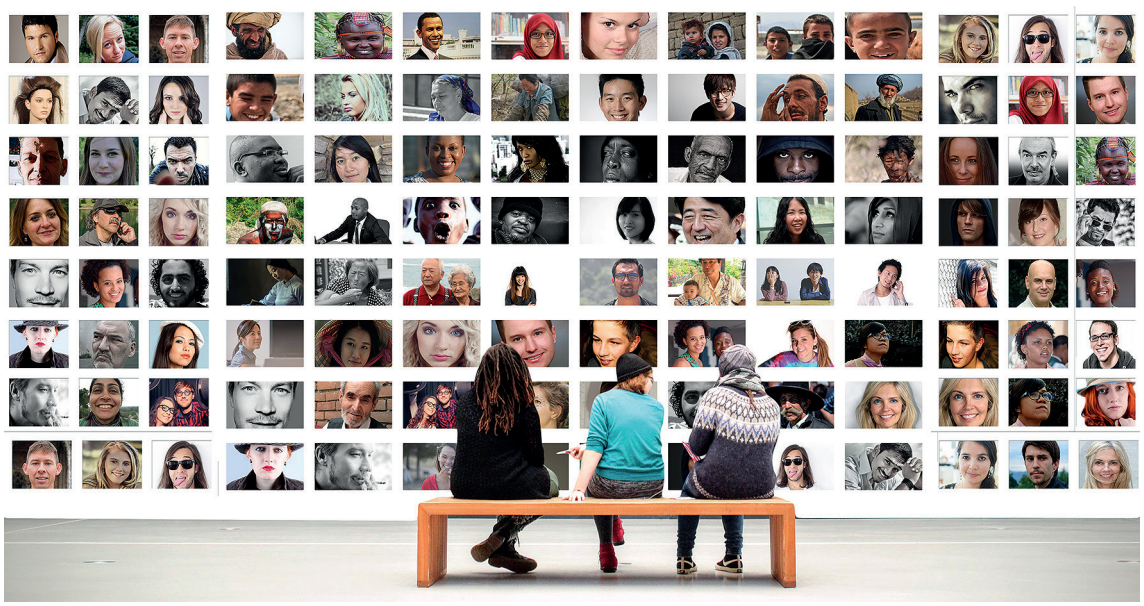
JYU DISSERTATIONS 673

Francesca Brandolin

ACT for International University Students

An ACT-Based Group Intervention for Enhancing the Psychological Well-Being of International Students



UNIVERSITY OF JYVÄSKYLÄ
FACULTY OF EDUCATION AND PSYCHOLOGY

JYU DISSERTATIONS 673

Francesca Brandolin

ACT for International University Students

An ACT-Based Group Intervention for Enhancing the Psychological Well-Being of International Students

Esitetään Jyväskylän yliopiston kasvatustieteiden ja psykologian tiedekunnan suostumuksella
julkisesti tarkastettavaksi yliopiston Ruusupuiston Helena-salissa (RUUD104)
elokuun 18. päivänä 2023 kello 12.

Academic dissertation to be publicly discussed, by permission of
the Faculty of Education and Psychology of the University of Jyväskylä,
in the building Ruusupuisto, auditorium Helena (RUUD104), on August 18, 2023 at 12 o'clock noon.

JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

JYVÄSKYLÄ 2023

Editors
Noona Kiuru
Department of Psychology, University of Jyväskylä
Ville Korkiakangas
Open Science Centre, University of Jyväskylä

Cover photo by Katarzyna Ferneza - ACTive morning with photography (source Pixabay).

ISBN 978-951-39-9682-6 (PDF)
URN:ISBN:978-951-39-9682-6
ISSN 2489-9003

Permanent link to this publication: http://urn.fi/URN:ISBN:978-951-39-9682-6

ABSTRACT

Brandolin, Francesca
ACT for international university students: An ACT-based group intervention for enhancing the psychological well-being of international students
Jyväskylä: University of Jyväskylä, 2023, 102 p.
(JYU Dissertations
ISSN 2489-9003; 673)
ISBN 978-951-39-9682-6 (PDF)

The general aim of this dissertation was to investigate how the psychological well-being of international university students could be promoted. We developed a group-based intervention, which included five group meetings and two individual assessment sessions. Between 2017 and 2021, international university students from nearly 40 nationalities participated voluntarily in ACT-based group workshops to improve their well-being. Study I examined psychological distress and psychological flexibility skills as potential predictors of symptoms among the students (n = 103). Study II explored the effectiveness and acceptability of an ACT group intervention delivered in person (n = 53). We investigated the impact of the workshops on symptoms of stress, depression, anxiety, and psychological flexibility as well as the changes in psychological flexibility and the predictors of changes in symptoms. Study III explored the effectiveness and acceptability of an ACT group intervention delivered via videoconference (n = 48). We were interested in whether the videoconference-delivered ACT would result in similar outcomes to those of the in-person-delivered ACT. The results of Study I showed that students with low psychological flexibility skills experienced more stress, depression, and anxiety. Four psychological flexibility skills were associated with psychological distress: life fulfillment, acting with awareness, non-judgement, and non-reactivity. The results of Study II showed that the five workshops reduced the students' stress, depression, and anxiety symptoms and increased their psychological flexibility skills. Changes in stress, depression, and anxiety were predicted by changes in different psychological flexibility skills. Study III found that the workshops delivered via videoconference during the COVID-19 pandemic showed equivalent effects on symptoms and psychological flexibility skills as in the in-person-delivered group intervention. Both interventions, in-person and videoconference, were well accepted by the students. The overall satisfaction was slightly higher in the in-person intervention. In conclusion, a brief ACT-based intervention, whether administrated in-person or via videoconference, is effective in enhancing the well-being of international university students.

Keywords: international university students, wellbeing, acceptance and commitment therapy, face-to-face and videoconference intervention

TIIVISTELMÄ (ABSTRACT IN FINNISH)

Brandolin, Francesca
Hyväksymis- ja omistautumisterapiaan pohjautuva ryhmäinterventio kansainvälisten yliopisto-opiskelijoiden hyvinvoinnin edistämiseksi
Jyväskylä: Jyväskylän yliopisto, 2023, 102 s.
(JYU Dissertations
ISSN 2489-9003; 673)
ISBN 978-951-39-9682-6 (PDF)

Tämän väitöskirjan yleisenä tavoitteena oli tutkia, miten kansainvälisten yliopisto-opiskelijoiden psyykkistä hyvinvointia voidaan edistää. Kansainvälisille opiskelijoille laadittiin hyväksymis- ja omistautumisterapian (HOT) menetelmiin pohjautuva hyvinvointi-interventio, joka sisälsi kaksi yksilöllistä arviointitapaamista ja viisi tapaamista ryhmässä. Yhteensä 40 kansallisuutta edustavat opiskelijat osallistuivat pienryhmiin 2017–2021. Osatutkimuksessa 1 selvitettiin opiskelijoiden (n = 103) psyykkistä hyvinvointia ja psykologisen joustavuuden taitojen yhteyttä oireiluun. Osatutkimuksessa II tarkasteltiin kasvokkain tarjottavan HOT-ryhmäintervention (n = 53) vaikutusta opiskelijoiden stressin, masennuksen ja ahdistuneisuuden oireisiin sekä psykologisen joustavuuden taitoihin. Lisäksi selvitettiin, miten psykologisen joustavuuden muutokset ennustivat muutoksia oireissa. Osatutkimuksen III tavoitteena oli selvittää, saadaanko vastaavalla, mutta videoneuvottelusovellus zoomin kautta tarjotulla HOT-ryhmäinterventiolla (n = 48) samanlaisia tuloksia kuin kasvokkaisella interventiolla. Osatutkimuksen I tulokset osoittivat, että osalla opiskelijoista esiintyi vakavaa psyykkistä oireilua. Opiskelijat, joilla oli alhainen psykologinen joustavuus, kokivat enemmän stressiä, masennusta ja ahdistusta. Psyykkiseen pahoinvointiin oli yhteydessä neljä psykologisen joustavuuden osataitoa: arvojen mukaiset teot, tietoinen toiminta, hyväksyvä suhtautuminen ja reagoinnin välttäminen. Tutkimuksen II tulokset osoittivat, että kasvokkain tarjottu interventio vähensi opiskelijoiden stressiä, masennusta ja ahdistuneisuusoireita ja lisäsi psykologista joustavuutta. Eri joustavuustaidot ennustivat eri tavoin muutoksia eri oireissa. Osatutkimus III tulokset osoittivat, että videoneuvottelun avulla tarjotulla ryhmäinterventiolla oli samanlaisia myönteisiä vaikutuksia kansainvälisten opiskelijoiden oireiluun ja joustavuustaitoihin kuin perinteisellä ryhmäinterventiolla. Opiskelijat ottivat molemmat interventiot hyvin vastaan. Yhteenvetona voidaan todeta, että kasvokkain tai videoneuvottelusovelluksen avulla tarjottu HOT-ryhmäinterventio kohensi kansainvälisten yliopisto-opiskelijoiden hyvinvointia.

Avainsanat: kansainväliset opiskelijat, hyvinvointi, hyväksymis- ja omistautumisterapia, kasvokkainen ryhmäinterventio, videoneuvottelusovelluksen avulla tarjottu interventio

Author

Francesca Brandolin
Department of Psychology
University of Jyväskylä
francesca.f.brandolin@jyu.fi
ORCID 0000-0003-4079-3669

Supervisors

Professor Raimo Lappalainen
Department of Psychology
University of Jyväskylä

PhD Päivi Lappalainen
Department of Psychology
University of Jyväskylä

Reviewers

PhD, Research Scientist Jacqueline Pistorello
Student Counseling Services
University of Reno
United States

PhD, University Lecturer Andreas Larsson
Department of Psychology
Mid Sweden University
Sweden

Opponent

Professor Jari Lahti
Department of Psychology and Logopedics
University of Helsinki

ACKNOWLEDGEMENTS

Non chi comincia, ma quel che persevera.
— Leonardo da Vinci
The process of living is like taking a very long road trip. The destination may be important, but the journey experienced day to day and week to week is what is invaluable.
— Steven C. Hayes

As I approach writing this section, I am in disbelief at the journey and life events that have occurred since I started working on my PhD thesis and even before that, when I arrived in Jyväskylä simply as an exchange student. I have been so fortunate to have met such amazing people who became my mentors, colleagues, and kind supporters in this endeavour. This journey has been incredible, amazing, tedious, and terrifying all at the same time, and it would not have been possible without the support, patience, and understanding of all the people surrounding me.

First and foremost, I want to express my immense gratitude towards my supervisors, mentors, and friends, Raimo and Päivi Lappalainen. Your support and guidance have been the basis and main reason why this work came to be. I am deeply grateful and lucky to have met you in my journey; all your knowledge, advice, and expertise have shaped me into the woman, psychologist, and researcher I am today. Words cannot do justice to the outmost respect and gratitude I have for you. Päivi, your kindness and understanding have kept me going through the best and the worst times. Without your support, this dissertation would not have seen the light of day, I am deeply thankful, and I genuinely care for you with all my heart. Raimo, your ground-breaking knowledge has always been deeply inspiring to me; you made me grow in research beyond my wildest dreams, we shared some good laughs and a great deal of stressful times, and you were always there to provide support and humour. I hope to keep you in my life and make you proud of my work in the future.

I am very grateful to the reviewers of my dissertation. Thank you, Dr. Jacqueline Pistorello and Dr. Andreas Larsson, for your invaluable comments and suggestions. And thank you, Dr. Jari Lahti, who served as my opponent. I have great respect for your work, and I am honoured to have received your advice and guidance.

I would also like to thank my colleagues and members of our wonderful research group. Simone Gorinelli, we do not only share cultural identity but also a lot of companionship, growth, and venting moments, you have been one of my best pals on this journey. Ana Gallego, thank you for your support, patience, and understanding while I took my first steps in research. To my other colleagues Katariina Keinonen, Panajiota Räsänen, and Anna-Lotta Lappalainen for providing help, useful advice, and words of encouragement. I would also like to thank Joona Muotka for his valuable work on statistical analysis.

I want to extend my gratitude to the other Finns I had the pleasure to meet and chat with, Sanna Turakka, Anne Puolakanaho, and all those in the ACBS Finnish chapter.

A few words also to the multitude of people I met through ACBS, this community is a constant source of inspiration and connections. My gratitude goes to the Women's SIG, Jenna LeJeune, Debbie Sorensen, Sarah Pegrum, and many more, as well as the ACT with Technology SIG. To my ACT peer support group, you guys are fantastic, I love connecting and growing with you. Vanessa del Aguila, your companionship, and support have been meaningful. To my loving FAP crew and the amazing Stavroula Sanida and Holly Yates, two amazing ladies and souls that helped me grow and supported me in ways that words cannot explain, I deeply care for you both. Katarzyna Ferneza, your friendship is one of the best gifts I received from our training. Rikke Kjelgaard, you are my role model, your support and guidance are so important and valuable, thank you for your kindness.

Finally, I would like to thank my family and friends in Italy and Finland. I am grateful for all the amazingly nice people I met on my path, even if just briefly, you made my journey here more valuable. The international artsy crew Maryam, Alex, and Fin. My nicest Finnish roommate and friend, Tiina, thank you for your support and all the encouragement. To Sabrina for substituting as a "mom" in Finland and always being available for helping and for venting. Laura, thank you for making a part of my journey less lonely during the pandemic. To Francesca for keeping encouraging me to study Finnish and forcing me to come to class. To my university pals in Bergamo, Katia, and Andrea, thank you for your support.

Last but not least, I would like to thank my two true best friends and life companions, Jennifer Tintori and Debora Siciliano. You guys are my past, present, and future, and no matter how far we go, we will never lose each other. To my mom Claudia, an amazingly strong woman who taught me loads about life and always encouraged me to keep going and aim for the stars. To my brother Alberto, who may have barely read a single line of my work but was always there to support me, encourage me, and brag about his smart little sister. To Linus, you came into my life in the most hectic part of this endeavour, you understood me, supported me, comforted me, encouraged me, told me I was crazy, and yet you gave me the push to keep going and finish this work. As uncertain as the future is, I look forward to seeing where life takes us.

One last word goes to those who are no longer with us. To my dad, your teaching and example will always guide me through life, I miss you every day. To my grandma, you left us before I could finish this work, and you have always been so proud and supportive, even if you always wanted me to come back home.

I am one but not alone, all these people made me and have my deepest gratitude.

Jyväskylä, 15.06.2023
Francesca Brandolin

LIST OF ORIGINAL PUBLICATIONS

I Brandolin, F., Lappalainen, P., Gallego, A., Gorinelli, S., & Lappalainen, R. (2023). Understanding and explaining psychological distress in international students. *International Journal of Psychology & Psychological Therapy*, 23(1), 17-29.

II Brandolin, F., Lappalainen, P., Gorinelli, S., Muotka, J., Räsänen, P., & Lappalainen, R. (2023). The effectiveness of a five-session workshop on the distress of international students in Finland – a pilot study. *British Journal of guidance and counselling*, 1-18

III Brandolin, F., Lappalainen, P., Gorinelli, S., Muotka, J. & Lappalainen, R. (2023). Examining the effectiveness and acceptability of a group-based ACT intervention delivered by videoconference to international students during the COVID-19 pandemic. Submitted manuscript.

Taking into account the instructions given and comments made by the co-authors, the author of the present thesis participated in designing the research plan, planning and execution of the intervention, and collecting the data. The author also contributed to the statistical analysis and was the main author of the three publications.

FIGURES

TABLES

CONTENTS

1 INTRODUCTION

1.1 Wellbeing as a global priority

In 2018, the World Health Organization cast a spotlight on the importance of helping young people build mental resilience to cope with the challenges of today's world. The focus was placed on raising awareness among young adults of the various ways in which to look after their mental health. The belief is that mental illness prevention starts with being aware of and understanding the early warning signs and symptoms of mental problems. There is also growing evidence that promoting and protecting young adults' health will render them capable of making greater contributions to their communities and society (WHO, 2018).

Furthermore, The COVID-19 pandemic created a global crisis for mental health, fueling short- and long-term stresses and undermining the mental health of millions of people around the world. Estimates place the rise in both anxiety and depressive disorders at more than 25% during the first year of the pandemic. Mental health services have also been severely disrupted, with a widening treatment gap for mental health conditions (WHO, 2022). Recognizing the importance of mental health and well-being as a global priority will hopefully lead to the further development of research and counselling. It will increase our understanding of predictors and processes that explain risk factors in mental health and processes of change while undergoing a psychological intervention as well as different formats of intervention delivery. Furthermore, the theme of World Mental Health Day 2022, "Make mental health and wellbeing for all a global priority" (WHO, 2022), aligns well with the central theme explored in this dissertation.

The aim of this dissertation was to investigate how psychological well-being could be promoted among international university students. This study was conducted among international university students pursuing their studies at the University of Jyväskylä (JYU). Consistent with the global priority, JYU's strategy focuses on wisdom and well-being for people and society, deeming it

essential that each member of our community thrives and has opportunities to grow and develop, with the main objective being the promotion of competence and comprehensive well-being. JYU has witnessed a growing number of international students, with about 1,000 such enrolments each year, which represents around seven percent of the total student population. In addition, Finland accounts for eight percent of international student mobility, which is higher than the OECD countries' average of six percent (OECD, 2019). The number of students worldwide who decide to pursue at least part of their higher education studies abroad has more than doubled in the past two decades, rising from two million in 1998 to 5.3 million in 2017 (OECD, 2019). Since then, the number of visiting students has steadily increased. Across European countries, about 10% of the graduates from 2020 had some mobility experience. Over the period 2014–2020, around two million students participated in the Erasmus+ study exchange program (OECD, 2022). Studying far away from home offers students the opportunity to develop language skills, study in an international context, and test their own abilities in a foreign culture and environment. This experience, however, can also present several challenges and stress factors that may have an impact international students' well-being and quality of life (Hauschildt et al., 2015).

