our emotions not by always using the same strategy, but rather by using the most useful strategy to meet the demands of the situation and the desired short and long term goals (Aldao et al., 2015; Kobylińska & Kusev, 2019). Thus, ER is a key factor in well-being (Aldao et al., 2010; Berking & Wupperman, 2012) not only because it allows us to accomplish our goals (Aldao et al., 2015), but even more broadly because it enables us to better cope with the demands of the environment (Bonanno & Burton, 2013; Jarymowicz & Imbir, 2015).

However, difficulties with ER have been identified by numerous studies as playing a central role in the development, maintenance or worsening of many psychopathological

disorders (for reviews see, Aldao et al., 2010; Sloan et al., 2017). These research studies have included an understanding of ER as a transdiagnostic process (Cludius et al., 2020). By targeting this process, and modifying it through targeted interventions, this can be expected to reduce the risk of clinical symptomatology (Morris & Mansell, 2018).

Gross's model is the most widely used model to understand ER. However, another perspective exists, that of emotional intelligence or Emotional Competence (EC) (Peña-Sarrionandia et al., 2015). This approach focuses more on individual differences in emotional skills than on the processes that allow people to regulate their emotions (Akerjordet & Severinsson, 2007; Roberts et al., 2007). EC refer to a set of five skills that operate on an intra- and interpersonal level: (1) emotion identification, (2) emotion understanding, (3) emotion expression, (4) emotion use, and (5) ER (Mayer & Salovey, 1997; Mikolajczak et al., 2014; Petrides & Furnham, 2003). Emotional identification is about connecting with your emotional experience rather than avoiding it (Hayes et al., 1996; Terasawa et al., 2013; Williams et al., 1997). The second dimension consists in understanding emotional information, the manner in which they combine, and their causes and consequences (Mayer & Salovey, 1997; Schneider et al., 2013). Identifying and understanding one's emotions are also two dimensions of emotional awareness, and are therefore two preliminary skills for the ER (Barrett & Gross, 2001; Berking & Wupperman, 2012; Boden & Thompson, 2015; Gratz & Roemer, 2004). Emotional expression also plays a major role on ER: it can concern the expression or suppression of emotional expression, whether the emotion is positive or negative. It will be considered adaptive if it is appropriate in the context (Bonanno et al., 2004; Kalokerinos et al., 2017). Finally, concerning their use, our emotions can help us to make decisions and adapt. Indeed, emotions provide individuals with information about their environment and their progress toward goals and thereby influence their judgments, decisions, priorities, and actions (Schwarz, 1990; Schwarz & Clore, 1983).

Chapter 8: Reducing Emotion Dysregulation: A Randomized Controlled Trial comparing Online Compassion focused Therapy with an Emotional Competencies Program

There are effective EC-based interventions aiming at developing emotional skills and increasing ER (Hodzic et al., 2018; Kotsou et al., 2018). However, other forms of promising interventions targeting ER have emerged, such as Compassion-Based Interventions (CBIs, Inwood & Ferrari, 2018). Studies show that ER may be one of the processes mediating the effect of self-compassion on mental health. However, most of these studies are observational and non-interventional and there are still too few Randomized Controlled Trials (RCT) evaluating the effect of CBIs on ER, as revealed by a recent meta-analysis (Paucsik et al., 2022).

Compassion Focused Therapy (CFT) is one of the most evaluated approaches to developing compassion (Kirby, 2017). This psychotherapy, proposed by Gilbert 20 years ago, draws on work from evolutionary psychology, attachment theory, and applied psychology processes from neuroscience and social psychology (Gilbert, 2010b). The primary goal of CFT is to help individuals to develop motivation, emotions, and affiliative skills underlying compassion which plays an important role in ER, well-being, and prosocial behaviors (Gilbert, 2014, 2015, 2017). To do so, CFT integrates psychoeducational aspects that allow a better understanding of human functioning through a model of three circles of ER: (1) the threat/self-protect system, (2) the drive-reward system, and (3) the affiliative/soothing system (Gilbert, 2009a). The psychoeducational elements will help discover how to develop a regulation based on appeasement and affiliation by adopting a motivation focused on the development of compassion. This motivation can be sustained by several practices such as the soothing breathing rhythm and compassionate imagery practices (e.g. safe place or compassionate self) that will allow the development of the attributes of compassion cited as care for well-being, sensitivity, distress tolerance, empathy and non-judgment (Gilbert, 2009). This therapy therefore aims at developing several abilities intrinsically linked to ER but which could also mobilize all emotional skills. Indeed, developing a motivation to compassion involves to 1) recognising suffering, 2) understanding the universality of suffering in human experience, 3)

feeling moved by the person suffering and emotionally connecting with their distress, 4) tolerating uncomfortable feelings aroused (e.g., fear, distress) so that we remain open to and accepting of the person suffering, and 5) acting or being motivated to act to alleviate suffering (Gu et al., 2017; Strauss et al., 2016), which are relevant to the EC (see above). A growing number of studies have recently evaluated CFT protocols and revealed interesting effects on mental health but more specifically on ER difficulties (for a review, see Leaviss & Uttley, 2015). However, Leaviss and Uttley's literature review did not use meta-analytic techniques due to lack of available data especially because most studies on CFT were uncontrolled studies.

Although CFT seems promising for developing new skills in ER, few studies have directly evaluated this skill or its potential mediating role in the effectiveness of this psychotherapy.

Therefore, the aim of this RCT is to evaluate the effect of a Compassion Focused Program (CFP) and a Emotion Competencies Program (ECP) on ER difficulties and , symptoms of depression, anxiety and stress, well-being and other change processes such as self-compassion, emotional competencies compared to a waiting-list control group. We hypothesized that both programs would be more effective than the waiting list control group to enhance ER, self-compassion, EC, well being and to decrease depression, anxiety and stress. We also hypothesized that ER will mediate the effect of the CFP and ECP on symptoms of depression, anxiety and stress.

4. Methods

1. Transparency and openness

This study has received the favorable approval from a human protection committee (Number of approval 2020.09.03 four_ 20.05.13.42837). It was pre-registered on OSF (Paucsik

et al., 2021) and on clinical trial (ID: NCT05113680). The present study employed a three-arm Randomized Control Trial (RCT) design to compare the Compassion Focused Program (CPF), the Emotion Competence Program (ECP) and a waitlist control group (WL) in community with difficulties in ER. This study also follows the guidelines of the CONSORT 2010 Checklist of information to include when reporting a randomized trial presented in Table 1.

2. Participants

Figure 1 summarizes the recruitment process. Prospective participants were recruited through online advertisements in the community. Inclusion criteria were as follows : (1) a score above 20 on the Difficulty in Emotional Regulation Scale (DERS), i.e. at least one item of the scale (meaning an emotional regulation difficulty) being rated as being present sometimes, (2) understanding, speaking, and reading French, (3) have given consent to participate in the study, and (3) belonging to a social security scheme. Participants were excluded if they (1) had been involved in active emotion regulation intervention (involving CBT, mindfulness, or relaxation) within the last 3 months and (2) were taking anti-anxiolytic medication where the dose had not been stable over one month prior to entering the study. After selection and assessment, 179 individuals were randomized in three group arms.

3. Overview of procedure

After informed consent was obtained, all participants completed the baseline questionnaires. Allocation of participants to one of the three groups was concealed until participants had completed the baseline questionnaire. They were subsequently informed of the condition to which there were randomly assigned them: CFP, ECP, or WL. Participants were randomly assigned to conditions based on two principles: (1) the groups were formed as inclusion proceeded (i.e., as soon as the CFP or ECP group reached 8 participants, it could start)

Table 1

CONSORT 2010 checklist of information to include when reporting a randomised trial

Section/Topic	Item No	Checklist item	Reported on page No
Title and abstract			
	1a	Identification as a randomised trial in the title	1
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)	1
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	2-4
	2b	Specific objectives or hypotheses	4
Methods			
Trial design	3a	Description of trial design (such as parallel, factorial) including allocation ratio	5
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	5
Participants	4a	Eligibility criteria for participants	5-6
	4b	Settings and locations where the data were collected	5-6
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	8-10
Outcomes	6a	Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed	6-8
	6b	Any changes to trial outcomes after the trial commenced, with reasons	13
Sample size	7a	How sample size was determined	10
	7b	When applicable, explanation of any interim analyses and stopping guidelines	NA
Randomisation:			

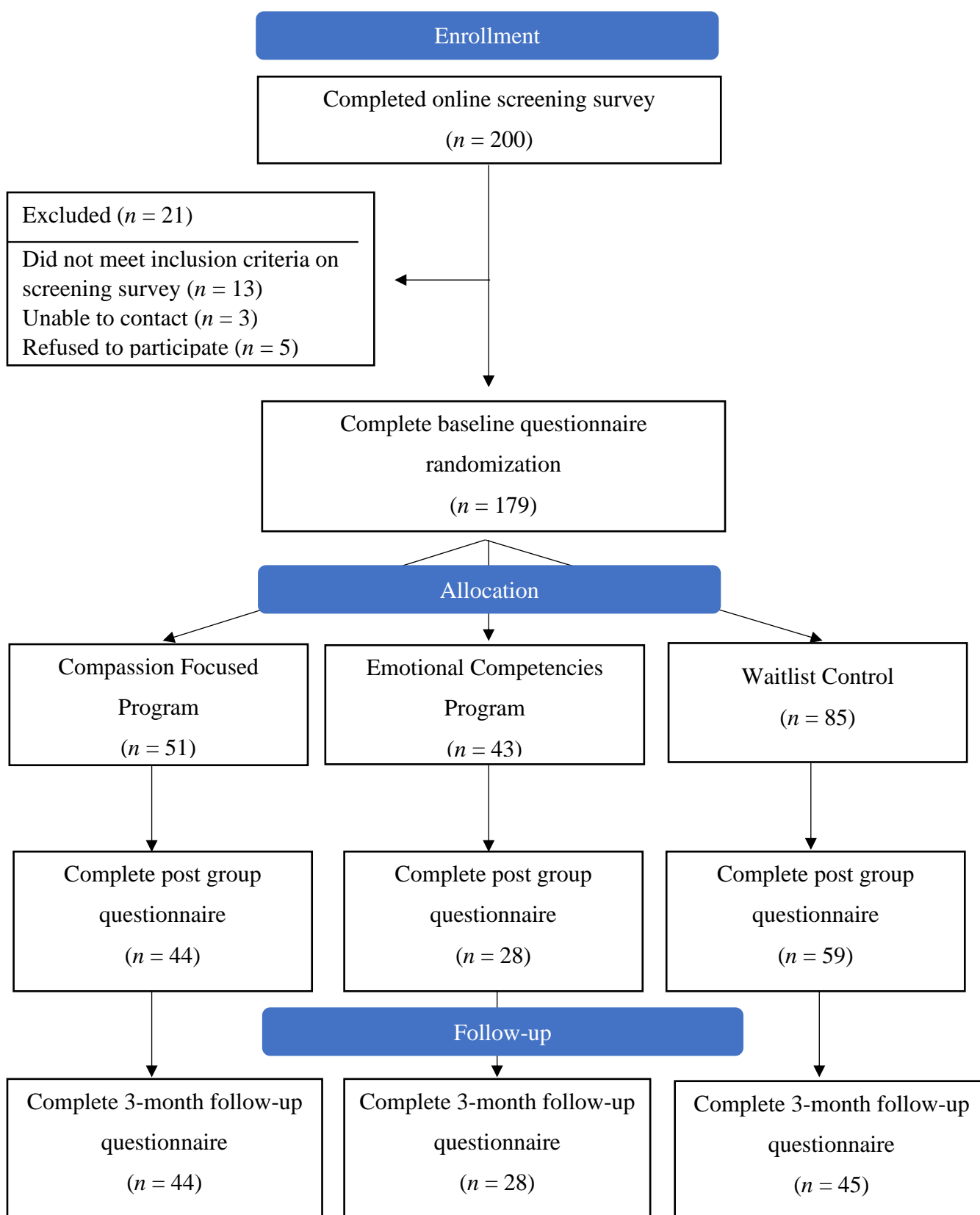
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Sequence generation	8a	Method used to generate the random allocation sequence	5
	8b	Type of randomisation; details of any restriction (such as blocking and block size)	5
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	5
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	5
	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	5
Blinding	11b	If relevant, description of the similarity of interventions	9
	12a	Statistical methods used to compare groups for primary and secondary outcomes	11-12
Statistical methods	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	11-12
	<hr/>		
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome	12
	13b	For each group, losses and exclusions after randomisation, together with reasons	12
Recruitment	14a	Dates defining the periods of recruitment and follow-up	5
	14b	Why the trial ended or was stopped	5
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	13
Numbers analysed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	13
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	14
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	NA
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory	14-16

Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	NA
<hr/>			
Discussion			
Limitations	20	Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses	17-19
Generalisability	21	Generalisability (external validity, applicability) of the trial findings	17-19
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	17-19
<hr/>			
Other information			
Registration	23	Registration number and name of trial registry	5
Protocol	24	Where the full trial protocol can be accessed, if available	5
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	20
<hr/>			

Figure 1

CONSORT Flow Diagram of the recruitment process



and (2) the control group consisted of twice as many participants as the experimental groups in order to prevent dropout during the study. After they were assigned to the active groups, a therapist contacted them to inform them of the beginning of the program, the schedule, and how to complete the program online. Each participant then attended the program for 12 weeks, after which they completed a second online questionnaire. During this time, participants on the waiting list were given information about one of the two interventions and were also asked to complete a second set of questionnaires 12 weeks after the first. A third set of questionnaires was sent to all participants 3 months after the second questionnaire. All participants and therapists were blinded but not the researcher.

4. Measures

Difficulties in Emotion Regulation Scale. Difficulties in emotion regulation was assessed with the French version of Difficulties in Emotion Regulation Scale – Short Form (DERS-SF, Gratz & Roemer, 2004; Victor & Klonsky, 2016a). The DERS-SF is an 18-item self-report multidimensional scale which examines six difficulties in emotion regulation : (1) unacceptance of negative emotions (*e.g., When I'm upset, I feel guilty for feeling that way*) , (2) difficulty engaging in goal-directed behaviors in the presence of negative emotions (*e.g., When I'm upset, I have difficulty concentrating*), (3) difficulty controlling impulsive behaviors in the presence of negative emotions (*e.g., When I'm upset, I lose control over my behaviors*), (4) limited access to emotion regulation strategies perceived as effective (*e.g., When I'm upset, I believe that I'll end up feeling very depressed*), (5) lack of emotional awareness (*e.g., I am attentive to my feelings.*, reversed item), et (6) lack of emotional clarity (*e.g., I am confused about how I feel*). Items are scored on a five-point Likert scale. Lower scores indicate the presence of difficulties in emotion regulation. Cronbach's alphas were .87 for unacceptance, .90 for difficulty engaging

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in goal-directed behaviors, .88 for difficulty controlling impulsive behavior, .75 for limited access to emotion regulation strategies, .86 for lack of emotional awareness, .66 for lack of emotional clarity and .90 for the total scale.

Depression, Anxiety and Stress. Symptoms of depression, anxiety, and stress were assessed using the French version of the Depression, Anxiety and Stress Scale (DASS-21, Lovibond & Lovibond, 1995). This scale is composed of 21 items scored from 0 (did not apply to me at all in the past week) to 3 (applied to me very often or most of the time in the past week). It measures severity of depression (e.g., *I couldn't seem to feel anything positive*), anxiety (e.g., *I worried about situations in which I might panic and make a fool of myself*), and stress (e.g., *I had trouble calming down*) during the past week. Cronbach's alphas were .90 for depression, .81 for anxiety, and .85 for stress.

Well-being. Well being was measured using the 18-item version of the Psychological Wellbeing (PWB) Scale (Ryff & Keyes, 1995). This scale assesses six sub-dimensions of well-being: (1) self-acceptance (e.g., *I like most parts of my personality*), (2) positive relations with Others (e.g., *Maintaining close relationships has been difficult and frustrating for me*), (3) autonomy (e.g., *I have confidence in my own opinions, even if they are different from the way most other people think*), (4) environmental mastery (e.g., *The demands of everyday life often get me down*), (5) purpose in life (e.g., *I live life one day at a time and don't really think about the future*), and (6) personal growth (e.g., *For me, life has been a continuous process of learning, changing, and growth*). Items are rated on a Likert scale from 1 (Strongly agree) to 7 (Strongly disagree). Cronbach's alphas were .40 for self-acceptance, .20 for position relationship, .31 for autonomy, .41 for environmental mastery, .22 for purpose in life, .38 for personal growth and .80 for the total scale.

Self-compassion. Self-compassion was measured with the French version of the Self-Compassion Short Form Scale (SCS-SF, Neff, 2003). SCS-SF is a 12-item instrument with six

subscales assessing elements of self-compassion: (1) self-kindness (e.g., *I try to be understanding and patient toward those aspects of my personality I don't like*), (2) self-judgment (e.g., *I'm disapproving and judgmental about my own flaws and inadequacies*), (3) common humanity (e.g., *I try to see my failings as part of the human condition*), (4) isolation (e.g., *When I'm feeling down, I tend to feel like most other people are probably happier than I am*), (5) mindfulness (e.g., *When something painful happens I try to take a balanced view of the situation*) and (6) overidentification (e.g., *When I fail at something important to me, I become consumed by feelings of inadequacy*). Cronbach's alphas were .72 for self-kindness, .75 for self-judgment, .67 for common humanity, .48 for isolation, .72 for mindfulness, .48 for over-identification and .80 for the total scale.

Emotional competencies. Emotional competencies were assessed with the Short Profile of Emotional Competence (S-PEC; Mikolajczak et al., 2014). This is a multidimensional scale which measures the five emotional competencies : (1) identification (e.g., *When I am touched by something, I immediately know what I feel*), (2) comprehension (e.g., *When I am feeling low, I easily make a link between my feelings and a situation that affected me*), (3) expression (e.g., *I am good at describing my feelings*), (4) regulation (e.g., *I easily manage to calm myself down after a difficult experience*) and (5) utilization (e.g., *I use my feelings to improve my choices in life*). The five skills are assessed in the inter- and intra-personal dimensions. Cronbach's alphas were .86 for identification, .76 for comprehension, .70 for expression, .83 for regulation, .77 for utilization and .93 for the total scale.

Credibility/Expectancy. The French version of the Credibility/Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000; Coste et al., 2019) was used to assess participants' credibility (e.g., *At this point, how logical does the therapy offered to you seem ?*) and expectations of the intervention they would receive (e.g., *At this point, how much do you really feel that therapy will help you to reduce your symptoms ?*). The scale consists of six items, four of them are

measured on a nine-point scale ranging from 1 (“*not at all*” or “*none*”) to 9 (“*very*”) and two are measured on an 11-point scale ranging from 0% to 100%. The measure score is summed and ranges from 3 to 27. Higher scores indicate participants having higher credibility or expectation of improvement because of the treatment. This scale was completed by the participant of the two interventional arms during the first measurement time, before they started the CFP and the ECP. Cronbach’s alphas were .87 for Credibility, .86 for Expectancy and .89 for the total scale.

Satisfaction with intervention. Participants’ level of satisfaction with the experimental (CFP) and active control intervention (ECP) was assessed with the Satisfaction With Therapy and Therapist Scale—Revised (STTS–R, Oei & Green, 2008). This scale is composed of 13 items assessing three sub-dimensions: (1) the patient’s level of Satisfaction with Therapy (ST, e.g., *My needs were met by the program*), (2) the patient’s level of Satisfaction With Therapist (SWT, e.g., *The therapist was friendly and warm towards me*) and (3) global improvement (e.g., *How much did this treatment help with the specific problem that led you to therapy?*). Cronbach’s alphas were .88 for satisfaction with therapy, .86 for Expectancy and .89 for the total scale, .79 for satisfaction with therapist and .90 for the total scale.

Testimonials. Some participants also wished to make a testimonial of their participation in these interventions (see Appendix A and B).

5. Interventions

The Compassion Focused Program (CFP)

The CFP was designed by the first author and Francis Gheysen, both experts in CFT. The program is composed of 12 two-hour group sessions and is based on the principles of CFT as described by Gilbert (see Gilbert, 2010, 2014; Gilbert & Procter, 2006). Each session proceeds in three steps: (1) 30 minutes of feedback on practices carried out by participants

between sessions, (2) 30 minutes of psycho-education and exchanges with the participant on the theme of the session, and (3) 1 hour of soothing breathing rhythm or compassionate imagery practice followed by discussions on the practice. For more details, see Table 2 which presents the sessions overview. The goal of this program is to help individuals (a) develop a motivation for compassion, (b) create an internal safe space, (c) soothe themselves, (d) address their painful emotions with insight, wisdom and courage, and (d) engage in compassionate behavior. At the first session of the program, participants received a CFP training manual including all the psycho-educational aspects, the practice guides, the intersession practices to be carried out as well as a practice follow-up journal. After each session, they also received an audio file with the practice done during the session and the one with the practice to be done during the following day.

The Emotional Competence Program (ECP)

The ECP is a translated and adapted version by the first author of the program developed by Kotsou and colleagues (Kotsou et al., 2011; 2022). The program consists of 12 sessions. Each emotional competence is developed in two sessions and two additional sessions are used to synthesize the training of the skills and to evaluate the program. The details of the program sessions are presented in Table 3. Each session starts with a feedback on the home practices, then a theoretical focus on the skill is introduced for 30min followed by 1h of practice and discussions. Depending on the skill developed, the program is mainly based on identification and functional analysis charts of emotions, sensations, thoughts, action tendencies, behaviors and short and long time consequences. It is also based on mindfulness practices to facilitate the identification and observation of emotions, but also on relaxation practices such as Schultz' autogenic training. The intervention aims at helping individuals to “(a) observe the relations among environmental triggers, beliefs, thoughts, emotions, and behaviors; (b) identified the

conditioned links among emotions, thoughts, action tendencies, and habitual behaviors; (c) to use various emotion regulation strategies as appropriate to the individual's goal and the context; (d) to express and listen to emotions in an adaptive manner; and (e) to use emotions and emotional situations to clarify their priorities and needs" (Kotsou et al., 2011, p.830). During the first session, the participants also received a training manual including all the theoretical information about the program, the practice supports and instructions for the inter-session practices.

6. Therapists

The interventions were delivered by 6 psychologists trained by the first author to the two programs for three days each. For the CFP, the training was based on the therapist's skills required to provide compassionate therapy (Liddell et al., 2017) and on experience with the program's practices. For the ECP, psychologists were trained to understand the theoretical model of emotional competences (Mikolajczak et al., 2014) and to develop them. Supervision sessions were offered to psychologists during the program.

7. Power analysis

A priori sample size analyses were conducted using WebPower online software (Zhang & Yuan, 2018), running on the WebPower R Package (Zhang et al., 2021), based on the observed average effect size of interventions reported by Jazaieri et al., (2018). Based on an effect size of $d = .60$, an intra-class correlation of $.10$, a power of $\beta = .90$, a significance level of $.05$, and a group size of approximately 8 persons per group, the a priori power analysis performed on a randomized trial with 3 arms cluster design (i.e., 2 treatments and 1 control), identified that 24 groups were needed (i.e., $n = 192$).

Table 2

Content of the online Compassion Focused Program (CFP)

Sessions	Themes	Practice
1	Presentation of the program and scientific basis.	Introduction to the soothing breathing rhythm and exploration of an affiliative motivation
2	Discovering the emotional regulation systems	Drawing of the three circles of regulation and Soothing Breathing Rhythm
3	Embracing compassion	Practice of the soothing breathing rhythm and acceptance of unpleasant emotions
4	Creating internal safety space	Imagery of the safe place
5	Connect to an ideal compassionate image	Compassionate imagery
6	Develop your compassionate attributes	Imagery of the qualities of compassion
7	Discovering your compassionate self	Imagery of the compassionate self
8	Addressing and understanding self-criticism with compassion	Imagery of the critical self and the compassionate self
9	Dealing with difficult emotions	Imagery of difficult emotion with compassion
10	Dealing with shame and guilt	Imagery of shame and guilt with compassion
11	Writing to your compassionate part	Imagery of the compassionate self and writing the compassionate letter
12	Expanding your circle of compassion	Imagery of the circle of compassion

Note. The CFP was design by Paucsik, M., Gheysen, F and Delamillieure, P. in 2021.

Table 3

Content of the online Emotion Competencies Program (ECP)

Sessions	Themes	Practice
1	Program objective and scientific basis. To identify one's emotions.	Identification of body sensations in the body and identification chart of unpleasant and pleasant emotions
2	Identify one's own emotions and those of others	Mindfulness and emotion identification chart
3	Understand the functional value of emotions.	Understanding chart between emotions and thoughts
4	Understand the emotional message and identify the consequences of inappropriate coping strategies.	Identification of needs and analysis of strategies and short and long-term consequences on needs
5	Understand the importance of expressing emotions without judgment	Training in emotional expression without judgment
6	Express emotions in an adaptive way and listen to others' emotions.	Training in emotional expression in pairs
7	Use emotions to take care of oneself.	Functional analysis of needs and available strategies
8	Use emotions to make decisions and build psychological resources.	Functional analysis of strategies and formulation of alternative strategies
9	Regulate emotions through experiential acceptance in mindfulness meditation.	Mindfulness practices
10	Regulating emotions with cognitive restructuring techniques.	Formulation of alternative thoughts in role plays
11	Regulating emotions with our body	Relaxation of the Schultz autogenic training type
12	Encouraging pleasant emotional experiences and program evaluation.	Sharing of the learning achieved in the program.

Note. The ECP is a program translated and adapted from the program created by Kotsou et al. (2011)

8. Data analysis plan

Data were analyzed using JAMOVİ Version 1.2.27 (The Jamovi Project, 2020) and using an Intention To Treat analysis (ITT), recommended for RCTs (Schulz et al., 2010). ITT ensures the preservation of the benefits of randomization and avoids the introduction of bias during analysis (Jun et al., 2010). At baseline, group differences were examined with ANOVA

for age and chi-square for the other demographic data. To compare participants' expectations and satisfaction between the two interventions, we conducted t-tests.

Due to the nested nature of the data, multilevel linear growth modellings were performed – with Mixed Linear Models module of the GAMLj suite of JAMOVI – to test the main hypothesis. Generalized linear mixed model (GLMM) analysis allows for the requirements of ITT analysis and permits the inclusion of participants with missing values at T1 and T2 without imputations (Chakraborty & Gu, 2019).

Data was treated as a two-level hierarchical model (i.e., the three waves of measurement at Level 1 and participants at Level 2). Following the recommendations of Singer and Willett (2003), an unconditional model (Model 1) – with only an intercept and no explanatory variables – was tested in a preliminary step. This model partitions the variance of each dependent variable into within-individual and between-individual components and permits the examination of intra-class correlation. In a second step, an unconditional linear growth curve model (Model 2) was tested by including the variable “time” as a fixed parameter. This variable was centered on the first measurement (i.e., three waves of measurement, with Wave 1 coded as 0, Wave 2 coded as 1, and Wave 3 coded as 2) and represented the linear change in the treatment condition over time. In Step 3, the variable “condition” and the interaction term “Time × Condition” were added as predictors (Model 3). To examine the effect of the three conditions, we computed two orthogonal contrasts (Judd et al., 2011). The first contrast compared the WL with ECP and CFP (using -2, 1, 1 respectively for WL, ECP and CFP) was labeled “WL vs. ECP-CFP”, the other contrasted ECP with CFP (using 0, -1, 1, respectively for WL, ECP and CFP), and was labeled “ECP vs. CFP”. The variables “sex” and “age” were also included in Model 3 as a control variable. The “WL vs. ECP-CFP” and the “ECP vs. CFP” effect tested whether the treatment conditions and the control condition differed at baseline (time = 0), while the interaction “Time × WL vs. ECP-CFP” and “Time × ECP vs. CFP”

examined whether the linear rate of change over time differed across treatments. Models were compared based on the -2 log likelihood (i.e., likelihood ratio test / deviance test; Heck et al., 2013), with lower values indicating better model fit. Due to space restrictions, only the results of Models 1 and 3 are presented. An estimate of the effect size was reported using R^2 conditional (i.e., provides the variance explained by the entire model) and R^2 marginal (i.e., provides the variance explained only by fixed effects). To ascertain the mediation effects between the study variables, a further multilevel analysis was performed, in which “Time \times WL vs. ECP-CFP” and “Time \times ECP vs. CFP” were included as the input variables; “DERS” was modelled as mediator; and DASS was entered as the outcome variable. This multilevel mediation test is based on 2-1-1 models, as the input is situated at Level 2, and the mediator and the outcome are time-varying variables situated at Level 1 (Zhang et al., 2009). In this case, to prevent the risk of confounded mediation-effect estimations, a person-mean centering must be applied to the mediator variable in order to disentangle within-person from between-person effects (Zhang et al., 2009). Indeed, the composite effect without disaggregation is “generally an uninterpretable blend” (p.138) of between- and within-person effects (Raudenbush & Bryk, 2002). Given that “a paths” (i.e., from the input variable to the mediators) and “c paths” (from the input variable to the outcome) of the mediation were tested in the multilevel analyses related to Hypothesis 1 and 2, this further multilevel analysis examined “b paths” (i.e., from the mediator to the outcome) and “c’ paths” (i.e., from the input variable to the outcome, controlling for the mediators). Thus, “DASS” was regressed on “Time”, “WL vs. ECP-CFP”, “ECP vs. CFP”, “Time \times WL vs. ECP-CFP”, “Time \times ECP vs. CFP”, DERS at the within-person level (i.e., person-mean-centered mediator), and DERS at the between-person level (i.e., the individual-person mean of the mediator). The typical procedure to test for mediation effects is to use resampling methods to generate bias-corrected confidence intervals, but this conventional bootstrapping method cannot be applied to

multilevel modeling, because the assumption of independence of observations is violated when using nested or clustered data (Preacher & Selig, 2012). Accordingly, we utilized a Monte Carlo approach to resampling that allowed us to construct the appropriate confidence intervals. To do so, we used Selig and Preacher's (2008) web-based utility to generate and run R code for simulating the sampling distribution of each indirect effect (20,000 values). If the 95% CI from this simulation excludes zero, then the indirect effect test is significant ($p < .05$).