1.2 The vulnerable population of international students

Studying or working abroad is enriching for many in terms of offering new experiences and perspectives. It offers students the opportunity to develop language skills, study in an international context, and experience a foreign culture and environment. However, it can also present significant challenges, especially with regard to well-being and mental health (Biswas et al., 2022). Consequently, international students frequently face adaptation challenges associated with difficulty adjusting to a new culture and language (Andrade, 2006; Hechanova-Alampay et al., 2002; Mori, 2000). Adjustment to new social and learning environments can be a stressful experience, which may manifest in communication problems and feelings of isolation, loneliness, and hopelessness (Mori, 2000; Wilton & Constantine, 2003). International students are deemed to be at an elevated risk for psychological problems (Brown & Brown, 2013; Jung et al., 2007; Mori, 2000), including stress, loneliness (e.g., Rosenthal et al., 2006; Russell et al., 2010; Sawir et al., 2008), depressive symptoms (e.g., Rice et al., 2012), and anxiety (Shadowen et al., 2019).

Among the general university student population, psychological problems such as procrastination, perfectionism, low self-esteem, test anxiety, and stress are common (Cuijpers et al., 2021), leading to mental health problems such as depression, anxiety disorders, and substance abuse disorders (Auerbach et al., 2018). According to the latest national Finnish Student Health and Wellbeing Survey (KOTT survey, 2021) 56% of university students experienced heightened levels of psychological distress, 35% of whom reported clinically significant

psychological distress. An alarming finding was that 40% of female students reported symptoms of anxiety and depression. Compared to domestic students, international students have been found to report more anxiety, stress, and sleeping problems and have less social support and more numerous and severe university adjustment problems (e.g., Forbes-Mewett, 2019; Lee et al., 2004; Mori, 2000; Russell et al., 2010; Shadowen et al., 2019). Consequently, mental health is currently considered one of the leading concerns among international students (Forbes-Mewett, 2019). As Rosenthal and colleagues (2008) suggested, differences between foreign students' culture of origin and host culture may cause unease in their adaptation process, indicating that culture and identity conflicts are linked to a poor well-being index (Brown & Brown, 2013; Jung et al., 2007). Psychological distress can be a significant burden for many, impairing their social functioning and academic performance and causing study delays or dropout (Hauschildt et al., 2015).

In addition to adjusting to unfamiliar academic practices and coping in a different cultural context, Forbes-Mewett and Sawyer (2016) identified another critical factor in the mental health of international students: recognizing and seeking professional help or counselling for mental health problems. It may be particularly difficult for foreign students to access resources and support services on campus. Moreover, international students may be reluctant to seek help from counselling centers or other services due to cultural differences in beliefs about mental health problems and stigma associated with psychological disturbances (Aguiniga et al., 2016; Forbes-Mewett & Sawyer, 2016; Mori, 2000). For example, Lu et al. (2014) found that 54% of Chinese international students reported high levels of psychological distress but that only nine percent of them had received mental health services. International mobility patterns demonstrate the importance of cultural, linguistic, and physical proximity to students' choice of host country (OECD, 2022). The cultural differences between their culture of origin and the host culture are seen as an important factor, with greater differences implying greater adjustment difficulty (Ward et al., 2001). One kind of loneliness experienced by international students—cultural loneliness—is triggered by the absence of a preferred cultural and linguistic environment (Sawir et al., 2008). Another factor is length of stay: The longer the student has lived in the host country, the better the language and social skills, the more the social networking and support, and the easier the student's everyday life (Ward & Kennedy, 1999). However, Ward and Rana-Dueba (1999) argued that while sociocultural adjustment relates to length of stay, psychological adjustment does not.

In contrast, perceived social support has also been associated with fewer stress symptoms, anxiety, and depression and higher levels of resilience among university students from different countries (Recabarren et al., 2019). Previous research has suggested that social, cultural, or economic support should be provided by universities to enable international students to have a pleasant and enriching experience (Altinyelken et al., 2019; Sherry et al., 2010).

Overall, the research suggests that international students are a vulnerable population with unique challenges that can affect their well-being. However, with the right support and resources, these students can successfully navigate challenges and thrive academically and personally in their host country.

1.3 Well-being and stress management among international students

Research has shown that the well-being of international students is a complex and multifaceted issue. Engaging in the choice and effort of studying abroad in a foreign country with an unfamiliar culture and environment may present several challenges, including homesickness, loss of support systems, loneliness, lack of meaningful relationships with host nationals, culture shock, perceived discrimination, language difficulties, unfamiliar academic approaches and overload, an altering sense of identity, unrealistic family and self-expectations, financial problems, and difficulties at home in their own country (Lee et al., 2004; Mori, 2000; Russell et al., 2010; Sandhu & Asrabadi, 1994). The problems encountered by international students include helplessness, irritability, physical correlates such as persistent sleep disturbances, loss of appetite, low energy, greater susceptibility to illnesses, chronic somatic complaints, and psychological distress (Mori, 2000). A study conducted in Australia found that nearly 41% of international students adapted to their experience somewhat negatively and displayed high levels of stress, anxiety, and depression due to homesickness, cultural shock, or discrimination (Russell et al., 2010). Sümer and colleagues (2008) explored distress in international students studying in the United States and found that those with lower levels of support experienced higher levels of depression and anxiety.

A study on Chinese and Indian students attending college in the United States reported that around 37% of them met the clinical cut-off point for depression (Rice et al., 2012) and that self-critical perfectionism, exacerbated by personal, cultural, and family expectations, was positively associated with depression. Another study on Chinese international students attending Yale University reported that 45% of them showed symptoms of depression and that 29% reported symptoms of anxiety (Han et al., 2012). Moreover, 27% percent of responders were not aware of the availability of mental health and counselling services on campus (Han et al., 2012). Similarly, Kawamoto et al. (2018) found that students from Asia reported significantly greater levels of distress, such as depression and anxiety, compared to students from other cultures—findings confirmed in other studies (e.g., Shadowen et al., 2019). A more recent study showed elevated levels of acculturative stress, depression, and anxiety in an international student population (Kim et al., 2019). Shadowen and colleagues (2019) found high levels of depressive and anxiety symptoms in international students, with nearly 50% of them reporting clinically significant depression and

approximately 25% reporting moderate to severe symptoms of anxiety, which has been associated with acculturative stress, perceived discrimination, and poor English fluency. Rosenthal and colleagues (2006) reported that female students showed greater levels of psychological distress than male students, given that they experienced higher distress in response to physical abuse or sexual harassment, self-harm, anxiety, and depression.

A few studies have reported varying levels of depression and anxiety across gender in U.S. international student samples (e.g., Khoshlessan & Das, 2017). For instance, Misra and McKean (2000) reported that undergraduate female students experienced higher academic stress and anxiety. In terms of graduate students, Khoshlessan and Das (2017) showed that female students felt less anxiety while preparing for exams than male students, indicating that as female students grow older, they overcome anxiety more quickly than male students. In a recent study by Kim and colleagues (2019), female international students in the United States showed higher levels of acculturative stress, anxiety, and depression than their male counterparts. These findings highlight the heightened vulnerability of female international students to psychological distress, a gender-specific issue that arguably warrants attention when orienting international students to campus life (Kim et al., 2019).

On average, a higher proportion of male students (12%) are internationally mobile than female students (9%), with greater differences in specific countries and study programs (OECD, 2022). In most countries, the share of women among international students generally decreases with higher education levels. There may be a range of explanations, such as the social and cultural reasons behind gender differences in study mobility, which may reflect differing societal expectations for women (OECD, 2022), thus prompting increased pressure and distress when studying abroad.

The psychological distress experienced by international students may ultimately cause poor academic performance, delay, withdrawal, or study interruptions (Hauschildt et al., 2015). Ill-being can make it difficult to maintain adequate levels of energy and focus on studies (Russell et al., 2010). Moreover, a study in the Netherlands (Rienties et al., 2012) reported that social adjustment was negatively related to study performance. In this study, international students of a Western ethnic background performed well on both academic and social integration. In contrast, international students of a non-Western background were less integrated compared to other international students but showed similar study performance (Rienties et al., 2012).

These studies underline the difficulties and psychological distress experienced by international students, and therefore, efforts should be made to improve awareness of and accessibility to mental health and counselling services to improve their study experience and mental health (Han et al., 2012). It must also be noted that most studies of international students have been conducted outside of the European context. Consequently, there is a need to examine the mental health and psychological functioning of international students pursuing higher education studies in Europe.

1.4 International students' well-being during the COVID-19 pandemic

The COVID-19 pandemic placed new and unforeseen stress on individuals, resulting in increased feelings of overwhelm, social isolation, and worry about our own health and that of others. Mental health problems have increased due to the COVID-19 pandemic, prompting numerous disruptions to daily life, unique stressors, increased mental health concerns, and decreased quality of life (Gallagher et al., 2020; White & Van Der Boor, 2020). University students—characterized as a population susceptible to poor mental health (Kross et al., 2013)—encountered additional challenges and adversities caused by the pandemic. These included threats to their personal health, financial problems and uncertainty, risk of unemployment or redundancy, social distancing measures and isolation, loneliness, and radical disruptions to their learning (Wright et al., 2020). These sudden and unexpected changes had an impact on millions of college and university students around the world. Studies have reported that students experienced high levels of stress that negatively impacted their mental health and led to increased anxiety and depression (e.g., Baloch et al., 2021; Di Consiglio et al., 2021; Essadek & Rabeyron, 2020; Kaparounaki et al., 2020; Meda et al., 2021; Zandifar & Badrfam, 2020; Zhang et al., 2020). The results of a European study indicated that all university students suffered from poor mental health, which was considerably below pre-pandemic norms (Allen et al., 2022). Students' well-being was influenced by their lack of social interaction with fellow students, disruption of contact teaching and progress of courses and classes, as well as concerns about cancellation or extension of scholarships and timing of degree completion (Pappa et al., 2020). A recent study from Allen and colleagues (2022) reported various levels of psychological distress among students of different European nationalities due to significant feelings of loneliness; however, the average scores for distress and anxiety were relatively similar among the different ethnic groups.

Students living away from home faced physical, social, financial, and psychological struggles caused by COVID-19, without the usual comforts of their social support circles (Allen et al., 2022). Moreover, international students were faced with uncertainty over whether they would be able to physically reach their country of study due to border restrictions or find work within the period of time allowed for international students to seek employment after the end of their studies (OECD, 2022). This potentially explains why in some contexts, such as Australia, international students reported larger declines in the quality of their educational experience in 2020 compared to national students (OECD, 2022).

Student mobility and study experiences worldwide have also been significantly impacted by the COVID-19 pandemic. Preventive measures, such as closing campuses, canceling classes, and transitions to online teaching adversely affected students' mental health, particularly that of international students (Dhawan, 2020; Lai et al., 2020). Their loneliness, isolation, and reduced well-

being were further amplified by the COVID-19 pandemic, preventing them from acclimatizing to their new environment (Allen et al., 2022). Lai et al. (2020) found that international students who stayed in their host country during the pandemic experienced higher levels of stress related to personal health and lack of social support, perceived stress, and more severe symptoms of insomnia compared to those who returned to their home country. Their survey indicated that more than 80% of the students perceived moderate to high stress, with females showing higher stress and lower resilience than males (Lai et al., 2020). Several studies reported that COVID-19 and the consequent lockdowns had a more negative impact on females than males, with female students showing more anxiety and increased risk of developing depression (Di Consiglio, 2021; Flesia et al., 2020; Prowse et al., 2021; Wang & Zhao, 2020).

In 2020, higher educational institutions around the world implemented campus shutdowns to control the spread of the COVID-19 pandemic (OECD, 2022). The prolonged closure of face-to-face teaching at universities demanded a transition toward a virtual approach to teaching (Allen et al., 2022). It was estimated that over 1.5 billion students were learning from home (UNESCO, 2020). While campus closures affected the continuity of learning and the delivery of courses for all students, lockdowns were particularly problematic for many of the 4.4 million international and foreign students (OECD, 2022). In addition, the use of technology became the only way to offer psychological services (Duan & Zhu, 2020; Jiang et al., 2020; Li et al., 2020; McGuire, 2020; Zhou et al., 2020). The possibility of effectively delivering similar services online via videoconferencing applications offers a chance to reach students coming and/or attending workshop from overseas, or simply from a different location, to join in and feel part of the college community without losing the human support aspect, as in stand-alone online interventions. Protecting the mental health of university students is a top priority; thus, the development and delivery of appropriate mental health support services are vital (Zhai & Du, 2020) in supporting students through these challenging times as well as in the future after the pandemic (Allen et al., 2022).

1.5 Acceptance and commitment therapy and psychological flexibility

1.5.1 Acceptance and commitment therapy

Acceptance and commitment therapy (ACT; Hayes et al., 2012) is a process-based cognitive behavioral therapy approach that has been used to effectively alleviate stigma and treat psychological distress (A-Tjak et al., 2015; Gloster et al., 2020; Masuda et al., 2007). While sharing many components with more "traditional" cognitive behavioral approaches, one fundamental characteristic of ACT is that the aim is not to modify or correct altered cognitions but, rather, to change the function of thoughts, emotions, and sensations that are the subject of fear or

avoidance (Hayes et al., 2004). One of the key components of ACT is value work, including descriptions of values and value-based actions. Another ACT characteristic relies on relatively nonlinear uses of language since language processes are themselves thought to be a primary source of rigid and ineffective repertoires. Therefore, ACT is heavily reliant on paradoxes, metaphors, stories, exercises, behavioral tasks, and experiential processes, with logical analysis playing a relatively limited role (Hayes, 2016).

The goal of ACT is psychological flexibility, that is, to help individuals understand and manage their thoughts, feelings, and actions in a way that allows them to live a fulfilling and meaningful life. ACT pays attention to both the context and meaning or function of our actions instead of focusing on influencing or fixing the difficulties that a person encounters in life. What the client is feeling, thinking, remembering, or otherwise experiencing, although important, is not assumed to be a core difficulty. The problematic stance is the way in which we react toward such difficulties. ACT therapists assume that it is not useful or healthy to attempt to rescue clients from the difficulties or challenges of growth. The focus in ACT is to enhance skills in order to handle these difficulties and challenges (Hayes, 2016).

The ACT acronym perfectly encompasses these principles: it is pronounced as a solid word that frames the concept of action and not as single letters spelled one by one: A = accept your thoughts and feelings and be present; C = choose a valued direction; T = take action (Harris, 2019). The desired outcome in ACT is to conduct a more mindful and values-congruent living, not symptom reduction per se, even if this usually occurs. ACT seeks to alter the person's relationship with the symptoms (e.g., anxiety or depressive cognitions) in a way that they no longer prevent the person from living in accordance with their own values. The aim of ACT is to create a rich, full, and meaningful life while accepting the pain that inevitably goes with it (Harris, 2019).

Overall, the ACT model has the potential to be applied and be effective in a broad range of mental health conditions and populations and settings. Furthermore, well-being could be enhanced through the training of specific psychological flexibility skills (Hayes, 2019). The interest in ACT has increased greatly in the last years. At the beginning of 2023, the randomized controlled trials published using the ACT-based methodology reached over 1,000 studies, and research is still growing (ACBS, 2023).

1.5.2 Psychological flexibility

Psychological flexibility is defined as the ability to contact the present moment as a fully aware and conscious human being as well as to change or persist in behavior according to personal values and what matters to oneself (Hayes et al., 2006). The concept of psychological flexibility (Figure 1) refers to a variety of dynamic, overlapping processes of shifting perspectives, relocating mental resources to meet current and future demands, and balancing between competing life domains and their associated needs (Kashdan & Rottenberg, 2010). The aim of ACT is to foster psychological flexibility skills through the following

six core processes: (1) acceptance, (2) defusion, (3) being present, (4) self as context, (5) clarification of personal values, and (6) committed action (Hayes et al., 2012).

Acceptance involves being actively open about and aware of one's own experiences, actively making room for unwanted private experiences. For example, it allows unpleasant thoughts and emotions to simply be as they are, through noticing and leaving space to come and go as they naturally do, without unnecessary attempts at changing their frequency or form, especially when doing so would cause psychological harm. It is fostered through committed actions based on personal values.

Cognitive defusion entails undermining the negative effects of cognitions by teaching skills aimed at creating distance from thoughts rather than trying to alter their form, frequency, or sensitivity. There are three levels of defusion: noticing, naming, and neutralizing the impact. Noticing is about being aware of your thoughts and feelings, followed by naming what the mind is telling us and how it is guiding our actions, and neutralizing their effect by gaining distance from them. Defusion suggests ways of changing how one interacts with or relates to thoughts by creating instances in which unhelpful functions are diminished.

Self-as-context can be conceptualized as awareness of awareness or consciousness of consciousness. It is a perspective from where to observe thoughts and feelings, a metaphorical container where they can move freely in and out as fish in an aquarium. It is a perspective from which individuals can become aware of their experiences without becoming overly attached to them.

Contact with the present moment is about flexibly attending to all experiences happening in the now. It is also referred to as mindfulness and defined as the ability to reach full consciousness and awareness in daily experiences in the here and now. The aim is to promote ongoing non-judgmental contact with psychological and external events as they occur.

Values are chosen qualities of purposive actions that can never be obtained as an object but can be chosen and performed or aspired to as an underlying characteristic to what each person deems as important. Values are leading principles guiding and motivating us as we move through life, representing how we wish to behave on an ongoing basis.

Committed actions have to do with encouraging the development of larger patterns of effective actions represented by the ability to choose what matters and act in the service of these choices by performing value-oriented actions. It entails awareness and reflection on what really matters to you and how you can structure your course of actions.

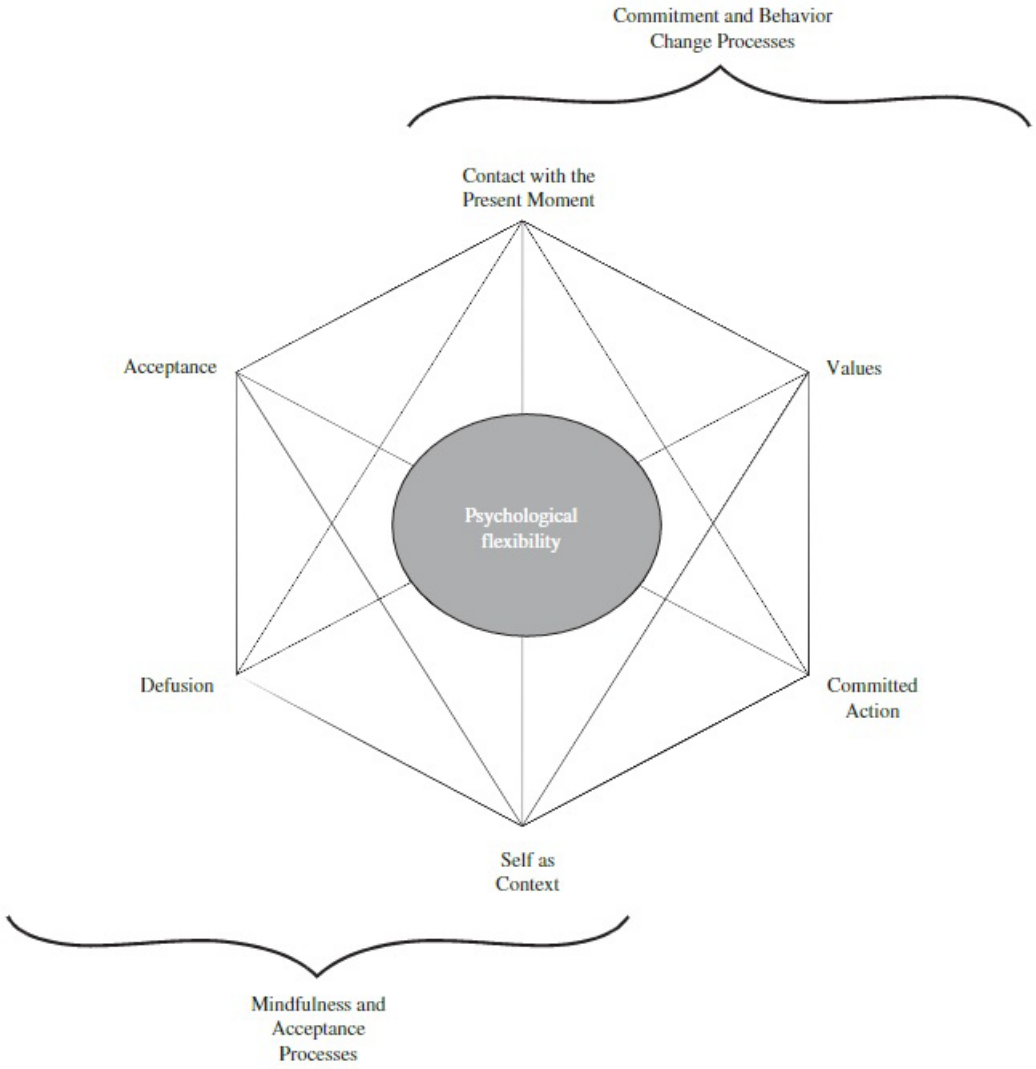


FIGURE 1 The psychological flexibility model (Hayes, 2006).

The core ACT processes overlap and are interrelated (Figure 1). These six processes can be differentiated into two groupings: mindfulness and acceptance processes and commitment and behavior change processes. The mindfulness and acceptance processes involve acceptance, defusion, contact with the present moment, and self as context (Hayes, 2006). In the ACT model, these mindfulness processes are all placed in the service of commitment and behavior change processes, including values and committed action (Hayes et al., 2012). The commitment and behavior change processes involve contact with the present moment, self as context, values, and committed action (Hayes, 2006). Contact with the present moment and self as context occur in both groupings because all psychological activity by conscious human beings involves the concept of the present moment (Hayes, 2006). Acceptance, mindfulness, and values seem to be powerful processes that have a broad impact on human functioning and predict positive outcomes when they are part of therapy (Hayes et al., 2012). ACT can

thus be defined as an intervention model that uses acceptance and mindfulness processes as well as commitment and behavior change processes to produce psychological flexibility (Hayes et al., 2012).

Empirical evidence supports psychological flexibility as the mechanism of action in ACT (Doorley et al., 2020; Hayes, 2016; Mallett et al., 2021; Stockton et al., 2019; Trompetter et al., 2015). Several studies have found higher levels of psychological flexibility to be associated with lower levels of health-related symptomatology, including stress, depression, and anxiety (e.g., Hayes et al., 2006; Lee & Orsillo, 2014). Higher levels of psychological flexibility have been found to predict better mental health, indicating that better flexibility skills may lead to improved psychological well-being and better quality of life (Hayes, 2019). Research has highlighted that psychological flexibility likely represents a fundamental set of skills critical to developing and maintaining well-being across many life domains (Kashdan & Rottenberg, 2010). Studies have also shown that psychological flexibility was a consistent moderator in the relationship between stressors and psychological distress symptoms, where higher levels of psychological flexibility were more protective (Gloster et al., 2017). Psychological flexibility is one resource that may help individuals stay engaged with their personal values and adhere to them daily, regardless of daily variations in environmental stressors (Finkelstein-Fox et al., 2020). For example, a study by Twohig et al. (2015) showed that changes in psychological flexibility in earlier sessions predicted decreases in OCD severity in later sessions. Furthermore, research has shown that psychological flexibility may reduce the impact of chronic pain in patients with low to moderately complex chronic pain conditions (McCracken & Velleman, 2010). Consequently, aiming to enhance psychological flexibility could promote various health outcomes (Gloster et al., 2017).

Studies with university student populations have shown that the training of psychological flexibility and mindfulness skills can increase the ability to respond more adequately to stressful situations, which may lead to improvements in a wide range of mental health outcomes (see, e.g., Danitz et al., 2016; Grégoire et al., 2018; Lee & Orsillo, 2014; Levin et al., 2014, 2016). For example, a recent study on the psychological flexibility profiles of Chinese college students showed that students with high psychological flexibility were the best at adjusting to college life and recorded the highest level of well-being, whereas students with low psychological flexibility were the worst at adjusting to college life and had the lowest level of well-being (Bi & Li, 2021). Practical and mental skills related to health, adaptation, resilience, and flexibility are considered protective factors in mental health (Biglan et al., 2008). For instance, clarifying values and working on flexibility and mindfulness skills are associated with symptom reduction and greater academic performance in graduate students (Paliliunas et al., 2018).

In addition, research has demonstrated a strong positive association between COVID-19-related hardship and distress (Pierce et al., 2020). One of the potential mediating factors of this relation is psychological flexibility (Hernández-López et al., 2021). There are indications that psychological

flexibility and four of its sub-processes (self-as-context, defusion, values, committed action) may mitigate the detrimental impacts of COVID-19 risk factors on mental health (Pakenham et al., 2020). Individuals high in psychological flexibility may be less affected by the adverse consequences of the COVID-19 pandemic (e.g., McCracken et al., 2021). Psychological flexibility can alleviate suffering and clarify how individuals deal with adversity and is a potential factor in improving well-being (Mallett et al., 2021). In addition, psychological flexibility has been proven to be a moderating factor in the relationships between social isolation and depression and anxiety (Smith et al., 2020), COVID-19 risk factors and mental health difficulties (Pakenham et al., 2020), and COVID-19 stressors and suicide risk (Crasta et al., 2020). In a recent study by Landi and colleagues (2022), psychological flexibility and four of its sub-processes (present moment awareness, defusion, values, and committed action) were found to be associated with higher post-traumatic growth in highly distressed subjects during the COVID-19 pandemic.

1.5.3 Psychological inflexibility

Psychological inflexibility, the counterpart to psychological flexibility, is defined as the inability to persist or change behavior in the service of one's own values (Hayes et al., 2006). Psychological inflexibility (Figure 2) is a pattern in which behavior is excessively controlled by one's thoughts and feelings or aimed at avoiding certain experiences (Levin et al., 2014). Juxtaposing the six core processes that aim to foster psychological flexibility are the six processes of inflexibility, which are related to psychopathology: (1) cognitive fusion; (2) experiential avoidance; (3) conceptualized past and feared future; (4) lack of values clarity; (5) inaction, impulsivity, or avoidant persistence; (6) attachment to the conceptualized self. These components bring more focus on the world within as a source of behavioral regulation, corroborating experiential avoidance patterns, narrowing behavioral repertoires, and becoming less sensitive to personal values and the actions that facilitate them (Hayes et al., 2006).

It has been posited that psychological inflexibility and experiential avoidance contribute to the development, maintenance, and exacerbation of a broad range of psychological problems (Levin et al., 2014). Psychological inflexibility has been found to be functionally related to a range of problems, including many of the major psychological disorders (Hayes, et al. 2006), such as mood and anxiety disorders (e.g., Venta et al., 2012), substance use disorders (e.g., Levin et al., 2012), and eating disorders (e.g., Rawal et al., 2010). Furthermore, it has been associated with a variety of addictive behaviors (e.g., Kingston et al., 2010), greater levels of psychological distress, rumination, and physical health problems (Lee & Orsillo, 2014; Ruiz & Odriozola-González, 2015; Stabbe et al., 2019). A recent metanalysis (Yao et al., 2023) conducted during the COVID-19 pandemic found that psychological inflexibility is an important risk factor for symptoms of depression, anxiety, and stress, which holds for people across different life stages and should therefore be targeted in interventions addressing mental health problems.

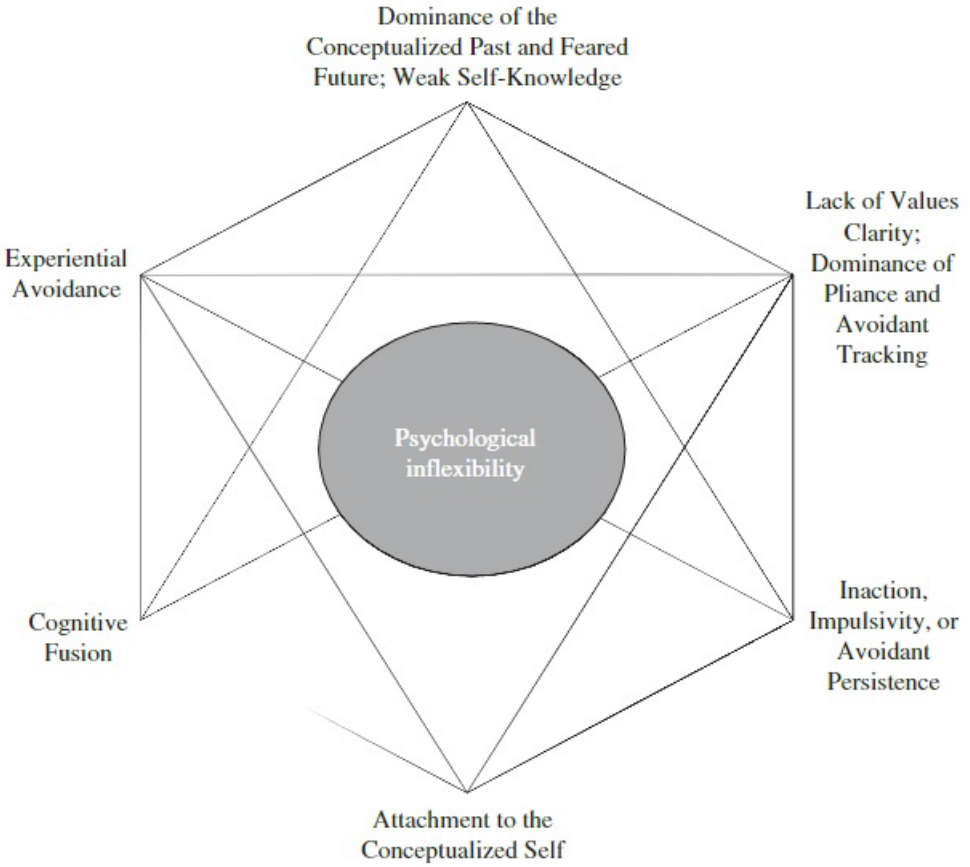


FIGURE 2 The psychological inflexibility model (Hayes, 2006).

Numerous studies have suggested that psychological inflexibility is associated with several mental health problems among university students, such as substance abuse, general psychological distress, depressive and anxiety disorders, eating disorders (Levin et al., 2014; Masuda et al., 2014; Masuda & Tully, 2012), and academic procrastination (Glick et al., 2014). Levin et al. (2014) found that psychological inflexibility was associated with a wide range of psychological disorders and comorbidities, in particular, depression and anxiety. In line with these findings, Tavakoli et al. (2019) reported that stress, worry, somatization, and generalized anxiety were associated with psychological inflexibility among ethnically diverse samples of college students. For example, among Indonesian college students, higher psychological inflexibility was found to be associated with higher perceived stress, loneliness, and depression (Radyani et al., 2022). Hernández-López and colleagues (2021) investigated psychological inflexibility and mental health symptoms in college students from the start to the end of the mandated lockdown period and found a strong relationship between psychological inflexibility and mental health symptoms throughout the pandemic.

1.5.4 Findings on processes of change

Several studies of university students have focused on the effectiveness of ACT-based interventions. However, there is a need for more studies of university populations to identify the processes through which interventions impact mental health. For example, Levin et al. (2017) showed that their ACT-based intervention helped reduce students' psychological distress through its effect on acceptance and values. Muto (2011), however, found that their bibliotherapy intervention for Japanese international students influenced the students' mental health symptoms through effects on general psychological flexibility (AAQ-II). Frögeli et al. (2016) showed that their intervention for nursing students reduced symptoms of stress and burnout through its effects on contact with the present moment. More recently, Morin et al. (2021) explored the processes of change within an ACT intervention for university students. Mediation analyses revealed that the intervention indirectly influenced symptoms reduction through its effect on acceptance and mindfulness processes but not commitment and behavior change processes, suggesting that contact with the present moment, acceptance, cognitive defusion, and self as context are important processes of change.

As the above-mentioned studies suggest, various kinds of psychological distress may be associated with different aspects of mindfulness and psychological flexibility. Similar findings have been observed in the studies of Gallego et al. (2020) and Kinnunen et al. (2020), who found that different aspects of mindfulness and psychological inflexibility may be related to different psychological outcomes. For example, openness to experiences is a key factor in developing interventions to cope with self-reported public speaking anxiety for undergraduate students (Gallego et al., 2020), while non-judging is perhaps the most important mindfulness facet for improvement in burnout interventions (Kinnunen et al., 2020).

1.5.5 Acceptance and commitment therapy interventions for university students

Research has posited that one of the key elements of psychological health is psychological flexibility (Hayes et al., 2012; Kashdan & Rottenberg, 2010), which is the ability to adapt to changing life circumstances (Knirsch, 2015). As previously stated, inflexibility has been found to be linked to academic procrastination and negative emotional states, such as stress, depression, and anxiety, among university students (Levin et al., 2014; Ruiz, 2014; Tavakoli et al., 2019). Masuda and Tully (2012) demonstrated that both mindfulness and psychological flexibility were inversely associated with somatic symptoms, depression, and anxiety in a non-clinical sample of college students, suggesting that psychological inflexibility is associated with a wide range of psychological distress. For these reasons, interventions to enhance student well-being through psychological flexibility skills are warranted.

ACT has been found to be effective among university students (Pistorello, 2013; Viskovich et al., 2021). A recent meta-analysis provided empirical evidence

in support of ACT, MBSR, and MBCT for reducing depressive and anxiety symptoms among college students showing no superiority for any of these approaches when compared to active control conditions, either when they were combined or considered separately (Ma et al., 2022). The effect size of ACT for depressive symptoms at post-intervention was significant (d = 0.28), but not for anxiety (Ma et al., 2022). A systematic review of five studies showed that ACT training, implemented in various formats, had a positive, albeit small, effect (d = .29) on student well-being (Howell & Passmore, 2019). These studies implemented a group-based training program (Gregoire et al., 2018; Stafford-Brown & Pakenham, 2012), bibliotherapy (Muto et al., 2011), a web-based ACT self-help program (Levin et al., 2014; Levin et al., 2020; Levin et al., 2016), a hybrid intervention combining face-to-face meetings with an online program (Räsänen et al., 2016), or an online peer support intervention (Gregoire et al., 2022). In addition, brief ACT training (Brief ACT for Undergraduates) has successfully been embedded within an undergraduate psychology course where lessons were delivered via the Zoom platform due to the COVID-19 pandemic (Browning et al., 2022). The results of this small pilot study (n = 22) showed that students significantly decreased their stress and anxiety levels. These studies suggest that ACT is promising in helping higher education students improve their academic success (Chase et al., 2013). ACT may alleviate anxiety and depression (e.g., Grégoire et al., 2018; Levin et al., 2014, 2016, 2020) and improve general psychological health, well-being, and stress management (Räsänen et al., 2016; Stafford-Brown & Pakenham, 2012) and can be used as a treatment in combination with counseling services (Levin et al., 2016; see also Pistorello, 2013).