5. Results

1. Preliminary analysis

The total ITT sample consisted of 179 individuals (151 females) who responded to the baseline questionnaire. Table 4 shows the participant characteristics at baseline. The mean age was 39 years ($SD = 12.5$), and 94.5% of participants had French nationality. 84.9% of participants had completed higher education. Among the participants, 71.7% were in a couple, 56.1% had children, 46.4% were working and 15.1% were students. Finally, in our sample, 11.7% of the participants had been on a stabilized treatment for more than one month for mood regulation.

Of the 179 participants allocated to one of the three study arms, 51 (28%) did not complete the posttreatment assessment even though they had been invited three times in weekly intervals by email (CFP : $n = 10$, ECP : $n = 15$, WL : $n = 26$). Descriptive data at baseline are presented in Table 5. Our t-test did not show any significant differences in the age of the participants within the groups, however, our chi-square showed significant differences in some characteristics of our participants including having children, employment status, medication use and meditation experience. Participants who took part in the 3-month follow-up had higher well-being scores at T1 ($M = 74.54$, $SD = 10.21$) relative to those who did not

($M = 64.55$, $SD = 27.57$), $t(175) = -3.49$, $p < .001$, $d = -.5$. However, they did not differ on any of the other outcome measures, either at T1 or T2.

2. Attrition, credibility, expectancy, and satisfaction about the intervention

Overall, the attrition rate was moderate (36%, $n = 62$). Of those randomized to the intervention conditions, $n = 44$ (86%) of the CFP group and $n = 28$ (65%) of the ECP group followed up to T2 (see Fig. 1). In the WL condition, 69% answered the second questionnaire and only 52% for the follow-up. Based on our conservative approach, $n = 72$ completed all primary outcome measures and received the allocated intervention. Our analyses showed that there were no significant differences between our CFP and ECP participants regarding credibility ($t(93) = .79$, $p = .43$, $d = .16$) and expectation ($t(93) = .46$, $p = .64$, $d = .09$) about the interventions. Furthermore, our analyses show that there was no significant difference in scores of intervention satisfaction between participants in the CFP and ECP groups ($t(63) = -1.43$, $p = .16$, $d = -.38$) nor in their satisfaction towards the therapist in their group ($t(63) = -1.68$, $p = .09$, $d = -.45$).

3. Interventions effects on emotion regulation

The main aim of this study was to assess the effect of the CFP and ECP compare to WL condition. Table 6 presents the results of the GLMM analysis on difficulty in emotion regulation. The results showed a significant main effect of time and group. Moreover, a significant interaction effect of time x group was found between our three arm and no significant

Table 4

Baseline Sample Characteristics for the Intervention (CFP) and the active control group (ECP) and Control Group (Waiting-list, WL)

	WL (n=85)	ECP (n=43)	CFP (n= 51)	Statistics		
				<i>df</i>	F Value	<i>p</i> Value
Mean age (SD)	40.7 (13.9)	39.4 (11.2)	35.9 (10.7)	2/177	2.46	.08
				χ^2	V	<i>p</i> Value
Gender, <i>n</i> (%)				1.90	.103	.39
Male	17 (20%)	6 (13%)	6 (11%)			
Female	68 (80%)	37 (86%)	46 (89%)			
Marital status <i>n</i> (%)				3.13	.093	.54
Single / living alone	60 (70%)	30 (70%)	39 (75%)			
Married / living together	20 (24%)	11 (26%)	13 (25%)			
Other	5 (6%)	2 (5%)	0 (0%)			
Children <i>n</i> (%)				12.3	.261	.002
Yes	57 (67%)	25 (58%)	19 (37%)			
No	28 (33%)	18 (42%)	33 (63%)			
Highest education, <i>n</i> (%)				11.6	.180	.31
9 th Grade	4 (5%)	0 (0%)	0 (0%)			
High-School	9 (10%)	7 (16%)	7 (13%)			
Diploma/Degree						
Bachelor	19 (22%)	14 (33%)	16 (31%)			
Master's degree	38 (45%)	16 (37%)	26 (50%)			
Phd	5 (6%)	1 (2%)	1 (2%)			
Other	10 (12%)	5 (12%)	2 (4%)			
Employment, <i>n</i> (%)				23.5	.256	.009
Full-time paid work	35 (41%)	14 (33%)	17 (33%)			
Part-time paid work	9 (11%)	6 (14%)	2 (4%)			
Unemployed	2 (2%)	7 (16%)	6 (12%)			
Student	7 (8%)	7 (16%)	13 (25%)			
Retired	9 (11%)	2 (5%)	1 (2%)			
Other	23 (27%)	7 (16%)	13 (25%)			
Current medications, <i>n</i> (%)				17.9	.317	< .001
Yes	3 (4%)	13 (30%)	5 (10%)			
No	82 (96%)	30 (70%)	47 (90%)			
Meditation experience, <i>n</i> (%)				21.2	.343	< .001
Yes	11 (13%)	21 (49%)	20 (38%)			
No	74 (87%)	22 (51%)	32 (62%)			

Notes. Data presented as means (SD) or numbers (%). WL = Waiting List; ECP = Emotion Competence Program; CFP = Compassion Focused Program. Chi-squared were conducted for categorical variables and ANOVAs for continuous variables.

Table 5

Observed means at baseline and standard deviations for each primary outcome by condition over time.

	Baseline Mean (SD)	Post-intervention Mean (SD)	Follow-up Mean (SD)
Difficulties in Emotion Regulation (DERS)			
CFP	47.2 (12.7)	36.2 (10.2)	33.7 (10.5)
ECP	46.4 (12.4)	35.3 (10.2)	34.1 (9.30)
WL	37.7 (11.8)	34.5 (13.6)	33.8 (10.8)
Depression (DASS21)			
CFP	7.08 (4.27)	3.68 (3.80)	4.02 (3.53)
ECP	6.70 (4.62)	3.93 (4.12)	3.29 (3.10)
WL	4.52 (4.22)	4.64 (4.13)	3.94 (4.36)
Anxiety (DASS21)			
CFP	5.12 (3.51)	3.09 (3)	3.04 (3.77)
ECP	5.58 (3.59)	2.18 (2.88)	2.75 (2.34)
WL	2.96 (3.42)	2.75 (3.06)	2.61 (3.27)
Stress (DASS21)			
CFP	8.77 (3.54)	5.20 (3.29)	5.22 (3.76)
ECP	8.16 (3.15)	4.64 (3.38)	5.68 (2.79)
WL	6.47 (4.44)	6.88 (4.79)	5.61 (4.70)
Well being (PWB)			
CFP	79.4 (8.27)	82 (7.41)	84.9 (8.17)
ECP	75.8 (10.6)	81.3 (9.67)	82.6 (8.85)
WL	81.4 (10.4)	80.8 (14.2)	79.6 (19.7)
Self-compassion (SCS)			
CFP	36.3 (6.97)	41.2 (6.95)	42.4(9.71)
ECP	35.7 (6.72)	39.1 (7.17)	36.3 (15.9)
WL	40.9 (7.60)	41 (8.76)	29.5 (20.3)
Emotional Competencies (PEC)			
CFP	167 (21.4)	184 (18.3)	187 (21)
ECP	170 (24.2)	181 (21)	185 (23.5)
WL	179 (22.8)	181 (31.6)	176 (44.8)

Notes. WL = Waiting List; ECP = Emotion Competence Program; CFP = Compassion Focused Program.

effect of time x group was found between the two intervention groups. Thus, compared to WL, CFP and ECP' participants report a decrease in their difficulties in regulating their emotions over time.

Table 6

Intention-to-treat (ITT) linear mixed model analysis of group, time and interaction effects on Emotion regulation difficulty

	<i>b (SE)</i>	95%CI	<i>p</i>
Fixed Effects			
Intercept	52.83 (3.25)	46,44; 50,20	< .001***
Age	-.13 (.06)	-.25; -.02	.021*
Sex	-4.02 (2.01)	-7.93; -.06	.048*
WL vs. ECP-CFP	2.42 (.58)	1.28; 3.56	< .001***
ECP vs. CFP	.06 (1.20)	-2.30; 2.41	.962
Time	-5.07 (.48)	-6.01; -4.12	< .001***
WL vs. ECP-CFP × time	-1.63 (.32)	-2.26; -1.00	< .001***
ECP vs. CFP × time	-.36 (.62)	-1.58; .85	.561
Random Effects			
Level 2 intercept variance	81.64		
Level 3 intercept variance	.00		
log-Likelihood	-1578.22		
Conditional R2/Marginal R2	0.62/0.18		
log-Likelihood (null model)	-1630		
ICC (null model)	.68		

Notes. N = 179 participants. * $p < .05$, ** $p < .01$, *** $p < .001$

4. Post-hoc paired t-test

Post-hoc paired *t*-tests showed a significant decrease in emotion regulation difficulties levels from T0 to T1 in the CFP group, $t(42) = 6, p < .001, d = 0.9$, in the ECP group, $t(27) = 6.02, p < .001, d = 1.13$, and in the WL group, $t(61) = 1.91, p = .03, d = .24$. Moreover, significant changes emerged from T1 to T2 in CFP groups, $t(43) = 2.11, p < .05, d = .32$ with a decrease in emotional regulation difficulties scores,

but not in the ECP intervention, $t(23) = 1.08, p = .14, d = .22$ nor in the WLC group, $t(44) = 1.13, p = .13, d = .17$.

5. Intervention effect on depression, anxiety, stress and well-being

Regarding depression, anxiety and stress symptoms, the results showed a main effect of time and of group (see Table 7). Moreover, an interaction effect of time x group was found between our three arm and no effect of time x group was found between our two intervention groups. Regarding well-being, the analysis showed a main effect of time and of groups (see Table 8) and an interaction effect of time x group between our three arms. Moreover, the analysis also showed an interaction effect of time x group between the CFP and the ECP (see Fig. 2). Indeed, compared to the ECP' participants, CFP participants, showed a smaller increase of well-being over time.

6. Post-hoc paired t-test

Post-hoc comparisons yielded significant findings between T0 and T1 for the scores of CFP group with a decrease in depression, $t(42) = 5.58, p < .001, d = 0.85$, anxiety, $t(42) = 3.44, p < .001, d = 0.53$ and stress, $t(42) = 5.91, p < .001, d = 0.9$. For the ECP group' scores, paired t-test also showed a significant decrease between T0 and T1 of depression $t(27) = 4.17, p < .001, d = 0.8$, anxiety, $t(27) = 6.25, p < .001, d = 1.18$ and stress, $t(27) = 5.66, p < .001, d = .29$. Scored of the WL group only decrease significantly between T1 and T2 for stress, $t(47) = 2.06, p = .022, d = 0.85$.

Table 7*Intention-to-treat (ITT) linear mixed model analysis of group, time and interaction effects on depression, anxiety, and stress*

	Depression			Anxiety			Stress		
	<i>b</i> (SE)	95%CI	<i>p</i>	<i>b</i> (SE)	95%CI	<i>p</i>	<i>b</i> (SE)	95%CI	<i>p</i>
Intercept	6.32 (1.23)	3.9; 8.74	< .001***	7.81 (.92)	5.98 ; 9.6	< .001***	10.6 (1.15)	8.33 ; 12.86	< .001***
Age	-.01 (.02)	-.05 ; .03	.54	-.06 (.02)	-.09 ; -.03	< .001***	-.03 (.02)	-.07 ; .003	.072
Sex	.07 (.76)	-1.43 ; 1.58	.92	-.76 (.57)	-1.91 ; .36	.18	-1.37 (.72)	-2.77 ; .04	.059
WL vs. ECP-CFP	.63 (.21)	.22 ; 1.04	.003**	.56 (.15)	.28 ; .9	< .001***	.37 (.19)	.003 ; .74	.049
ECP vs. CFP	.05 (.43)	-.8 ; .9	.91	-.30 (.32)	-.93 ; .33	.35	.21 (.39)	-.55 ; .97	.597
Time	-1.13 (.16)	-1.45 ; -.81	< .001***	-.81 (.14)	-1.1 ; -.53	< .001***	-1.1 (.17)	-1.42 ; -.76	< .001***
WL vs. ECP-CFP × time	-.48 (.11)	-.69 ; -.26	< .001***	-.41 (.09)	-.6 ; -.23	< .001***	-.46 (.11)	-.68 ; -.24	< .001***
ECP vs. CFP × time	.02 (.21)	-.4 ; .44	.93	.23 (.19)	-.14 ; .6	.226	-.24 (.22)	-.67 ; .18	.264
Random Effects									
Level 2 intercept variance	12.48			5.39			7.96		
Level 3 intercept variance	.00			.15			.00		
log-Likelihood	-1152.66			-1075.87			-1154.37		
Conditional R2/Marginal R2	.68/.06			.58/.14			.60/.08		
log-Likelihood (null model)	-1178			-1106			-1184		
ICC (null model)	.71			.61			.52		

Notes. N = 179 participants. **p* < .05, ***p* < .01, *** *p* < .001

Table 8

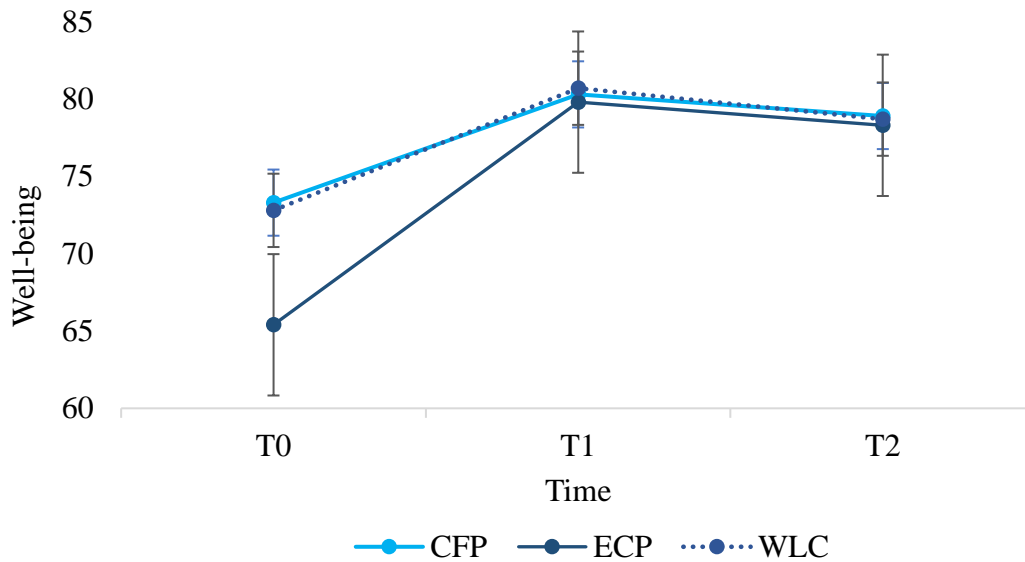
Intention-to-treat (ITT) linear mixed model analysis of group, time and interaction effects on well-being

	Well-being		
	<i>b (SE)</i>	95%CI	<i>p</i>
Intercept		58.83 ; 77.26	< .001***
Age	68.04 (4.70)	-.12 ; .21	.601
Sex	.04 (.08)	-4.23 ; 7.27	.606
WL vs. ECP-CFP	1.52 (2.93)	-2.70 ; .89	.328
ECP vs. CFP	- .90 (.91)		
	3.98 (1.87)	.31 ; 7.65	.035*
Time	3.07 (.46)	2.15 ; 3.98	< .001***
WL vs. ECP-CFP × time	.72 (.39)	.12 ; 1.32	.021*
ECP vs. CFP × time	-1.22 (0.60)	-2.40 ; -.03	.048*
Random Effects			
Level 1 intercept variance			
Level 2 intercept variance		295.06	
log-Likelihood		.00	
		-1606.19	
Conditional R2/Marginal R2		.85/0.04	
log-Likelihood (null model)		1628	
ICC (null model)		.90	

Notes. N = 179 participants. **p* < .05, ***p* < .01, *** *p* < .001

Figure 2

Estimated marginal means of well-being from T0 to T2 for CFP, ECP and Waiting-list.



Notes. CFP: Compassion Focused Program. ECP: Emotion Competencies Program. WLC: Wait-list control group. Error bars represent standard errors.

7. Intervention effect on self-compassion and emotional competencies

Regarding self-compassion, results showed a main effect of time and of group (see Table 9). Moreover, an interaction effect of time x group was found between our three arms and no significant effect of time x group was found between our two intervention group. Finally, the results of analysis on EC showed an interaction effect of time x group between our three arms and between our two intervention groups. As shown in Fig. 3, the EC scores of the CFP participants increased more than those of participants in the ECP group.

8. Post-hoc paired t-test

Post-hoc comparisons for the CFP group showed an increase in self-compassion between T0 and T1, $t(42) = -4.65, p < .001, d = -.71$, and between T1 to T2, $t(43) = -2.65, p = .006, d = -.4$, and an increase in emotion competencies between T0 to T1, $t(42) = -6.7, p < .001, d = -1.02$, and between T1 to T2, $t(43) = -2.55, p = .007, d = -.38$. Regarding the scores of the ECP group, paired t-test showed a significant increase in self-compassion between T0 and T1, $t(27) = -3.04, p = .003, d = -.54$, and increase in EC between T0 to T1, $t(27) = -2.54, p = .009, d = -.48$ and between T1 to T2, $t(23) = -2.54, p = .009, d = -.52$. For the WL group, paired t-test only showed a significant increase in EC scores between T0 and T1, $t(58) = -1.8, p = .04, d = -.23$. Finally, we computed independent samples T-test to explore differences in EC scores between the CFP and ECP groups. Group comparisons did not reveal significant difference in emotional competencies in the CFP group compared to the ECP group.

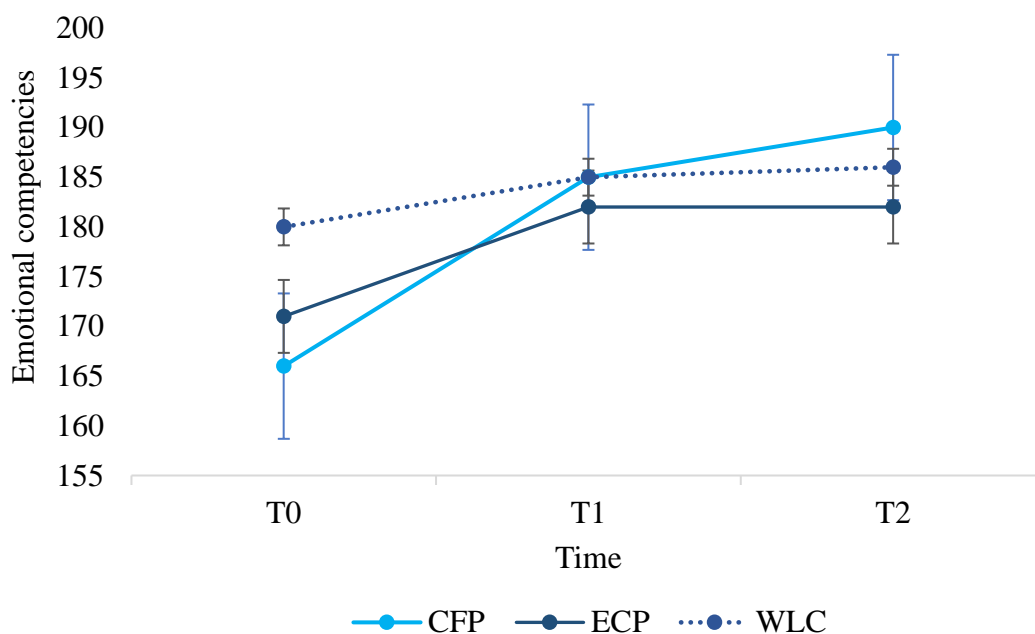
Table 9*Intention-to-treat (ITT) linear mixed model analysis of group, time and interaction effects on self-compassion and emotional competencies*

	Self-compassion			Emotional Competencies		
	<i>b</i> (<i>SE</i>)	95%CI	<i>p</i>	<i>b</i> (<i>SE</i>)	95%CI	<i>p</i>
Intercept	35.13 (2.35)		< .001***	174.86 (7.85)	159.47 ; 190.26	< .001***
Age	-.02 (0.04)	30.51 ; 39.75	.657	-.004 (.14)	-.28 ; .27	.973
Sexe	3.2 (1.45)	-1 ; .06 .35 ; 6.06	.029*	-1.05 (4.94)	-10.74 ; 8.63	.832
WL vs. ECP-CFP	-2. (.39)	-2.77 ; -1.24	< .001***	-3.67 (1.26)	-6.14 ; -1.21	.004**
ECP vs. CFP	-.52 (.8)	-2.08 ; 1.05 -1.94 ; .81	.519	-1.67 (2.54)	-6.65 ; 3.31	.511
Time	-.57 (-.56)	1.51 ; 3.29	.420	5.91 (1.18)	3.59 ; 8.22	< .001***
WL vs. ECP-CFP × time	2.4 (2.4)	-.4 ; 3.21	< .001***	2.30 (.78)	.76 ; 3.84	.004**
ECP vs. CFP × time	1.41 (1.40)		.129	3.29 (1.52)	.3 ; 8.28	.033**
Random Effects						
Level 1 intercept variance					491	
Level 2 intercept variance		.73			.00	
log-Likelihood		.89				
		-1657.95			-1840.17	
Conditional R2/Marginal R2		0.53/0.09			0.85/0.05	
log-Likelihood (null model)		-1682			-1860	
ICC (null model)		.05			.84	

Notes. N = 179 participants. * $p < .05$, ** $p < .01$, *** $p < .001$

Figure 3

Estimated marginal means of emotional competencies from T0 to T2 for CFP, ECP and Waiting-list.



Notes. CFP: Compassion Focused Program. ECP: Emotion Competencies Program. WLC: Wait-list control group. Error bars represent standard errors.

9. Mediation analyses: treatment effects on depression, anxiety and stress symptoms mediated by emotional regulation difficulties

Analyses of mediation indicated that change in emotion regulation mediated the effect of the interventions on depression, anxiety, and stress. Results for all paths are presented in Table 10 and Figure 4. As presented, all paths are significant. This means that reducing emotional regulation difficulties mediates the effect of interventions on symptoms of depression, anxiety, and stress.

Table 10

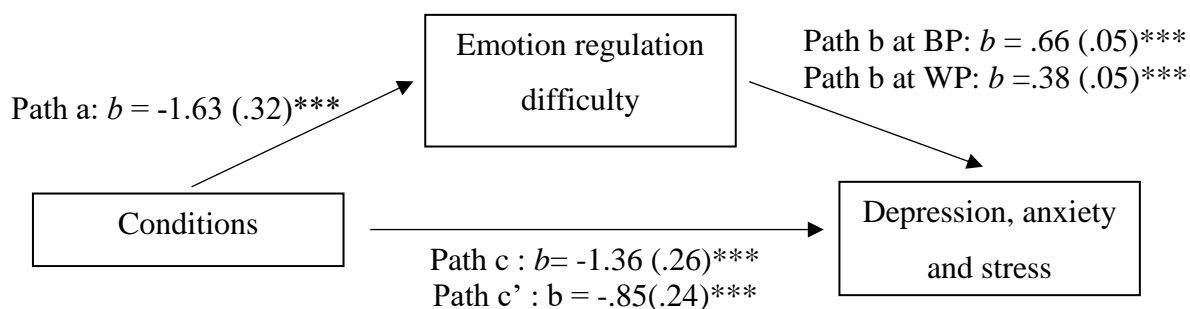
Intention-to-treat (ITT) linear mixed model analysis to examine multilevel mediation of Emotion regulation difficulty between condition and depression, anxiety, stress

	Paths a <i>b</i> (SE)	Paths b <i>b</i> (SE)	Paths c <i>b</i> (SE)	Paths c' <i>b</i> (SE)	Monte Carlo CI
Input					
WL vs. ECP-CFP × time			$\hat{c}_1 = -1.36 (.26)***$	$\hat{c}'_1 = -.85(.24)***$	
ECP vs. CFP × time			$\hat{c}_2 = -.02 (.51)$	$\hat{c}'_2 = .04 (.44)$	
Mediator					
DERS	$\hat{a}_1 = -1.63 (.32)***$ $\hat{a}_2 = -.36 (.62)$				
DERS at BP		$\hat{b}_1 = .66 (.05)***$			(-1.52, -.65)
DERS at WP		$\hat{b}_2 = .38 (.05)***$			(-.91, -.36)

Notes. Path a: relationships between the input and the mediator; path b: relationship between the mediators and the outcome; path c: relationship between the input and the outcome; path c': relationship between the input and the outcome, controlling for the mediators. BP: Between Person, WP: Within Person. SE: standard error. * $p < .05$, ** $p < .01$, *** $p < .001$

Figure 4

Mediation model of emotion regulation difficulty between condition and depression, anxiety, stress



Notes. Path a: relationships between the input and the mediator; path b: relationship between the mediators and the outcome; path c: relationship between the input and the outcome; path c': relationship between the input and the outcome, controlling for the mediators. BP: Between Person, WP: Within Person.

6. Discussion

ER is a key process in psychotherapy (Berking & Wupperman, 2012). Functional ER can contribute to mental health, but when it is dysfunctional, it can contribute to the development, maintenance or deterioration of many psychological disorders (Aldao et al., 2016). The challenge today is therefore to develop interventions that will reduce the difficulties in ER. The aim of this study was therefore to evaluate the effects of two interventions on mental health through a range of indicators and to assess ER as a mediating process for their effectiveness. The results of this study supported our hypotheses. Both interventions were found to be effective in reducing emotional regulation difficulties, symptoms of depression, anxiety and stress and in increasing well-being, self-compassion and emotional competencies. Our

mediation hypothesis was also supported, as the results showed that the effect of our interventions was mediated by emotional regulation. As expected, both interventions have shown similar effectiveness in developing ER, despite using different practices, i.e. compassion imagery and soothing breathing rhythm for CFP and cognitive reappraisal and relaxation for ECP. Specifically, they both decreased difficulties in acceptance, engagement, impulsivity, awareness, clarity, and in access to ER strategies to deal with difficult emotions. This is consistent with cross sectional or longitudinal studies on the development of ER. For example, Inwood and Ferrari's review (2018) suggested that ER as a mediating process between self-compassion and mental health while Peña-Sarrionandia's meta-analysis (Peña-Sarrionandia et al., 2015) showed that emotional competences were associated with better ER. Furthermore, although very few studies to date have evaluated the effectiveness processes of this type of intervention in RCT, our results are consistent with those identified previously (i.e., decreased symptoms of depression, anxiety, stress, improved well-being, self-compassion, and emotional competence). However, post-hoc test showed that participants of the CFP showed sustained improvements of ER and self-compassion even after the end of the intervention. In contrast to the ECP group, participants in the CFP group show a decrease in ER difficulties and an increase in self-compassion up to 3 months after the end of the intervention. It would seem that, the effects of CFP are more sustainable than those of ECP.

In addition, our interventions differ in their effects on well-being and emotional competence: the ECP program allowed the development of more well-being than the CFP program. However, it is interesting to note that the average scores of the participants in T2 in the three conditions are similar and seem to reach a peak score. The higher increase in well-being scores in the ECP condition could thus be explained by the difference in means present at T0, which leaves more possibility for participants in the ECP group to evolve than in the CFP or control group.

Chapter 8: Reducing Emotion Dysregulation: A Randomized Controlled Trial comparing Online Compassion focused Therapy with an Emotional Competencies Program

One of the most surprising results concerns the evolution of emotional competence scores. The emotional competence scores of the CFP group increased more than those of the ECP group over time, although the evolution of the scores was significant in both interventions and at each measurement time. These results allow to better understand the links between compassion and ER in a broader way, i.e., by including other emotional skills than the ability to regulate emotions. Indeed, if several studies have focused on the links between compassion and ER (for a review see, Inwood & Ferrari, 2018), so far, none has assessed other emotional skills such as identification, understanding or expression of emotions. These results thus offer new research perspectives in understanding the mechanisms of effectiveness of compassionate interventions.

Finally, our results showed that the effects of CFP and ECP on mental health are mediated by the decrease in ER difficulties. They are consistent with the current state of research showing the mediating role of ER between compassion and mental health (e.g. Inwood & Ferrari, 2018), and between emotional competences and mental health (e.g., Peña-Sarrionandia et al., 2015). However, to date, few studies have explored the mediating processes of interventions that develop these skills.