Grégoire et al. (2021) have shown that students who report being more engaged in committed actions also report lower distress and greater well-being. Another recent ACT-based online course was shown to enhance student well-being and decrease stress (Katajavuori et al., 2021). Similarly, students showed significantly reduced levels of general psychological distress and negative emotional symptoms at follow-up—outcomes mediated by increases in psychological flexibility and mindfulness (Christodoulou et al., 2021). A recent study by Räsänen and colleagues (2020) examining mediators of well-being suggested that the use of practices focusing on non-reactivity—allowing thoughts and feelings to come and go without getting carried away by them—is important in enhancing the well-being of university students. The analyses revealed that changes in the non-reactivity subscale of mindfulness mediated changes in well-being, depression, and stress. A self-help digital intervention conducted during the COVID-19 pandemic improved well-being in students who reported persistent experiences of COVID-related distress; they felt better able to cope with general psychological distress, such as anxiety (Shepherd et al., 2022). In addition, an e-ACT study aiming to promote Malaysian university students' psychological flexibility and mental well-being showed that students with more psychological flexibility can make more mindful decisions that may help them pursue a rich and meaningful life, despite challenges (Chen et al., 2022).

Overall, these studies suggest that ACT-based interventions can help college students cope with the unique challenges they face and improve their mental health outcomes. Moreover, the knowledge gained from this research could serve to foster further studies as well as improve counselling services for students, with the aim of providing a better and more meaningful study experience.

1.5.6 ACT-based interventions for international students

ACT-based research examining international students remains scarce. ACT has been examined among Japanese international students attending college in the United States (Muto et al., 2011). In that study, 70 Japanese international students in the United States were randomly assigned to a waitlist (n = 35) or to receive an ACT self-help book on bibliotherapy intervention (n = 35), with access to a message board among each other. According to Muto and colleagues, translating and culturally modifying an existing ACT bibliotherapy workbook into Japanese and altering aspects of it to better represent Japanese culture and values provided a more culturally responsive intervention to Japanese international students. Those who received treatment were part of a 19-week study that included a pre-assessment, an eight-week engagement with a book, a post-assessment, and a follow-up after two months. The students in the intervention group were also able to interact with other participants through an online message board. The results showed that those participating in the intervention group showed significantly better general mental health and increased psychological flexibility at the post- and follow-up measurements (general mental health, within-group effect size, d = .98). Also, the students who received treatment after the waitlist condition showed significant improvement in their general mental health and psychological flexibility. The observed changes in mental health were found to occur through effects on general psychological flexibility (AAQ-II).

Recently, a novel study piloted a small ACT-based group intervention focused on helping Chinese students manage stress when studying abroad (Xu et al., 2020). The intervention protocol was developed from a well-established ACT work-stress protocol based on the core processes of ACT and adapted for the Chinese international student population. Eight students attended an ACT group intervention: one group had two participants, and the other two groups had three participants each. The ACT intervention consisted of two two-hour sessions spaced one week apart. There was a post-assessment at the end of the intervention and follow-up measures one month after the intervention. The outcome measure in this study were the Chinese versions of the Depression, Anxiety, and Stress Scales-21 (DASS-21; Lovibond & Lovibond, 1995) and the Patient Health Questionnaire (PHQ-15; Kroenke et al., 2002). Furthermore, the Chinese version of the Acceptance and Action Questionnaire-II (AAQ-II) was used to monitor changes in psychological flexibility (Cao et al., 2013). The results showed reductions in depression, stress, anxiety, and physical symptoms at post-intervention and that these changes were maintained at the one-month follow-up (Xu et al., 2020).

In conclusion, the research suggests that ACT interventions can be effective in promoting international students' well-being. These interventions can provide international students with tools and skills to increase their psychological flexibility, that is, skills to handle stressful or unpleasant thoughts and emotions and act toward values-based goals. Increased psychological flexibility can help international students to effectively cope with the unique challenges they face. Furthermore, ACT interventions can have a positive impact on overall well-being. However, only few studies have investigated the acceptability and effectiveness of ACT-based interventions among international students.

1.5.7 ACT-based interventions delivered online and via videoconference

The application of low-intensity treatments delivered online provides a possibility to improve access to treatment for common mental disorders (Andersson et al., 2019). Recent advances in technology have resulted in an increase in online interventions, telehealth, and over-distance ways of delivering mental health services. These have become increasingly popular due to their flexibility, accessibility, and cost-effectiveness. Ample research has demonstrated that ACT online interventions have been effective in treating a variety of mental health conditions, such as depression in adults and caregivers (Lappalainen et al., 2014, 2019), general psychological distress, social anxiety, well-being, stress management in students, COVID-19-related distress (Katajavuori et al., 2021; Levin et al., 2016, 2017; Räsänen et al., 2016; Shepherd et al., 2022), well-being, academic buoyancy, psychological flexibility, and self-compassion (Lappalainen et al., 2021, 2023; Puolakanaho et al., 2019). These interventions typically include modules to complete mindfulness and values-based exercises and support delivered by a coach or therapist. However, Levin and colleagues (2021) also showed that online self-guided ACT interventions with email prompts appear sufficient in addressing college students' mental health, with phone coaching providing minimal additional benefits. Another common format for online therapy delivery is videoconferencing, which allows real-time communication and personal exchange as face-to-face encounters through a computer software in people's own home.

Videoconferencing provides an alternative to in-person meetings in the delivery of and accessibility to mental health treatments. It is a flexible and cost-effective tool, making it an interesting option to render mental health treatment more comprehensive for a greater number of people. The most obvious benefit of videoconferencing is that it facilitates access to people from rural or geographically remote areas and reaches potentially isolated or housebound groups and people who would otherwise be unable to access any therapy (Thomas et al., 2021). A systematic review by Thomas et al. (2021) maintained that videoconferencing was an accessible and effective modality for therapy delivery. Banbury and colleagues (2018) reported that the acceptability and effectiveness of group videoconferencing was high in different age- and content-related groups. Videoconferencing outcomes are similar to those of in-person groups, and the videoconference tool helps in overcoming many barriers to

accessing face-to-face groups. Other recent meta-analyses have suggested that videoconferencing interventions consistently produce treatment effects that are largely equivalent to those of in-person interventions (Batastini et al., 2021; Varker et al., 2018). Further, Thomas and colleagues (2021) reported in their systematic review that clients rate therapeutic alliance and satisfaction similarly to those of in-person therapy.

With the advent of COVID-19, a sudden shift forced many therapists to close their offices and start delivering psychotherapy online through a screen (Fernández-Àlvarez & Fernández-Àlvarez, 2021). The use of videoconferencing applications was noticeably accelerated during the COVID-19 pandemic (Billingsley, 2020). Many therapists preferred this modality as it proved to be equally efficacious for a range of mild conditions, although the possibilities for in-person therapy still appeared superior (Fernández-Àlvarez & Fernández-Àlvarez, 2021).

Previous studies have found videoconference ACT to be effective in reducing symptoms of depression, anxiety, and stress in Iranian adolescents, along with improvements in worry, emotion regulation, and intolerance of uncertainty (Zemestani et al., 2022). A decrease in distress and increases in functioning, engagement, and valued action were also reported following a brief two-session telehealth ACT-based intervention for inflammatory bowel disease (IBD; Lavelle et al., 2022). Furthermore, telehealth ACT showed positive effects over psychological consequences related to chronic pain (Herbert et al., 2017), post-traumatic stress syndrome (Muscara et al., 2020), borderline personality disorder (Zimmerman et al., 2022), and social anxiety (Gershkovich et al., 2016; Yuen et al., 2013). Yuen and colleagues (2019) investigated the feasibility and efficacy of a pilot twelve-session ACT group videoconferencing intervention for public speaking anxiety with participants in separate physical locations. They found significant improvements in social anxiety symptoms from the pre-treatment to the follow-up, with high levels of patient satisfaction. Brief ACT videoconference training for university students was also embedded in an undergraduate course during the COVID-19 pandemic (Browning et al., 2022) and decreased symptoms of stress and anxiety.

The use of videoconference interventions has become especially important in contexts where social distancing is necessary, as in the COVID-19 pandemic. Furthermore, group interventions delivered via videoconference have grown exponentially with COVID-19 (Marmarosh et al., 2020), suggesting that they are effective at reducing depression, anxiety, and stress and allowing group cohesion similar to that of in-person group therapy (Gentry et al., 2019; López et al., 2020). Group cohesion helps with survival during distressing times (Marmarosh et al., 2020); therefore, groups can be important when treating people suffering during COVID-19 and can be critically beneficial to mental health and coping with COVID-19 (Marmarosh et al., 2020).

In sum, videoconferencing interventions present several advantages and are an effective means to deliver psychotherapy for adults with mental health problems, such as post-traumatic stress, anxiety, depression, eating disorders,

and obsessive-compulsive spectrum disorders (Thomas et al., 2021). Psychological interventions via videoconference will be expanded and hopefully integrated as a modality through which complex psychotherapeutic interventions can be delivered (Fernández-Àlvarez & Fernández-Àlvarez, 2021). Even after the COVID-19 pandemic, telemedicine has the potential to offer more equitable, accessible, and differentiated care to vulnerable populations (Phan et al., 2022). For these reasons, further research in this area is necessary.

1.6 Research aims

Several studies have revealed concerning rates of psychological distress among international students. Therefore, brief interventions that support their well-being are warranted. There is also a need for interventions that do not only target psychological symptoms but also enhance psychological flexibility skills (Masuda & Tully, 2012) since these skills are associated with psychological well-being. An ACT approach could provide treatment that specifically targets these aims.

The aim of this dissertation was to understand and analyze the problematics and psychological distress presented by international university students attending JYU in Central Finland. Considering the large number of students experiencing psychological problems, in particular, international students, there is a need for more research on various types of interventions and the ways in which to deliver them. Overall, ACT-based interventions targeting students have been found to be effective in promoting their overall well-being and psychological flexibility (Howell & Passmore, 2019; Räsänen et al., 2016). However, research investigating ACT delivery among international students remains scarce. Therefore, there is a need for more research on how ACT can be delivered to international students in an effective and acceptable way.

During times of immense difficulty, such as the COVID-19 pandemic, there is an especially urgent need for effective psychological procedures to enhance mental well-being. Based on earlier observations, we concluded that it was important to examine and pay attention to the potential contribution of psychological inflexibility or flexibility to the psychological distress of international university students as they are at greater risk of psychological problems than the general student population. In addition, there is limited research on the mental health of this student population in European countries. Last, this knowledge could help us develop interventions and counseling services that could enhance the overall well-being of students when they pursue education abroad.

The studies presented in this dissertation focused on the application of the ACT model as a framework to better understand and impact psychological well-being in international university students. The first study investigated the psychological flexibility processes as predictors of the symptoms displayed by these students when they voluntarily decided to join an intervention to improve

their well-being and study life. The second study analyzed the effectiveness and acceptability of the group-delivered face-to-face ACT intervention as well as processes of change explaining the changes observed. Lastly, the third study investigated the effectiveness and acceptability of the videoconference-delivered intervention, which was a forced shift during the pandemic years, and explored similarities and differences with the face-to-face intervention as a reference group.

The research questions and aims of **Study I** were set as follows: to (1) examine which psychological flexibility skills based on the ACT model were associated with symptoms of stress, depression, and anxiety and (2) to determine which of these skills could most strongly predict stress, depression, and anxiety.

In **Study II,** the main objective of the pilot study was to examine (1) whether a brief group-based ACT workshop would be effective at reducing psychological symptoms and increasing psychological flexibility skills among international university students experiencing study-related stressors. We hypothesized that participation in a five-week workshop would decrease symptoms of perceived stress, depression, and anxiety and increase psychological flexibility skills. (2) The second objective was to enhance our understanding of psychological processes or, more precisely, skills connected to favorable changes in psychological symptoms among international university students. We expected that a decrease in psychological inflexibility and an increase in mindfulness and engaged living skills would predict a reduction in symptoms of stress, depression, and anxiety. Furthermore, we were interested in identifying which of these psychological skills acted as the strongest predictors of change in psychological symptoms.

Lastly, in **Study III**, the aim was to investigate the impact of variously delivered ACT-based group interventions (videoconference vs. face-to-face) in terms of efficacy and acceptability. In the spring of 2020, the pandemic forced us to shift from a group-based in-person intervention offered to international university students to a group-based intervention delivered through the Zoom videoconferencing platform. Thus, we had the opportunity to study the impact of a distance-delivered intervention during the pandemic. As we were unable to randomize the participants to the two interventions, and the context of the delivery differed (no-pandemic vs. pandemic), the comparison between the procedures was problematic. However, we were interested in whether the distance intervention (ACT videoconference) would be beneficial to a group of international university students during the distressing pandemic period. To evaluate the usefulness of the intervention, we used our previous face-to-face intervention as a reference group (ACT face-to-face). The reference group offered us the possibility to control the effect of attention and repeated measurements and increase the validity of the findings. We were particularly interested in (1) investigating the impact of the videoconference intervention on psychological symptoms such as stress, anxiety, and depression and psychological flexibility skills. We also wanted to (2) study the exposure–response relationship, that is, the relationship between the number of sessions completed and the magnitude of change. Moreover, we were interested in (3) investigating the adherence,

acceptability, and user experiences of the ACT-based intervention delivered via videoconference to international university students during the pandemic. The findings of this study can be used to provide insight into whether engagement in an ACT intervention delivered via videoconference could be a feasible alternative to ACT-based in-person interventions.

2 METHOD

2.1 Participants

The participants of studies I, II, and III were recruited through an advertisement on the JYU campus. Flyers were distributed on site and through email lists and newsletters as well as social media platforms such as Facebook, Instagram, and WhatsApp groups. Ads were directed to international university students, inviting them to participate in a group intervention consisting of five weekly meetings. The ad specified that the aim of the workshop was to promote student well-being and that it would cover topics such as how to more effectively adapt and cope with life and study-related stressors and mindfulness and how to engage in life and studies in a more meaningful way. The participants were required to be enrolled as international students at JYU, be at least 18 years old, and have access to the Internet. International university students who were already participating in a psychological intervention or receiving psychological therapy were excluded from the study. Students who indicated via email or registration form that they were willing to participate in the workshop were then contacted via email to schedule the first interview. Between the falls of 2017 and 2019, the workshops were administered through in-person group-based sessions. Thus, during the COVID-19 pandemic from the spring of 2020 to the fall of 2021, meetings took place via Zoom videoconference workshops in group format. The study was conducted under the ethical approval provided by the board of Central Finland Healthcare District's Ethics Committee. Informed consent was obtained from all participants as part of the recruitment process.

In **Study I**, the analyses included pre-measurement data from a total of 103 international university students. The participants' ages ranged from 18 to 46 years; the average age was 25.93 (SD = 5.78); and most participants were female (n = 82; 80%). Nearly half of the participants were on exchange (n = 47; 46%), and the other half were degree students (n = 56; 55%). The students' background can be described as heterogeneous, comprising nearly 40 nationalities, with most

students coming from Asia (n = 29; 28%), Central Europe, and the Baltic countries (n = 22; 21%; see Figure 3).

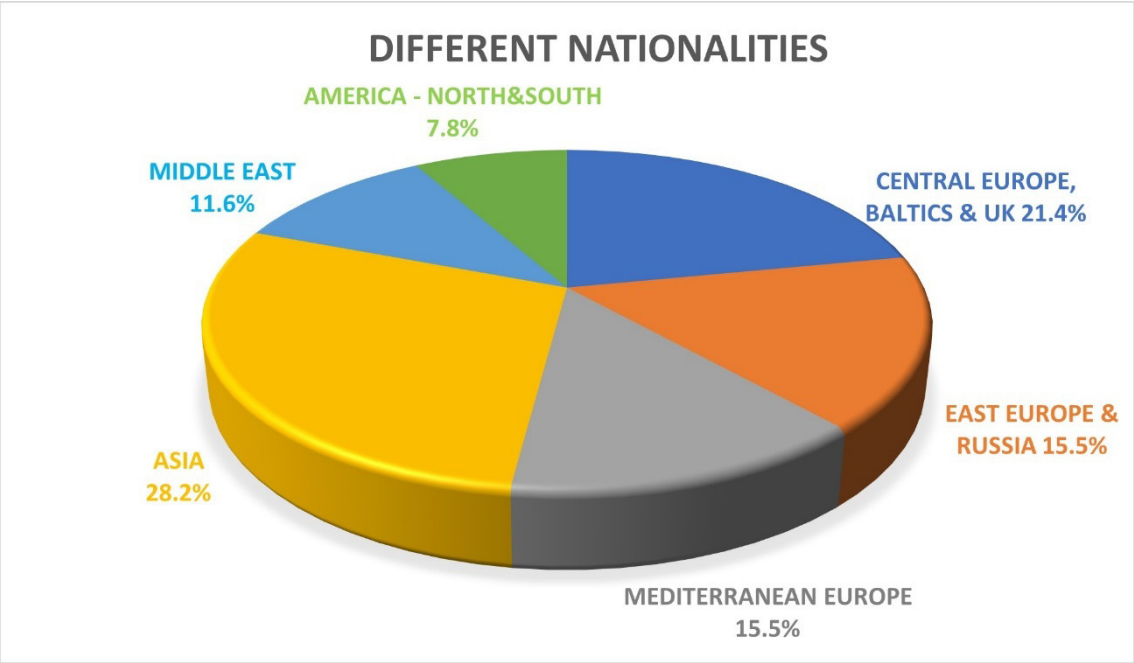


FIGURE 3 Percentages of students (Study I, n = 103) from different nationalities.