The present study contributes to this line of research and has several important strengths. First, this RCT allows preliminary conclusions to be drawn about the causal effects of interventions on outcome and mediators, without the bias of confounding variables. In addition, the use of three assessment phases, analyzed in ITT with GLMM allows for appropriate modeling of individual change over time and thus to generate accurate estimates in mediating processes (Maxwell & Cole, 2007; Schulz et al., 2010). Finally, our study meets several conditions of practical clinical trials (Tunis et al., 2003) to enhance relevance to clinicians: (1) a clinically relevant active comparison group and a waitlist control (2) relatively broad inclusion criteria that created a sample with characteristics similar to non clinical patients,

(3) use of nonexpert therapists rather than academic researchers, and (4) the evaluation of several dimensions including anxiety-depressive symptoms, well-being, expectations and satisfaction of the participants with the program received. Despite these strengths, our study has several limitations. First, the assessment of ER was based on a single questionnaire. However, there are now many models that assess ER and that take into account other ER competencies than those assessed by the DERS or that assess ER strategies. For example, the Adaptive Coping with Emotions model (ACE) by Berking and Whitley (2014) conceptualise adaptive ER as a situation-dependent interaction between seven ER skills (i.e., awareness, identification & labelling, understanding, modification, acceptance and tolerance, readiness to confront and self-support). Their model led to the development of a scale assessing all of these skills (ERSQ, Berking & Znoj, 2008). To increase external validity, future studies could thus use more comprehensive instruments such as the ERSQ to comprehensively assess ER skills while also assessing strategies and flexible strategy use. Indeed, while ER skills are essential, it appears that flexible use of strategies is also essential to contribute to mental health (Kobylińska & Kusev, 2019). Future studies could therefore use scales that assess ER strategies while relying on designs and tools to measure their use such as experience sampling methods (ESM) that allow to comprehensively monitor time co-variations among contextual and motivational demands, ER strategy use, resulting affect and the fit of such outcomes to initially triggering regulatory goals (Sanchez-Lopez, 2021). Second, and this is a common problem in RCTs (e.g., de Bruin et al., 2015; Dumville et al., 2006), attrition constitutes another important limitation of our study. The differential attrition rates between our arms, a differential attrition that could be related to the interventions themselves or to their acceptability. Indeed, a higher rate of participants in the control and ECP intervention did not complete the final follow-up questionnaire compared to the CFP participants. The ECP intervention appears to be less attractive or may propose practices that are more difficult for participants to integrate, leading

them to stop participating in the intervention. For the control group, this attrition rate is not abnormal given that participants on the waiting list are not engaged in an intervention and feel less obligation or meaning to respond to follow-up measures (Wortman, 1978). Finally, this attrition rate can also be explained by the way in which the interventions were conducted online. However, attrition rates online are generally higher than when interventions are conducted in face to face sessions (Eysenbach, 2005; Mathieu et al., 2013). Future studies can therefore test face-to-face interventions and clarify their mechanisms of change linked to ER.

7. Conclusions

This RCT showed the effect of a compassion-based program and an emotional competence program on ER, mental health, self-compassion, and emotional competence at short and long terms. It also provided preliminary evidence regarding ER as a mediating process of these effects. If replicated, future studies should more precisely determine the effect of these interventions on ER skills and strategies to increase our understanding of the mechanisms of treatment effect. This study also revealed the interest of offering online psychotherapeutic programs to promote mental health and reduce the risk of psychopathological disorders, but also invites to evaluate the effectiveness of these interventions on mental health in clinical populations suffering from co-morbidities.

This RCT showed that the Compassion-Focused Program (CFP) was as effective as an Emotional Competencies Program (ECP) in decreasing emotion regulation difficulties, depression, anxiety and stress symptoms and in increasing well-being and self-compassion. The results showed that Emotional Regulation (ER) is one of the processes mediating the effect of interventions on symptoms of depression, anxiety and stress. By targeting ER, CFP could be a useful intervention for individuals with psychological disorders. Therefore, the following study aims to test the feasibility, acceptance and effect of CFP compared to ECP in a clinical population. Furthermore, the results showed that the CFP is more effective than the ECP for developing emotional competencies. Thus, it seems that self-compassion plays an important role on ER, which led us to conduct the study presented in the third part of this manuscript.

Chapter 9: Feasibility and Efficacy of a Transdiagnostic Compassion-Focused Program and an Emotional Competencies Program for Emotion Dysregulation

Marine Paucsik¹, Céline Baeyens¹, Christophe Leys² & Rebecca Shankland^{3,4}

Manuscript in preparation

¹Univ. Grenoble Alpes, LIP/PC2S, 38000 Grenoble, France

²University Libre de Bruxelles, Brussels, Belgium

³Institut Universitaire de France

⁴Univ. Lumière Lyon 2, DIPHE, 69676 Bron Cedex, France

1. Résumé

Cette étude pilote a évalué l'efficacité et la faisabilité d'un Programme Fondé sur la Compassion (PFC) et d'un Programme d'Entraînement aux Compétences émotionnelles (PEC) pour réduire les difficultés de régulation émotionnelle chez les personnes souffrant de troubles psychologiques sévères. La mesure principale était la sévérité de la dysrégulation des émotions, évaluée à l'aide de l'échelle de difficulté de régulation des émotions. Les mesures secondaires étaient les symptômes de dépression, d'anxiété et de stress, le bien-être, l'auto-compassion et les compétences émotionnelles. Sur les vingt-sept participants potentiels, vingt-six étaient éligibles et ont intégré l'étude (PFC = 14 et PEC = 12). Les difficultés de régulation émotionnelle et le stress ont diminué de manière significative après les deux interventions et sont restés bas pendant 3 mois. Le bien-être, l'auto-compassion et les compétences émotionnelles ont augmenté de manière significative après les deux interventions et se sont maintenus pendant 3 mois. Les interventions ont eu les mêmes effets sur nos résultats, à l'exception de l'auto-compassion qui a augmenté davantage dans le PEC. Aucun événement indésirable grave n'est survenu. Quatre participants ont abandonné l'intervention. La faisabilité et l'acceptabilité du traitement ont été confirmées. Les résultats suggèrent la faisabilité et l'efficacité du PFC et PEC comme interventions transdiagnostiques efficaces pour diminuer les difficultés de régulation émotionnelle.

Mots-clés : Régulation Emotionnelle; Transdiagnostique; Compassion; Compétences émotionnelles; Bien-être.

2. Abstract

The current study conducted a preliminary investigation of the effectiveness and feasibility of a Compassion Focused Program (CFP) and an Emotion Competencies Program (ECP) for reducing emotion dysregulation in individuals with several psychological disorders. The primary outcome was severity in emotion dysregulation, as assessed using the Difficulty in Emotion Regulation Scale. Secondary outcomes were depressive, anxiety and stress symptoms, well-being, self-compassion and emotion competencies. Of the twenty-seven prospective participants, twenty-six were eligible and enrolled (CFP = 14 and ECP = 12). Emotion regulation difficulties and stress decreased significantly after both intervention and remained low for 3 months and well-being, self-compassion and emotion competencies increased significantly after both intervention and maintained for 3 months. The interventions had the same effects on our outcomes except for self-compassion which increased higher in the CFP. No severe adverse event occurred. Four participants dropped out of the intervention. High treatment feasibility and acceptability were confirmed. Results suggest the feasibility and efficacy of both CFP and ECP as effective transdiagnostic intervention for emotion regulation difficulties.

Keywords: Emotion regulation; Transdiagnostic; Compassion; Emotional skills; Well-being

3. Introduction

Emotion Regulation (ER) is empirically supported as a transdiagnostic construct (Barlow et al., 2017; Sloan et al., 2017). Gratz and Roemer (2004) state that the process of ER involves the ability to control impulsive behaviors, to orient behaviors towards goals when experiencing unpleasant emotions and flexibility to adapt the strategy to be used in a specific context, taking into account individual objectives, their costs and benefits. When developed, ER skills allow for the flexible processing of emotions (Kobylińska & Kusev, 2019). Thus, ER is not aimed at eliminating emotions, but rather at using them in a flexible manner (Aldao, 2013; Cheng, 2001), using them intelligently (Peña-Sarrionandia et al., 2015) or at understanding them and managing their influence when this influence is undesired (Mauss & Tamir, 2014; Tamir et al., 2020). When these skills are not developed, difficulties arise in emotional regulation (Gratz & Roemer, 2004; Gross, 2002). The authors listed six emotional *dysregulation domains* (which will be the term used in this work): (1) lack of awareness of emotional responses (consciousness); (2) difficulty of understanding the emotional response (clarity); (3) non-acceptance of emotional response (non-acceptance); (4) limited access to emotional regulation strategies perceived as effective (strategies); (5) difficulty of impulse control (impulses); and (6) difficulty engaging in goal-oriented behaviors when experiencing unpleasant emotions (objectives). These difficulties are now identified in many psychopathological disorders (e.g., Aldao et al., 2016; Aldao et al., 2010) establishing ER as a transdiagnostic process (Cludius et al., 2020; Fernandez et al., 2016) and as an important target for treatment (Matthias Berking et al., 2008).

Several interventions have been shown to be effective in developing emotion regulation and mental health in adulthood (for reviews see, Hodzic et al., 2018; Kotsou et al., 2019). For example, the study by Nelis et al. (2011) showed that 18 hour of training is sufficient to improve

ER, and overall EC. These Emotional Competences (EC) based interventions aim to develop emotional skills through the improvement of the ability to identify, express, understand, manage, and use emotions (Kotsou et al., 2019). However, few of these studies have evaluated the effects of EC training on clinical populations (Kotsou et al., 2019). Therefore, to date, it is not possible to determine the feasibility and effectiveness of this type of intervention on patients with clinical disorders.

Another promising transdiagnostic approach to develop ER is Compassion Focused Therapy (CFT, Paucsik et al., 2022; 2022). CFT is based on an evolutionary (Gilbert, 2010a, 2010b) and neuroscientific model of emotional regulation (Depue & Morrone-Strupinsky, 2005; Panksepp, 2010). More precisely, this model suggests that there are three specific ER systems: (1) the threat system that detects and responds to threats and activates aversive emotions such as anger or fear (LeDoux, 1998), (2) the drive system that detect and respond to rewards and generates pleasant affective states such as pleasure or excitement, and (3) the soothing system that detects relief and safeness and gives rise to feelings of contentment, soothing, and affiliation. CFT aims to develop the soothing system that regulates the other two systems, through the development of a compassionate attitude including several elements such as the motivation to care, sympathy, distress tolerance and empathetic and non-judgmental understanding (Gilbert, 2005; Gilbert, 2009). CFT has been shown to be effective for many psychopathological disorders (Kirby et al., 2017; Leaviss & Uttley, 2015). However, the evidence related to CFT has some limitations (Kirby, 2017). One of the current challenges is the need to assess the processes of change of these interventions to understand how they work. One of these processes could be ER (Paucsik et al., 2022).

Given this background and the profound challenges regarding assessing transdiagnostic processes in psychotherapy, we conducted a controlled pilot study which aimed to assess the feasibility, acceptability and efficacy of two interventions to enhance ER in a clinical

population. More precisely, the aim of this study was to assess and compare the effects of an EC Program and a Compassion Focused Program (CFP) on ER and mental health across a clinical sample with severe mental disorders. We hypothesized that (1) both interventions will present good levels of feasibility and acceptability. Regarding the efficacy of the interventions, we hypothesized that patients who completed one of the two interventions would report (2) improvements in ER, (3) a decrease in depressive, anxiety and stress symptoms and an increase in well-being, and (4a) that CFP would increase self-compassion to a greater extent than ECP, and (4b) that ECP would increase emotional competencies more compared to CFP.

4. Methods

1. Overview of procedure

This study was approved by the ethical committee (Number of approval 2020.09.03 four_20.05.13.42837) and pre-registered on Clinical trials (ID: NCT05113680). The present study used a two-arm design to evaluate and compare the Compassion Focused Program (CPF) and the Emotional Competences Program (ECP) clinical population. After informed consent was obtained, all participants were asked to complete the baseline questionnaire. Each participant then attended the program for 12 weeks, after which they completed a second online questionnaire. A third questionnaire was sent to all participants three months after the second one.

2. Participants

Participants were recruited from the psychosocial rehabilitation and cognitive remediation centers of the Grenoble and Annecy hospitals. Inclusion criteria were as follows : (1) a score above 20 on the Difficulties in Emotional Regulation Scale (DERS), i.e. at least one item of the scale (meaning an emotional regulation difficulty) is rated as being present

sometimes, (2) to understand, speak, and read French, (3) to have signed and informed consent to participate in the study, (4) to belong to a social security scheme, (5) to be aged 18–70 years and (6) to have an established clinical diagnosis of schizophrenia spectrum disorder, mood disorder, personality disorder or autism spectrum disorder. Participants were excluded if they (1) had been involved in an active emotion regulation intervention (involving CBT, mindfulness, or relaxation) within the last 3 months and (2) were taking anti-anxiolytic medication where the dose had not been stable over one month prior to entering the study. The recruitment process is presented in Figure 1.

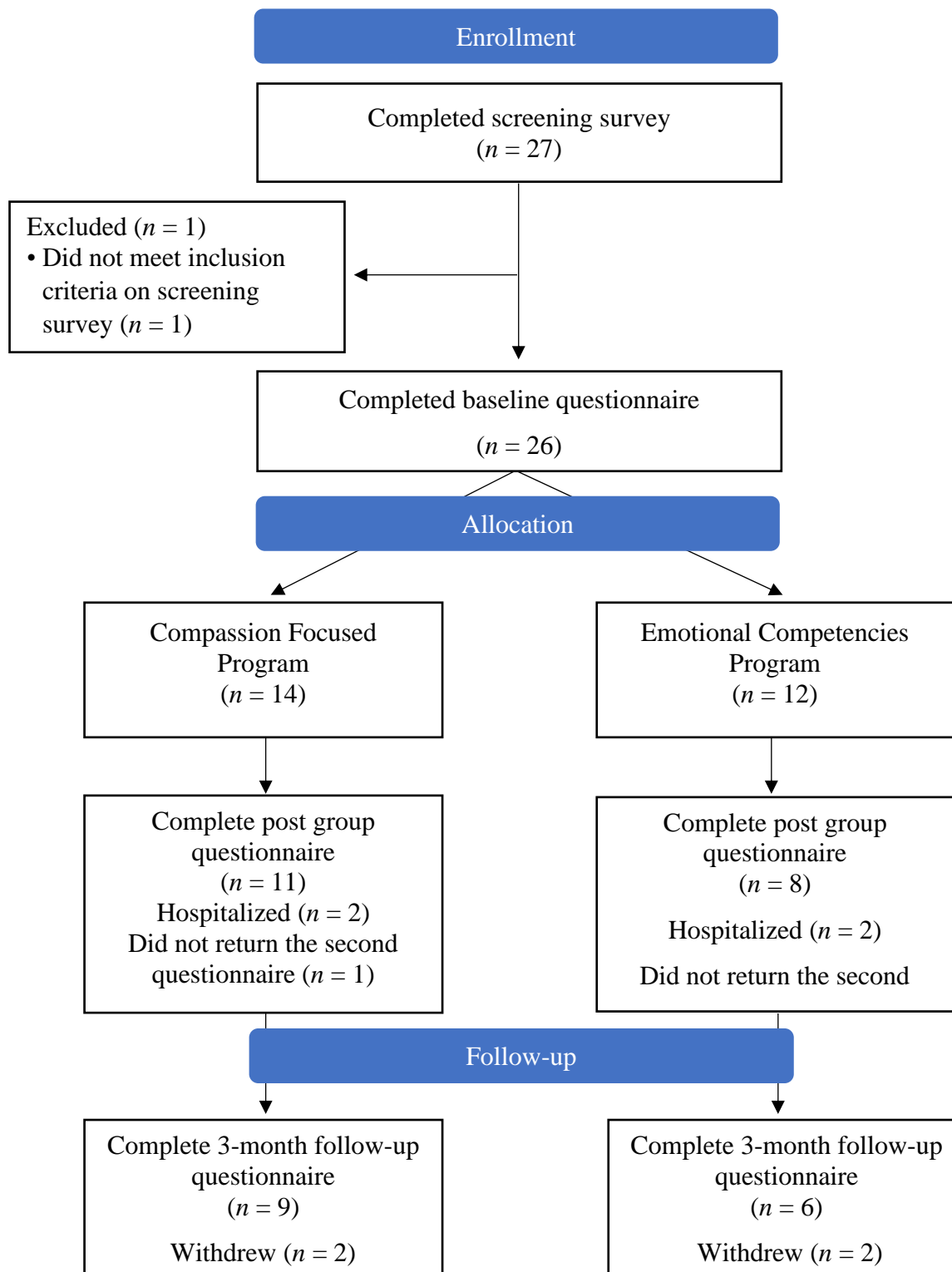
3. Measures

Difficulties in Emotion Regulation Scale. To assess difficulties in emotion regulation, we used the French version of Difficulties in Emotion Regulation Scale – Short Form (DERS-SF, Gratz & Roemer, 2004; Victor & Klonsky, 2016). The DERS-SF is an 18-item self-report multidimensional scale which examines six difficulties in emotion regulation : (1) unacceptance of negative emotions (e.g., *When I'm upset, I feel guilty for feeling that way*) , (2) difficulty engaging in goal-directed behaviors in the presence of negative emotions (e.g., *When I'm upset, I have difficulty concentrating*), (3) difficulty controlling impulsive behavior in the presence of negative emotions (e.g., *When I'm upset, I lose control over my behaviors*), (4) limited access to emotion regulation strategies perceived as effective (e.g., *When I'm upset, I believe that I'll end up feeling very depressed*), (5) lack of emotional awareness (e.g., *I am attentive to my feelings.*, reversed item), et (6) lack of emotional clarity (e.g., *I am confused about how I feel*). Items are scored on a five-point Likert scale. Lower scores indicate the presence of difficulties in emotion regulation. Cronbach's alphas were .86 for unacceptance, .92 for difficulty engaging in goal-directed behaviors, .88 for difficulty controlling impulsive behavior, .70 for limited

access to emotion regulation strategies, .76 for lack of emotional awareness, .70 for lack of emotional clarity and .85 for the total scale.

Figure 1

CONSORT Flow Diagram of the recruitment process



Depression, Anxiety and Stress. Symptoms of depression, anxiety, and stress were assessed using the French version of the Depression, Anxiety and Stress Scale (DASS-21, Lovibond & Lovibond, 1995). This scale is composed of 21 items scored from 0 (did not apply to me at all in the past week) to 3 (applied to me very often or most of the time in the past week). It measures, during the past week, severity of depression (e.g., *I couldn't seem to experience any positive feeling at all*), anxiety (e.g., *I felt I was close to panic*), and stress (e.g., *I found it hard to wind down*). Cronbach's alphas were .65 for depression, .86 for anxiety and .86 for stress and .86 for the total scale.

Well-being. Well-being was measured using the 18-item version of the Psychological Wellbeing (PWB) Scale (Ryff & Keyes, 1995). This scale assesses six dimensions of well-being: (1) self-acceptance (e.g., *In many ways I feel disappointed about my achievements in life*), (2) positive relations with others (e.g., *I have not experienced many warm and trusting relationships with others*), (3) autonomy (e.g., *I tend to be influenced by people with strong opinions*), (4) environmental mastery (e.g., *In general, I feel I am in charge of the situation in which I live*), (5) purpose in life (e.g., *I live life one day at a time and don't really think about the future*), and (6) personal growth (e.g., *I gave up trying to make big improvements or changes in my life a long time ago*). Items are rated on a Likert scale from 1 (Strongly agree) to 7 (Strongly disagree). Cronbach's alphas were .73 for self-acceptance, .65 for positive relationship, .73 for autonomy, .02 for environmental mastery, .53 for purpose in life, .73 for personal growth and .69 for the total scale.

Self-compassion. Self-compassion was measured with the French version of the Self-Compassion Short Form Scale (SCS-SF, Neff, 2003). SCS-SF measure six subscales in 12-item: (1) self-kindness (e.g., *I try to be understanding and patient toward those aspects of my personality I don't like*), (2) self-judgment (e.g., *I'm intolerant and impatient towards those aspects of my personality I don't like*), (3) common humanity (e.g., *When I feel inadequate in*

some way, I try to remind myself that feelings of inadequacy are shared by most people), (4) isolation (e.g., *When I'm feeling down, I tend to feel like most other people are probably happier than I am*), (5) mindfulness (e.g., *When something upsets me I try to keep my emotions in balance*) and (6) overidentification (e.g., *When I fail at something important to me, I become consumed by feelings of inadequacy*). Cronbach's alphas were .53 for self-kindness, .86 for self-judgment, .37 for common humanity, .68 for isolation, .52 for mindfulness, .66 for overidentification and .73 for the total scale.

Emotional competencies. Emotional competencies were assessed with the Short Profile of Emotional Competence (S-PEC; Mikolajczak et al., 2014). This is a multidimensional scale which measure the five emotional competencies : (1) identification (e.g., *I am aware of my emotions as soon as they arise.*), (2) comprehension (e.g., *When I am sad, I often don't know why*), (3) expression (e.g., *I am good at describing my feelings*), (4) regulation (e.g., *When I am angry, I find it easy to calm myself down*) and (5) utilization (e.g., *I use my feelings to improve my choices in life*). The five skills are assessed in the inter- and intra-personal dimensions. Cronbach's alphas were .82 for identification, .77 for comprehension, .77 for expression, .74 for regulation, .79 for utilization and .92 for the total scale.

Credibility/Expectancy. To assess participants' credibility and expectancy, the French version of the Credibility/Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000; Coste et al., 2019) was used. The scale consists of six items, four of the items are measured on a nine-point scale ranging from 1 ("*not at all*" or "*none*") to 9 ("*very*"). Two of the items are measured on an 11-point scale ranging from 0% to 100%. This scale is composed of two subscales evaluating participants 'credibility (e.g., *At this point, how logical does the therapy offered to you seem ?*) and expectations of the intervention they would receive (e.g., *At this point, how much do you really feel that therapy will help you to reduce your symptoms ?*). The total score is summed and ranges from 3 to 27. Higher scores indicate participants having higher credibility

or expectation of improvement because of the treatment. This scale was completed by the participant of the two interventional arms during the first measurement time, before they started the CFP and the ECP. Cronbach's alphas were .74 for Credibility, .83 for Expectancy and .78 for the total scale.

Satisfaction with intervention. Participants' level of satisfaction with both interventions was assessed with the Satisfaction With Therapy and Therapist Scale Revised (STTS-R, Oei & Green, 2008). This scale is composed of 13 items assessing three sub-dimensions: (1) the patient's level of Satisfaction with Therapy (ST, e.g., *My needs were met by the program*), (2) the patient's level of Satisfaction With Therapist (SWT, e.g., *The therapist was friendly and warm towards me*) and (3) global improvement (e.g., *How much did this treatment help with the specific problem that led you to therapy?*). Cronbach's alphas were .91 for satisfaction with therapy, .86 for Expectancy and .89 for the total scale, .84 for satisfaction with therapist and .94 for the total scale.

4. Interventions

The Emotional Competencies Program

The Emotional Competencies Program is a translated and adapted version by the first author of the program developed by Kotsou and colleagues (Kotsou et al., 2011). The program consists of 12 sessions in which each emotional competence is developed. The details of the program sessions are presented in Table 1. Each session follows a similar process: (1) the session begins with a feedback on the home practices, then (2) a theoretical focus on the skill is introduced for 30min and (3) followed by 1h of practice and discussions. The program aims at developing the five emotional competencies and relies on several tools such as identification and functional analysis charts of emotions. It also uses mindfulness practices to facilitate the identification and observation of emotions, as well as relaxation practices such as Schultz'

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autogenic training for the regulation part. The intervention aims at helping individuals to “(a) observe the relations among environmental triggers, beliefs, thoughts, emotions, and behaviors; (b) identified the conditioned links among emotions, thoughts, action tendencies, and habitual behaviors; (c) to use various emotion regulation strategies as appropriate to the individual’s goal and the context; (d) to express and listen to emotions in an adaptive manner; and (e) to use emotions and emotional situations to clarify their priorities and needs” (Kotsou et al., 2011 p.830). During the first session, the participants also received a training manual including all the theoretical information about the program, the practice supports and instructions for the inter-session practices.

The Compassion Focused Program

The Compassion Focused Program (CFP) was designed by the first authors and Francis Gheysen, both experts in Compassion Focused Therapy. The program is composed of 12 two-hour group sessions and is based on the principles of CFT as described by Paul Gilbert (see Gilbert, 2010, 2014a; Gilbert & Procter, 2006). This program aim to enhance compassion in these three flows: compassion for others, compassion for oneself and receiving compassion and allow participants to (a) develop a motivation for compassion, (b) create an internal space of safety, (c) soothe themselves, (d) address their painful emotions with kindness, wisdom and courage, and (d) engage in compassionate behavior. To this end, each session addresses a different theme but is structured on the same framework. Each session proceeds in three steps: (1) 30 minutes of feedback on practices carried out by participants between sessions, (2) 30 minutes of psycho-education and exchange with the participant on the theme of the session, and (3) 1 hour of soothing breathing rhythm or compassionate imagery practice followed by discussions on the practice. The sessions overview is presented in Table 2. To facilitate home practices and assimilation of the concepts, participants received a CFP training manual including all the psycho-educational aspects, the practice guides, the intersession practices to

be carried out as well as a practice follow-up journal at the first session of the program. After each session, they also received an audio file with the practice done during the session and another one with the practice to be done during the following day.

Table 1

Content of the online Emotion Competencies Program (ECP)

Session	Theme	Practice
1	Program objective and scientific basis. To identify one's émotions.	Identification of body sensations in the body and identification chart of unpleasant and pleasant emotions
2	Identify one's own emotions and those of others	Mindfulness and emotion identification chart
3	Understand the functional value of emotions.	Understanding chart between emotions and thoughts
4	Understand the emotional message and identify the consequences of inappropriate coping strategies.	Identification of needs and analysis of strategies and short and long-time consequences on needs
5	Understand the importance of expressing emotions without judgment	Training in emotional expression without judgment
6	Express emotions in an adaptive way and listen to others' emotions.	Training in emotional expression in pairs
7	Use emotions to take care of oneself.	Functional analysis of needs and available strategies
8	Use emotions to make decisions and build psychological resources.	Functional analysis of strategies and formulation of alternative strategies
9	Regulate emotions through experiential acceptance in mindfulness meditation.	Mindfulness practices
10	Regulating emotions with cognitive restructuring techniques.	Formulation of alternative thoughts in role plays
11	Regulating emotions with our body	Relaxation of the Schultz autogenic training type
12	Encouraging pleasant emotional experiences and program evaluation.	Sharing of the learning achieved in the program.

Note. The ECP is a program translated and adapted from the program created by Kotsou et al. (2011)

Table 2

Content of the online Compassion Focused Program (CFP)

Session	Theme	Practice
1	Presentation of the program and scientific basis.	Introduction to the soothing breathing rhythm and exploration of an affiliative motivation
2	Discovering the emotional regulation systems	Drawing of the three circles of regulation and Soothing Breathing Rhythm
3	Embracing compassion	Practice of the soothing breathing rhythm and acceptance of unpleasant emotions
4	Creating internal safety space	Imagery of the safe place
5	Connect to an ideal compassionate image	Compassionate imagery
6	Develop your compassionate attributes	Imagery of the qualities of compassion
7	Discovering your compassionate self	Imagery of the compassionate self
8	Addressing and understanding self-criticism with compassion	Imagery of the critical self and the compassionate self
9	Dealing with difficult emotions	Imagery of difficult emotion with compassion
10	Dealing with shame and guilt	Imagery of shame and guilt with compassion
11	Writing to your compassionate part	Imagery of the compassionate self and writing the compassionate letter
12	Expanding your circle of compassion	Imagery of the circle of compassion

Note. The CFP was design by Paucsik, M., Gheysen, F., and Delamillieure, P. in 2021.

5. Therapists

Each intervention was delivered by two clinical psychologists previously trained by the first author to the two programs for three days each. The training for CFP consisted of developing the therapist's skills required to provide CFT (Liddell et al., 2017), and on experimenting the program practices. For the ECP, the psychologists were trained to understand the theoretical model of each emotional competency and to experiment the program practices (Mikolajczak et al., 2014).

6. Sample size

Power was calculated with G*Power statistical software version 3.1 (Faul et al., 2007) to determine adequate sample size in each condition to detect possible differences. In line with previous research (e.g. Jazaieri et al., 2014) indicating medium effect sizes on ER, an a priori power analysis with ANOVAs ($\alpha = .01$ with bonferroni correction of $.05/5$ and $\beta = .80$) estimated a sample size of 26 participants to enable medium effects of $f = .25$ to be detected.

7. Feasibility and Acceptability

Dropout rates of therapy in clinical trial are typically 5.6–19.0% (e.g., Otto et al., 2004). Therefore, we set the dropout rate lower than 20% (i.e., retention rate higher than 80%), suggesting the feasibility of CFP and ECP in this study. Acceptability was assessed by the Satisfaction with Therapy subscale of the Satisfaction With Therapy and Therapist Scale (STTS–R, Oei & Green, 2008). A minimum score of 24 was expected, meaning that participants scored at least 4 on each item.

For safety, we expected zero severe adverse events for both CFP and ECP. Treatment efficacy was assessed by the change in depression and anxiety measures. We expected a comparable effect size to that of the earlier EC and CFT literature. For EC, $d = .5$ for anxiety and $.4$ for depression, Persich et al., 2021) and $d = .5$ for anxiety and $d = .6$ for depression for CFT, Kirby et al., 2017).

8. Statistical analysis

Data were analysed using JAMOVI Version 1.2.27 (The Jamovi Project, 2020).

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To compare the two interventions group with respect to demographic data, t-tests for age and a series of chi-square for the other demographic data were performed. To compare participants' expectations and satisfaction between the two interventions, we conducted t-tests. At baseline, we conducted t-test to compare outcome difference between group. To calculate change in ECP and CFP we conducted mixed ANOVAs to evaluate change over time.

To evaluate the differences between the three measurement times, we conducted Helmert contrasts. The first contrast (2, -1, -1) will assess the difference between the pre and post intervention scores. And the second contrast (0, 1, -1) will assess the maintenance or evolution of the results after the intervention. The level of significance was set at $p \leq .05$. Following Cohen (1988) we also calculated effect sizes with the following ranges. For ANOVAs, effect sizes were reported with partial eta-squared (η^2_p). According to the benchmarks provided by Cohen, a $\eta^2_p = .01$ indicates a small effect, $\eta^2_p = .06$ indicates a medium effect, and a $\eta^2_p = .14$ indicates a large effect. For *t*-tests: Cohen's *d*, with $.49 \geq d \geq .20$ indicating small effect sizes, $.79 \geq d \geq .50$ indicating medium effect sizes, and $d \geq .80$ indicating large effect sizes.

5. Results

1. Preliminary analyses

The total sample consisted of 26 individuals (14 females) who responded to the baseline questionnaire. Table 3 shows the participants' characteristics and outcomes at baseline. The mean age was 34.45 years (SD = 9.65), and all participants had French nationality. 61.5 % of participants had their baccalaureate or completed higher education. Among the participants, 42.3% were in a couple, 15.4% had children, 15.4% were working and 11.5% were students.

Finally, in our sample, 50% of the participants had been on a stabilized treatment for more than one month for mood regulation and 38.5% had already practiced mindfulness. Diagnoses of participants included the following: major depressive disorder (38.7%), bipolar affective disorder (22.6%), borderline personality disorder (25.8%) and schizophrenia (12.9%).

Of the 26 participants who were allocated to one of the two study arms, 7 (26.92%) did not complete the second assessment (CFP : $n = 3$, ECP : $n = 4$). Our t-tests and chi-squares did not show any significant differences in the age of the participants within the groups, neither on gender, marital status, family situation, education or meditation experience. However, our chi-square showed significant differences in the professional situation of the participants and for treatment. Participants who took part in the 3-months follow-up ($n = 15$) did not significantly differ from those who did not ($n = 11$) in terms of their program condition, $\chi^2(1) = .54, p = .46$, age, $t(24) = 1.58, p = .13, d = .63$, or gender, $\chi^2(1) = 0.004, p = .95$. At baseline, participants of ECP had higher levels of well-being and stress than participants in the CFP. Participants who took part in the 3-months follow-up did not differ on any of the other outcome measures at T1. However, at time 2 our t-test showed that they had higher emotional competence scores $t(18) = 2.05, p = .05, d = 1.06$ and self-compassion scores $t(17) = 2.09, p = .05, d = 1.18$, than those who did not respond at time 3. Table 4 showed means for each outcomes at baseline, post and follow-up interventions.

2. Feasibility and acceptability

Of those allocated to the intervention conditions, $n = 11$ (79%) of the CFP group and $n = 8$ (67%) of the ECP group followed up to T2 (see Fig. 1). Of the participants who did not complete the second questionnaire, four of the participants were hospitalized for reasons other than their participation in the program and three others completed the interventions in their

entirety but did not complete the second questionnaire. If we count the participants who completed all the interventions but did not return the second questionnaire, the attrition rate at Time 2 was moderate (7%, $n = 1$ for CFP and 16%, $n = 2$ for ECP). According to our threshold set, both interventions were acceptable.

3. Credibility, Expectancy and Satisfaction about the intervention

Our analyses show that there were no significant differences between our CFP and ECP participants regarding credibility - $t(2) = .61$, $p = .54$, $d = -.24$, and expectation - $t(24) = .46$, $p = .25$, $d = .47$ about the interventions. Participants' mean satisfaction with the CFP was 28.5 (SD = 4.80) and 30.4 (SD = 4.17) with the ECP. Furthermore, our analyses show that there were no significant difference in scores of intervention satisfaction between participants in the CFP and ECP groups - $t(17) = .91$, $p = .38$, $d = .42$, nor in their satisfaction towards the therapist in their group - $t(17) = -.02$, $p = .99$, $d = -.007$.

Table 3

Baseline Sample Characteristics for the Intervention (CFP) and the active control group (ECP) and Control Group (Treatment as Usual, TAU)

	ECP (n=12)	CFP (n= 14)	Statistic			
			<i>df</i>	<i>t</i> value	<i>p</i> value	<i>d</i> value
Mean age (SD)	32.8 (11.4)	(7.96)	24	-.9	.38	-.35
			χ^2	<i>V</i>	<i>p</i> value	
Gender, <i>n</i> (%)			1.33	.23	.25	
Male	7 (58%)	5 (36%)				
Female	5 (42%)	9 (64%)				
Marital status <i>n</i> (%)			.004	.01	.95	
Single / living alone	7 (58%)	8 (57%)				
Married / living together	5 (42%)	6 (43%)				
Children <i>n</i> (%)			.85	.18	.36	
Yes	1 (8%)	3 (21%)				
No	12 (92%)	11 (79%)				
Highest education, <i>n</i> (%)			4.85	.43	.43	
9 th Grade	1 (8%)	2 (14%)				
High-School Diploma/Degree	3 (25%)	4 (29%)				
Bachelor	3 (25%)	5 (36%)				
Master's degree	3 (25%)	1 (7%)				
Phd	0 (0%)	2 (14%)				
Other	2 (17%)	0 (0%)				
Employment, <i>n</i> (%)			13.5	.72	.009	
Full-time paid work	2 (17%)	0 (0%)				
Part-time paid work	0 (0%)	2 (14%)				
Unemployed	5 (41%)	2 (14%)				
Student	3 (25%)	0 (0%)				
Other	2 (17%)	10 (72%)				
Current medications, <i>n</i> (%)			2.48	.31	.12	
Yes	4 (33%)	9 (64%)				
No	8 (67%)	5 (36%)				
Meditation experience, <i>n</i> (%)			1.25	.22	.26	
Yes	6 (50%)	4 (29%)				
No	6 (50%)	10 (71%)				
Outcomes			<i>df</i>	<i>t</i> value	<i>p</i> value	<i>d</i> value
Emotion regulation difficulty	54.5 (12.5)	53 (10.6)	24	.33	.74	.13
Depression	9.58 (6.04)	12.1 (7.46)	24	-.95	.35	-.37
Anxiety	7.25 (4.92)	6.64 (4.50)	24	.33	.74	.13
Stress	11.3 (5.05)	7.79 (2.83)	24	2.25	.03	.89
Well-being	66.3 (8.82)	59.5 (5.79)	24	2.37	.03	.93
Self-compassion	25.3 (6.01)	27.9 (6.99)	24	-.98	.34	-.38
Emotional Competencies	143 (25.9)	140 (26.2)	24	.27	.79	.1

Notes. Data presented as means (SD) or numbers (%). ECP = Emotion Competence Program; CFP = Compassion Focused Program. t-tests were conducted for continuous variables and Chi-squared for categorical variables.

Table 4

Observed means at baseline and standard deviations for each primary outcome and repeated measures Anova by condition over time.

	Baseline Mean (SD)	Post-intervention Mean (SD)	Follow-up Mean (SD)
Difficulty in emotion regulation (DERS)			
CFP	53 (10.6)	44.5 (10.8)	42.4 (10.1)
ECP	54.5 (12.5)	50.6 (12.5)	48.2 (9.66)
Depression (DASS21)			
CFP	12.1 (7.46)	6.82 (6.75)	8.33 (7.07)
ECP	9.58 (6.04)	6.75 (6.23)	7.17 (7.52)
Anxiety (DASS21)			
CFP	6.64 (4.50)	4.91 (4.25)	7 (4.45)
ECP	7.25 (4.92)	4.13 (3.68)	5.17 (4.45)
Stress (DASS21)			
CFP	7.79 (2.83)	5.91 (3.39)	6.78 (4.29)
ECP	11.3 (5.05)	8.75 (3.92)	9.67 (4.13)
Well-being (PWB)			
CFP	59.5 (5.79)	65.7 (10)	65.1 (8.75)
ECP	66.3 (8.82)	66.4 (9.77)	68.3 (2.5)
Self-compassion (SCS)			
CFP	27.9 (6.99)	37.3 (8.47)	36.3 (7.30)
ECP	25.3 (6.01)	29.3 (4.80)	29.2 (6.79)
Emotional competencies (PEC)			
CFP	140 (26.2)	149 (31.4)	151 (29.8)
ECP	143 (25.9)	144 (57.9)	164 (13.7)

Notes. ECP = Emotion Competence Program; CFP = Compassion Focused Program.

4. Treatment effect on emotion regulation difficulty

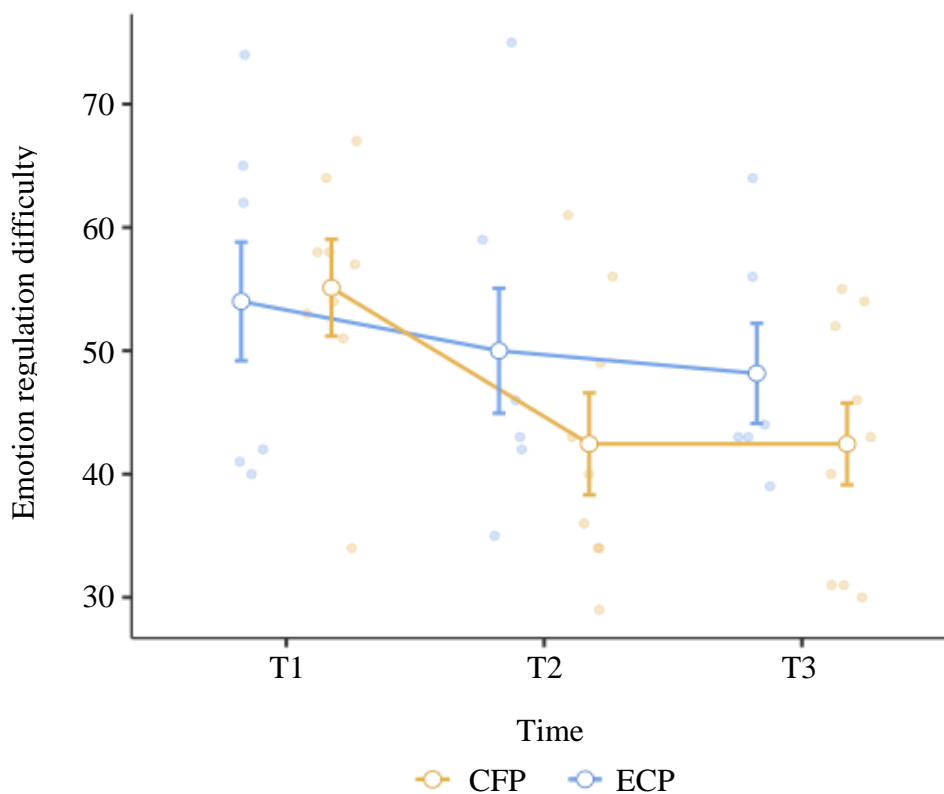
Mixed Anovas showed a decrease in ER difficulties across time in both treatments - $F(2,26) = 8.25, p = .002, \eta^2_p = .39$ and no difference between both treatments across time - $F(1,13) = .59, p = .46, \eta^2_p = .04$. Since there was no difference between the two interventions, we evaluated the effect of the treatment and its persistence over time using Helmert contrasts. The first contrast (2, -1, -1) proved significant, showing a decrease of emotion regulation difficulty following both treatments - $t(14) = 3.68, p = .002, d = .95$. The second contrast (0, 1, -1) was not significant, showing no difference in emotion dysregulation post and follow-up measure, showing the persistence of the treatment effect up to three months after its end - $t(14) = .39, p = .71, d = .10$. These results are presented in Figure 2. These results indicate that both interventions are equally effective in decreasing emotional regulation difficulty.

5. Treatment effect on depression, anxiety, stress

The mixed Anova didn't showed a statistically significant decrease in depression - $F(2,26) = 3.06, p = .06, \eta^2_p = .19$, and anxiety - $F(2,26) = 1.09, p = .35, \eta^2_p = .08$, but a decrease of stress symptoms across times in both treatment - $F(2,26) = 3.53, p = .04, \eta^2_p = .21$ and no difference between both treatment - $F(1,13) = 4.39, p = .06, \eta^2_p = .25$. Contrast analyses showed no significant effect between our measurement times. Contrast analyses showed no significant effect between our measurement times. From a statistical point of view, both interventions did not reduce symptoms of depression and anxiety although from a descriptive point of view we can observe a decrease in the depression and anxiety scores after the end of the two interventions (Table 4).

Figure 2

Estimated marginal means of difficulties in emotion regulation from T0 to T2 for CFP and ECP.



Notes. CFP: Compassion Focused Program. ECP: Emotion Competencies Program. Error bars represent standard errors.

6. Treatment effect on well-being

Mixed Anova didn't showed statistically significant decrease in well-being - $F(2,26) = 2.30, p = .12, \eta^2_p = .15$ and no difference between both treatment across time - $F(1,13) = .28, p = .61, \eta^2_p = .02$. Contrast analyses showed no significant effect between our measurement times. These results indicate that both interventions are equally effective in developing psychological well-being.

7. Treatment effect on self-compassion

Results of mixed Anova showed a significant increase in self-compassion across time in both treatments - $F(2,26) = 20.69, p < .001, \eta^2_p = .61$ and a significant difference between both treatments across time - $F(1,13) = 6.13, p = .03, \eta^2_p = .32$. Because our interventions appeared to have different effects, we performed Helmert contrast analyses for each. The first contrast (2, -1, -1) proved significant, showing a decrease in self-compassion following CFP - $t(8) = -5.34, p < .001, d = -1.78$ and ECP - $t(5) = -3.18, p = .02, d = -1.30$. The second contrast (0, 1, -1) was not significant, showing no difference in self-compassion between time 2 and 3, showing the persistence of the both CFP and ECP effect up to three months after its end, respectively - $t(8) = 1.96, p = .08, d = .65$ and $t(5) = .44, p = .68, d = .18$. Results are shown in Figure 3. Thus, it appears that both interventions increase self-compassion, but CFP was more effective than ECP in developing it.

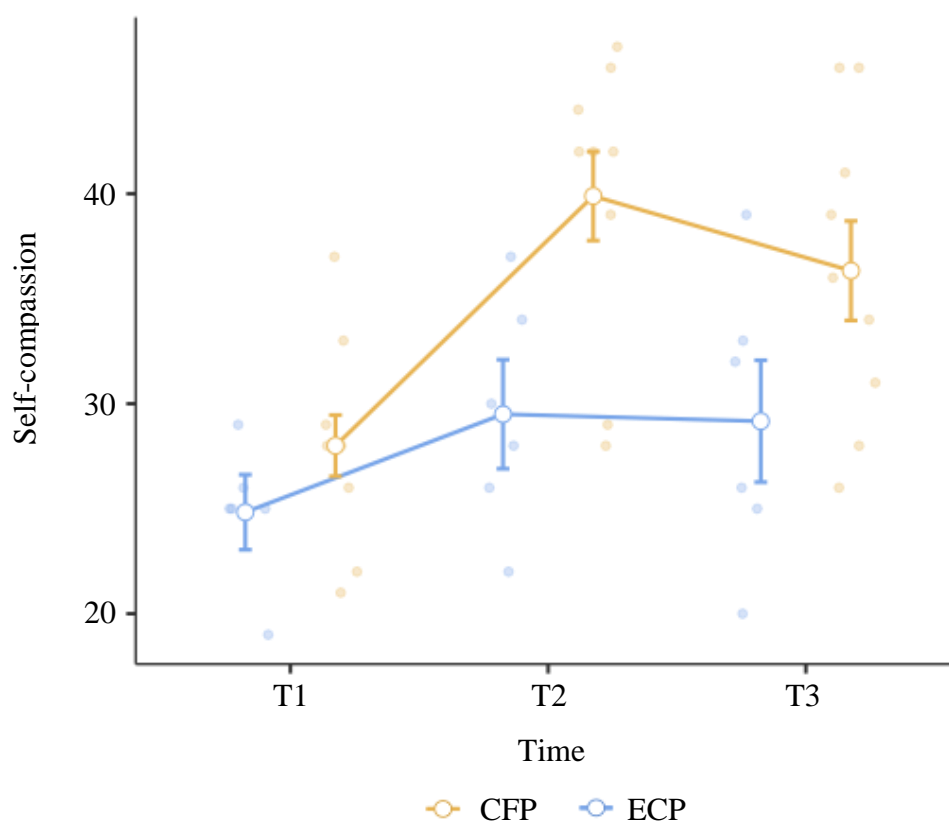
8. Treatment effect on emotional competencies

Mixed Anova results showed that in both interventions emotional competencies increased - $F(2,26) = 9.31, p < .001, \eta^2_p = .42$ with no differences between the two treatments across time - $F(1,13) = .84, p = .38, \eta^2_p = .06$. We also evaluated the effect of the treatment and its persistence over time using Helmert contrasts. The first contrast (2, -1, -1) proved to be

significant, showing an increase of emotion competencies following both treatment - $t(14) = -4.48, p < .001, d = -1.16$. The second contrast (0, 1, -1) was not significant, showing no difference in emotion competencies between time 2 and 3, showing the persistence of the treatment effect until three months after its end - $t(14) = .31, p = .76, d = .08$. These results showed that both interventions allowed to increase emotional competencies in an equivalent way.

Figure 3

Estimated marginal means of self-compassion from T0 to T2 for CFP and ECP.



Notes. CFP: Compassion Focused Program. ECP: Emotion Competencies Program. Error bars represent standard errors.

6. Discussion

The purpose of this study was to evaluate the feasibility, acceptability, and effectiveness of an Emotion Competencies Program and a Compassion Focused Program in decreasing ER difficulty, depression, anxiety and stress and enhancing well-being, self-compassion and emotional competencies in a clinical population. Extending beyond the preliminary findings that these two compassion and emotional competencies program who were shown to be effective in enhancing mental health in the community (Paucsik et al., 2022; Kotsou et al., 2011), this study provided new evidence of their application to a clinical population. The results from the current study provide initial support for the feasibility and acceptability of the Compassion Focused Program and the Emotion Competencies Program as transdiagnostic interventions for patient with several mental disorders. This study also shows preliminary evidence regarding the effectiveness of CFP and ECP to decrease ER difficulty in a transdiagnostic sample.

Regarding the CFP, as hypothesized, participants of CFP reported a significant decrease in ER difficulty and stress and a significant increase in self-compassion and emotional competencies between pre and post intervention and follow-up. These results are in line with previous studies that have shown the interest of developing self-compassion for ER. Some studies have already shown the links between self-compassion and ER difficulties. For example, Jazaieri et al. (2015) tested an ER model of self-compassion and showed that self-compassion significantly negatively predicted ER difficulties. In the same way, some intervention studies showed promising results of compassion-based interventions on ER in a community-based sample (e.g., Hasselberg & Rönnlund, 2020; Jazaieri et al., 2014; Paucsik et al., 2022). For example, the study of Jazaieri et al. (2014) showed that Compassion Cultivation Training reduced the expressive suppression which contribute to ER difficulties.

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Second, these results contribute to the understanding of the mechanisms of efficacy of CBIs. Some authors had already emphasized the importance of evaluating the mechanisms of change such as ER. For example, Finlay-Jones in her review of 2017, concluded on the relevance of evaluating the effects of self-compassion practices on ER, especially in clinical populations where data are limited. If the study by Scoglio et al. (2018) had shown the importance of developing self-compassion with people with PTSD, the results of our studies suggest that the compassion based intervention can be useful for individuals with range of diagnoses.

Contrary to what we expected, depression, anxiety and well-being did not significantly change over the three measurement times. However, contrast analyses showed that participants of CFP reported fewer stress symptoms after the intervention. The paucity of previous studies on clinical sample makes the comparison with our results difficult. Mostly, they are focused on a specific category of disorders (for a review see Ferrari et al., 2019), but still too few on populations with various severe psychological disorders such as in the study of Bartels-Velthuis et al. (2016) who have evaluated the effect of a compassion-focused training in a heterogeneous psychiatric outpatient population. Although their study had many limitations, their results showed no effect on anxiety symptoms, but a decrease in depressive symptoms after the intervention. Future studies are therefore needed to determine whether compassion-based interventions are effective in reducing depression and anxiety symptoms in populations with severe psychological disorders.

Finally, our hypotheses regarding the effect of the program in developing compassion and emotional competencies are supported. CFP increases self-compassion and emotional competencies up to three months after its completion, indicating that the development of attitudes and skills is stable over time. Accordingly, studies have already shown that self-

compassion is associated with a reduction in depressive symptoms over a period of 5 months in a non-clinical sample (Raes, 2011) and in a clinical sample over a period of 26 months (Krieger et al., 2013). Thus, it is possible that CFP may have longer-term effects on symptoms of depression and anxiety through the development of self-compassion. Future studies with longer follow-up periods would be useful to test this.

Regarding the ECP program, our results support the hypothesis regarding the effect of the program on ER difficulties and stress but not on depression and anxiety symptoms. The results differ from those obtained in previous studies conducted on clinical populations. For example, Jahangard et al. (2012), found an effect of an emotional competencies training program on depressive symptoms in patients with borderline personality disorder and depression. This is also the case of a recent study conducted by Zoromba et al. (2022) who found a decrease in depression scores but also an improvement in the participants' well-being after an emotional competencies training program in patients with depressive disorders. The results of the study conducted by Persich et al. (2021) during the COVID-19 pandemic also showed that a training of emotional competencies was effective to reduce depression and anxiety. The lack of effect of ECP on depressive and anxiety symptoms in our study could be explained by the delivery of the intervention. The intervention was delivered over 12 2-hour sessions at a rate of one session per week. The interventions in the studies by Jahangard et al (2012) and Persich et al (2021) were delivered in an equivalent number of sessions but were delivered several times a week (Jahangard, 2012) and online with roughly 1-1.5h per day (Persich, 2021). These different modes of delivery could explain the different effects between these interventions (i.e., number of sessions per week and online or face-to-face format). In addition, although we assessed participants' expectations and satisfaction with the intervention, we did not assess their involvement in the session, nor the practices carried out between sessions. Future studies may include a follow-up of the practices performed between sessions

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to assess whether the involvement of participants in the intervention produces a greater effect on symptoms of depression and anxiety.

Even though depression and anxiety scores did not decrease in our study, our results showed that stress scores of ECP participants decreased after the end of the intervention which suggests a short-term effect on some indicators of mental health. Finally, our hypothesis that self-compassion and emotional competencies would increase between pre, post and follow-up phases is supported. Thus, the ECP program did reduce ER difficulties in this clinical population and helped to develop other resources such as self-compassion and emotional competencies and to reduce stress symptoms. These results show that, if the ECP does not decrease depression and anxiety, it nevertheless makes it possible to develop emotional competencies such as the identification, expression, comprehension, regulation and the management of the emotions. We did not assess the effects of the ECP on each of these skills, but future studies could do so and would provide a better understanding of the effect of the intervention on emotions. In addition, it is possible that the development of these skills could have longer-term effects as studies have already shown that higher levels of emotional competencies are associated with better ER (Peña-Sarrionandia et al., 2015).

This study has several limitations. First, the study did not use a randomized controlled design, thus the benefits of CFP or ECP could not be separated out from non-specific group therapeutic factors such as group cohesion (Landi et al., 2021).

Second, our study relied exclusively on self-report questionnaires to assess ER, depression, anxiety, stress, well-being, self-compassion, and emotional competencies. Future studies would be enhanced using more ecological measures such as daily diary and ecological momentary assessment (Colombo et al., 2020).

Additionally, in this study we focused on the effects of the interventions on the symptoms of depression, anxiety, and stress and on well-being and on ER as transdiagnostic process. However, other mental health indicators and process seems to be equally important when looking at recovery for people with severe mental illness such as empowerment and hope (Thomas et al., 2018). Empowerment and hope are also considered to be transdiagnostic processes. For example, the study of Grealish et al. (2017) showed that empowerment mediate the relationship between psychological factors (e.g., feeling of self-efficacy, coping strategies and control) and mental health, well-being and recovery. The assessment of these processes is also consistent with new approaches to mental health that focus not only on symptoms but also on personal recovery. Personal recovery differs from clinical recovery in that it focuses on hope, identity, meaning and personal responsibility (Slade, 2010; Slade & Longden, 2015). In this sense, future studies addressing the effect of interventions on populations with severe psychological disorders should also include indicators of recovery.

7. Conclusion

This study is one of the first to test the feasibility and efficacy of transdiagnostic application of such interventions and their effects on ER. The results of this study provide preliminary evidence of the feasibility, acceptability, and effectiveness of both Compassion Focused Program and Emotional Competencies Program on ER, stress, self-compassion and emotional competencies in a clinical population. Nevertheless, further studies using randomized controlled designs with clinical trial are needed to replicate these results.

This pilot study showed the feasibility and acceptability of the CFP in a population with several psychological disorders. The program also showed promising results on emotional regulation, stress, self-compassion and emotional skills. Statistically, its effects on emotional regulation, stress and emotional competences are similar to those of an intervention based on emotional competences, but it increases self-compassion to a greater extent. This study suggests that CFP is a relevant transdiagnostic intervention, the effects of which need to be confirmed by further studies based on a robust design.

Rational from the second to the third part

The challenge of clinical research evaluating the effect of interventions is no longer simply to assess their effectiveness but also to evaluate the processes of change of these interventions (Laurenceau et al., 2007). Among the processes that could mediate the effect of self-compassion, several studies suggest that emotional regulation (ER) is promising (e.g., Inwood et Ferrari, 2018).

However, the results of our meta-analysis showed that few studies had evaluated the effect of compassion-based interventions on ER. Therefore, we developed a compassion-based program (CBP) and evaluated its effects on several mental health indicators and ER in subclinical and clinical populations. The results of these interventional studies reveal the effectiveness of CFP in reducing symptoms of depression, anxiety, and stress and developing well-being in a subclinical population. The program also revealed its feasibility and acceptability in a clinical population and its effect on stress symptoms.

Finally, whether in a subclinical or clinical population, the program decreased ER difficulties and increased emotional competences, even more importantly than a program based on the development of emotional competences. In that sense, our results showed that ER is an effective intervention process in CFP. Thus, it seems that self-compassion practices improve mental health in part because they improve ER. In order to clarify the effect of self-compassion on ER, we conducted a last study presented in the third part of this thesis and which aims to specify the links between self-compassion and ER.

Part III

Compassion, a factor to develop emotion regulation

Chapter 10: Self-compassion and emotion regulation: An integrative emotion regulation model of self-compassion

Marine Paucsik¹, Carla Nardelli¹, Catherine Bortolon¹, Rebecca Shankland^{2,3},
Christophe Leys⁴, & Céline Baeyens¹

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¹ Univ. Grenoble Alpes, Univ. Savoie Mont Blanc, LIP/PC2S, 38000 Grenoble, France

²Univ. Lumière Lyon 2, DIPHE, 69676 Bron Cedex, France

³Institut Universitaire de France

⁴Université Libre de Bruxelles, ULB, 1050, Bruxelles, Belgique

1. Résumé

L'auto-compassion semble jouer un rôle important dans l'amélioration de la régulation des émotions (RE). Néanmoins, les résultats d'études antérieures concernant les liens entre l'auto-compassion et la régulation des émotions ne sont pas toujours cohérents, en particulier face à la diversité des modèles de RE (basés sur des stratégies ou des compétences). L'objectif de cette étude longitudinale était d'évaluer les liens entre ces deux concepts, en testant les rôles prédictifs de l'auto-compassion et des compétences de RE sur les stratégies adaptées et inadaptées de la RE, à l'aide de questionnaires standardisés et d'échelles visuelles analogiques. Les résultats ont montré que les stratégies de régulation des émotions adaptées étaient prédites positivement par les compétences d'auto-compassion et de RE et négativement lorsqu'elles sont considérées comme inadaptées. Les résultats d'un modèle de médiation exploratoire sont prometteurs au regard du rôle des compétences de RE et de l'auto-compassion sur les stratégies adaptées de RE. Malgré les limites liées aux mesures d'auto-évaluation, cette étude apporte des éléments de compréhension du rôle de l'auto-compassion dans un modèle intégratif de la RE.

Mots-clés : Auto-compassion; Régulation émotionnelle; Stratégies de régulation émotionnelle; Compétences de régulation émotionnelle.

2. Abstract

Self-Compassion (SC) seems to play an important role in improving Emotion Regulation (ER). Nevertheless, the results of previous studies regarding the links between SC and ER are not consistent, especially facing diverse models of ER (strategy-based vs skill-based). The goal of this longitudinal study was to evaluate the links between these three concepts, by testing the predictive roles of SC and ER skills on both ER adaptive and maladaptive strategies, using standardized questionnaires and visual analog scales. Results

showed that strategies were predicted by SC and ER skills, based on their adaptability. Results from an exploratory mediation model are also promising regarding both the role of ER skills on the effect of SC on adaptive ER strategy use. Even if this study can be associated with common limits of self-report measures, it highlights the role of SC in an integrative model of ER.