In **Study II**, a total of 53 international university students participated in an ACT-based group intervention (Figure 4). The students participating in this study attended the intervention in person between the Fall of 2017 and the Fall of 2019. Their average age was 26.09 (SD = 6.49), and most of them were female (n = 44; 83%). Around half of the students were pursuing degree programs (n = 29; 54.7%), and the other half were exchange students (n = 24; 46.3%). The students belonged to a variety of ethnicities and 28 nationalities, with most coming from Asia (n = 17; 32%).

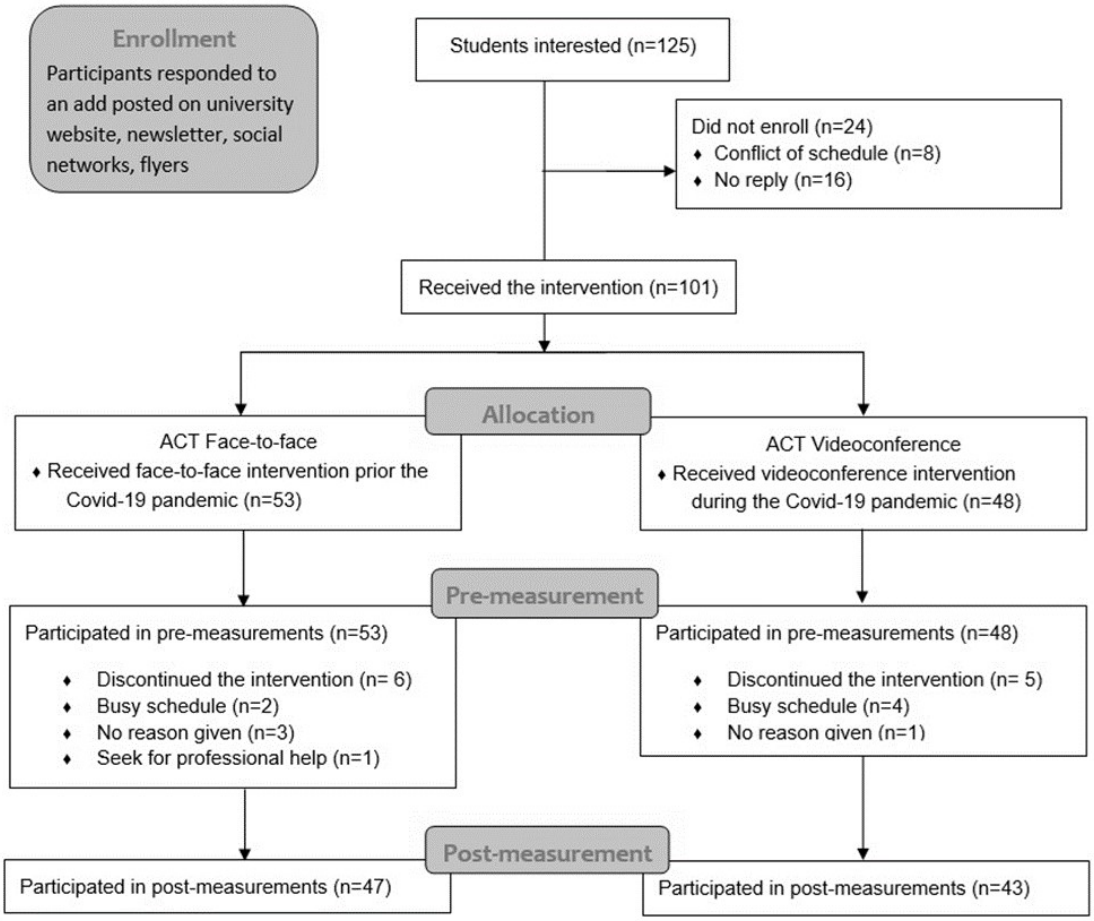


FIGURE 4 Flow of participants in face-to-face and videoconference interventions.

In **Study III**, the ACT videoconference group (n = 48) was compared to a reference group, the ACT face-to-face group (n = 53; Figure 4). The students participating in the videoconference intervention attended the workshop between the Spring of 2020 and the Fall of 2021. Post-measurements were collected seven to eight weeks after the start of the intervention from 47 participants (89%) in the ACT face-to-face workshop and 43 participants (90%) in the ACT videoconference workshop. The average age of the participants was 26.09 (SD = 6.49), ranging from 18 to 46 years, and most of them were female (n = 80; 79%). About half of them were degree students (n = 55, 55%), representing nearly 40 nationalities, with nearly 30% of them coming from Asia (n = 29; 29%). A more detailed description of the nationalities and the categories they were grouped into is highlighted in Table 1. Note: participants were not randomly divided into the two intervention groups (Figure 4).

TABLE 1 Participant Characteristics (Study I, n = 103).

Country of origin	n	%
Asia: China, Indonesia, Vietnam, India, Kazakhstan, South Korea, Uzbekistan, Nepal, Azerbaijan, Bangladesh, Japan	29	28.2
Central Europe, Baltics & UK: United Kingdom, Germany, Netherlands, Latvia, Lithuania	22	21.4
East Europe & Russia: Russia, Bulgaria, Czech Republic, Hungary	16	15.5
Mediterranean Europe: Spain, France, Italy, Greece, Cyprus, Portugal	16	15.5
Middle East: Turkey, Iran, Egypt, Israel	12	11.6
America North & South: Uruguay, Costa Rica, Canada, Brazil, Colombia, United States	8	7.8

2.2 Procedure and measurements

In **Study I**, the analyses included pre-measurement data from the 103 study participants, who were asked to fill out self-report questionnaires at pre-measurement. In **Study II** and **Study III**, questionnaires were filled out at pre-assessment before starting the group intervention and at the end of the workshop seven to eight weeks from the pre-assessment interview.

The primary outcome measures in all three studies were perceived stress, and psychological (in)flexibility. Symptoms of stress were evaluated by the Perceived Stress Scale (PSS-10 (Cohen et al., 1983; Cohen & Williamson, 1988). Psychological inflexibility was measured by the Avoidance and Fusion Questionnaire for Youth (AFQ-Y; Greco et al., 2008), which assessed increases in flexibility skills by decreases in non-adaptive inflexibility patterns such as avoidance of thoughts and emotions distinctive of many psychopathologies. Secondary outcome measures were the symptom measures of depression and anxiety and the process measures of mindfulness and engaged living skills. The presence or absence of depressive symptoms was assessed by the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001). The level of generalized anxiety was determined by the Generalized Anxiety Disorder Assessment (GAD-7; Spitzer et al., 2006). Mindfulness skills were evaluated by the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). Finally, the ability to act along with one's values was measured by the Engaged Living Scale (ELS; Trompetter, 2014). A detailed description of the questionnaires used in the three studies is found in each of the published articles (see also Table 1). Items of the FFMQ (Baer et al., 2006) and ELS (Trompetter, 2014) are presented in the Appendix (p. 97-99).

TABLE 2 Assessment measures and phases for assessment.

Measures	Measure description	Scale	Time of assessment
Symptom measures			
The Perceived Stress Scale (PSS-10) Cohen et al., 1983; Cohen & Williamson, 1988	Main outcome measure Level of stress perceived in the last month. The total score with a minimum of 13 indicates low, 14 to 26 moderate, and 27 to 40 high levels of stress.	10 items on a five-point Likert scale (0 = never, 4 = very often).	Study I: pre-measurement Study II and III: pre- and post-measurement
The Patient Health Questionnaire (PHQ-9) Kroenke et al., 2001	Level of depression according to the DSM-IV. A total score of less than 4 is indicative of an absence of minimal levels of depressive symptoms, 5 to 9 mild, 10 to 14 moderate, 15 to 19 moderately severe, and over 20 severe depression.	9 items on a scale of 0 (not at all) to 3 (nearly every day).	Study I: pre-measurement Study II and III: pre- and post-measurement
The Generalized Anxiety Disorder Assessment (GAD-7) Spitzer et al., 2006	Level of generalized anxiety in the last two weeks. Scores below 5 indicate minimum levels of anxiety, scores from 5 to 9 mild, 10 to 14 moderate, and above 15 high levels of anxiety.	7 items on a scale from 0 (not at all) to 3 (nearly every day).	Study I: pre-measurement Study II and III: pre- and post-measurement
Process measures			
The Avoidance and Fusion Questionnaire for Youth (AFQ-Y) Greco et al., 2008	Main outcome measure Level of psychological inflexibility, referring to the non-adaptive avoidance of thoughts and emotions	17 items on a scale from 0 to 4 (0 = not at all true, 4 = very true).	Study I: pre-measurement Study II and III: pre- and post-measurement
Five-Facet Mindfulness Questionnaire (FFMQ) Baer et al., 2006	Level of mindfulness skills with a total score and five subscales: Observing (FFMQ-Ob), Describing (FFMQ-Des), Acting with awareness (FFMQ-Aw), Non-judging (FFMQ-Nj), and Non-reacting (FFMQ-Nr)	39 items on a five-point scale ranging from 1 (never or very rarely true) to 5 (very often or always true).	Study I: pre-measurement Study II and III: pre- and post-measurement
The Engaged Living Scale (ELS) Trompetter, 2014	Ability to engage in actions in accordance with their values. Consists of two subscales: valued living (ELS-VL), measures the ability to identify one's own values, and life fulfilment (ELS-LF), evaluates the ability to act in accordance with one's values.	16 items on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).	Study I: pre-measurement Study II and III: pre- and post-measurement

2.3 Intervention

2.3.1 The interventions

No intervention was carried out in **Study I**. Instead, Study I investigated levels of stress, depression, and anxiety among international university students at pre-measurement as well as which psychological skills acted as predictors of these symptoms.

In **Study II** and **Study III**, a five-session intervention in group format based on ACT was delivered by two group leaders. Prior to the workshops (i.e., one week before the start), students in Study I and Study II were invited to participate in an individual semi-structured psychosocial interview based on the model adapted from Strosahl et al. (2012). The purpose was to obtain an overview of the students' situation and provide general information about the intervention. The key difference in the ACT intervention conditions was the delivery format. The interviews and workshops in group format were delivered in-person (ACT face-to-face) or via the Zoom videoconference application (ACT videoconference). Similarly, during the pre-assessment phase, the participants either received a link to complete a set of online questionnaires (ACT videoconference) or completed online questionnaires on site (ACT face-to-face).

The workshop meetings were conducted in English and led by two coaches who were trainee psychologists, later becoming postgraduate researchers trained in the application of ACT models. The intervention was based on earlier brief ACT interventions developed by the research group at JYU (see, e.g., Lappalainen et al., 2014; Lappalainen et al., 2021; Räsänen et al., 2016). During the intervention, the workshop facilitators were supervised by a psychologist and supervisor with more than 20 years of experience in ACT. All participants provided written informed consent during the initial interview. During the initial meeting, the participants were informed about the study and had the opportunity to ask questions.

2.3.2 The face-to-face intervention

Study II examined the effectiveness and acceptability of the face-to-face-delivered ACT workshop (ACT face-to-face) for international university students. In Study III, the ACT face-to-face intervention was used as a reference group.

Between the autumn semesters of 2017 and 2019, the workshops (n = 7) were administered through face-to-face group sessions. Five group meetings followed a 90-min workshop format and totaled 7.5 hours for the workshops and 2–2.5 hours for individual assessment and feedback (2 × 1–1.5 hours). The intervention was completed in groups of five to 12 students, with two group facilitators in each group. A different ACT process was introduced each week (Table 3). Each workshop meeting started with a mindfulness exercise focusing on the contents of the meeting. Second, at the beginning of each session, the past week's theme was summarized, followed by a discussion in pairs. Next, the topic

and core message of ACT were introduced, and a variety of experiential exercises and metaphors, including animated videos, were utilized (Table 3). Each group meeting closed with a home assignment to be conducted throughout the week, including ACT skills for application in daily life.

2.3.3 The videoconference intervention

Study III investigated the efficacy and acceptability of the workshop delivered as a videoconference intervention (ACT videoconference). During the COVID-19 pandemic (i.e., starting from the spring of 2020 to the fall of 2021), we offered the workshops (n = 5) remotely through the Zoom videoconferencing tool. Participants were invited to have their cameras on during the group meetings, however, we let them decide whether they wanted to turn their cameras off during the mindfulness exercises. Minor adjustments were made due to the delivery format and the COVID-19 lockdown. For example, the mindfulness exercises were shortened, and the Face Covid protocol (by Harris, 2020) was introduced. In addition, in the discussions, the participants were encouraged to talk about the current COVID-19 situation (see Table 3 for details). A website (https://ok.jyu.fi/en) was introduced to provide text and audio exercises on the concepts discussed and the ACT skills to be practiced. Extra material was sent to the students via email the day after each workshop (see Table 3). The protocol for the videoconference group intervention followed the same structure and content as that of the face-to-face group intervention (see Table 3)

TABLE 3 Structure and Themes of the Intervention (ACT face-to-face group vs. CT videoconference group).

Theme	Module content	Discussion and Exercises	Home assignment	Adjustment and additional resources for the Videoconference intervention
Individual Pre-Assessment	Informed consent. Psychosocial interview to get a sense of the participant's current situation, problems, and level of functionality		Pre-measurements: online questionnaires	Informed consent sent via email, signed digitally, or printed and scanned. Interviews via the Zoom videoconference app.
Group Meeting 1: Introduction and Values	**Find out what is important to you.** Introduction, introducing each other, experiences of international university students. Defining values.	Discussion: Why are you here as an international student? Exercises: Two kids in a car, Value cards, 80th birthday. Video: Values vs goals	Clarifying one's own values – Find out which areas are a priority now. Video: The unwelcome party guest.	Introduction of the Face Covid protocol and related discussion. Additional exercises on the website: The Compass; Scary passengers; Clarifying your values.
Group Meeting 2: Take action	Engage with the important things in your life. Value-based actions. SMART goals, FEAR and DARE moves. Obstacles to actions.	Discussion: How do you connect your actions to your values? Exercise: Zorg the alien. Videos: The choice point Discussion: Feelings of being an outsider	Defining goals: Immediate, short, semi-long, and long term. Commitment to taking valued actions. Video: Ted Talk –Becoming a mad scientist with your life.	Additional exercises on the website: Trip to the theme park; The dice; Three steps to setting goals

Group Meeting 3: Mindfulness	Be present in this moment. How to be mindful in the here and now in daily life.	Videos: Mindfulness is a superpower; How mindfulness empowers us. Exercises: Body scan; Mindfulness of the hand; Time machine. Discussion: How to be more engaged and focused on this experience here and now.	Being mindful in daily activities: eat, cook, shower. Audio exercise: "Hexaflex" Video: Ted Talk – Want to be happier; stay in the moment.	Additional exercises on the website: Mindful breathing; Three senses; Mindful listening; Dropping the anchor
Group Meeting 4: Get out of your mind (Cognitive Defusion)	Watch your thinking and don't get caught up in it. An observer's perspective on thoughts and feelings	Exercises: Watch your thinking; I'm having the thought that… Mind as storyteller; Say it in another language, weakening of language control. Videos: Internal struggle; Struggle switch. Discussion: How to take distance from thoughts and negative judgements about studying abroad?	Taking distance from your thoughts: Defusion techniques sheet. Audio exercise "Leaves on the stream" Video: Ted Talk – How to make stress your friend.	Additional exercises on the website: Terrier thoughts; Observer; Treat your mind as a separate person; Do the opposite; Label your thoughts; The lecture room.
Group Meeting 5: Acceptance and Compassion	Embrace all your thoughts and feelings. Acceptance of thoughts and feelings	Exercises: The sky; The continuous you. Connection to values, value cards. Connection to self-compassion. Videos: Three happiness myths; Sadness Comforts Bing Bong. Summary of psychological flexibility. Discussion: How to reconnect the studying abroad experience with values and a more open attitude.	Write down three things you learned from this workshop. Video: Ted Talk – How love turns pain into purpose.	Additional exercises on the website: Exploring emotional strategies; Giving space to your emotions; Two friends; What am I willing to accept?
Individual Post-measurements and feedback	Final interview Evaluating the student's situation.		Post-measurements: online questionnaires and feedback	Interviews via the Zoom video conference app. Questionnaire link was delivered via email.

2.4 Statistical analysis

In **Study I**, a pre-assessment analysis was conducted to describe the amount of psychological distress among the participants. We were interested in examining how many students were reporting minimal, low, moderate, and high levels of symptoms. Second, we investigated the associations between symptom measures (PSS-10, PHQ-9, GAD-7) and process measures (AFQ-Y, FFMQ, ELS) using Pearson's correlations. Correlations of $r < 0.30$ were considered small, correlations of $r \geqslant 0.30$ and $r < 0.50$ medium, and correlations of $r \geqslant 0.50$ strong (Kraemer et al., 2003). Linear regression analyses were performed to investigate which components of psychological flexibility, in particular, the different mindfulness facets (FFMQ-Ob, FFMQ-De, FFMQ-Nj, FFMQ-Nr, FFMQ-Aw), and engaged living skills (ELS-VL, ELS-LF) made significant contributions to the prediction of stress (PSS-10), depression (PHQ-9), and anxiety (GAD-7). We wanted to understand the subskills in psychological flexibility as predictors. Therefore, the AFQ-Y was not included in the regression analysis as it generally measures psychological inflexibility. The FFMQ and ELS total scores were not included in the regression analysis because of their high correlation with the subscales. We included in the regression analysis components that significantly correlated, with at least a medium ($r \geqslant 0.30$) coefficient, with stress, depression, and anxiety. We first employed the enter method and entered the predictors in order of the level of the correlation coefficient, starting from the strongest correlation. After identifying the significant predictors, we applied the stepwise method and investigated the contribution of the individual predictors (FFMQ and ELS subscales). The variance inflation factors (VIF) were in acceptable range ($VIF < 2.5$), indicating that multicollinearity was not a problem.