Keywords: Self-compassion; Emotion regulation; Emotion regulation strategies; Emotion regulation skills.

3. Introduction

The understanding and development of Emotion Regulation (ER) are one of the main interests in clinical psychology (Berking & Wupperman, 2012) due to its key implication in mental health and its disorders (Aldao et al., 2010). ER refers to a set of processes by which individuals tend to control the nature and intensity of their emotions (Gross, 1998). Among several models on ER, two models exist. The first refers to a "Strategies-based Model", and the second one to a "Skills-based model". The first model considers that efficient ER will depend on the use of strategies categorized as "adaptive", and to less reliance on maladaptive strategies. This traditional classification is based on the correlations between specific mental health (Aldao & Nolen-Hoeksema, 2010; Hu et al., 2014). For example, it has been shown that maladaptive strategies (i.e., distraction, behavioral avoidance, expressive suppression, consumption, and rumination) were associated with higher levels of psychopathology, whereas adaptive strategies (i.e., cognitive reappraisal, emotional expression, acceptance, problem solving, social and self-support and tolerance) were associated with good mental health (Aldao & Nolen-Hoeksema, 2010). More recently, studies have gone beyond this dual categorization and have demonstrated that the ability to effectively use a wide range of strategies (i.e., having a large repertoire of

both adaptive and maladaptive strategies) in different contexts was the most adaptive (Bonanno & Burton, 2013).

Second, the Adaptive Coping with Emotion model (ACE) - developed by Berking and Whitley (2014) – is an example of a skills-based model. It conceptualizes adaptive ER as the interplay of several *skills* which would facilitate the implementation of ER strategies. These general skills include (a) the awareness of one's emotional experiences, (b) the ability to identify and label perceived emotions; (c) the ability to interpret body sensations correctly, (d) the understanding of the circumstances that may have led to and maintained those emotions, (e) the ability to modify the intensity or duration of one's emotions, (f) to accept and tolerate undesired emotions, (g) to confront certain situations, and finally (h) to be able to provide self-support (e.g., self-kindness). Developing these skills would allow individuals to select adaptive strategies for ER. Indeed, Berking et al. (2012) showed that the effect of ER skills on mental health would be mediated by the use of strategies to modify emotion. In that sense, ER skills would be important for mental health because they involve using ER strategies to modify emotions. More specifically, good levels of ER skills could lead to greater use of adaptive ER strategies and lower use of maladaptive ER strategies. Some studies already support this hypothesis. For example, high emotional regulation skills are positively correlated with the use of adaptive strategies such as cognitive reappraisal (e.g., Fujisato et al., 2017). Other studies have shown that deficits in ER skills predict more maladaptive strategies, such as the use of consumption of alcohol (e.g., Berking et al., 2011).

Several meta-analyses have shown the importance of ER strategies and skills to reduce the risk of several disorders (Aldao et al., 2010; Visted et al., 2018; Webb et al., 2012). ER is now considered as a processual and transdiagnostic factor (Aldao et al., 2016; Aldao & Nolen-Hoeksema, 2010; Cludius et al., 2020). The challenge in clinical psychology research is

therefore to identify the factors and practices that would enable the development of strategies and skills of ER (Berking et al., 2008; Moyal et al., 2015; Rottenberg & Gross, 2007).

Self-compassion and emotion regulation

Self-compassion has been suggested to be an important factor in facilitating the learning and use of ER skills and strategies (e.g., Inwood & Ferrari, 2018). Self-compassion is an emotionally positive self-attitude (Neff, 2003a). Three components define it: (a) self-kindness (i.e., being kind and understanding toward oneself in times of pain or failure rather than being self-critical), (b) common humanity (i.e., perceiving one's experiences, even difficult ones, as part of the larger human experience rather than seeing them as stigmatizing and isolating), and (c) mindfulness (i.e., approaching one's painful thoughts and emotions in balanced awareness (i.e., observing them without being overwhelmed) rather than over-identifying with them (Neff, 2003). This positive attitude toward oneself is associated with reduced negative affect and emotional reactivity in response to difficult everyday situations (Leary et al., 2007). Thus, self-compassion is a key resilience mechanism in mental health (Trompetter et al., 2017).

If some studies consider self-compassion as a strategy of ER (Diedrich et al., 2014), research is now focusing on a more precise understanding of how self-compassion allows for better ER by looking at the link between self-compassion and certain ER strategies and skills. In a strategy-based perspective, results showed that self-compassion was negatively associated with ruminative strategies (Oudou & Brinker, 2014), and positively associated with cognitive reappraisal (Allen & Leary, 2010; Chishima et al., 2018). Other studies focused more on the link between self-compassion and ER skills. Results of the self-compassion model of ER tested by Finaly-Jones and colleagues (2015) showed that self-compassion negatively predicted ER difficulties. Specifically, their results showed that ER is one of the mediators of the effect of self-compassion on stress and that self-compassion negatively predicted difficulties in terms of

acceptance, goal commitment, impulsivity, clarity, or access to ER strategies. However, recent studies showed that self-compassion might not be crucial to all ER skills. The results of Diedrich et al.'s (2017) study showed that among the different ER skills, only tolerance to negative emotions mediated the relationship between self-compassion and depression. These contrasting results have led some authors to define new paths between self-compassion and ER strategies. For example, Hansen and colleagues (2021) conceptualize self-compassion as a self-regulating strategy. On the basis of all these studies, the links between self-compassion and ER remain to be specified. Therefore, the main purpose of this study was to analyse more precisely the links between self-compassion and ER by integrating the two models of ER, i.e., by evaluating both ER strategies and skills.

Aims and Hypotheses

In summary, this research aimed to analyse the predictive role of self-compassion on ER skills and ER strategies (both adaptive or maladaptive), as well as the predictive role of ER skills on ER strategies. Strategies were considered as adaptive or maladaptive according to the literature (Aldao, 2010). Based on these results, we will subsequently explore an integrative mediation model with ER skills as a mediator in the effect of self-compassion on ER strategies.

We draw four hypotheses. First, self-compassion would positively predict adaptive ER strategies (i.e., cognitive reappraisal, problem-solving, acceptance, social support, relaxation, self-support, tolerance), and negatively predict maladaptive ER strategies (i.e., distraction, behavioral avoidance, suppression of emotional expression, consumption, and rumination). Second, we hypothesized that self-compassion would positively predict ER skills (i.e., attention, sensations, clarity, understanding, modification, acceptance, tolerance, confronting situations, self-support). Third, we expected that ER skills would positively predict adaptive ER strategies and negatively predict maladaptive ER strategies. Finally, we wished to test a

preliminary mediation model, and expected that ER skills would mediate the relation between self-compassion and ER strategies. In other words, we hypothesized that self-compassion would enable individuals to better use their ER skills, which in turn, would increase the use of adaptive ER strategies, and decrease the use of maladaptive ones.

4. Method

1. Transparency and openness

This study's design and its analysis were pre-registered on Open Science Framework (OSF, https://osf.io/yjm9a/?view_only=50021e2c65e24260a07be97424974815). All data, analysis code and research materials are available on the OSF Project. This study initially included a secondary goal regarding the evaluation of the psychometric properties of the VASs. The study, therefore, involved other questionnaires for the evaluation of psychometric qualities of these VASs. Materials and results are also presented on OSF. These analyses are not included here because it represents a lot of material and data to report. The authors, in agreement with the reviewers, decided to separate the two sub-goals and to focus the present manuscript on the relationship between self-compassion and ER.

2. Participants

This study was approved by the local university's ethics committee (approval number: CERGA-Avis-2020-1-amendement-2021-4). Informed consent was given for the two measurement times of this online longitudinal study which collected data on two occasions at 1-month intervals. The study began on December 3, 2021, and the second measurement time was on January 4, 2022. Participants were recruited using the Prolific platform. Participants were included if they were French speakers and at least 18 years old. Conversely, they were

excluded if they failed two or more attentional checks dispersed throughout the online survey as a way to control for careless responders. A total of 300 participants were recruited at T1, and 281 of them completed the same questionnaires at T2 (one month after T1). The sample comprised 138 women, 150 men and 12 others-identified participants, with a mean age of 29.21 years ($SD = 9.45$, range: 18–64). Among the participants, 96% had their bachelor's degree or higher, 37.3% of them were without a professional activity. Among the participants with a professional activity, 94 were working at their workplace, 40 were teleworking, and the remaining participants were sometimes teleworking and sometimes in the workplace. One hundred eighty-eight of the participants were single, and 93 were in a couple, and among them, 45 had at least one child. Finally, 12.3% of the participants had a current psychiatric diagnosis, including 12 participants with a diagnosis of depression, 13 with a diagnosis of anxiety disorder, 4 with bipolar disorder, 2 with a personality disorder, and 6 with another diagnosis.

3. Measures

Demographic measures. Participants were asked to indicate their gender, age, education level, employment status, and whether they had a current psychiatric diagnosis and if so, which one.

Visual Analogue Scales (VASs) of Emotion Regulation strategies. Thirteen single items measuring ER strategies (i.e., reappraisal, distraction, behavioral avoidance, expressive suppression, emotional expression, acceptance, problem solving, social support, relaxation, consumption, rumination, self-support, tolerance) were initially designed by the second author as VAS (see Table 1 for single items development). The general instruction for each strategy was: *“In general, when faced with a difficult situation or unpleasant emotions, to what extent do you try to apply the following strategies ?”* Each of the strategies was then proposed on a

scale from 0 (not at all) to 10 (very much). These VASs have already been pre-tested and have shown moderate test-retest correlation with standardized scales (Nardelli et al., 2022).

Emotion Regulation Skills. The Emotion Regulation Skills Questionnaire (ERSQ, Berking & Znoj, 2008) comprised 27 items measuring ER skills as defined by Berking and Whitley's ACE model (Berking & Whitley 2014) through nine factors: awareness (e.g., I was able to consciously pay attention to my feelings), sensations (e.g., *I had a clear physical perception of my feelings*), clarity (e.g., *I could have labelled my feelings*), understanding (e.g., *I understood my emotional reactions*), modification (e.g., *I was able to consciously bring about positive feelings*), acceptance (e.g., *I was able to accept my negative feelings*), tolerance (e.g., *I was able to endure my negative feelings*), confrontation with situations (e.g., *I did what I wanted to do, even if I had to face negative feelings on the way*), and self-support (e.g., *I tried to reassure myself during distressing situations*). Each item is assessed using a Likert scale ranging from 0 "Not at all" to 4 "Almost always". Each subscale is composed of three items. While each skill can be evaluated by computing the average of the corresponding items belonging to each subscale, a general ER skills score can be calculated by computing the average of the entire questionnaire. Internal consistency of the total scale was .96 in the original version. Cronbach's alphas were .66 for attention, .73 for sensations, .82 for clarity, .80 for understanding, .73 for modification, .64 for acceptance, .80 for tolerance, .78 for confrontation, .82 for self-support and .94 for the total scale.

Table 1

Single Items development

Strategy	Item	Adapted from
Cognitive reappraisal	“I try to change the way I perceive the situation I am in”	ERQ (Gross & John, 2003)
Distraction	“I try to distract myself”	MPFI24 (Grégoire et al., 2020)
Behavioural avoidance	“I try to avoid situations, people or activities, to defer the tasks I have to do”	MEAQ-15 (Gamez et al., 2011)
Suppression of emotional expression	“I try not to let other people know my emotions”	ERQ (Gross & John, 2003)
Emotional expression	“I express my emotions, for example by crying, shouting, etc.”	ERQ (Gross & John, 2003)
Acceptance	“I embrace the thoughts and emotions related to the situation, without trying to change them”	MPFI24 (Grégoire et al., 2020)
Problem-solving	“I focus my efforts on resolving the situation I am in”	Brief COPE (Carver et al., 1997)
Social support	“I look for support from others (emotional, advice, help, etc)”	Brief COPE (Carver et al., 1997)
Relaxation	“I try to relax physically (sport, relaxation, breathing, meditation, etc)”	Brief COPE (Carver et al., 1997)
Consumption	“I have consumption behaviors (food, shopping, alcohol, cigarettes, etc.) to help me get through the situation”	Brief COPE (Carver et al., 1997)
Rumination	“I cannot stop thinking about the situation and/or how I feel”	CERQ (Garnefski, 2001)
Self-support	“I try to reassure myself, to boost my spirits, to comfort myself in the situation”	ERSQ (Berking & Whitley, 2014)
Tolerance	“I try to support, to tolerate my emotions”	ERSQ (Berking & Whitley, 2014)

Self-compassion. Self-compassion was measured with the Self-Compassion Short Form Scale (SCS-SF, Raes et al., 2011). The SCS-SF is a 12-item instrument with six subscales assessing elements of self-compassion: (1) self-kindness (e.g., *I try to be understanding and patient toward those aspects of my personality I don't like*), (2) self-judgment (e.g., *I'm disapproving and judgmental about my own flaws and inadequacies*), (3) common humanity (e.g., *I try to see my failings as part of the human condition*), (4) isolation (e.g., *When I'm*

feeling down, I tend to feel like most other people are probably happier than I am), (5) mindfulness (e.g., *When something painful happens I try to take a balanced view of the situation*) and (6) overidentification (e.g., *When I fail at something important to me, I become consumed by feelings of inadequacy*). Cronbach's alphas were .64 for self-kindness, .83 for self-judgment, .60 for common humanity, .65 for isolation, .73 for mindfulness, .71 for over-identification and .86 for the total scale.

4. Procedure

Prolific software was used for this study to recruit participants. The first part of the study was paid 2.20\$, and the second 3.10\$. For the first time point (T0), participants created their anonymous code (first two letters of their name, day of birth, number of brothers/sisters, number of their home address, e.g., "CA2423") and then completed the following questionnaires which were randomly presented: sociodemographic and clinical data (i.e., sex, age, level of education, professional activity, current place of work (teleworking or not), living alone or not, current diagnosis, past diagnosis), ERSQ, VAS Questionnaire and SCS. Five attentional checks were also inserted into the questionnaire and participants were asked to respond with a number named in the item. One month later, they were invited to complete the same questionnaires except for the sociodemographic questions.

5. Statistical analysis

Sample size

The sample size was calculated using effect sizes from related publications (e.g., Diedrich et al., 2014) with G*Power statistical software version 3.1 (Faul et al., 2007). The power analysis gave an approximate value of a minimum of 135 participants for the correlation

tests when we expected a medium effect size of $d = .3$ with and $\alpha = .003$ (Bonferroni corrections: $.05/13$) and a power, 80%. For multiple linear regression, the power analysis gave an approximate value of a minimum of 167 participants when we expected a medium effect size of $d = .3$ with and $\alpha = .0006$ (Bonferroni corrections: $.05/8$) and a power of 80%. All variables were tested for normality prior to conducting analyses using a Shapiro-Wilk test.

All variables were tested for normality prior to conducting analyses using a Shapiro-Wilk test. The ERSQ-total score and the SCS-total score were normally distributed and at T1 and T2 ($p > .05$).

Before conducting the analyses to test our hypotheses, one-way ANOVAs were conducted to investigate associations between demographic (gender, self-report presence of current diagnosis) and outcomes variables at baseline (VASs, ERSQ and SCS). We tested these two demographic variables since previous studies have shown levels of self-compassion, and emotional regulation differed between men and women (e.g., Yarnell et al., 2015), but also according to the presence of psychological disorders (e.g., Athanasakou et al., 2020). For the one-way ANOVA, we conducted the Welch ANOVA by default (Delacre et al., 2020). Finally, we also conducted bivariate correlation between VASs, ERSQ and SCS at T1.

Association between self-compassion and emotion regulation

To test the first three hypotheses, according to which (1) self-compassion at T1 would positively predict adaptive ER strategies at T2 and negatively predict maladaptive ER strategies at T2, (2) self-compassion at T1 would positively predict ER skills at T2; and (3) ER skills at T1 would positively predict adaptive ER strategies at T2 and negatively predict non-adaptive ER strategies at T2, several linear regression analyses were performed using JAMOVI Version 1.2.27 (The Jamovi Project, 2020). The first step in each analysis included each dependent

variable (the ER strategy or ER skills) at T1 as a control for initial levels. In the second step of the regression analysis, we added self-compassion at T1 or ER skills at T1 as a predictor to observe the additional variance explained.

To test the model, strategies were mean into either adaptive or maladaptive categories. Thus, we explored factorial analysis and investigated the internal consistency of both adaptive and maladaptive dimensions using Cronbach alphas. Given those results (see Results section), we decided to conduct a simple mediation model using the open statistical software R (R Core Team, 2017), function *mdt_simple* from the package *JSmediation* (Yzerbyt et al., 2018). We used the joint-significant method implemented by Muller et al. (2005), as this method is associated with a lower risk of false positives (Yzerbyt et al., 2018). Here, we report the relevant paths for the analysis (see Muller et al., 2005). In this analysis, we investigated whether the effect of self-compassion (total score of the SCS) on the use of adaptive strategies (mean score of the adaptive ER strategies) was mediated by ER skills (total score of the ERSQ).

5. Results

1. Descriptive statistics and correlations at baseline

Results showed a significant effect of gender on several VASs as for reappraisal, $F(2,29.9) = 4.04, p = .028$, emotional expression, $F(2,29.3) = 40.22, p < .001$, problem solving, $F(2,29.4) = 3.69, p = .037$, social support, $F(2,29.5) = 5.27, p = .011$, relaxation, $F(2,30.2) = 5.01, p = .013$ and ruminations, $F(2,30.4) = 5.9, p = .007$ and on ERSQ, $F(2,30.5) = 6.57, p = .004$ and SCS, $F(2,30.4) = 10.39, p < .001$. Results also showed that presence of self-reported diagnosis had a significant effect on several VASs, more precisely on reappraisal, $F(1,45.1) = 4.33, p = .04$, behavioral avoidance, $F(1,52.4) = 16.87, p < .001$, problem solving, $F(1,44) = 4.44, p = .04$ and consumption, $F(1,47.9) = 5.28, p = .03$ and on SCS, $F(1,48.5) = 11.4, p =$

.001. Table 2 shows descriptive statistics for all variables at baseline and T2. Table 3 presents bivariate correlations between VASs, ERSQ and SCS at baseline.

Table 2

Means and Standard deviations of all the outcomes at baseline and time 2.

Outcomes	T1 M (SD)	T2 M (SD)
Emotion Regulation Skills Questionnaire	88.7 (17.7)	88.9 (17.7)
VAS reappraisal	5.77 (2.53)	5.82 (2.32)
VAS distraction	7.28 (2.05)	7.40 (2.02)
VAS behavioral avoidance	6.28 (4.20)	6.21 (2.64)
VAS expressive suppression	7.05 (3.92)	6.67 (2.69)
VAS emotional expression	5.03 (8.55)	3.82 (2.77)
VAS acceptance	5.20 (4.80)	4.72 (2.42)
VAS problem solving	6.25 (3.32)	6.04 (2.30)
VAS social support	5.82 (8.73)	4.19 (2.88)
VAS relaxation	5.61 (5.98)	5.10 (2.92)
VAS consumption	5.40 (4.91)	4.78 (3.22)
VAS rumination	6.66 (4.15)	6.09 (2.36)
VAS self-support	5.99 (2.41)	6.04 (2.28)
Self-Compassion Scale	33.4 (8.5)	33.9 (8.45)

Note. ¹VAS = Visual Analogue Scale

Table 3

Pearson's correlations between self-compassion, ER Skills and ER Strategies at T1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Self-compassion	-														
2. ER ¹ skills	.53***	-													
3. Cognitive Reappraisal	.5***	.44***	-												
4. Distraction	.07	.14*	.22***	-											
5. Behavioral Avoidance	-.28***	-.28***	-.13*	.2***	-										
6. Expressive Suppression	-.25***	-.23***	-.03	.09	.24***	-									
7. Expression	-.05	.07	-.02	.06	-.05	-.4***	-								
8. Acceptance	.24***	.27***	.09	-.1	-.07	-.2***	.22***	-							

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9. Problem-Solving	.45***	.44***	.51***	.06	-.32***	-.13*	-.005	.13**	-						
10. Social Support	.2***	.26***	.26***	.06	-.08	-.45***	.39***	.18**	.28***	-					
11. Relaxation	.28***	.26***	.27***	.11	-.14*	-.14*	-.06	.05	.31***	.16**	-				
12. Consumption	-.25***	-.13*	-.1	.04	.17**	.11	.06	-.05	-.08	-.03	.02	-			
13. Rumination	-.42***	-.2***	-.26***	.1	.24***	.07	.16**	-.09	-.21***	.1	-.11	.23***	-		
14. Self-support	.46***	.42***	.57***	.31***	-.12*	-.14*	.11	.15*	.47***	.36***	.25***	-.05	-.14*	-	
15. Tolerance	.38***	.44***	.36***	.1***	-.1	-.09	.04	.34***	.33***	.24***	.14*	-.07	-.11	.5***	-

Notes. * $p < .05$, ** $p > .01$, *** $p < .001$. ¹ER = Emotion regulation

2. Self-compassion, ER skills and strategies.

According to our first and second hypotheses, the results of linear regression analyses presented in Table 4 showed that self-compassion at T1 positively predicts VASs of adaptive ER strategies (except for the expression and social support strategies) at T2 and negatively predicts VASs of maladaptive ER strategies at T2 (except for the distraction and consumption strategies). Self-compassion explains between 1 and 7% of additional variance depending on the strategy predicted at T2 when controlling for that same strategy at T1, gender and the presence of diagnosis (Table 4). Regarding ER Skills, the initial regression step combining T1 ER Skills was significant, accounting for 52% of the variance in T2 ER Skills. Adding the variable self-compassion on a subsequent step explained an additional 1% of the variance in T2 ER Skills.

Regarding our third hypothesis, the results showed that general ER skills significantly positively predict VASs adaptive strategies (except social support) at T2 and significantly negatively predict VASs maladaptive strategies at T2 (except distraction and consumption, see Table 4). ER Skills explain between 1% and 5% of additional variance depending on the strategy type at T2 when controlling for that same strategy at T1 and for gender and current diagnosis (Table 5).

Table 4

Linear regression analysis between self-compassion and ER Skills and Strategies

	β	t	p	R^2	F
ER ¹ strategies					
Cognitive Reappraisal T2					
Step 1 : Cognitive reappraisal T1	.543	12.68	<.001	.36	161
Step 2 : Gender	.133	.69	.49	.37	80.5
Step 3 : Current diagnosis	.7	2.1	.04	.37	55.8
Step 4 : SCS T1	.07	4.73	<.001	.42	50.7
Distraction T2					
Step 1 : Distraction T1	.49	9.27	<.001	.24	86
Step 2 : Gender	-.007	-.04	.97	.24	42.9
Step 3 : Current diagnosis	.15	.48	.63	.24	28.6
Step 4 : SCS T1	-.005	-.378	.71	.24	21.4
Behavioral Avoidance T2					
Step 1 : Avoidance T1	.40	7.17	<.001	.15	51.3
Step 2 : Gender	-.29	-1.15	.25	.16	26.4
Step 3 : Current diagnosis	.35	.78	.44	.16	17.7
Step 4 : SCS T1	-.08	-4.7	<.001	.22	19.9
Expressive Suppression T2					
Step 1 : Suppression T1	.47	9.42	<.001	.24	88.8

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Step 2 : Gender	.13	.54	.6	.24	44.4
Step 3 : Current diagnosis	-.14	-.33	.74	.24	29.6
Step 4 : SCS T1	-.04	-2.8	.005	.26	24.7
Expression T2					
Step 1 : Expression T1	.61	14.43	<.001	.43	208
Step 2 : Gender	-.68	-2.92	.004	.44	111
Step 3 : Current diagnosis	-.56	-1.48	.14	.45	75.2
Step 4 : SCS T1	.02	1.67	.1	.45	57.4
Acceptance T2					
Step 1 : Acceptance T1	.48	9.58	<.001	.25	91.7
Step 2 : Gender	.12	.54	.59	.25	45.9
Step 3 : Current diagnosis	.68	1.8	.07	.28	31.9
Step 4 : SCS T1	.05	3.59	<.001	.28	54.3
Problem Solving T2					
Step 1 : Problem Solving T1	.51	10.49	<.001	.28	110
Step 2 : Gender	.12	.58	.56	.28	55.1
Step 3 : Current diagnosis	.71	2.01	.05	.29	38.4
Step 4 : SCS T1	.05	3.39	<.001	.32	32.8
Social Support T2					
Step 1 : Social Support T1	.66	16.19	<.001	.48	262
Step 2 : Gender	-.25	-1.14	.25	.49	132
Step 3 : Current diagnosis	.23	.6	.55	.49	87.8

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Step 4 : SCS T1	.005	.35	.72	.49	65.7
Relaxation T2					
Step 1 : Relaxation T1	.59	12.49	<.001	.36	156
Step 2 : Gender	.09	.39	.69	.36	77.8
Step 3 : Current diagnosis	.48	1.12	.26	.36	52.3
Step 4 : SCS T1	.07	4.17	<.001	.40	45.9
Consumption T2					
Step 1 : Consumption T1	.7	16.5	<.001	.49	272
Step 2 : Gender	.25	1.06	.29	.5	137
Step 3 : Current diagnosis	-.41	-.68	.33	.5	91.4
Step 4 : SCS T1	-.01	-.68	.5	.50	68.6
Rumination T2					
Step 1 : Rumination T1	.41	8.69	<.001	.21	75.6
Step 2 : Gender	-.27	-1.22	.22	.22	38.6
Step 3 : Current diagnosis	.3	.77	.44	.22	25.9
Step 4 : SCS T1	-.07	-4.21	<.001	.27	25
Self-support T2					
Step 1 : Self-support T1	.57	12.99	<.001	.38	169
Step 2 : Gender	-.25	-1.15	.25	.49	132
Step 3 : Current diagnosis	.23	.6	.55	.49	87.8
Step 4 : SCS T1	.04	2.66	.008	.39	89.8
Tolerance T2					

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Step 1 : Tolerance T1	.52	11.46	<.001	.32	131
Step 2 : Gender	.37	2.05	.04	.33	68.5
Step 3 : Current diagnosis	.69	2.22	.03	.34	48
Step 4 : SCS T1	.04	3.51	<.001	.37	40.5
Total ER ¹ Skills T2					
Step 1 : ER skills T1	.71	17.38	<.001	.52	302
Step 2 : Gender	-.66	-.52	.6	.52	151
Step 3 : Current diagnosis	.5	.22	.82	.52	100
Step 4 : SCS T1	.29	2.85	.005	.53	79.1

Notes. ER = Emotion regulation. SCS = Self-Compassion Scale. Step 1 = controlling each initial ER strategy or ER skill at T1. Step 2 and 3 = controlling gender and current diagnosis. Step 4 = addition of the predictor self-compassion

Table 5

Linear regression analysis between ER Skills and Strategies

	β	t	p	R^2	F
ER ¹ strategies					
Cognitive Reappraisal T2					
Step 1 : Reappraisal T1	.543	12.68	<.001	.37	161
Step 2 : Gender	.13	.69	.5	.37	80.5
Step 3 : Current diagnosis	.7	2.09	.03	.38	55.8
Step 4 : ERSQ T1	.03	4.82	<.001	.42	51
Distraction T2					
Step 1 : Distraction T1	.48	9.27	<.001	.24	86
Step 2 : Gender	-.007	-.04	.97	.24	42.9
Step 3 : Current diagnosis	.15	.49	.63	.24	28.6
Step 4 : ERSQ T1	.007	1.12	.26	.24	21.8
Behavioral Avoidance T2					
Step 1 : Avoidance T1	.39	7.17	<.001	.15	51.3
Step 2 : Gender	-.29	-1.15	.25	.16	26.4
Step 3 : Current diagnosis	.35	.77	.44	.16	17.7
Step 4 : ERSQ T1	-.02	-2.36	.02	.18	14.9
Expressive Suppression T2					
Step 1 : Suppression T1	.47	9.42	<.001	.24	88.8

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Step 2 : Gender	.13	.54	.59	.54	44.4
Step 3 : Current diagnosis	-.14	-.33	.74	.24	29.6
Step 4 : ERSQ T1	-.02	-2.04	.04	.25	23.5
Expression T2					
Step 1 : Expression T1	.61	14.43	<.001	.43	208
Step 2 : Gender	-.68	-2.92	.004	.44	111
Step 3 : Current diagnosis	-.56	-1.48	.14	.45	75.2
Step 4 : ERSQ T1	.02	2.43	.02	.46	58.9
Acceptance T2					
Step 1 : Acceptance T1	.48	9.58	<.001	.25	91.7
Step 2 : Gender	.12	.54	.59	.25	45.9
Step 3 : Current diagnosis	.68	1.8	.07	.26	31.9
Step 4 : ERSQ T1	.02	2.75	.006	.28	26.4
Problem-Solving T2					
Step 1 : Problem-Solving T1	.51	10.49	<.001	.28	110
Step 2 : Gender	.12	.58	.56	.28	55.1
Step 3 : Current diagnosis	.71	2.01	.05	.29	38.4
Step 4 : ERSQ T1	.03	4.02	<.001	.33	34.5
Social Support T2					
Step 1 : Social Support T1	.66	16.19	<.001	.48	262
Step 2 : Gender	-.25	-1.14	.25	.49	132
Step 3 : Current diagnosis	.23	.6	.55	.49	87.8

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Step 4 : ERSQ T1	.01	1.27	.2	.49	66.4
Relaxation T2					
Step 1 : Relaxation T1	.59	12.49	<.001	.36	156
Step 2 : Gender	.09	.39	.69	.36	77.8
Step 3 : Current diagnosis	.48	1.12	.26	.36	52.3
Step 4 : ERSQ T1	.03	4.23	<.001	.40	46.1
Consumption T2					
Step 1 : Consumption T1	.7	16.5	<.001	.49	272
Step 2 : Gender	.25	1.06	.29	.49	137
Step 3 : Current diagnosis	-.41	-.98	.33	.5	91.4
Step 4 : ERSQ T1	.7	-1.34	.18	.50	69.2
Rumination T2					
Step 1 : Rumination T1	.41	8.69	<.001	.21	75.6
Step 2 : Gender	-.27	-1.22	.22	.22	38.6
Step 3 : Current diagnosis	.3	.77	.44	.22	25.9
Step 4 : ERSQ T1	-.01	-2.32	.02	.23	21.1
Self-support T2					
Step 1 : Self-support T1	.57	12.99	<.001	.38	169
Step 2 : Gender	-.16	-.85	.39	.39	84.7
Step 3 : Current diagnosis	.72	2.23	.03	.39	58.9
Step 4 : ERSQ T1	.02	3.67	<.001	.41	48.7
Tolerance T2					

Step 1 : Tolerance T1	.52	11.46	<.001	.32	131
Step 2 : Gender	.37	2.05	.04	.33	68.5
Step 3 : Current diagnosis	.69	2.22	.03	.34	48
Step 4 : ERSQ T1	.03	5.36	<.001	.40	46.8

Notes. ER = Emotion regulation. Step 1 = controlling each initial ER strategy. Step 2 and 3 = controlling gender and current diagnosis. Step 4 = addition of the predictor ER skills

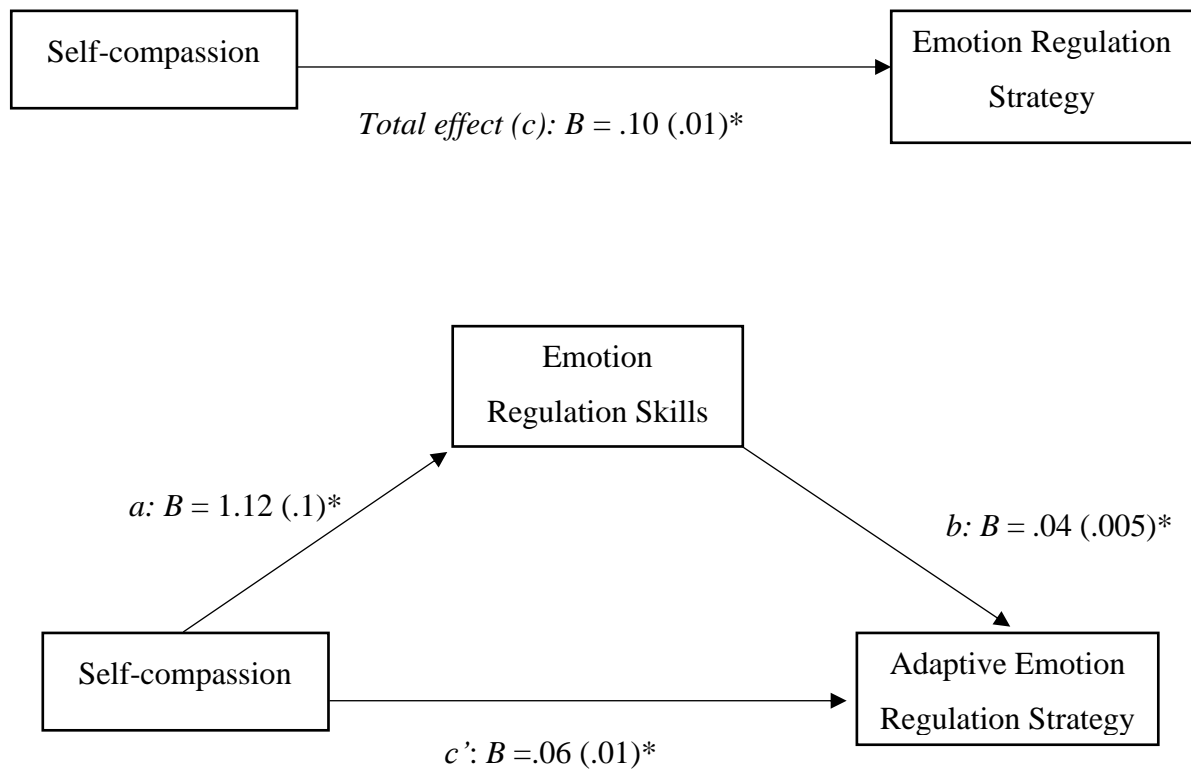
3. Preliminary testing of a mediation model

Exploratory factorial analysis showed adaptive ER strategies are represented by one factor explaining 27.6% of the variance. We excluded items of acceptance and emotional expression because their load was $< .3$ (Cohen et al., 2003). Cronbach's α was .77 which represents a good internal reliability. Exploratory factorial analysis in maladaptive ER strategies showed that one factor explained them explaining 23.2% of variance. We also excluded items of distraction and consumption because their load was $< .3$ (Cohen et al., 2003). Nevertheless, cronbach's α was .56, which is considered as a poor internal consistency, we therefore decide not to include maladaptive ER strategies in the mediation model.

Therefore, we conducted a mediation analysis considering only adaptive strategies (i.e., cognitive reappraisal, self-support, tolerance, problem solving, social support, and relaxation) as dependent variable, self-compassion as a predictor and ER skills as a mediator. As hypothesized, results from the mediation analysis indicated that the relationship between self-compassion at T1 and ER strategies at T2 was significantly and partially mediated by ER skills at T1. The analysis showed the following indirect effect: $SCS\ T1 \times ERSQ\ T1 \times Adaptive\ ER\ strategies\ T2 = .04, SE = .01, z = 5.82, p < .001$. Results of the mediation are presented in Figure 1.

Figure 1

Mediation model results



Notes. a: association between self-compassion and ER skills; B: association between ER skills and adaptive ER strategies; c: total effect between self-compassion and ER; c': direct effect between self-compassion and adaptive ER strategy. Standard errors are in brackets. *: $p < .001$

6. Discussion

Self-compassion has been identified as a promising factor influencing adaptive ER (Berking & Whitley, 2014). Likewise, more general ER skills have been highlighted as necessary to apply ER strategies adaptively (e.g., Berking & Whitley, 2014). However, very few studies have tried to elucidate relationships between self-compassion, ER skills and ER strategies (Finlay-Jones, 2017; Inwood & Ferrari, 2018). Thus, the aim of this study was to investigate the association between these three variables and test a preliminary mediation model.

Our findings extend the literature exploring the link between self-compassion and ER (e.g., Finlay-Jones et al., 2015; Inwood & Ferrari, 2018; Paucsik et al., 2020) and showed that self-compassion predicts better ER in terms of both skills and strategies, even after controlling for the effect of gender and self-reported diagnosis.

In other words, these findings suggest that individuals who are more self-compassionate tend to be more aware of their emotions, approaching them with more clarity, understanding, acceptance, and tolerance. They also seem to more accurately identify physical sensations associated with emotions, remain committed to their goals no matter what emotion is present, and soothe and reassure themselves when necessary. These findings are in line with previous research (e.g., Finlay-Jones, 2017; Neff et al., 2007) showing, for instance, that self-compassion allowed one to develop a balanced awareness of one's emotion by motivating one to confront (rather than avoid) painful thoughts and feelings, but without exaggeration, drama, or self-pity.

If self-compassion predicts ER skills, our results also showed that people with higher self-compassion scores tend to use more adaptive strategies, such as reappraisal or problem solving and less maladaptive strategies such as behavioral avoidance or rumination. These results are also consistent with previous studies indicating that rumination and worry, two well-

known maladaptive ER strategies, mediate the relationship between self-compassion and symptoms of depression and anxiety (Krieger et al., 2013; Raes, 2010). However, our results provide a better understanding of the relation between self-compassion and ER and suggested that self-compassion does not predict all ER strategies. Our analyses showed that self-compassion does not predict distraction, emotional expression, social support, and consumption strategies. Replication of these analyses in future systemic studies involving subclinical and clinical samples would allow for better targeting of therapeutic interventions. For example, a person adopting consuming strategies (e.g., drinking or eating) to regulate his emotions would not benefit from an intervention focused on self-compassion, or at least not at first. These results are also in line with previous research. For example, in Neff's (2003b) study assessing the psychometric qualities of the self-compassion scale, the results showed no correlation between self-compassion and emotional expression (Neff, 2003b). She concluded that emotional expression involves communicating one's emotions to others, whereas self-compassion is an internal process (Neff, 2003b). Our results also showed that self-compassion tends to decrease the use of expressive suppression, which is in line with the results of recent studies (e.g., McBride et al., 2022). Thus, it appears that self-compassion reduces the use of expressive suppression strategies without increasing the use of expression during an emotional event. Considering that our results showed that emotional expression and expressive suppression are moderately correlated strategies, it could be that the absence of one does not necessarily imply the presence of the other. Moreover, it is interesting to note that while our results do not indicate an effect of self-compassion on expression, they do reveal that this strategy is predicted by ER skills and gender. Specifically, women were more likely to use emotional expression than men. These results are also consistent with previous studies (e.g., Chaplin, 2014). A recent study showed that women consistently used more strategies and implemented them more flexibly than men (Goubet & Chrysikou, 2019). However, our results showed no effect of gender over

time on ER skills. In that sense, individuals, irrespective of gender, appear to develop similar ER skills but use different ER strategies.

Reliability analysis conducted before the mediation model has shown that the aggregation of maladaptive ER strategies is not internally consistent and therefore cannot be treated as a single factor representing maladaptive ER strategies. These results are relevant given the literature highlighting the importance of the context in characterizing the adaptability of a strategy. Indeed, studies have shown that the type of strategy is not the only predictor of the adaptability of ER; the context in which the strategy is selected and used seems to be as relevant (Aldao, 2013; Bonanno & Burton, 2013). Indeed, adaptive ER strategies tend to be implemented with more cross-situational variability than maladaptive ER strategies (Aldao & Nolen-Hoeksema, 2012). As shown by Bonanno et al. (2004), maladaptive strategies can contribute to a functional ER if they are implemented in specific contexts and in a flexible way.

Exploratory factorial analyses and internal consistency analyses showed satisfactory factorial structure for the adaptive ER strategies (excluding emotional expression and acceptance), which as used for testing the mediation model. The mediation analysis showed that self-compassion predicts more ER skills and enables the use of more adaptive strategies, partly thanks to these ER skills. Findings suggest that ER, and more precisely ER skills, may represent one of explanatory mechanisms underlying the link between self-compassion and psychological health more broadly. In that sense, self-compassion seems to promote a more peaceful connection with one's emotions, allowing individuals to engage with them rather than avoiding or becoming entrenched in them (Neff, 2003a). Moreover, by being more connected to their emotions and remaining more engaged in their initial goal, self-compassionate individuals use more adaptive strategies to regulate their emotions and move toward their initial goal. Indeed, it seems that self-compassion is positively associated with variables that predict action-oriented coping such as optimism, curiosity, exploration, and personal initiative (Neff et

al., 2007). These results suggest that self-compassionate people are more engaged in their environment to achieve their goals. Overall, self-compassion could be considered as an important foundation for developing other competencies such as ER skills and that could facilitate the use of adaptive strategies. In addition, results of mediation analysis showed that ER skills are implicated and partly explain the effect of self-compassion on adaptive ER strategies use. Referring to Bonnano's work cited above, it is possible that this effect can also be explained by the context and the variability in which the strategy is used. Future studies that take into account context and variability in the choice of strategies are therefore needed to determine whether self-compassion and ER skills result in better ER and psychological health more broadly.

Importantly, our results also need to be moderated considering the small effect sizes. Indeed, besides showing the importance of self-compassion for the development of ER skills and, subsequently, the use of adaptive ER strategies, our results leave space for many other psychological processes. For instance, psychological flexibility is nowadays identified as a decisive factor for ER because it will allow a flexible use of the different ER strategies according to the situational requirements (e.g., Bonanno et al., 2004; Cheng, 2001; Kashdan & Rottenberg, 2010). Nevertheless, research on flexible ER is still recent and very complex to evaluate (Aldao et al., 2015).

7. Limitations

This study is not without limitations. First, our study involved a non-clinical sample, which precludes our results from being generalized to other populations. Indeed, the use of maladaptive ER strategies may not be problematic in non-clinical samples but may be problematic when they contribute to the maintenance of psychopathological disorders (Aldao

& Nolen-Hoeksema, 2010; Eftekhari et al., 2009). Indeed, it is not the strategies themselves that are problematic but rather the pattern they are used and combined (Daros & Williams, 2019; Eftekhari et al., 2009).

Second, research on self-compassion, ER skills and strategies suffer from an overlap between concepts, such as self-support. Self-support is defined by “the ability to support oneself effectively when struggling to cope with difficult emotions” (Grant et al., 2018). In our study, it has been operationalized as an ER skills assessed by ERSQ as well as an ER strategy assessed by the VAS. Moreover, self-support is also quite similar to the definition of the self-kindness sub-dimension of self-compassion defined by “the tendency to be caring and understanding with ourselves rather than harshly critical or judgmental” (Neff, 2003). This overlap illustrates the lack of consensus or the lack of specific operationalisation of SC, ER Skills and strategies to a point that relations between factors might reflect more the lack of operationalisation than actual relations.

Finally, another limitation concerns the use of VASs to assess each of the ER strategies. Although the psychometric qualities of the VASs have been previously evaluated (Nardelli et al., 2022), their validity remain to be assessed. The use of single items is common in research on ER and remains an important challenge for EMA research (e.g., Heiy & Cheavens, 2014; McMahon & Naragon-Gainey, 2019; Stumpp et al., 2021). Indeed, as indicated in the article of Medland et al. (2020), no validated short scale for comprehensively assessing all ER strategies exists. Studies assessing ER strategies therefore either measure them by focusing on one or two strategies using validated questionnaires (e.g., Brockman et al., 2017; Nezlek & Kuppens, 2008) or by creating several single items to assess a range of ER strategies (e.g., Brans et al., 2013; Heiy & Cheavens, 2014). Thus, this is the choice we made in this study to assess all the ER strategies identified in the literature. Nevertheless, single-item measures have several limitations because they often have low content validity and standard approaches cannot

estimate their reliability (Schuurman & Hamaker, 2019; Weidman et al., 2017). In addition, grouping of items assessing adaptive ER strategies have shown satisfactory but not extremely robust results. Therefore, there is still a clear need for a brief, reliable and valid scale to measure all the repertoire of adaptive and maladaptive ER strategies (Medland et al., 2020).

8. Conclusion

Overall, the results of this study shed light on the importance of developing self-compassion to further develop general ER skills, both of them resulting in potential better ER strategies application. In that perspective, self-compassion appears to be a relevant motivation to develop as a solid background toward the improvement of ER skills and later adaptive ER strategies used. These findings are promising, especially because of the transdiagnostic nature of ER. Still, ER is a difficult process to capture. Furthermore, this study provides for the first time an integrative model of ER with self-compassion. If the present mediation model can be confirmed, this will allow the design of clinical interventions targeting both self-compassion and ER skills that will be relevant to a wide range of mental disorders. Overall, self-compassion could be considered as a necessary basis, enabling the development and improvement of ER skills, themselves required to an adaptive choice and implementation of ER strategies.

This study provided insight into the relationship between self-compassion and emotional regulation (ER). The results of the analyses showed that self-compassion helps to develop ER skills and strategies. Thus, by developing self-compassion (via the compassion focused program for example), it would increase the ER skills and the used of adaptive strategies, which are essential to mental health. The results of this study also propose a preliminary and integrative model of self-compassion and ER that can be tested in future studies and strengthened by taking into account the flexibility dimension in ER.

General discussion

General discussion

In this thesis, we investigated the role of compassion as a protective factor and the effect of compassion-based practices on several mental health outcomes in a community and a clinical sample. Specifically, we addressed three main empirical questions. The first is related to the role of self-compassion as a protective factor on mental health in times of crisis. In order to investigate this first question, we conducted four studies. The first part of this thesis was based on a processual approach to compassion (Chapter 1) and was followed by three longitudinal studies (Chapters 2-4) that evaluated the protective effect of self-compassion on mental health in times of crisis in individuals from the community and on more vulnerable populations such as parents and PhD students. Together, these studies provide evidence for the importance of self-compassion in maintaining mental health in crisis in both general community and more vulnerable populations. These studies have helped to identify self-compassion as a key resource to be developed.

Our second question addressed is related to the evaluation of compassion-based interventions and more precisely to the evaluation of the processes of change of these interventions. To this end, we focused on the role of ER in the effect of compassionate interventions on mental health. Chapter 5 is a key element as it presents the results of a meta-

analysis of studies that evaluated compassion-based interventions and their effects on emotional regulation. Our results provide the impetus for the following chapters. Chapter 6 presents the results of a study that evaluated the psychometric qualities of scales that we used in the following studies. In order to accurately assess the effects of a compassionate intervention we created, we conducted an initial single case study presented in Chapter 7 that led to a larger study, a randomized controlled online study in the community (Chapter 8), and a pilot study in a clinical population (Chapter 9). Together, these studies can make significant contributions to the understanding of the effectiveness of compassion-based interventions on mental health and have identified ER as a core process in their effectiveness.

The studies carried out contributed to considering self-compassion as a factor that develops ER. This led us to the last question that guided this work, which is related to the links between self-compassion and ER. To investigate this third question, we proposed and tested an integrative ER model of self-compassion presented in Chapter 10. This latest study has clarified the links between self-compassion and RE and gives insight into future directions to investigate. To approach this discussion, we will first summarize our main results by addressing the three hypotheses presented. Second, we will develop the theoretical and clinical implications of our work. Third, we will discuss the transversal limitations of the studies. Fourth, we will present future perspectives, and will finally summarize with the conclusion.

Synthesis of our empirical data

1. Is compassion a protective factor for mental health in times of crisis?

While many studies have shown the central role of compassion for mental well-being (e.g., Inwood & Ferrari, 2018), our study highlights the current difficulty in understanding what specifically compassion involves. Namely, while Strauss et al.'s (2016) study provides a componential definition of compassion, our initial review reveals the limited evidence to establish with confidence how different components contribute to compassion. However, we identified several potential processes (i.e., awareness, decentering, cognitive reappraisal, tolerance and acceptance) that could be mobilized in these components and that would play a key role in the effect of compassion on mental health. These processes are commonly identified in research as functional processes involved in the effectiveness of many interventions across a range of issues (e.g., for emotional awareness, Weissman et al., 2020; for decentering and cognitive reappraisal, O'Toole et al., 2019; for tolerance and acceptance, Michel et al., 2016).

These results are consistent with previous studies that have shown interactions between these different processes. For example, emotional awareness is a precondition for the use of reappraisal (Subic-Wrana et al., 2014), and cognitive reappraisal facilitates decentering (Kobayashi et al., 2020). These processes thus seem to interact, allowing compassion to develop mental health. They also entrust compassion with a regulatory function. Indeed, all of the above processes are identified by research as contributing to ER (for a meta-analysis see, Naragon-Gainey et al., 2017).

For example, emotional awareness contributes to a better recognition and understanding of emotions (Szczygieł et al., 2012), and thereby facilitates ER (Ciarrochi et al., 2003). Decentering predicts less psychological distress via the decrease of ER difficulties. Jeffries et

al. (2016) showed that low levels of distress tolerance were associated with the use of dysfunctional ER strategies such as suppression, avoidance or abstract ruminations. At the same time, reappraisal and acceptance are associated with more functional ER (Wolgast et al., 2013). Specifically, some of these processes are considered as skills in ER models (Berking & Whitley, 2014b) while others are considered as ER strategies (Aldao & Nolen-Hoeksema, 2010; Hu et al., 2014). Future studies are therefore needed to assess the links between compassion and ER.

The first review presented in this thesis also identified two motivational systems, one associated with seeking rewards (approach motivation), and one associated with avoidance of threat (avoidance motivation). Even not explored, compassion could be associated with greater approach motivation by promoting up-regulation of pleasant affects as the development of a physiological state of calm, pleasant emotions, and a sense of affiliation (Engen & Singer, 2015; Klimecki et al., 2013), and less avoidance motivation by decreasing avoidance of experiences perceived as difficult. For example, compassion training decreased distress related to auditory hallucinations (Maisey et al., 2022) by inviting the person to approach their voices, listen to them, and engage with their own experience without trying to avoid it (Heriot-Maitland & Anderson, 2015; Heriot-Maitland & Levey, 2021). In this sense, compassion can decrease avoidance motivation of difficulties and promote a commitment to helping and supportive behaviors (Yang et al., 2019; 2021).

A motivational dimension has also been integrated into research on the conceptualization and understanding of ER, especially as it is central to the flexible use of ER skills and strategies (i.e., selecting and using ER strategies that are synchronized with contextual requests, Aldao et al., 2015). Indeed, motivational factors will impact ER (Millgram, Huppert, & Tamir, 2020; Sheppes et al., 2011, 2014). Avoidance motivation is positively correlated with ER difficulties while approach motivation is negatively associated with ER difficulties (Tull et al., 2010). This latter evidence provides additional insight into the links between compassion

and ER that could be the subject of future studies integrating all these models into one more complex model (i.e., approach and avoidance motivation, strategies-based ER model, skills-based ER model and dimensions of compassion).

However, this first study also revealed the lack of standardized assessment tools based on this dimensional approach to compassion. The majority of studies focusing on compassion use the Kristin Neff's Self-Compassion Scale (Self-Compassion Scale, SCS, Neff, 2003b). If the SCS remains the most psychometrically robust measure to date (Costa et al., 2016; Neff, 2016), the most commonly used (MacBeth & Gumley, 2012), and the only one validated in French (Kotsou & Leys, 2016), it only assesses a subpart of compassion, excluding compassion for others and from others (Gilbert, 2014). In order to carry out research consistent with the literature, and comparable to previous studies, we therefore also used the SCS scale for the other studies in this thesis.

The next three studies in the first part of this thesis (Chapters 2-4) showed that self-compassion appears to be a transdiagnostic protective factor in time of crisis. Indeed, previous studies had shown the beneficial effects of self-compassion on mental health (for reviews see, MacBeth & Gumley, 2012; Zessin et al., 2015). Some studies has also examined the effect of self-compassion on more specific situations, such as traumatic experiences (for a review see, Winders et al., 2020). In this thesis, we examined the role of self-compassion in promoting mental health during the Covid-19 pandemic.

Numerous studies showed that the Covid-19 pandemic has been a particularly stressful situation for individuals, generating difficult emotions such as fear, and activating dysfunctional ER strategies such as ruminations (Satici et al., 2020). Trait-mindfulness and self-compassion have been identified as two potential protective factors. For example, studies have shown that trait-mindfulness was negatively related to worry and depression (Dillard & Meier, 2021),

while self-compassion was negatively related to fear of COVID-19 and positively related to well-being (Deniz, 2021). However, previous studies have shown that the effect of mindfulness is mediated by self-compassion and ruminations (Svendsen et al., 2017), and others reveal more nuanced results regarding ruminations by distinguishing the effects of abstract ruminations from those being concrete (Altan-Atalay et al., 2022; Watkins & Moulds, 2005). Contrary to abstract ruminations, concrete ruminations increase problem solving, resulting in significant improvements in mood and reductions in the intensity of ruminative thoughts (Altan-Atalay et al., 2022). Our second and third studies therefore focused on the protective effect of self-compassion by considering the interactions between mindfulness, and abstract and concrete ruminations.

These two studies showed results that are consistent with the existing literature. First, they confirmed that self-compassion and the type of ruminations are mediators of the effects of mindfulness on mental health (Carpenter et al., 2019; Sala et al., 2019). Self-compassion and concrete ruminations positively mediated the effect of mindfulness on mental health while abstract ruminations negatively mediated this effect.

Second, our first study showed that self-compassion can be considered as a protective factor for symptoms of depression, anxiety and stress in the general population during the pandemic, and the results of our second study show that self-compassion protects against parental burnout during the same period. In contrast to abstract ruminations, self-compassion allows individuals to place their attention in the present moment without becoming caught up in judgments or isolating themselves. Instead, it shows understanding and caring for what they are experiencing during the pandemic, and remembering that a large portion of the global population is also going through difficulties (Neff, 2016). More specifically to the parenting framework, more self-compassionate parents are also kinder in the way they handle the situation with their child at home, focus on the present moment with their child rather than focusing on

the uncertainty related to the situation, and remember that other parents are also going through difficulties in this difficult time (Coyne et al., 2020).

Our studies therefore showed that self-compassion was a protective factor both in the general population and in more vulnerable populations such as parents. Our fourth study extended these results and showed the importance of self-compassion on the mental health of PhD students. This last study provides additional relevant information to answer the first question we asked in this thesis. This study allowed to follow the evolution of self-compassion during one year of crisis. The results showed that, contrary to savoring, another protective factor for mental health which decreased during the pandemic, self-compassion was a stable factor over time. In this sense, self-compassion appears to be an even more relevant factor to develop because it does not seem to be impacted by contextual changes, even in certain extreme situations such as a pandemic.

To conclude on this first part, beyond the lack of studies on all the dimensions of compassion and the underlying processes of compassion, self-compassion appears as a protective factor of mental health for the community and at-risk populations and this, in a sustainable manner, and in spite of a health context of global crisis. Our results are consistent with studies conducted during the same period. For example, the study by Matos et al. (2022) carried out in 22 countries, showed the universal protective role of compassion, in particular self-compassion and compassion from others, to buffer against the harmful effects of the long-term threat induced by the COVID-19 pandemic on mental health. In addition, another study also conducted by Matos et al. (2021) showed that if compassion has a protective effect, the fears to connect with compassion for oneself or for others magnify the harmful effects of the perceived threat related to the COVID-19 pandemic.

The protective value of compassion for mental health and its stability over time highlight the importance of implementing interventions aimed at developing self-compassion and investigating the ER processes that they involve. These results led us to conduct the studies that we presented in the second part of this thesis.

2. Is emotional regulation one of the key effectiveness processes underlying the effectiveness of compassion-based interventions?

Previous studies suggest that self-compassion acts on various mental health indicators via ER (Inwood & Ferrari, 2018), and that compassion-based interventions (CBIs) may also develop ER (Finlay-Jones, 2017). Nevertheless, few studies have directly evaluated the effect of CBIs on ER. Our meta-analysis (Chapter 5) aimed to identify studies that have assessed ER among interventional studies. Only six studies were included in the meta-analysis, some of which had a high risk of bias. The results showed that CBIs are effective in developing ER and more specifically in developing functional ER strategies such as cognitive reappraisal, which is consistent with our review (Chapter 1). The results of our meta-analysis revealed several important aspects that led us to conduct the following studies (Chapters 6-9). First, the results revealed the lack of homogeneity and consistency in the CBIs evaluated and suggest the need to develop standardized and evidence-based protocols. This led us to develop the CFP, that could become a useful tool to develop CFT using a manualized program.

Second, the conceptualization and evaluation of ER is a rapidly expanding field of study. Many models of ER exist and have resulted in several assessment tools (i.e., DERS, Gratz & Roemer, 2004; ERQ, Gross & John, 2003; ERSQ, Berking & Znoj, 2008). Researchers assessing ER in ecological contexts or with ecological sample method (ESM) designs typically select one or two items from reference scales (Blanke et al., 2020; Brockman et al., 2017;

English et al., 2017). To date, there is therefore no short, standardized tool to assess ER in the clinical setting that meets specific methodological designs such as ecological momentary assessment (EMA, Shiffman et al., 2008). This second element leads to develop VAS measures of ER and to test their psychometric validity (Chapter 6) prior to their use. The analyses showed satisfactory results regarding the different single items of ER in order to use them. However, future research is needed that will use longitudinal designs to test the reproducibility and repeatability of VASs, which was one of the objectives of the last study presented in this thesis (Chapter 10).

Finally, the results of this meta-analysis also underlined the importance of conducting further interventional studies based on robust methodologies on subclinical and clinical sample and using active control groups and other interventions to control non-specific effects. These elements had also been highlighted in previous meta-analyses on CBIs (e.g., Kirby et al., 2017). To address these elements, we conducted a series of interventional studies adopting different methodologies: multiple single case (Chapter 7), RCT (Chapter 8) and pilot study (Chapter 9) in the community (Chapters 7 and 8), and in a clinical sample (Chapter 9).

From these studies, it first appears that participants perceived the CFP as credible and a priori helpful to better manage their emotions. They also reported a high satisfaction rate regarding the intervention and the therapist. This is an important aspect because according to the Contextual Model (Wampold, 2015), psychotherapy leads to benefits for patients through three pathways: a real relationship between the patient and the therapist (therapeutic alliance), expectations of the patient on the positive impact of the psychotherapy and specific ingredient of the psychotherapy. The CFP seems to meet all these points since it also showed satisfactory effects on several mental health indicators, which brings us to our second point.