In **Study II**, descriptive statistics were computed in the IBM Statistical Package for the Social Sciences (SPSS) to provide an overview of the mean values and standard deviations of the change scores from the pre- to post-measurements of the symptom and process measures. Structural equation modelling (SEM) in the Mplus statistical package was used to investigate the within-group changes from the pre- to post-measurements. The analysis included all the participants who completed the pre-measurement ($n = 53$). Therefore, the within-group changes were described using estimated mean values. In addition, within-group effect sizes (ESs) were reported using Cohen's d (1988) to obtain an estimation of the magnitude of the changes. An ES of $d = 0.20$ was considered small, $d = 0.50$ medium, and $d = 0.80$ large. We further investigated the clinical significance of the intervention by studying how many students were reporting moderate and high levels of symptoms of anxiety (GAD-7) and depression (PHQ-9) at the pre- and post-measurements ($n= 47$).

In addition, we conducted multiple (linear) regression analyses in SPSS ($n = 47$) to determine whether changes in the psychological flexibility measures (AFQ-Y, FFMQ, ELS) predicted changes in the symptoms of stress (PSS-10),

depression (PHQ-9), and anxiety (GAD-7). Two separate analyses were performed. First, the total scores of the AFQ-Y, FFMQ, and ELS were used as independent (predictor) variables. Second, the subscales of the FFMQ and ELS were investigated as independent (predictor) variables. We then selected only those process variables that significantly correlated ($p < 0.05$) with the changes in the symptom measures. We performed the regression analyses using the stepwise model and verified the results using the enter method. The two methods resulted in identical conclusions. Furthermore, we tested whether multicollinearity was a problem by calculating tolerance and the variance inflation factors (VIF; Kutner et al., 2004). The selected variables did not represent a problem of multicollinearity as the VIF scores were under 3.0.

In **Study III**, t-tests and chi-square tests in SPSS were used to analyze the baseline differences between the videoconference and reference intervention (the face-to-face) groups. Latent change score (LCS) models in Mplus were used to investigate whether changes in the face-to-face and videoconference groups differed between the pre- and post-measurements. They were represented by the Wald test score and the associated p-value. All the available information was used in the analyses, and missing data were assumed to be missing at random. All participants who completed the pre-measurements were included in the analyses. The ESs were reported using Cohen's d. The corrected between-group ES was calculated by dividing the change in the mean difference between the face-to-face and videoconference groups by the mean of the standard deviation of the pre-measurement (Face:MPre – Mpost + Online: Mpost-MPre) divided by ((Face:SDpre + Online: SDpre) divided by 2), the Excel formula: A4-C4+H4-F4)/((B4+G4)/2). To interpret Cohen's between- and within-group d, an ES of 0.20 was considered small, 0.50 moderate, and equal to or above 0.80 large (Cohen & Williamson, 1988). To calculate Cohen's d for the within-subjects ESs, we used the average standard deviation of both repeated measures as a standardizer, as recommended by Lakens (2013). We expected both interventions to have an impact on our outcome variables; therefore, we interpreted that the intervention had shown beneficial effects when the within-group 95% confidence interval (CI) for the within-group ESs did not include zero; thus, the lower range of the 95% CI for the d-value was positive and larger than zero.

All analyses were completed using SPSS version 24-26 and Mplus version 8 (Muthén, 1998). A summary of the statistical analyses for all three studies is presented in Table

TABLE 4 Summary of the variables and analysis used in Studies I, II and III.

Study	Sample	Variables	Analysis
Study I	Pre-assessment participants (n = 103)	Mindfulness facets: Acting with awareness (FFMQ-Aw) Non-judging (FFMQ-Nj) Non-reacting (FFMQ-Nr Engaged living skills: Life fulfilment (ELS-LF) Symptoms: Perceived Stress (PSS-10) Depression (PHQ-9) Anxiety (GAD-7)	Symptoms screening (pre-assessment) Correlations and reliabilities internal consistencies (Cronbach alpha, α) Linear regression – Enter and Stepwise method VIF variance inflation factors
Study II	Face-to-face intervention participants (n = 53)	Psychological inflexibility (AFQ-Y) Mindfulness facets: FFMQ Total Describing (FFMQ-De) Acting with awareness (FFMQ-Aw) Non-judging (FFMQ-Nj) Non-reacting (FFMQ-Nr Engaged living skills: ELS Total Valued Living (ELS-VL) Life fulfilment (ELS-LF) Symptoms: Perceived Stress (PSS-10) Depression (PHQ-9) Anxiety (GAD-7)	Mean and Standard deviation (M; SD) Correlations and reliabilities internal consistencies (Cronbach alpha, α) Clinical significance (pre and post changes in symptoms) Structural equation modeling (SEM) for Wald test, p-values, within-group effect sizes (d_w) Linear regression – Enter and Stepwise method VIF variance inflation factors
Study III	Face-to-face intervention participants (n=53)	Psychological inflexibility (AFQ-Y) Mindfulness facets:	t and $\chi 2$ tests for baseline differences Mean and Standard deviation (M; SD)

Videoconference intervention participants (n = 48)	FFMQ Total Observing (FFMQ-Ob) Describing (FFMQ-De) Acting with awareness (FFMQ-Aw) Non-judging (FFMQ-Nj) Non-reacting (FFMQ-Nr) Engaged living skills: ELS Total Valued Living (ELS-VL) Life fulfilment (ELS-LF) Symptoms: Perceived Stress (PSS-10) Depression (PHQ-9) Anxiety (GAD-7)	Internal consistencies (Cronbach alpha, α) Latent change score (LCS) models for Wald test, p-values, between and within-group effect sizes (d_b; d_w) including 95% confidence intervals (d_w 95% CI) Linear regression – Enter and Stepwise method VIF -variance inflation factors

3 SUMMARY OF THE RESULTS

3.1 Study I

3.1.1 Understanding and explaining psychological distress in international students

Aim. This study applied the ACT model as a framework to learn more about which psychological abilities were associated with, and might be helpful to predict, psychological symptomatology in international university students. The overall aim was to expand our knowledge of how to further develop well-being interventions and counselling services. Therefore, the purpose of this study was to investigate which psychological flexibility skills were associated with symptoms of stress, depression, and anxiety and determine which of these skills could most accurately predict these symptoms.

Symptoms Severity. At first, we investigated the symptoms of stress, depression, and anxiety in international university students. Nearly 90% of the students in the sample experienced moderate or high levels of stress (PSS-10); almost half of them displayed at least moderate depressive symptoms (PHQ-9; 43%); and over a third at least moderate anxiety (GAD-7; 38%).

Associations between Symptoms and Psychological Inflexibility and Mindfulness and Engaged Living Skills. The results indicated that psychological inflexibility (AFQ-Y) had a significant and moderate positive correlation (r = 0.31-0.38) with perceived stress (PSS-10), depression (PHQ-9), and anxiety (GAD-7) (see Figure 5). Similarly, high levels of symptoms were associated with low levels of mindfulness. The mindfulness subscales acting with awareness (FFMQ-Aw) and non-judgement (FFMQ-Nj) showed moderate negative correlations (r = -0.37; -0.43) with all the symptom measures (Figure 6) (See Appendix for FFMQ subscales). The Engaged Living Subscale, Life Fulfilment (ELS-LF) correlated strongly and negatively with stress and depression (r = -0.52, r = -0.53, respectively) and moderately and negatively with

anxiety (r = -0.35) (see Figure 7) (See Appendix for ELS subscales). Thus, lower values in these scales were associated with a higher number of symptoms.

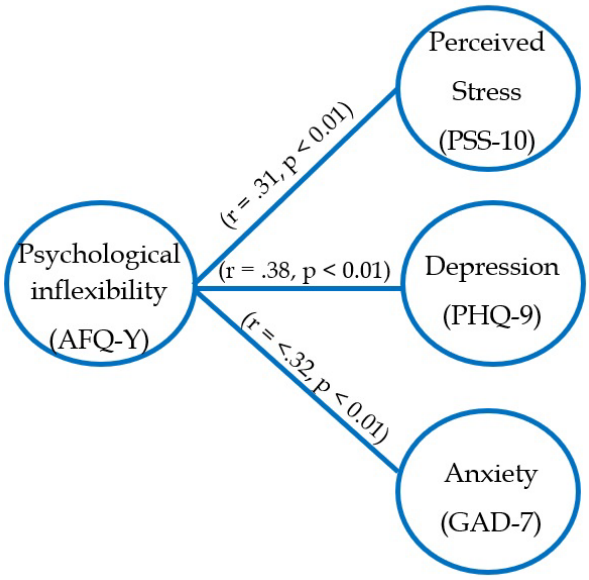


FIGURE 5 Correlation between psychological inflexibility and symptoms of stress, depression, and anxiety.

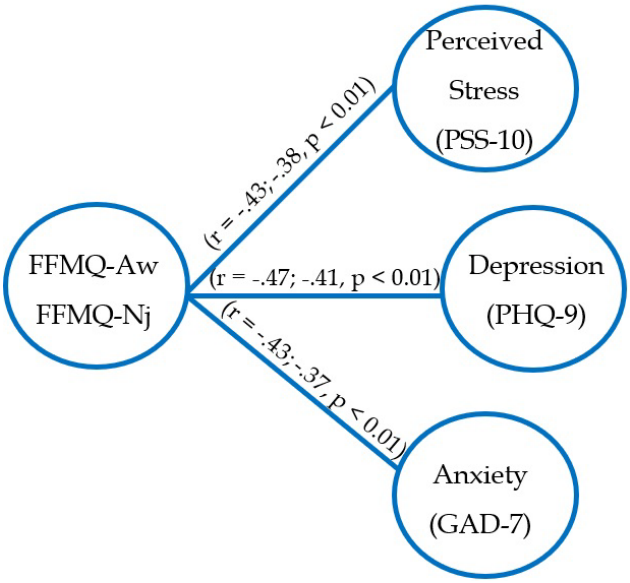


FIGURE 6 Correlation between the mindfulness skills acting with awareness (FFMQ-Aw) and non-judgement (FFMQ-Nj) and symptoms of stress, depression, and anxiety.

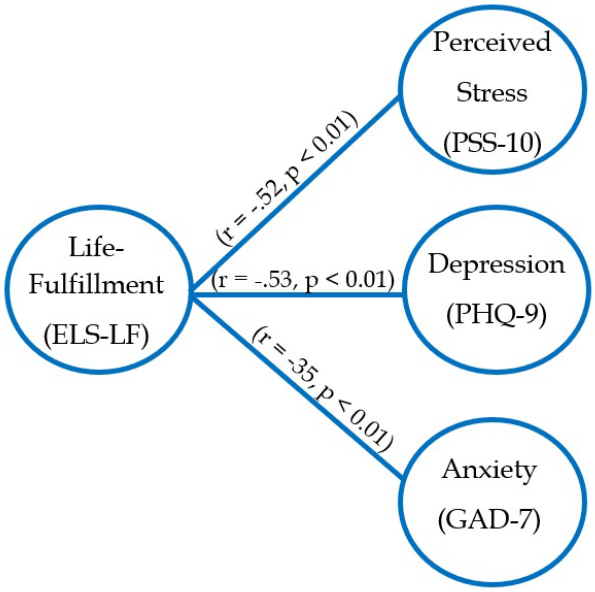


FIGURE 7 Correlation between life-fulfilment and symptoms of stress, depression, and anxiety.

Psychological Processes as Symptom Predictors. To better determine which aspect of psychological flexibility helped in predicting adverse symptoms in international university students, a regression analysis was performed. At first, we analyzed the impact of the total scores, which suggested that psychological inflexibility (AFQ-Y) was not a significant predictor of stress (PSS), depression (PHQ-9), or anxiety (GAD-7) when investigated together with the FFMQ and ELS total scores.

As a second step, the subscales of the FFMQ and ELS were investigated as predictors (note that AFQ-Y, which measures psychological inflexibility, has no subscales). We were especially interested in psychological flexibility skills with clinical relevance and selected these variables as predictors that correlated significantly or at least moderately ($r \geq 0.30$) with the symptom measures. The regression analysis indicated that the Engaged Living Subscale, Life Fulfillment (ELS-LF, $\beta = -0.347$, $p < 0.001$) explained 25% of the variance in stress symptoms (PSS-10), the Mindfulness Questionnaire subscales acting with awareness (FFMQ-Aw, $\beta = -0.208$, $p = 0.027$) an additional seven percent and non-judging (FFMQ-Nj, $\beta = -0.188$, $p = 0.037$) an additional three percent (Figure 8).
In relation to perceived stress (PSS-10), these variables explained approximately 35% of the variance, $F(4,96) = 13.817$, $p < 0.001$.

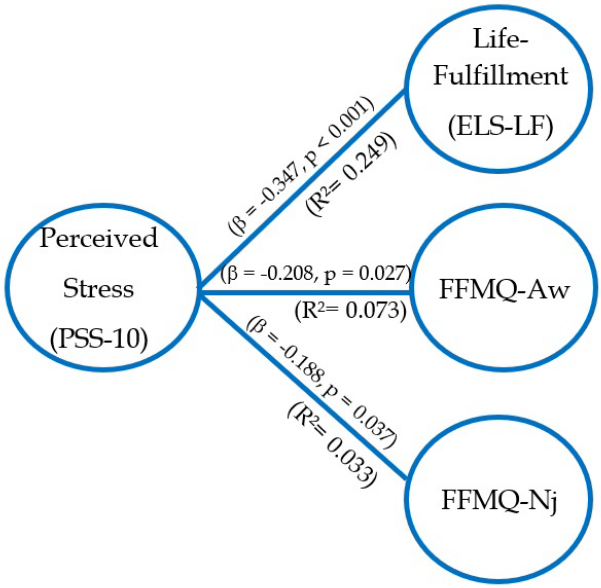


FIGURE 8 Regression analysis: stress and dimensions of psychological flexibility.

For the investigation of the symptoms of depression, the regression method indicated that life fulfillment (ELS-LF) explained 27% of the variance in the PHQ-9 (β = -0.384, $p < 0.001$), the Mindfulness Questionnaire subscales acting with awareness (FFMQ-Aw) an additional nine percent (β = -0.250, $p = 0.007$) and non-judging (FFMQ-Nj) an additional four percent (β = -0.198, $p = 0.024$) (see Figure 9). These three variables explained 40% of the variance in the symptoms of depression (PHQ-9), $F(5,95) = 13.361$, $p < 0.001$.

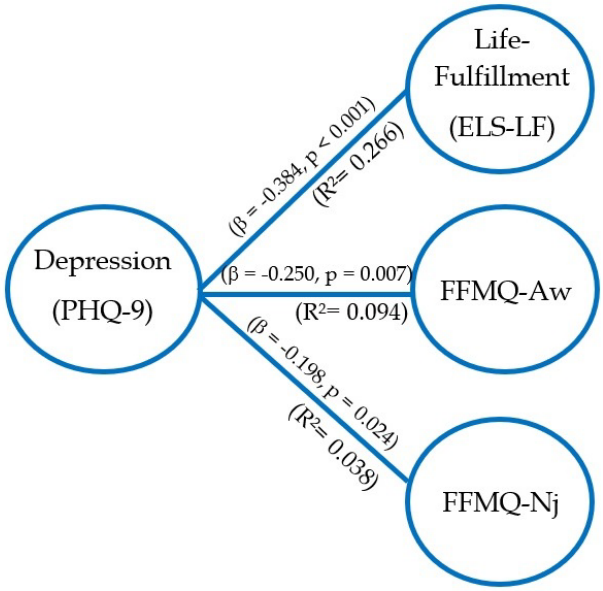


FIGURE 9 Regression analysis: depression and dimensions of psychological flexibility.

For the investigation of the symptoms of anxiety (GAD-7), only the mindfulness subscales were observed to act as significant predictors. The regression method indicated that the subscale acting with awareness (FFMQ-Aw) explained 19% of the variance in the GAD-7 (β = -0.267, p = 0.007), the subscale non-reacting (FFMQ-Nr) an additional five percent (β = -0.193, p = 0.036), and the subscale non-judging (FFMQ-Nj) an additional four percent (β = -0.197, p = 0.038) (see Figure 10). These three mindfulness scales accounted for 28% of the variance in anxiety, F (4,96) = 9.999, p < 0.001.

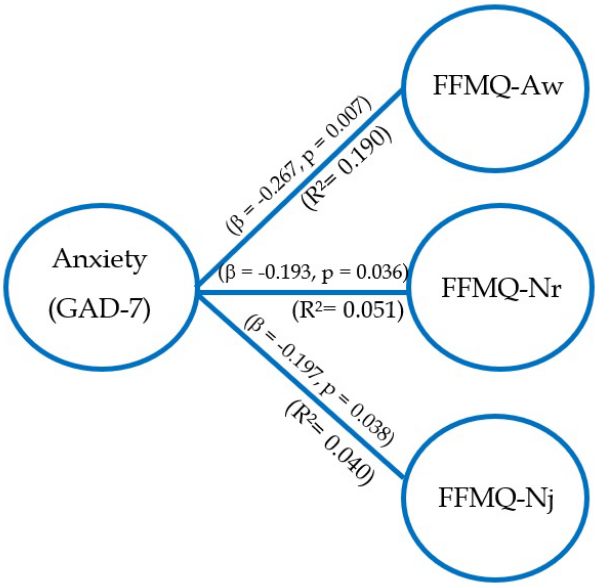


FIGURE 10 Regression analysis: anxiety and dimensions of psychological flexibility.