Results from our studies showed that CFP, delivered online, decreased symptoms of depression, anxiety and stress and increased well-being in a subclinical population. This makes CFP a relevant program considering the high rates of depression, anxiety and stress worldwide (World Health Organization, 2017). It should be remembered that, depression is the most contributor to the disease burden caused by poor mental health worldwide due to its high prevalence, high recurrence rates, chronicity, and comorbidity with mental and physical illness (World Health Organization, 2017). During the COVID-19 pandemic, rates of depression (Necho et al., 2021), anxiety (Kan et al., 2021), and stress (Lakhan et al., 2020) increased. Therefore, the results of our studies encourage the implementation of CFP to decrease symptoms of depression, anxiety, and stress in the general population, especially in times of crisis. In the clinical population, the results on symptoms of depression, anxiety and stress were more nuanced. Our pilot study (Chapter 9) revealed only a decrease in stress symptoms. The lack of results on the other statistical outcomes may be explained by our small sample size, which implies low statistical power. Nevertheless, our sample size is consistent with what is generally recommended in pilot studies. Although guidelines are limited in terms of sample size for clinical pilot study, it is generally recommended to include approximately ten participants (Nieswiadomy, 2002) or 10% of the final study size (Lackey & Wingate, 1998). It is important to specify that the objective of this pilot study was not to evaluate the effect of the program on outcomes, but rather to test the feasibility, acceptability, credibility and usefulness of the intervention on a population with severe mental health disorders. Pilot studies represent a fundamental phase of the research process (Leon et al., 2011). The purpose of conducting a pilot study is to examine the feasibility of an approach that is intended to be used in a larger scale study (Leon et al., 2011). Our preliminary results showed that CFP is a relevant intervention for patients suffering from mental health disorders in recovery. While our statistical analyses did not reveal a significant effect on anxiety and stress symptoms, from a

descriptive point of view, our results showed a decrease in depression and anxiety symptoms after the intervention. This encourages us to conduct a larger study using a randomized controlled design.

Third, the effectiveness of CFP on symptoms of depression, anxiety, and stress and on well-being occurred when CFP was delivered face-to-face (Chapter 7), but also online with a therapist (Chapter 8). This is consistent with studies of psychotherapy delivered online showing equivalent results to face-to-face interventions (Andersson et al., 2014), even for the treatment of depression (Andersson & Cuijpers, 2009). There are many benefits to implementing an intervention online. According to the review by Stoll et al. (2020), it allows to (1) increase access to psychotherapy availability and flexibility, (2) can be as efficient, effective, and efficacious as traditional therapy, (3) increase advantages related to specific client characteristics such as those living in remote, rural or otherwise underserved areas where few or no therapists are available (4) increase convenience, satisfaction, acceptance, and increased demand not least because of the greater comfort and accessibility it offers in terms of location and time, and (5) provide economic advantages. Since a manual containing all the program information was created for the delivery of the interventions, as well as audio-guided recorded practices, future studies could explore the effect of the program in other formats, such as self-help format. Studies have shown that guided self-help psychotherapy has comparable effects to face-to-face treatments (Cuijpers et al., 2010). A mixed delivery (i.e., face-to-face and online self-help) could also be considered to combine the benefits of these two delivery modes (Zwerenz et al., 2017). Given the recent nature of these delivery formats, the challenge for future studies will be to conduct direct comparisons of guided self-help and face-to-face treatments, in order to provide reliable evidence of superiority and/or specific effects of one of the delivery modes (Spielmans et al., 2007).

Fourth, all our studies highlighted the effectiveness of the CFP on ER in both subclinical (Chapter 6 and 8) and clinical (Chapter 9) populations, with results that are maintained over time, and that are comparable or superior to an intervention that has already shown its effectiveness (ECP). Our results also revealed that its effects on symptoms of depression, anxiety and stress were mediated by the decrease in difficulties in ER. This therefore answers the second question we asked in this thesis: compassionate practices performed in the CFP decreased symptoms of depression, anxiety and stress because they fostered more effective ER.

These results should be considered in the context of the specificity of the CFP practices. Indeed, it seems that compassion is effective in developing ER, but also more effective in developing ER competencies than learning ER skills and strategies themselves. By comparing CFP to ECP, we were able to compare interventions using the same psychotherapeutic techniques (i.e., imagery, relaxation, mindfulness, psychoeducation), but used in a different way (i.e., with compassion elements in CFP and with emotion competencies elements in ECP), and to better understand their specificity beyond the common factors they share (Rosenzweig, 1936). Results of our studies also showed that the effects of CFP on ER are measured in the short-term (i.e., after the intervention ended), and are also maintained or improved in the long-term (i.e., up to three months after the intervention ended). The CFP program thus seems to implement sustainable changes. These results are consistent with previous studies showing that CBIs have sustainable effects (e.g., Sommers-Spijkerman et al., 2018), and also need to be considered in relation to the properties of self-compassion.

As previous studies have shown (e.g., Chapter 4), while self-compassion appears to be a stable mindset over time, it is also a predictor of many benefits across adult lifespan (Lee et al., 2021). Therefore, by developing compassion and more specifically self-compassion, CBIs allow for the development of a protective factor and predictor of mental well-being, the effect of which can be explained by the development of better ER. Future studies may explore

precisely how Compassion Based Practices (CBP) help develop RE skills and competencies. Some authors are beginning to address this and show promising results by also incorporating other measures of ER such as physiological measures (Di Bello et al., 2020; Kirby et al., 2017; Helen Rockliff et al., 2011).

Finally, these results enable to understand how compassion may be a meta-skill that allows to decrease the difficulties in ER, and to develop the set of emotional competencies. These results led us to the last question asked in this thesis.

3. How is self-compassion is related to emotion regulation?

As highlighted previously, ER is now conceptualized in different ways. In this dissertation, we aimed to integrate several models: the ER skills model (Gratz & Roemer, 2004), the Emotional Competence Model (Brasseur et al., 2013) and the ER strategies model (Aldao et al., 2010). The previous studies discussed have shown that CFP not only decreases transdiagnostic ER difficulties, but also develops higher emotional competencies than a program targeting them directly (Chapter 8).

These results therefore indicate that practices developing self-compassion can promote better ER and encourage further specific research on the links between self-compassion and ER. Indeed, the results of all of our studies support the hypothesis that self-compassion can develop ER but do not allow us to specify whether this is linked to the development of ER skills or strategies. To answer the last question of this thesis, we conducted a final study (Chapter 10) using the two main models of ER (skills and strategies). The results showed that self-compassion predicted ER skills and strategies over time. We also tested a preliminary model of mediated moderation specifying the links between these three dimensions. The results of this model showed that self-compassion allows the development of ER strategies by developing ER

skills. These results are consistent with the models of Neff (2003a) and Gilbert (2009). For example, according to the model proposed by Neff (2003a), self-compassion was related to the ability to monitor one's own emotions and the ability to skilfully use this information to guide one's thinking and actions.

Using Gilbert's model, self-compassion would be a motivation to take care of oneself in the event of difficulties (Gilbert, 2009). More precisely, it would contribute to a better ER by developing a soothing system, a natural regulator of emotional difficulties. From an empirical point of view, results presented in Chapter 10 are also consistent with the results of previous studies. Studies had previously shown the link between self-compassion and ER skills (Finlay-Jones et al., 2015; Scoglio et al., 2018), and between self-compassion and certain ER strategies such as cognitive reappraisal. However, our results provide new information, including evidence that self-compassion would be related to several ER strategies. For example, our results showed that self-compassion predicted greater use of functional ER strategies such as tolerance, relaxation, or problem solving, and less use of dysfunctional strategies such as behavioral avoidance, expressive suppression or ruminations. Finally, our results showed that the effect of self-compassion on ER strategies in terms of their functional character was mediated by ER skills. The results of this preliminary integrative model highlighted how self-compassion can promote greater ER. Self-compassion could thus be considered as a meta-skill, promoting a motivation to approach one's emotions in a different way.

The effect of compassion on ER could also be addressed from another perspective of emotions. Indeed, to date limited research has focused on the different ways emotions can be generated (McRae et al., 2012). Emotion can be generated through "bottom-up" (in response to inherently emotional perceptual properties of the stimulus) or "top-down" (in response to cognitive evaluations) pathways, both using different psychological processes and neural systems. According to the literature, self-compassion allows for the development of top-down

ER strategies such as cognitive reappraisal (e.g., Diedrich et al., 2016). Conversely, there are still too few studies that suggest a bottom-up effect, i.e., a reduction of emotional reactivity (Kim et al., 2020). Future studies may be able to capture the effect of self-compassion on these two components of emotion, just as some have already done with mindfulness practices (Chiesa et al., 2013). To answer the third question of this thesis work, the results of all our studies demonstrated that self-compassion is an important protective factor for mental health because it targets ER, a transdiagnostic functional process.

Clinical implications

This thesis show that self-compassion is a mental health promotion factor increasing psychological well-being, and also a prevention factor because protecting from symptoms of depression, anxiety, stress and parental burnout.

Our studies also confirme that compassion-based interventions can lead to sustainable improvement in emotional functioning in subclinical and clinical populations. In that sense, our interventional studies allow to consider CFP as a promising transdiagnostic clinical intervention, i.e., that “*apply the same underlying treatment principles across mental disorders, without tailoring the protocol to specific diagnoses*” (McEvoy et al., 2009, p.21).

These elements are key points for current clinical issues. First, promoting psychological well-being and preventing mental ill-being are both particularly significant in relation to mental illness and even more so during a pandemic (Thomas et al., 2016). In France, at the end of the first national lockdown, 13.5% of people aged 15 years or older living in France had a depressive syndrome (Hazo et al., 2021). Individuals with pre-existing mental illness are highly

vulnerable during a pandemic, and experience higher rates of psychiatric morbidity (Neelam et al., 2021).

The identification of psychological factors and evaluation of interventions that can contribute to mental health is therefore important. This is also emphasized in the World Health Organization (WHO) about mental health : « mental health is a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community (World Health Organization, 2004).

While for many years, psychological research has focused on reducing the symptoms of mental disorders, we now know that the distinction between mental illness and mental health is empirically validated. For example, studies have shown that depression and psychological well-being are slightly correlated, ranging from $-.40$ to $-.55$ (Frisch et al., 1992; Ryff & Keyes, 1995). These data are important because they highlight the importance for mental health professionals to support both the reduction of mental illness and the improvement of mental health (Slade, 2010).

This work is consistent with other currents that promote mental well-being such as positive psychology (Seligman & Csikszentmihalyi, 2000), but also on recovery (Deegan, 1988). By identifying individuals' resources and working on transdiagnostic processes, it is possible to not only support individuals' mental health, reduce their symptomatology while also contributing to the reduction of stigma of psychiatric disorders (Wong et al., 2019). Self-compassion is in this way a promising factor in promotion, prevention and recovery because our results showed that it predict well-being, the reduction of mental illhealth and improve functional way to relate with emotion.

However, identifying protective factors is not enough. Data collected by the WHO demonstrates the large gap that exists between resources that are available in countries for mental health and the burden caused by mental health problems (WHO, 2001). It is therefore necessary today to develop evidence-based protocols that have demonstrated their effectiveness in improving well-being and reducing symptoms, but above all to evaluate the processes of change of these therapies (Laurenceau et al., 2007). At the core of CBIs, ER was presented as an important factor which enables positive change over time. However, the results of our meta-analysis revealed that few studies had focused on this process. Therefore, our work also contributes to the development of evidence-based protocols through the creation of the CFP. Our studies underlined that the CFP, notably through its effects on ER, was effective in developing well-being and decreasing symptoms of depression, anxiety and stress in subclinical populations, and showed promising effects in clinical populations. The effect of this intervention on ER and on two different populations is perhaps the element with the most important clinical implications. Its effect on different populations is explained by the improvement of a common and transdiagnostic process: ER. This constitutes the second clinical contribution of this work.

Recent advances in clinical practice emphasize transdiagnostic interventions as an effective alternative to “single disorder” approaches (Sakiris & Berle, 2019). Indeed, treatment seekers in community mental health settings tend to have more than one disorder (Havassy et al., 2004). In addition, mental healthcare centers and hospitals are faced with decreasing resources and increasing demand for services, resulting in a shift to group treatment modality, which is more economic (Coco et al., 2015), yet less developed (Meier & Meier, 2018). The creation and evaluation of so-called transdiagnostic interventions is therefore both an ethical and economic issue. The conception and evaluation of the CFP helps to address these emerging

needs although future studies are needed to validate its effectiveness in a transdiagnostic clinical population.

Nevertheless, if our studies have shown the effectiveness of the CFP in reducing ER difficulties, the challenge will now be to continue the evaluation of this intervention in order to decompose its effects and to help the clinician identifying the best practice for a given patient/issue. Indeed, while individuals with severe mental illness have a variety of diagnoses and comorbidities, they also have other individual characteristics and may not react in the same way to the techniques used in psychotherapy. The CFP was created according to the classic canvas of CFT interventions. It begins with the soothing breathing rhythm that involves slowing and deepening the breath and focusing attention on the sensations of breathing in one's own body and continues with compassionate imagery. Two main types of compassionate imagery exist: (1) compassionate other imagery that guides people to imagine an ideal compassionate other who is focused on caring about their well-being, and (2) compassionate self-imagery that guides people to imagine an ideal sense of self with compassionate qualities such as wisdom, strength, and non-judgment.

While some studies have shown that compassion based practices benefits in many aspects and for many disorders (Leaviss & Uttley, 2015), other studies show more ambiguous effects. Some reveal that, for some individuals, some CFT practices such as imagery practices, may not be beneficial (Naismith et al., 2018), and may even have counterproductive effects (Naismith et al., 2019; Rockliff et al., 2011), especially for patients presenting high levels of self-criticisms and insecure attachment (Rockliff et al., 2008, 2011). For these individuals, it may be essential to maintain a protocol such as the CFP that is progressive and not focused on a specific technique. Using elements of psychoeducation, breathing, mindfulness meditation, and imagery, the CFP offers a gradual and step-by-step psychotherapeutic work in the emotional exposure practices it propose.

Limitations

This thesis work has several limitations previously discussed in each chapter. In this section, we would like to clarify two limitations that are transversal to our studies. First, all the studies used Kristin Neff's self-compassion scale. However, it would be useful to evaluate compassion in its three components: self-compassion, compassion for others and compassion from others. The evaluation of these components has not been achieved due to the lack of validated instruments used by the research community. The development of an instrument was envisaged but requires prior work from a theoretical point of view. Indeed, if a definition of self-compassion is unanimously accepted in the scientific community, it is less obvious to understand and define its two other components. *Compassion for others* has been the subject of a few studies in which its definition varies (e.g., Cosley et al., 2010; López et al., 2018), while none has yet defined *compassion from others*. However, based on Kristin Neff's models of self-compassion, Pommier et al. (2019) published the validation of a compassion scale named the Compassion Scale (CS) in which compassion was operationalized as experiencing kindness, a sense of common humanity, mindfulness, and lessened indifference toward the suffering of others. As a multidimensional scale, its strength lies in the possibility of studying these different elements of compassion (i.e., mindfulness, kindness, common humanity). The CS has most of the elements that Strauss et al. (2016) proposed as optimal for a measure of compassion: (a) recognizing suffering, (b) understanding the universality of human suffering, (c) feeling moved by a person's suffering and connecting with their suffering, (d) tolerating uncomfortable feelings aroused in response to the suffering person and remaining open to and accepting of the person suffering, and (e) feeling motivated to act to alleviate suffering. However, items do not allow to assess compassion from others, but only self-compassion and compassion for others. Published in 2019, this scale is also very recent and has only been used in a few studies. This

limitation is therefore inherent to the study of compassion today. As Trochim et al. (2015, p.111-141) underlined, the first step in developing a scale is to define the construct being assessed. Compassion, as addressed in psychotherapy, is a recent concept and thus requires further exploration and modelling for scales to assess it.

A second limitation to be addressed concerns the evaluation of ER according to two aspects: the evaluation tool and the methodological design. First, several models of ER exist, each based on different scales. For this reason, we included two models of ER in the last study of our thesis (Chapter 9). However, for all our studies, we used only self-report measures of ER. If early research in ER predominantly employed self-report measure of trait-like ER, the past decade has seen a shift in focus toward understanding the dynamic nature of emotion regulation processes (Bettis et al., 2022). To capture this dynamic, other measures of ER can be adopted such as Heart Rate Variability (HRV) analysis. Which is currently considered as an important marker of emotion regulatory ability (Appelhans & Luecken, 2006). Some recent studies on compassion and on the effect of CBIs have shown promising results using this indicator (for a review see, Di Bello et al., 2020). The use of this indicator will allow studies to also consider another important aspect in ER: the ability to flexibly adapt ER across contexts. Indeed, HRV is also an index of *autonomic* flexibility and is positively associated with good psychological and physiological functioning (Thayer & Lane, 2000).

Second, these measures can also be combined with other methodological designs, which are also more sensitive to the dynamics of change in the ER. Beyond traditional methods, Ecological Momentary Assessment (EMA) has the potential to capture ER dynamics during the flow of daily experiences, in real-life settings and through repeated measurements (Colombo et al., 2020). Therefore, we used this type of design for the single case study. For the design of EMA, several qualities must be met: (1) data are assessed at a moment in time, (2) assessments involve a large quantity of repeated observations, and (3) assessments are performed as they

occur in the field (Stone & Shiffman, 1994). While our single case study met these requirements, they could be improved by following other recommendations such as assessing subjects with random time sampling and using technologies ranging from written diaries and telephones to electronic diaries and physiological sensors (Shiffman et al., 2008). Future studies investigating the link between compassion and ER may therefore rely on distinct assessment tools to capture ER with the greatest sensitivity while increasing the robustness of the methodological designs for assessing this process.

Future Perspectives

The study of compassion and ER is a rapidly expanding field of research. While the studies conducted in this thesis contribute to this field, they also provide new perspectives. First, the first study in this thesis presents several potential processes underlying the dimensions proposed by Strauss et al. (2016). It is perhaps a preliminary step in developing a processual model of compassion that could be empirically tested. A longitudinal study, relying on two measurement times would allow for an assessment of whether the identified process contributes to compassion or conversely, whether compassion allows for an increase in these processes. It is also possible that the links between compassion and its processes are not unidirectional but rather bidirectional.

Second, the single case study we conducted (Chapter 6) seems to reveal that the practices have distinct effects across participants. As noted earlier, studies show that compassionate practices are not necessarily accessible or beneficial to all. For example, Naismith et al. (2018) showed that some compassion-based practices, such as compassion-focused imagery are less effective for patients feeling negative affect or with low mental imagery ability. Baldwin et al. (2020) also showed that individuals with insecure attachments

are likely to require additional support increasing their attachment security, before they can successfully engage in compassion-based exercises or therapies. Individuals with insecure and avoidant attachment styles generally showed a threatening response to an initial compassion-focused imagery practice. Thus, some CBI may not be appropriate for all participants and some participants would benefit from other types of practices such as those contained in the ECP. Future studies should therefore focus on the contraindications of CBIs.

These future studies could also assess the specific effects of each CFP session and observe whether there are common and/or distinct effects. Since the CFP is designed with different themes in each session, it is possible that each session could have specific effects. By assessing this, it will be possible to implement the CFP in different formats, for example by adopting a modular approach. It could be offered in modules (e.g., soothing breathing rhythm module, self-compassion module, self-criticism module, shame module or compassion for others module) that connect with other units, but do not rely on those other units for their own stable operations (Chorpita et al., 2005). In this way, the CFP would be even easier to implement because it would be more flexible but perhaps also more effective since the flexibility and adaptability of an intervention generally improves the effect of the intervention (Durlak & DuPre, 2008).

Finally, this thesis adopted an intra-individual perspective of the effects of compassion on mental health. Nevertheless, it is possible that the effect of compassion is mediated by other variables such as a sense of relatedness, which is one of the basic psychological needs (Deci & Ryan, 2012). For example, studies show that self-compassion enhances feelings of relatedness, and is positively associated with secure attachment and healthy relationship functioning (Lathren et al., 2021). It appears that these dimensions may also have bidirectional effects such that positive social relationships promote self-compassion, and self-compassion in turn promotes relational and emotional well-being (Lathren et al., 2021).

Future studies could extend the concept of compassion to other living beings such as non-human animals and environment. To our knowledge, only a few studies have assessed the links between compassion and connection to animals and environment. For example, the study by Amiot et al. (2019) assessed several characteristics close to compassion such as solidarity (i.e., feeling connected to other animals) and similarity (i.e., perception that animals share similarities with humans), both close to the qualities of compassion described by Gilbert (2009), and their effects on the feeling of connection to animals. Their results showed that these two dimensions were related to morally based meat avoidance, desires to be helpful to animals, lower levels of speciesism, and donating to animal causes (Amiot et al., 2019). These preliminary findings are also consistent with those of more recent studies (e.g., Vezirian, et al., 2022), and remain promising regarding the effects of compassion on the relationship to non-human animals. However, to our knowledge, no study from a clinical perspective has evaluated how compassion might contribute to psychological well-being through its effects on our relationships with non-human animals and environment. By involving connecting with the suffering of living beings, compassion may develop a greater sense of closeness and empathy with animals and environment, which in turn may lead to more respectful behaviors toward them that enhance individual psychological well-being. Emotions are key drivers of climate change-related perceptions and actions when adaptively regulated (e.g., Budziszewska & Jonsson, 2022; Brosch, 2021). Thus, compassion, by allowing one to regulate one's emotions in order to adopt caring and supportive behaviors, could motivate individuals to engage in societal and environmental challenges that go beyond mere self-interest (Pfattheicher et al., 2015; Loy et al., 2022). By adopting a social and environmental perspective, these studies could therefore be relevant not only for the individuals themselves but also in terms of implications for climate change and environmental protection.

Conclusion

This thesis aimed at contributing to the understanding of the effect of compassion on mental health and to the development and evaluation of the effectiveness of compassion-based interventions. First, our primary study showed that compassion involves several potential psychological processes. Second, our longitudinal studies showed that self-compassion was a protective factor for mental health during a crisis in the community and in at-risk populations. Third, while numerous studies have been conducted on the effect of compassion-based interventions, our meta-analysis revealed the limited number of studies that have assessed ER as a process of change in these interventions. Fourth, our single case study and randomized controlled trial showed that a compassion-based intervention improved well-being and decreased ill health by developing ER. Fifth, our clinical population-based pilot study showed the feasibility and transdiagnostic acceptability of a compassion-based intervention and its beneficial effects on ER, stress symptoms, well-being, self-compassion, and emotional competencies. Finally, our last study reveals a preliminary model of the links between self-compassion, ER skills and ER strategies.

Taken together, these studies contribute to the understanding of compassion as a protective factor and of the processes of effectiveness of compassion-based interventions. We hope that this work will contribute to the development and evaluation of interventions that allow to relate differently to one's emotions in a way that is more helpful and fulfilling for each individual.

Appendix

Appendix A

Testimonials from Compassion Focused Program participants

« Je savais que ces ateliers sur la gestion des émotions allaient m'apporter, j'étais loin d'imaginer tout ce qu'ils allaient changer dans ma vie, dans mon être. J'ai rencontré des personnes formidables et découvert des outils précieux. Ces rdv hebdo m'ont aidé à grandir, à mieux m'accepter / me comprendre et à penser/agir différemment dans certaines situations. Cette période n'a pas été de tout repos, j'ai souvent été mise à l'épreuve. Mais la compassion m'a permis de découvrir et d'activer des ressources insoupçonnées. Merci Marine pour avoir conçu un programme aussi riche, et merci Violaine de lui avoir donné une si belle âme et du sens. Je mesure la chance que j'ai eu de pouvoir participer à ce programme à distance. En toute transparence, je craignais le manque de cohésion dû au contexte, mais Violaine a su créer le climat chaleureux et de confiance pour nous rapprocher les uns des autres. Il y a des tournants marquants dans vie, et je suis fière et tellement heureuse de vous associer à celui que j'ai vécu/vis »

Participante au Programme Fondé sur la Compassion, 2021

« J'ai eu la chance de vivre l'expérience d'un cercle de pratique fondée sur la compassion dont je continue à constater les effets bénéfiques quelques mois plus tard. Ces instants de pratique ont été une bulle de douceur, de bienveillance et de joie grâce aux partages du groupe mais aussi lors des temps d'intériorité vécus lors des pratiques. Cette approche m'a apporté une conscience plus affinée de mes états intérieurs (tant agréables que désagréables d'ailleurs) ainsi qu'une meilleure perception de mes besoins et de mes ressources pour en prendre soin. J'ai développé une attention plus bienveillante et compassionnée à qui je suis et à ce que je vis (physiquement, émotionnellement, dans mes relations ou encore spirituellement). Je m'écoute mieux et me respecte plus. Cela m'a également permis de développer de nouvelles ressources intérieures (mon souffle, l'observation de mes pensées et la mise en place de comportements plus aidants ...). Ces ressources je les ai à disposition lorsque j'en ressens le besoin pour les petits ou grands évènements de la vie que cela soit tout simplement pour

attendre dans une file d'attente à côté quelqu'un qui paraît pressé, réaliser un entretien professionnel stressant, ou traverser un deuil... Grâce aux rencontres en groupe et en pratiquant en dehors, je me suis aperçue que je cultivais en moi un espace intérieur bienveillant, « rayonnant » et plus connecté à l'instant présent. Et sans en avoir eu l'intention, cela a modifié certains de mes comportements et donc de facto mes relations aux autres. Cette qualité d'écoute et de bienveillance que j'entretiens pour moi-même me permet aussi plus de disponibilité à l'autre et à ce qu'il vit. Et je trouve que cela permet une acceptation plus tranquille de ce qui est, tout simplement. Pour résumer cela m'a permis de développer un accueil de soi et des autres plus apaisé et apaisant, une plus grande ouverture du cœur en somme. Je ne peux qu'inviter tout un chacun à expérimenter cette approche pour semer en soi cette magnifique graine de paix qu'est la compassion ! Encore merci de m'avoir offert l'opportunité de participer à votre étude ! »

Participante au Programme Fondé sur la Compassion, 2021

« Je suis une femme de 40 ans, maman à la maison à temps plein de 2 jeunes enfants. En cette année de remise en question et de grand chamboule-tout, j'ai découvert que j'étais hypersensible et HPI, ce qui expliquait mes réactions, mes relations aux autres, et mes souffrances ressenties dans ma vie. Mais il me manquait encore des méthodes pour pallier mes difficultés sur la gestion de mes émotions négatives pouvant me conduire à des envies d'autodestruction ou de fin de vie. C'est alors que j'ai aperçu par coïncidence sur facebook l'étude de Marine Paucsik sur la Gestion des émotions ! J'ai eu la chance de pouvoir entrer dans un groupe bienveillant et solidaire, travaillant sur la Gestion des émotions par la COMPASSION et animé par Clémence Gayet. Merci beaucoup à cette dernière pour sa douceur, son écoute et pour sa compassion ! Et merci infiniment à Marine Paucsik pour nous avoir permis d'intégrer cette magnifique étude ! Pendant ces 3 mois, à raison d'une séance de 90 minutes par semaine, en visio sur ZOOM, nous avons pu découvrir de nombreux outils afin de mieux comprendre et « disséquer » nos émotions. Ceci en faisant appel à une part indéniable de notre identité mais souvent occultée : l'être compassionné ! Contrairement à ce que j'imaginai, travailler sur soi en groupe s'avère être extrêmement efficace. Lorsque l'on est en groupe, l'axe de travail est le même pour tous, cependant, ayant des âges, des lieux de vie et parcours différents, les retours qui en résultent sont très variés. La somme de ces réflexions permet de nous ouvrir l'esprit à de nouvelles manières de penser et à de nouvelles solutions.