Conclusions. According to the results, students with higher levels of symptoms reported higher psychological inflexibility and lower scores in mindfulness skills and living based on their values. Looking specifically at which aspects of flexibility predicted adverse symptoms in international university students, life fulfillment (ELS-LF) played the biggest role in understanding stress (PSS-10) and depression (PHQ-9), while mindfulness skills were essential in describing anxiety (GAD-7), particularly acting with awareness (FFMQ-Aw).

Key Findings. The results indicate that four psychological flexibility skills were associated with different dimensions of psychological distress: (1) life fulfillment, (2) act with awareness, (3) non-judgement, and (4) non-reactivity. Symptoms of stress and depression could be reduced by engaging in meaningful actions based on personal values (life fulfillment). Interestingly, life fulfillment was not a significant predictor of symptoms of anxiety. Instead, improving awareness skills together with non-reacting and non-judging skills may have an impact on anxiety. Overall, the findings suggest that fostering psychological flexibility and especially life fulfillment and behavioral awareness skills could help international university students manage psychological distress and promote well-being. Therefore, when counseling international university

students, attention should be on value-based actions (engaged living skills) as well as improving present moment awareness with acceptance skills, including non-reactivity and non-judgment skills. Enhancing these skills could prevent or decrease symptoms of stress, depression, and anxiety.

3.2 Study II

3.2.1 The effectiveness of a five-session workshop on the distress of international students in Finland—a pilot study

Aim. The main objective of this pilot study was to examine whether a brief group-based ACT workshop would be effective and well-received in terms of reducing psychological symptoms. Therefore, the aim was to increase psychological flexibility skills among international university students experiencing study-related stressors. It was hypothesized that participation in a five-week workshop would increase psychological flexibility skills and decrease symptoms of perceived stress, depression, and anxiety. Further, we wanted to understand which psychological processes or, more precisely, psychological flexibility skills were connected to favorable changes in mental distress among international university students. The hypothesis was that an increase in mindfulness and engaged living skills would predict a reduction in symptoms of stress, depression, and anxiety. A further aim was to determine which of these skills acted as the strongest predictors of change in psychological symptoms. Thus, while Study I investigated the psychological flexibility skills that accounted for the level or number of symptoms, Study II investigated the psychological flexibility skills that accounted for the change in symptoms.

Treatment Adherence. The international university students recorded good workshop attendance. The attrition rate in this study was relatively low, with 11% of the participants discontinuing the workshops (n = 6, out of 53). About 83% of the participants attended four to five group meetings. Further, there was no trend indicating significant differences in the impact of the workshops on the seven treatment groups during the study period (fall 2017 to fall 2019).

Severity of Symptoms. Before the start if the workshops, we investigated the symptoms of stress, depression, and anxiety. Most of the students in the sample experienced moderate or high levels of stress (PSS-10; 87%, n = 46). Approximately half of them reported major levels of depression (PHQ-9 ≥ 10; 51%, n = 27), and a significant number experienced moderate to severe anxiety (GAD-7; 40%, n = 21).

Changes in Symptoms and Psychological Flexibility. Significant decreases in all the symptom variables, stress, depression, and anxiety were found from pre- to post-treatment. According to the ESs, stress (PSS-10) showed a large decrease (d > 0.80), whereas the reductions in anxiety (GAD-7) and depression (PHQ-9) were moderate (d > 0.50). For the process variables, we observed a

significant and large decrease in psychological inflexibility (AFQ-Y) and moderate increases in total mindfulness skills (FFMQ) and engaged living (ELS). Regarding the subscales, we observed a significant increase in four of the five mindfulness subskills. The change in non-judgement (FFMQ-Nj) was moderate, while the changes in the other three scales were small. The observing subscale showed no change. Regarding the subscales for the engaged living measure (ELS), there was a small effect on valued living (ELS-VL) and a moderate effect on life fulfillment (ELS-LF). Figure 11 illustrates the mean changes in the primary measures, stress (PSS-10), and psychological inflexibility (AFQ-Y) from pre- to post-intervention. The PSS-10 scores decreased on average five to six points from m = 20.74 (pre) to m = 15.61 (post). AFQ-Y decreased an average of eight points from m = 26.45 (pre) to m = 17.08 (post).

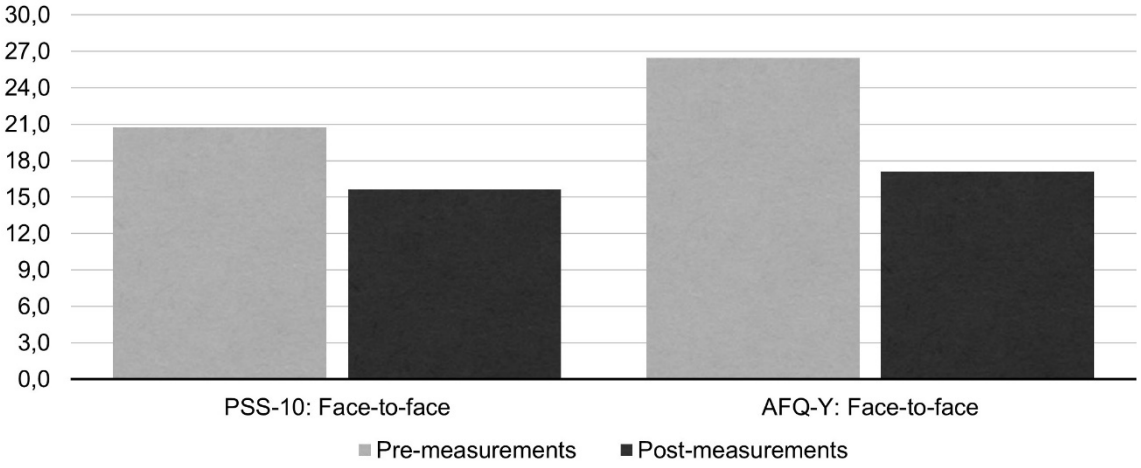


FIGURE 11 Mean values of stress (PSS-10) and psychological inflexibility (AFQ-Y) at pre- to post-measurements.

Clinical Significance. We analyzed the number of students who reported moderate or higher levels of symptoms of anxiety (GAD-7) and depression (PHQ-9) at the pre- and post-measurements (n = 53/47). At post-intervention, approximately 11% (n = 5/47) of the students reported moderate to high anxiety compared to 40% (n = 21/53) at the beginning of the intervention. Accordingly, 19% (n = 9) reported moderate to severe depression at the post-measurement compared to 51% (n = 27) at the pre-measurement (see Figure 12). Students attending all five workshop sessions recorded larger improvements (n = 24; stress PSS-10 m = 6.00; psychological inflexibility AFQ-Y m = 11.92) compared to students who attended three (n = 8; stress PSS-10 m = 3.75; psychological inflexibility AFQ-Y m = 7.63) or four (n = 15; stress PSS-10 m = 4.53; psychological inflexibility AFQ-Y m = 6.27) sessions.

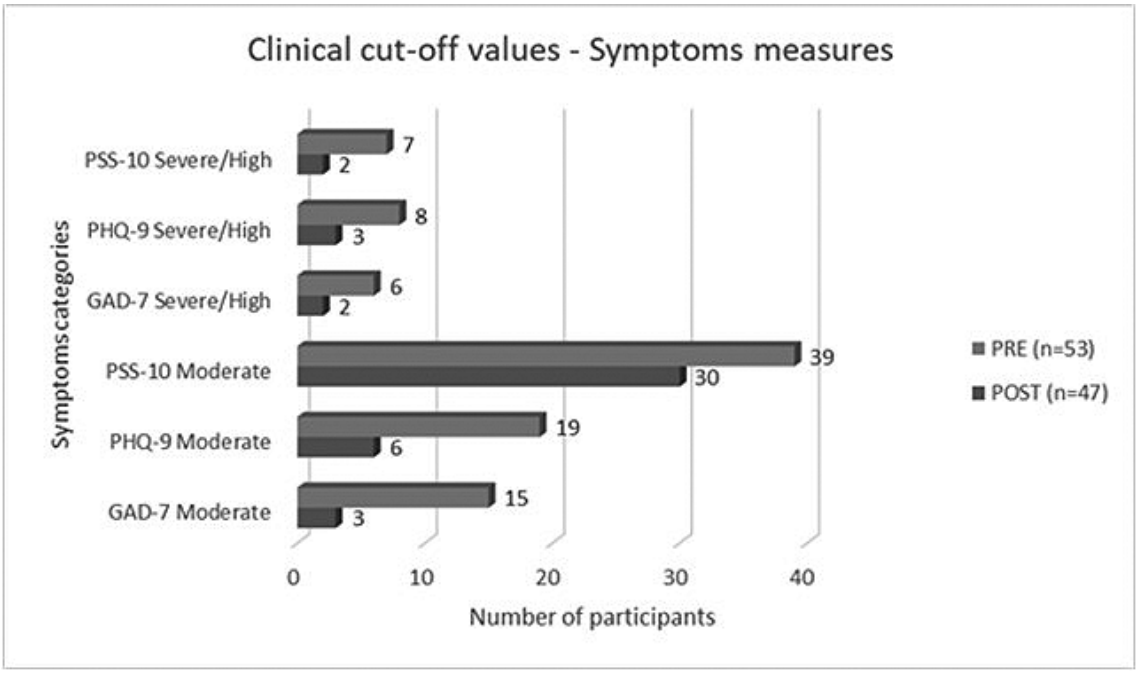


FIGURE 12 Clinical cut-off values of stress (PSS-10), depression (PHQ-9), and anxiety (GAD-7) at post-intervention for the severe and moderate symptom categories.

Predictors of Changes in Symptoms. To investigate predictors of changes in symptoms, a regression analysis was performed, and only those psychological flexibility measures showing significant correlation with the changes in stress, depression, and anxiety were selected for the regression analysis. First, the total scores were analyzed using the linear enter method. In relation to perceived stress (PSS-10), there were two significant models. Changes in psychological inflexibility (AFQ-Y; Model 1: $F(1,43) = 21.736$, $p < 0.001$) made a significant contribution and explained 32% of the variance in the changes in stress symptoms. Changes in mindfulness (FFMQ total) ($F(2,42) = 14.390$, $p < 0.001$) accounted for an additional seven percent of the variance. The changes in these two process measures accounted for close to 40% of the variance in changes in the perceived stress symptoms. Second, the subscales that correlated significantly with changes in stress were analyzed. Changes in the mindfulness skill of non-judgement (FFMQ-Nj; Model 1: $F(1,43) = 15.416$, $p < 0.001$) and changes in the value subscale valued living (ELS-VL; Model 2: $F(2,42) = 12.033$, $p < 0.001$) explained 25% and 10%, respectively, of the changes in stress symptoms (see Figure 13 below).

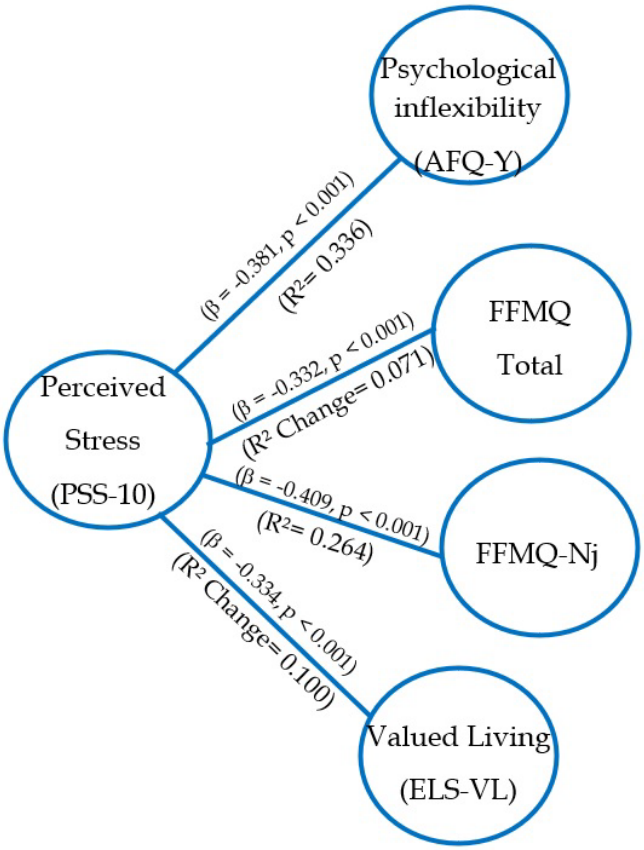


FIGURE 13 Regression analysis: predictors of changes in perceived stress.

In terms of changes in symptoms of depression (PHQ-9), among the total scores of AFQ-Y, FFMQ, and ELS, only the changes in values (ELS total; F (1,43) = 8.360, p = 0.006) acted as a significant predictor and explained 14% of the variance in depression. For the analysis of the subscales, only changes in life fulfillment acted as a significant predictor (ELS-LF; F (1,45) = 6.889, p = 0.011), explaining 11% of the variance in depressive symptoms (see Figure 14 below) (See Appendix for ELS subscales).

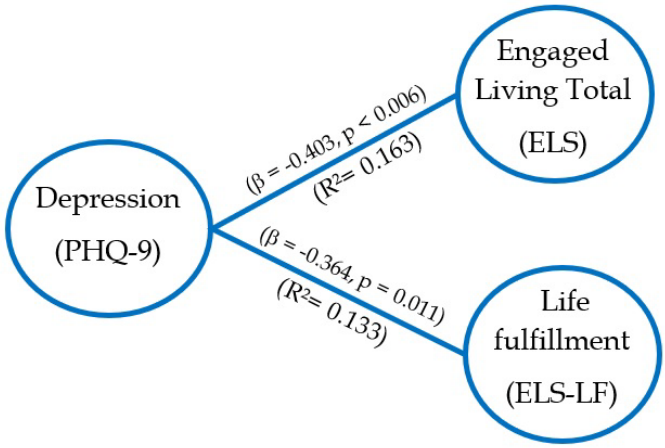


FIGURE 14 Regression analysis: predictors of changes in depressive symptoms.

Regarding changes in general anxiety (GAD-7), for the total scores, only changes in the FFMQ (F (1,43) = 11.971, p = 0.001) were a significant predictor and explained nine percent of the variance in anxiety symptoms. In the subscale analysis, only changes in the FFMQ acting with awareness (FFMQ-Aw; F (1,45) = 4.758, p = 0.034) were a significant predictor and explained eight percent of the changes in anxiety symptoms (see Figure 15 below) (See Appendix for FFMQ subscales).

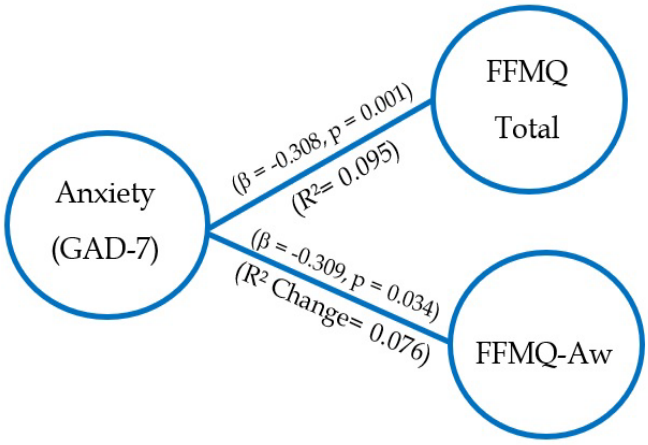


FIGURE 15 Regression analysis: predictors of changes in anxiety symptoms.

Participant Satisfaction and Motivation. The students evaluated their satisfaction with the workshop with a mean value of 8.57 (SD = 1.30) on a scale from 1 to 10. All participants (n = 47) agreed that the workshop helped them cope better with previously challenging issues. Nearly all students (n = 46; 97.9%) reported that they had gained new perspectives that had helped them clarify certain issues in their lives. Similarly, most students (n = 41; 87.2%) perceived greater satisfaction with their lives and that their well-being had increased. The opportunity to learn different techniques to handle thoughts and emotions constructively, developing present moment awareness, and clarification of values were all reported as helpful. Shortcomings and recommendations for improvement included the need for extra or longer sessions, more discussions or group activities, and smaller groups to improve cohesion.

Conclusions. According to the results, the ACT-based intervention, which included five weekly workshops and two individual meetings, significantly reduced psychological symptoms of stress, depression, and anxiety. The number of students reporting moderate or severe levels of depressive or anxiety symptoms decreased by more than 30%. However, there were some limitations relating to the pilot study, including the lack of a control condition; therefore, the conclusion needs to be treated with caution. The intervention decreased psychological inflexibility (a within-group ES of $d > 0.80$) and increased overall mindfulness skills and engaged living skills (a within-group ES of $d > 0.50$), in particular, life fulfillment. This indicates that the intervention was able to promote overall psychological flexibility skills, including a more fulfilling, values-based life and diminished avoidance of unpleasant thoughts and feelings. Looking specifically at significant predictors of changes in symptoms, decreases in psychological inflexibility predicted changes in stress. Furthermore, changes in depression symptoms were explained by changes in engaged living, whereas changes in anxiety were predicted by changes in mindfulness skills.