D'autre part, le fait d'être relié par un ordinateur permet aux plus réservés d'entre nous de pouvoir s'exprimer plus librement, tout en étant installé dans un lieu enveloppant (son lieu de vie). Travailler sur la Gestion des émotions en utilisant la compassion permet aux individus de tendre vers un regard compassionné envers l'autre. Et cette compassion est relayée de l'un à l'autre comme un ballon que l'on transmet et qui pourrait grossir au fur et à mesure qu'il est transféré. De ce fait, la compassion qui nous revient est d'autant plus grande que le nombre de personnes bienveillantes, s'unissant dans un but commun, est grand. Travailler en groupe, nécessite également une rigueur que l'on ne s'impose pas forcément lorsque l'on travaille seul avec son thérapeute. Lorsque l'on sait que l'ensemble des participants va travailler sur une méditation et nous donner son ressenti la semaine suivante, on se dit que l'on ne peut pas « arriver les mains vides », alors on s'y met ! C'est ce qui m'a permis, entre autres, de m'accrocher et de réaliser des méditations quasiment tous les jours. Grâce à cela, je réussis enfin à prendre plaisir à méditer le soir. C'est mon moment à moi de décompression et j'y trouve beaucoup de plaisir. Prendre un temps rien qu'à soit dans la bienveillance et l'accueil de son être permet de remettre de la stabilité dans son fort intérieur pour poursuivre sa vie dès le lendemain matin. J'ai beaucoup aimé travailler par la méditation. Il est souvent difficile de s'expliquer consciemment des émotions, qui resurgissent parfois pour un rien, et d'en comprendre la cause instantanément. En détournant notre attention sur notre partie immergée et en mettant au repos notre partie consciente, via le rythme respiratoire apaisant, l'accès à nos émotions et à nos souvenirs est plus aisé. Une méditation m'a particulièrement été utile « Se connecter à ces différents selfs en pleine conscience ». Le fait de séparer chacune des parties réactionnelles de notre esprit permet de mieux les entendre et les comprendre. En prenant l'un après l'autre, la colère, la tristesse, l'angoisse face à un évènement difficile, on comprend mieux ce qui nous tracasse réellement, à quels souvenirs passés ils nous ramènent ... car finalement, ce n'est pas le problème rencontré qui nous fait souffrir mais bien une somme d'évènements passés ayant généré des peurs, des angoisses, des injustices, des hontes, des défaites répétées. En prenant conscience de l'origine de notre mal être, on peut l'accueillir, l'accepter et travailler dessus afin qu'il soit moins douloureux à l'avenir. Je me suis aperçue que mes crises de nerf qui me rendaient folle n'étaient en fait qu'une superposition de voix colérique, triste et angoissée qui hurlaient sans que je ne puisse les entendre et les comprendre. Dans cette méditation, on apprend à entendre un autre self bien caché, celui de la compassion. Cette part au fond de nous si belle que l'on ne réserve souvent qu'aux autres ! Lorsqu'elle intervient au milieu du vacarme généré par les autres selfs, elle apparaît autoritaire et tellement bienveillante, voilà comment je l'ai entendue : « Taisez-vous tous maintenant, je suis là et je

vais vous écouter l'un après l'autre. Vous avez beaucoup de choses à dire et je prendrais le temps de vous entendre. Je serais à côté de vous pour trouver des solutions. Prenons le temps et calmons-nous. ». A ce moment précis, j'étais apaisée et rassurée. Ravie de comprendre ce qu'il pouvait se passer dans ma tête, ravie de savoir que j'avais des outils pour ne plus subir ces moments de souffrance, ravie de savoir qu'il y avait en moi une partie compassionnée qui pouvait m'aider ! Grace à cette méditation et à l'apprentissage du rythme respiratoire apaisant, j'ai notamment pu améliorer mes liens avec mon conjoint et ma maman. Lorsqu'une situation m'angoisse, je sors du lieu de conflit, je respire calmement, je pars faire une autre activité manuelle tout en essayant de comprendre qui, dans mes selfs, a besoin de s'exprimer. Puis, ayant compris ce qui me mettait en colère ou m'attristait, je reviens plus posée pour en discuter. Une autre méditation m'a beaucoup aidée : « Donner et recevoir de la compassion » en utilisant un cercle d'alliés. On imagine son lieu de sûreté où tout est apaisé, et on construit une table ronde avec autour des êtres compassionnés qui comptent ou qui ont compté pour nous. Pour ma part, je me trouve face à la mer, assise dans un confortable fauteuil, à une table où je convie des êtres que je ne serais plus jamais amenée à revoir. Ainsi, ma vision n'est pas polluée par la peur qu'ils me trahissent, me blessent, ou m'abandonnent dans un avenir plus ou moins proche. A droite, je retrouve la part féminine (mes grands-parents maternels ainsi que 2 collègues de travail) et à gauche, la partie masculine (un acteur de TV et 2 collègues de travail). En dehors de l'acteur de TV que j'ai choisi pour son rôle d'homme aimant et bienveillant, les autres m'ont donné réellement leur confiance, ils ont cru en moi, ils m'ont épaulée, soutenue et aimée ! Lorsque je les retrouve à ma table, le seul langage établi et celui du cœur. Je les aime et leur retour souriant me redonne de l'élan, de l'envie de vivre ! Ils ont été là pour moi dans le passé et cela me donne de la force dans mon présent. »

Participante au Programme Fondé sur la Compassion, 2021

« Pour moi, la compassion était une notion complètement "abstraite", ne représentait rien et même était un peu superflue et inapplicable dans le monde qui nous entoure. Mais étant entourée de personnes y étant sensibles j'ai voulu l'appréhender pour comprendre en suivant ce programme. Et, là, j'ai complètement changé mon état d'esprit. Ce programme m'a d'abord permis de rencontrer des personnes extrêmement bienveillantes, enrichissantes, j'ai constaté la force d'un groupe très rassurant et motivant. J'ai beaucoup avancé sur le plan personnel, appris et pratiqué des techniques relaxation, de réflexion qui m'accompagne maintenant tous

les jours, toutes les heures, en toute situation. Cela a donné un grand "coup de pied " dans la fourmilière qu'était mon esprit et ainsi pu identifier très précisément ce qui ne fonctionnait pas ou mal chez moi, pris du recul, compris des situations et beaucoup clarifié mes idées. Même si je ne sais pas encore réagir quelques fois, car pour moi c'est le début d'un chemin, une porte qui s'entrouvre, j'arrive à cerner les problèmes et comprendre que les solutions sont en moi , sans tout rejeter sur le monde extérieur . J'ai encore beaucoup de mal à être compassionnée envers moi-même, mais pense l'être plus envers les autres et je récupère beaucoup de bonheur. J'ai l'impression d'être rentrée dans un cercle vertueux : je "souris "aux autres, en retour ils me "sourient" et ainsi je me " souris" donc peux en donner encore plus.... Je vais m'arrêter là mais je voulais remercier : Clémence, toujours positive, très douce, très solaire qui a su nous faire goûter cette douce sensation qu'est la compassion. Notre groupe constitué de personnes toutes très à l'écoute, très généreuses, réfléchies avec déjà, malgré leur jeune âge, par rapport à moi, une capacité d'analyse impressionnante, et inspirante, et débordants d'amour. Enfin merci et surtout bravo à Marine d'avoir élaboré ce programme et bonne chance à elle pour la suite de ses études et recherches. »

Participante au Programme Fondé sur la Compassion, 2021

« Un grand merci pour votre programme de recherche qui pour moi est d'utilité publique. Je ne me suis jamais senti aussi confiante et forte depuis la réalisation de l'atelier compassion. Je suis ravi d'y avoir participé et d'avoir rencontré toutes ces personnes formidables à qui je souhaite une belle continuation sur le chemin de leur vie. Je ne me suis jamais senti aussi libre »

Participante au Programme Fondé sur la Compassion, 2021

« Marine merci infiniment pour ton initiative de recherche. J'ai été ravie de contribuer à l'avancée de tes travaux. Être volontaire sur ton programme a été une vraie bouffée d'oxygène et un ravitaillement psychique. Cela a en particulier permis de me reconnecter à ce qui m'a poussé à faire une thèse : mon rêve d'enfant de devenir exploratrice scientifique! Pour le témoignage de partage, je reprends la métaphore de Laurine " faire son marché". Laurine, encore un profond merci de m'avoir accompagnée. Durant ces douze semaines, j'ai découvert

que j'étais un marché, couvert certes, mais le cœur et les bras ouverts. J'ai appris à y trouver les ingrédients et les saveurs dont j'ai besoin pour parfumer et adoucir certains moments de la vie quotidienne. Tel un marché toujours, les gens qui m'entourent peuvent en profiter, car je suis aussi un marché ambulante. Et tel un marché encore, mes étales se réapprovisionnent, j'ai appris à recevoir la compassion d'autrui. Merci »

Participante au Programme Fondé sur la Compassion, 2021

« J'étais très impliquée pendant la durée de l'atelier. Il y a eu beaucoup de changements au cours de l'atelier dans mes relations familiales en particulier : des disputes très fortes qui se sont annoncées plutôt salvatrices avec un peu de recul. En parallèle de l'atelier, je poursuis une psychothérapie/psychanalyse avec un psychiatre suite à une sorte de bouffée délirante qui m'est arrivée il y a 2 ans dans un contexte de deuils successifs. Je ne prends pas de médicaments, mais la question d'une cyclothymie a été évoquée par mon psychiatre dans la période où se sont déroulés les ateliers. Je n'en ai pas parlé pendant les séances, j'ai préféré rester discrète sur ce point, n'ayant pas moi-même intégré cette possibilité. Aujourd'hui, la question du trouble bipolaire n'est toujours pas tranchée. Avec le recul, je continue à pratiquer la méditation que je pratiquais déjà avant les ateliers, et il m'arrive régulièrement de refaire des exercices de visualisation du lieu de sécurité avant de m'endormir mais sans écouter l'audio. Cela m'aide beaucoup à trouver du réconfort. Je pense aussi que j'identifie plus facilement la cause de mes émotions, ce qui m'aide beaucoup à les réguler et à améliorer mes relations aux autres. Je ne l'ai pas précisé à l'oral, mais je suis aussi plus souvent dans la gratitude. Cela m'aide beaucoup à voir les choses de manière positive et à éviter les ruminations. »

Participante au Programme Fondé sur la Compassion, 2021

« Que de chemin parcouru pendant cet atelier, et après. Les questions sur la gestion des émotions sont particulièrement éclairantes pour moi. Comme dans " les autres n'acceptent pas la manière dont j'exprime mes émotions" ou " mes proches disent que je n'exprime pas assez ce que je ressens" ou "je suis consciente de mes émotions au moment où je les éprouve". Ces questions m'ont clairement montrées l'évolution depuis cet atelier. J'ai appris à identifier mes émotions, même celles cachées sous d'autres. Pendant longtemps j'étais complexée car je trouvais que je n'exprimais pas assez bien, surtout pour décrire des personnes, leur caractère

ou leurs émotions. Et je pensais que c'était une question de vocabulaire. Mais de nature plutôt littéraire je ne me l'expliquais pas. Avec cet atelier j'ai enfin compris que c'était parce que je n'étais pas en lien avec mes émotions, que je ne savais pas les reconnaître et par conséquent les nommer. Aujourd'hui, je sais reconnaître la tristesse, la colère, la honte... savoir comment elles arrivent, pourquoi et comment les gérer. Du coup mon expression s'en trouve changée. C'est un grand soulagement. Mes relations en sont transformées, et ma vie aussi. Même si je vis des instants difficiles, je sais relativiser, prendre du recul pour trouver des solutions, et relâcher la tension pour continuer à vivre pleinement le moment présent. Merci infiniment Marine pour la conception de ce programme. Et un merci non moins appuyé à Laurine qui a su animer de mains de maître cet atelier avec délicatesse, finesse et compassion. Toujours dans l'écoute bienveillante, la reformulation adéquate et la synthèse qui a fait beaucoup pour l'unité de notre groupe. Merci également à chacune des participantes qui chacune a contribué à alimenter les échanges par sa sincérité et sa bienveillance. J'ai beaucoup apprécié la conception du programme, sa progression, et les outils mis à notre disposition qui sont d'une richesse incroyable et nous permette d'y revenir dès qu'on en ressent le besoin. Un grand plus ! Je ressors de cet atelier transformée ! Pendant toute sa durée, j'ai continué à travailler en EMDR avec ma psychologue, ce qui a aidé à faire émerger les émotions enfouies, et de consolider leur reconnaissance et leur acquisition. Du fond du cœur, un grand merci Marine. »

Participante au Programme Fondé sur la Compassion, 2021

« J'ai beaucoup aimé le groupe de thérapie basée sur la compassion. Agir avec compassion s'est montré tellement utile dans mon quotidien, que ce soit avec moi-même mais aussi avec les autres. J'ai particulièrement apprécié les exercices du rythme respiratoire apaisant (RRA), de la figure compassionnée, la connexion à la partie compassionnée à l'intérieur de soi et aux différentes parties de soi (tristesse et peur principalement chez moi). Il s'est avéré très utile dans mon quotidien d'utiliser le RRA, dans les situations de stress, pour m'apaiser. Je l'ai par exemple utilisé pendant des matchs de tennis pour faire diminuer la pression, mais aussi avant de m'endormir pour me détendre. J'utilise ma figure compassionnée lorsque je suis triste. J'imagine ma figure compassionnée près de moi, je l'imagine me parler avec douceur, me prendre dans ses bras et me dire d'être forte et courageuse. Ça m'aide à me repositiver et à accepter certaines situations que je ne peux pas changer. Finalement, essayer de réveiller les qualités de compassion qui sont en moi s'est aussi montré très important dans

ma vie courante. Je me crée un discours intérieur positif, et où je me remémore mes qualités de compassion. Si je considère ne pas les posséder au temps X, j'essaye de me remémorer une situation où j'ai fait preuve de cette qualité, et souvent, cela suffit pour ressentir à nouveau cette émotion, et la traduire dans mon quotidien (par exemple pour trouver la force de me remettre en action lorsque j'ai envie de procrastiner). Je pense que le programme m'a globalement aidé à être plus positive, plus forte face aux épreuves du quotidien, à éprouver plus de bienveillance et de gratitude pour toutes les petites choses simples de la vie. Cela se traduit chez moi par des actions plus douces et bienveillantes, une plus grande acceptation mais aussi par plus de force et d'autorité dans certaines situations (et ça, je ne l'avais pas imaginé comme étant une partie de la compassion !). L'observation de ce qu'il se passe à l'intérieur de moi, aide déjà beaucoup pour comprendre mon ressenti (identifier que c'est par exemple ma partie triste qui est activée à un moment donné, lui laisser toute la place et l'accueillir avec compassion). Je remercie donc encore énormément Marine et Violaine pour ce programme. Merci à Marine pour la création de cette thérapie qui va sans aucun doute faire une très grande différence chez tous les futurs participants de ce groupe thérapeutique. Merci aussi beaucoup à Violaine, qui a animé nos groupes avec douceur, bienveillance, positivité et avec une grande écoute ; elle a participé grandement à la réussite de ce groupe. Je remercie aussi les autres participants du groupe, pour leurs partages, leur bonne humeur et le respect mutuel de chacun, sans eux le groupe n'aurait pas été le même. »

Participante au Programme Fondé sur la Compassion, 2021

« J'avais envie de partager ce que vous et ce groupe m'avez apporté. J'ai l'impression d'être plus acceptante de mes limites et du coup de commencer à avoir une meilleure communication par rapport à elles. Dans la vie de tous les jours je me sens beaucoup plus libre (en particulier avec mon amoureux) et légitime de rester avec mes émotions désagréables, de les partager et de quitter un peu les chaussures de "la meuf toujours up, qui sourit tout le temps". Même si ça implique des ajustements aussi autour de moi, pas toujours simple... en tout cas ça me plaît, je me sens plus cohérente. »

Participante au Programme Fondé sur la Compassion, 2021

« J'ai eu la chance de participer à ce programme. Et j'en suis sincèrement très reconnaissante. J'éprouve vraiment beaucoup de gratitude, pour la vie, le hasard qui fait bien les choses, et tout ce qui m'a permis de participer à ce programme. Et je tiens à remercier très chaleureusement et sincèrement toute l'équipe qui l'a pensé, créé, organisé, mis en place et animé ; en particulier vous Marine, ainsi que Charlotte bien entendu qui s'est montrée si compréhensive et bienveillante, elle a su incarner la compassion qu'elle nous enseignait. Je remercie également tous les participants, car les échanges et les témoignages ont été très riches et sincères. Quand j'ai vu l'annonce pour participer au programme, j'ai tout de suite été attirée et intéressée. Mais à vrai dire, dans mon état (importants problèmes de santé), je ne savais pas si j'allais réussir à y assister jusqu'au bout malgré mon enthousiasme et ma motivation. Je m'y suis inscrite malgré mes doutes et je ne le regrette vraiment pas ! Charlotte a été vraiment très compréhensive vis-à-vis de ma situation et j'ai pu assister à chaque séance même quand ça n'allait vraiment pas bien. Cela a été vraiment très soutenant pour moi. Très isolée à cause de mes soucis de santé qui m'empêchent de sortir de chez moi depuis des années (je suis alitée la plupart du temps depuis 2 ans), chaque RDV hebdo avec le groupe était très important pour moi. Et être acceptée à y participer malgré mon état a été une véritable chance pour moi. J'avais déjà pratiqué des méditations de pleine conscience, ainsi que des méditations de compassion auparavant, mais jamais dans le cadre d'un programme. Le programme proposé et la régularité des rdv hebdomadaires pour en apprendre plus sur les émotions et sur la compassion, ainsi que les pratiques ensemble et en direct ont vraiment été très importants et enrichissants. Cela m'a permis d'approfondir ma pratique et mes connaissances, cela m'a permis également de jolies prises de conscience et de chouettes expériences. Mais surtout, cela m'a aidé à devenir encore plus consciente, douce, bienveillante et compréhensive avec moi-même, et avec les autres bien évidemment. J'ai toujours été très à l'écoute des autres, beaucoup plus à l'écoute des autres que de moi-même à vrai dire d'ailleurs. Aujourd'hui, j'arrive à prendre encore plus de recul qu'avant, à plus rapidement faire un pas de côté, et à mieux accueillir mes émotions, mes douleurs et mes peines, avec encore plus de compassion et d'amour qu'avant. J'arrive à mieux surfer les vagues émotionnelles, qui sont du coup à chaque fois moins intenses. J'arrive à être plus à l'écoute de moi-même et de ma petite voie intérieure. J'ai plus confiance en moi, et en ce que je ressens, et j'ai l'impression de plus facilement me connecter à moi-même, et à mieux reconnaître ce qui est juste pour moi. Et, grâce à cela, je parviens plus facilement à mettre des limites aux autres et à plus m'affirmer, plus sainement. Je parviens à mieux identifier, reconnaître, accueillir, comprendre et canaliser mes émotions, et également à agir plus en conscience plutôt qu'à réagir. Mes doutes, ma culpabilité et ma

honte se sont un peu allégés également. Je me suis toujours intéressée à la psychologie et au développement personnel. J'ai toujours cherché à mieux me connaître et me comprendre, moi-même, mais aussi les autres, et mes relations avec les autres et le monde. Et mes problèmes de santé m'ont amenée à explorer encore plus ces domaines. J'ai lu, écouté et pratiqué d'autres choses avant, en parallèle et après le programme. Il me semble que tout avait sa place et était complémentaire. Et je crois que chaque chose arrive au bon moment. Et le programme a été une étape supplémentaire pour moi. Je pense que l'alliance de la théorie, des échanges et des pratiques du programme, sa durée dans le temps et la régularité des rdvs, ont été très importants pour l'intégration des différents éléments. Je pense que des graines ont ainsi pu être plantées en nous, ont pu prendre et commencé à germer, voir ont déjà un peu poussé et donner quelques jeunes fruits. Ce qui a été intéressant également, c'est que les thèmes abordés et les pratiques effectuées étaient très variées. Et cela a permis à chacun de pouvoir trouver ses pratiques "préférées" et privilégiées, celles qui lui convenaient le mieux. Confronter nos avis et nos expériences nous a permis de constater que nous avions pour certains des points communs et pour d'autres étions différents face à certains thèmes ou pratiques. Les échanges pouvaient aussi nous donner des idées ou des pistes supplémentaires de réflexion ou d'utilisation des pratiques. Faire partie d'un groupe pour pratiquer a été vraiment facilitant. J'ai l'impression d'avoir développé un peu plus de force et de paix intérieures, de courage, et d'oser un peu plus également. Je chemine vers toujours plus d'acceptation, d'accueil, d'authenticité, d'ouverture et de lâcher prise. "Paix, amour, harmonie, joie et espoir" est mon leitmotiv depuis déjà quelques années. Le programme l'a renforcé. Avoir effectué des pratiques assez longues durant et parfois entre les séances a permis de développer, renforcer et ancrer les qualités de la compassion en moi. Pour finir, j'espère vraiment que cette étude et ce programme pourront se développer à l'avenir et être diffusés par la suite et être proposés et bénéficier au plus grand nombre bien sûr, notamment aux personnes malades, isolées ou en difficultés. Car je pense que ces personnes souffrent terriblement justement de ne pas savoir se connecter à elle-même et à ce qu'elles ressentent, ni de pouvoir décrypter les messages qui se cachent derrière leurs ressentis. J'aimerais moi-même pouvoir contribuer dans ce sens, apprendre et pratiquer davantage, et transmettre, pour faire émerger et laisser se diffuser plus de paix, d'amour et d'harmonie, en moi et autour de moi. Il y aurait encore beaucoup d'autres choses à dire, mais je vais m'arrêter ici. Encore un immense MERCI pour tout ce que vous m'avez apporté »

Participante au Programme Fondé sur la Compassion, 2021

« Merci encore pour cette expérience inoubliable qui me sert tous les jours. Les ateliers m'ont permis de mieux me connaître, de savoir quels sont les selfs les plus présent en moi et de mieux réussir à déjouer, ou en tout cas mieux accueillir les émotions qui me traversent. Pour moi la compréhension de qui je suis est utile pour m'apaiser. Ça m'aide à prendre aussi des décisions, à avoir un peu plus confiance en moi ! Je m'en rends compte par certaines décisions que j'ai pris dernièrement, surtout dans mon travail, où je souffre un peu du syndrome de l'imposteur. Et petit plus, je vais, comme marine, de nouveau voir une psychologue. Et ça fait partie des choses dur à faire, pour moi en tous cas. Le passage du coup de fil que l'on repousse quand ça va mieux !! J'ai réussi à le faire sans attendre d'être trop mal. Merci à vous deux encore. Violaine était d'une grande aide dans ces pratiques multiples. C'est une belle personne qui nous a tous beaucoup aidé aussi, rien par ce qu'elle est. Vraiment encore merci à toi Marine, et je vais essayer d'essaimer un peu ces pratiques que j'ai acquise. Car cela fait tellement de bien d'être plus vrai »

Participante au Programme Fondé sur la Compassion, 2021

Appendix B

Testimonials from Emotional Competencies Program participants

« La proposition de participer au « programme : compétences émotionnelles » dans le cadre de votre thèse à l'université Grenoble Alpes laboratoire interuniversitaire de psychologie m'est parvenu par mail. Le sujet de votre thèse m'intéressait aussi je n'ai pas hésité à partir dans l'aventure. Tout a été mis en place dans les règles de l'art et avec professionnalisme. Notre groupe était mené par Beatrice chaleureuse et bienveillante. Les séances étaient par zoom du fait du contexte du moment de la covid et je n'ai pas eu trop de difficulté à m'y faire. Bien sûr dans le groupe constitué nous avons semé au fil du temps quelques personnes pour des raisons personnelles ou professionnelles. A la première séance, un cadre a été mis en place ensemble afin que nous nous sentions pleinement en sécurité et en confiance. Ce cadre a été considéré par chacun de nous comme bénéfique. Je crois n'avoir manqué aucune des rencontres et je les ai suivis sans me forcer aucunement. Dans le groupe constitué j'ai senti et aimé le côté authentique dans nos échanges, le respect et la bienveillance nous ont tenu compagnie tout du long Nos âges variés furent une grande richesse. Le programme était très clair et bien progressif, il était constitué d'une partie théorique, des exercices en groupe et une pratique à effectuer dans la semaine pour la séance suivante. En ce qui concerne les exercices proposés en groupe, j'ai ressenti personnellement le besoin et j'ai choisi de les lire avant la séance et d'y réfléchir pour pouvoir profiter pleinement de ce temps de partage. Dans les exercices à deux ou trois, le temps imparti m'a semblé un peu juste par moment pour permettre à tous de s'exprimer et nous l'avons accepté dans la bonne humeur. La pratique proposée entre deux séances m'a permis de me poser bien régulièrement, de réfléchir et d'écrire, moments précieux et bons à vivre. Après ce programme J'ai pris conscience en utilisant votre expression, combien « les émotions sont les boussoles de notre vie » et j'y ai pris gout. Avec des « compétences » nouvelles, des « ressources » multiples et variées découvertes ou à inventer j'ai le désir maintenant de partager au gré du vent et mes rencontres, ces connaissances et par là même en les transmettant de pouvoir les approfondir. Je ne peux qu'éprouver de la gratitude et vous souhaiter une bonne continuation. »

Participante au Programme d'Entraînement aux Compétences émotionnelles, 2021

Testimonials from Emotional Competencies Program participants

« Tout d'abord, je souhaitais renouveler mes remerciements pour cette belle et généreuse expérience que tu as offert à ce groupe et plus particulièrement pour m'avoir sélectionné. Ce groupe me semble avoir bien fonctionner grâce à... probablement de nombreux paramètres dont je retiendrais : Clémence, les supports qui ont permis, au-delà des apports, de se recentrer sur la formation, la diversité des participants (avec toutefois au moins un point commun : la volonté d'évoluer dans la connaissance émotionnelle), et bien sûr le respect et la bienveillance. Après avoir écouté chacun, l'idée que c'est atelier ai été réalisé en visioconférence me semble avoir facilité l'ouverture de chaque protagoniste sur leurs expériences personnelles. En effet, le fait d'avoir comme a priori que du fait de la distance nous ne nous croiserions probablement pas à l'avenir, me paraît avoir ôter une barrière que j'ai pu observer en présentiel. Pour ma part, je m'intéresse depuis "peu" à moi-même (3 ans environ). Aussi suis-je attentif à tout ce que peut me permettre d'approfondir mes connaissances et pratiques sur les thématiques du développement personnel. (A titre personnel bien sûr mais aussi dirigé vers les autres puisque je suis un acteur dans la Formation) Des témoignages extraits de cette formation, il y en a plusieurs. Je vais donc t'en partager un. La participation à cet atelier m'a permis de prendre du recul sur moi-même lors de mes interventions en tant que formateur pompiers. En effet, malgré plusieurs années de pratique, je me sentais toujours en difficultés lors de mes prestations. Pour pallier à ce mal-être, j'augmentais d'autant plus mon temps de préparation, et d'anticipation, sans toutefois être finalement satisfait du résultat. Au cours de mes différents partages avec le groupe, et mise en pratique de quelques idées que nous avons partagées, je me suis finalement rendu compte que la perception que j'avais de moi-même n'était pas aussi négative que la perception que pouvait avoir les participants. Par ailleurs, en analysant mes séquences pédagogiques, en me plaçant sous différents point de vue : celui d'un participant, celui d'un formateur plus expérimenté observant la totalité de la séquence, celui d'un formateur arrivant à l'improviste durant ma formation, celui d'un enfant ou encore celui d'une personne ne parlant pas notre langue, j'ai finalement évalué mes prestations plus positivement, ce qui mécaniquement a contribué à améliorer mon niveau de confiance en moi et par conséquent mon aisance et la qualité de mes formations... Bien sûr, même si j'ai pu observer des bénéfices après 12 semaines de pratique hebdomadaire de cet atelier, je suis convaincu de pouvoir accroître les bienfaits en poursuivant les différents petits exercices qui ont jalonné nos rendez-vous. Merci encore à toi Marine, et à tous les collaborateurs et participants de ce programme. »

Participant au Programme d'Entraînement aux Compétences émotionnelles, 2021

« Dans le tunnel de l'épuisement professionnel où j'ai tutoyé angoisse et dépressions mêlées à de la colère et un profond sentiment d'injustice, je ne voyais pas de lumière. Marine est arrivée avec le groupe tel un passeur de chemin et a éclairé par sa bienveillance et son enseignement, mon sombre parcours. Cette lumière m'a réchauffée, motivée, encouragée et apaisée. J'ai pu comprendre le sens de mes émotions, les valeurs et les besoins qui furent les miens à cet instant et j'ai œuvré à y répondre au mieux par la suite. Grâce à Marine, j'ai orienté mes lectures pour enrichir mes compétences émotionnelles et cela m'a beaucoup apporté »

Participante au Programme d'Entraînement aux Compétences émotionnelles, 2021

*« Le fait de participer à ce groupe m'a permis de sortir de ma zone de confort car parler en visio devant une autre personne et un groupe est un acte compliqué pour moi. Les séances proposées par Marine ont ouvert le chemin vers un travail sur moi-même : une meilleure compréhension de mon mal être, une prise de conscience de mes émotions, de mes besoins, de mes valeurs et surtout une mise en action pour changer de voie. J'ai appris à repérer mon mode de pilotage automatique avec des pensées improductives. J'apprends petit à petit à défusionner de mes pensées et cela est un travail quotidien. Ces séances m'ont donné l'envie de progresser vers ce chemin où j'exprime ce que je ressens et ce dont j'ai besoin. Un chemin de compassion vis-à-vis de moi-même et de l'autre. Je lis actuellement le livre de Russ Harris *Le grand saut* où il décrit bien le travail à faire concernant la défusion de ses pensées, l'expansion de ses émotions et l'engagement. "Au lieu de vivre à la merci de mes émotions, je me comporterai comme la personne que je veux être et je ferai les choses qui comptent même si la fatigue ou l'angoisse m'assaillent et même si je n'ai pas envie". Les pratiques gardées sont le bulletin de météo intérieure, l'acceptation émotionnelle où je reconnais ma peur, ma gêne lorsqu'elle se présente, j'accueille les sensations dans mon corps et je les laisse être, se déplacer, évoluer et disparaître. La respiration profonde, la relaxation musculaire et les séances de méditation basées sur l'autocompassion de Marine sur Prezens. Plusieurs prises de consciences : (1) Me rendre compte que plus j'évite ma peur et plus elle augmente, (2) Mes tendances d'actions sont plus liées à mes émotions et mes pensées qu'à mes valeurs et un désir de changer cela. Ces actions automatiques diminuent ma peur à court terme mais sont délétères à long terme, je tourne en rond dans ma vie.*

Participante au Programme d'Entraînement aux Compétences émotionnelles, 2021

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