Key Findings. The results indicate that it is possible to influence symptoms of stress, depression, and anxiety among international university students by giving them access to a relatively short ACT-based group intervention, including two individual meetings. The ACT-based workshops also increased the students' psychological flexibility skills. Decreases in perceived stress were associated with diminished avoidance of unpleasant thoughts and feelings and diminished judgmental attitude toward oneself as well as the ability to identify one's own values. However, these skills did not predict changes in depressive symptoms. Instead, changes in value-based actions acted as significant predictors of decreases in depressive symptoms. Furthermore, changes in anxiety were predicted by changes in mindfulness skills, especially skills related to acting with awareness. These findings suggest that changes in certain psychological flexibility skills may predict changes in different kinds of discomfort.

3.3 Study III

3.3.1 Examining the effectiveness and acceptability of a group-based ACT intervention delivered by videoconference to international students during the COVID-19 pandemic.

Aim. The aim of the current study was to investigate the impact of ACT-based group interventions, whether delivered through videoconference or face-to-face format, in terms of efficacy, adherence, acceptability, and user experiences. The comparison between the procedures was problematic due to the different contexts in which they were delivered (no pandemic vs. pandemic). We sought to analyze whether an ACT-based videoconference intervention would be beneficial to a group of vulnerable students (i.e., international university students) during the COVID-19 pandemic. The ACT-based face-to-face group intervention delivered earlier served as a reference group, offering the possibility to control the effect of attention and repeated measurements and increase the validity of the findings. We were interested in seizing the impact of the videoconference intervention on psychological symptoms such as stress (PSS-10), anxiety (GAD-7), and depression (PHQ-9) and psychological flexibility skills measured by psychological inflexibility (AFQ-Y), mindfulness (FFMQ), and engaged living (ELS). A further aim was to study the exposure–response relationship, the magnitude of change based on the number of sessions completed. The findings of this study can be used to promote the mental health of international university students and provide insight into whether engagement in an ACT intervention delivered via videoconference could be a feasible alternative to the face-to-face format.

Treatment Adherence. The overall attrition rate was relatively low. Altogether, 89% (n = 90) of the 101 international university students completed the workshops and were assessed at post-intervention. The dropout rates were highly similar in both groups (10% videoconference group; 11% face-to-face group). There were no statistical differences between the groups in the number of sessions attended (videoconference, m = 4.28, SD = 0.67; face-to-face, m = 4.34, SD = 0.76).

Severity of Symptoms at Pre-measurements. At first, we investigated the symptoms of stress, depression, and anxiety in both samples and found that 91% (n = 44) of the students in the videoconference group and 87% (n = 46) in the face-to-face group reported moderate to high stress. Moderate to high depressive symptom levels were reported by 33% (n = 16) of the students in the videoconference group and 51% (n = 27) in the face-to-face group. Moderate to high anxiety was reported by 35% (n = 17) of the students in the videoconference group and 40% (n = 21) in the face-to-face group. Based on these scores, there were no statistical differences between the groups in terms of the severity of symptoms reported prior to the interventions ($p > 0.10$).

Changes in Symptoms and Psychological Flexibility. There were no significant interaction effects, suggesting that both intervention groups showed

beneficial changes. Although the groups did not change statistically differently from pre- to post-intervention, the between- (d_b) and within- (d_w) group ESs indicated slightly larger positive changes in the face-to-face intervention group. The between-group ESs were either very small (d = 0.05 to 0.19) or small (d = 0.20 to 0.36) in favor for the face-to-face intervention. The within-group ESs varied from d = 0.29 to 0.55 in the ACT videoconference condition and d = 0.63 to 0.94 in the ACT face-to-face condition. Based on the within-group ESs, and upon interpreting the 95% CI that did not include zero as a meaningful change, it was demonstrated that both intervention groups showed decreases in symptoms of stress and psychological inflexibility and increases in the mindfulness total scores, the mindfulness non-judgement subscale, and the engaged living subscale life fulfillment. Figure 16 illustrates the mean changes in stress (PSS-10) and the within- and between-group ESs, and Figure 17 illustrates the mean changes in psychological inflexibility (AFQ-Y) and the within- and between-group ESs.

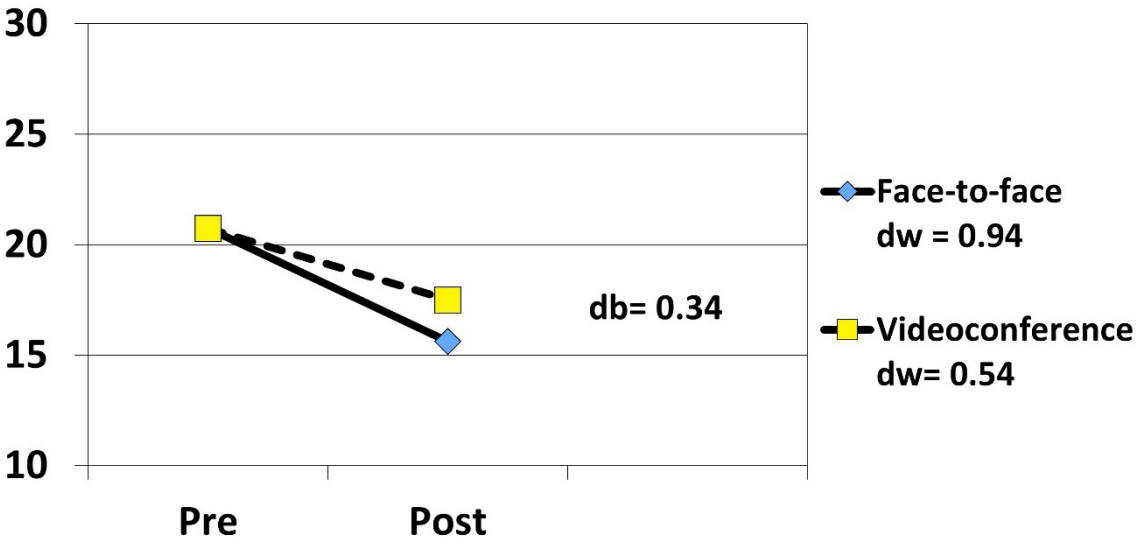


FIGURE 16 Perceived stress (PSS-10): pre-post face-to-face (n=53) vs videoconference (n=48).

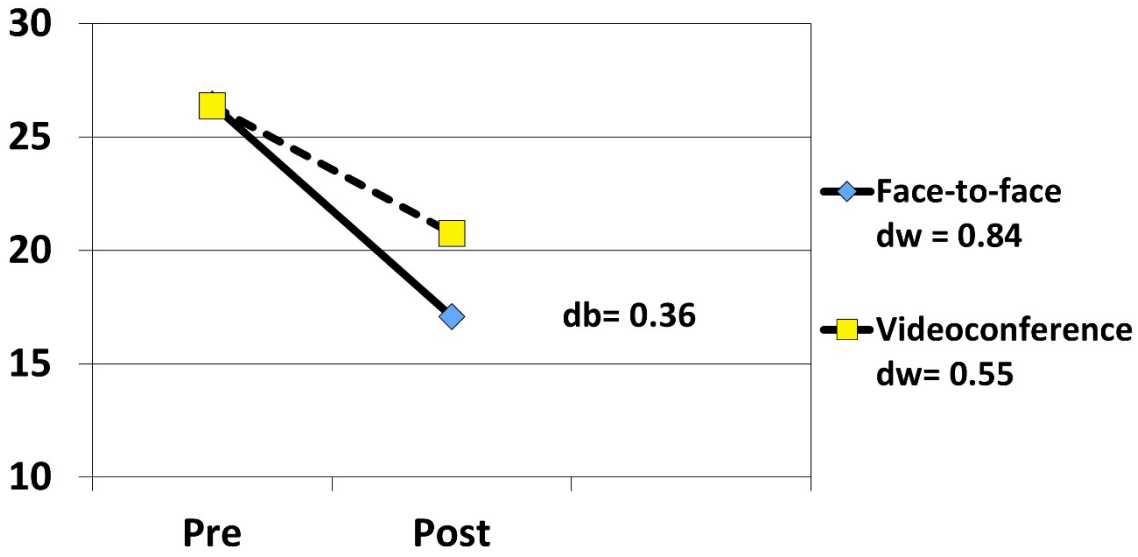


FIGURE 17 Psychological inflexibility (AFQ-Y): pre-post face-to-face (n=53) vs videoconference (n=48).

The Exposure–Response Relationship. We were interested in analyzing the number of sessions and the responses to the intervention relationship regarding the primary outcome measure for symptoms of stress (PSS-10) and decreases in psychological inflexibility (AFQ-Y). In the videoconference group, we observed that those who had completed all five sessions (n = 17) did not report larger changes in stress and psychological inflexibility compared to those who had completed three or four sessions (n = 26). However, in the face-to-face intervention group, those who had completed all five sessions (n = 24) also reported larger changes compared to those who had completed fewer sessions (n = 23). This was particularly true for psychological inflexibility where the difference was significant (t = -2.083, p = 0.043). Figure 18 shows the exposure–response relationship in the two groups.

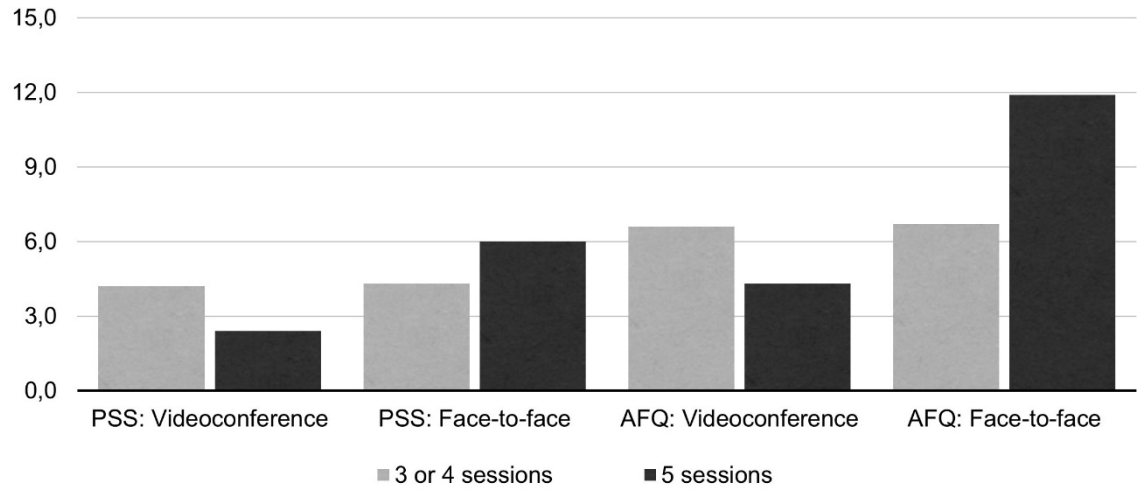


FIGURE 18 The exposure-response relationship in the videoconference and face-to-face groups. Mean changes of stress (PSS) and psychological inflexibility (AFQ-Y).

Participant Satisfaction and Experiences. The overall satisfaction with the intervention was slightly but significantly higher in the ACT face-to-face intervention (m = 8.57, SD = 1.30, n = 47) compared to the ACT videoconference condition (m = 7.88, SD = 1.76, n = 43; t (88) = 2.130, p = 0.039). There was no difference between the groups in the number of participants who would recommend the intervention to others (videoconference, 86%, n = 37; face-to-face, 83%, n = 39). The working relationship with the coaches was evaluated equally positively in both groups. Both groups perceived that learning new skills and strategies was helpful. In addition, opportunities to share with others were perceived in a similar way. Suggestions for improvement included more time for sharing ideas and interactive group activities (videoconference, 30%, n = 13 vs. face-to-face, 19%, n = 9) and more or longer sessions (n = 2 vs. 5, 5% vs. 10%). In sum, the two differently delivered workshops were both well accepted by the participants.

Conclusions. According to the results, the ACT-based five-week videoconference workshop reduced symptoms of stress, decreased psychological inflexibility, and increased mindfulness skills and value-based actions. These changes were comparable to the impact of the reference group, that is, the face-to-face workshop conducted prior to the pandemic. The current evidence supports the implementation of ACT in various formats for student well-being. However, there is a dearth of research investigating group-based ACT videoconferencing interventions for international university students during the pandemic.

Key Findings. The findings show encouraging benefits relating to the videoconference ACT intervention delivered during the pandemic. Even though it was delivered during arduous times, the relatively limited support and guidance provided online helped the students reduce their stress and other

symptoms such as depression and anxiety. The videoconference workshop decreased non-adaptive avoidance of thoughts and emotions and increased the students' ability to refrain from judging their thoughts, emotions, and sensations and act in accordance with their values. All the intervention groups showed beneficial changes and no interaction effect, suggesting that the outcome measures changed in a similar direction. Interestingly, attending all five videoconference sessions did not produce larger changes compared to attending three or four sessions on psychological inflexibility and stress symptoms. This observation raises the question of whether three or four sessions might be sufficient for a well-being intervention during the pandemic. It is advisable to develop and further investigate psychological interventions delivered via videoconference in order to further examine the benefits and limits of online group interventions. In the students' feedback, they reported a high degree of satisfaction and indicated that the online group was an important source of increased coping skills. It has been suggested that group treatments engage people socially while also protecting them from psychological symptoms during the COVID-19 pandemic (Marmarosh et al., 2020). Against this backdrop, this study showed that it was possible to help students during the pandemic by offering them a brief online workshop with the aim of enhancing their overall well-being and increasing their psychological flexibility skills. Many of the observed changes were equivalent to those obtained in a similar face-to-face workshop prior to the pandemic, corroborating the efficacy and acceptability of the videoconference-delivered intervention.

4 DISCUSSION

The main objective of the present research was to increase our understanding of psychological skills in explaining the well-being of international university students. Further, the aim was to investigate whether it was possible to influence the well-being of international university students by offering them a five-session ACT-based workshop. The first study explored the potential contribution of psychological inflexibility to the psychological distress of international university students, with the aim of better understanding which psychological skills were associated with and could predict psychological symptomatology among them. The second study examined the effectiveness of the five-session ACT group intervention with two individual meetings for international university students. It also aimed to identify the predictors of changes in symptoms, that is, which psychological flexibility skills, including mindfulness and engaged living skills, predicted a reduction in symptoms of stress, depression, and anxiety. The third study investigated the effectiveness of the Zoom videoconference-delivered group workshops, which included two individual meetings via Zoom.

The selected group of international university students experienced high levels of psychological distress. The results also showed that students with low psychological flexibility skills experienced more stress, depression, and anxiety symptoms. Therefore, the study suggests that students experiencing various types of distress may benefit from psychological flexibility training skills. Furthermore, the findings demonstrated that both the in-person- and distance-delivered ACT-based group interventions were effective in reducing symptoms of stress, depression, and anxiety as well as decreasing psychological inflexibility and enhancing mindfulness and engaged living skills. The initial results of the three studies are promising but must be interpreted cautiously due to the limitations in the design. Research on interventions aimed at enhancing the psychological well-being of international university students is scarce, and more studies are warranted.

4.1 Main findings of the three studies

The results of **Study I** showed that the lack of flexibility and other related skills could predict the level of symptoms and psychological distress. In particular, regression analysis indicated that four psychological flexibility skills were associated with different dimensions of psychological distress: (1) life fulfilment, (2) act with awareness, (3) non-judgement, and (4) non-reactivity. Symptoms connected to stress and depression could be reduced by identifying personal values as well as committing to and performing meaningful actions based on those values (life fulfilment). It is interesting to note that symptoms of anxiety were not predicted by engaged living dimensions and life fulfilment. Instead, practicing behavioral awareness (act with awareness) and refraining from judging undesired thoughts and feelings (non-judging) with impulsive reactivity (non-reactivity) could have a positive impact on students' anxiety. In addition to anxiety, symptoms of stress and depression could also be impacted by increased behavioral awareness and non-judgment skills.

This first study contributes to the current research and literature by examining the different dimensions of psychological flexibility, mindfulness, and engaged living associated with stress, depression, and anxiety symptoms. In addition, the results substantiate those of previous studies on the associations between mindfulness and the psychological well-being of university students (e.g., Baer et al., 2006; Brown & Ryan, 2003). Overall, the findings suggest that fostering psychological flexibility skills could be one of the key factors in managing psychological distress and promoting general well-being in international university students. International university students with low psychological flexibility skills may be at risk of experiencing elevated levels of psychological distress, such as stress, depression, and anxiety, or vice versa: the more distress these students experience the less flexibility they display. Therefore, helping them clarify what is important to them (personal values), encouraging them to act in accordance with what they consider important, and improving present moment awareness and a non-judgmental attitude toward emotions could prevent the development of adverse symptoms of psychological distress. The findings herein highlight specific skills that can be incorporated into services for international university students as well as guidance and counselling services and interventions directed at them.

The findings of **Study II** indicated that a brief group-based ACT workshop, which included two individual meetings delivered in person, was effective in terms of symptom reduction and increased psychological flexibility among international university students. The results showed a decrease of over 30% in the number of students reporting moderate to severe levels of depressive or anxiety symptoms following the seven-week intervention period. However, the current study did not include a control condition, and therefore, the conclusions need to be treated with caution. Furthermore, our findings are consistent with those of earlier ACT-based studies that have reported favorable outcomes for

both domestic (e.g., Grégoire et al., 2018; Levin et al., 2014, 2016, 2020; Räsänen et al., 2016) and international (Muto et al., 2011; Xu et al., 2020) student populations. For example, the within-group ESs in the research by Levin et al. (2104) were in line with our findings (d = .81–.97 vs. d = .63–.94 for the current study).

More specifically, the findings indicated that the decrease in psychological inflexibility was a strong predictor of changes in stress. When we investigated more closely specific subskills as predictors, we found that changes in an accepting attitude toward oneself (non-judgment) and clarification regarding one's values (valued living) acted as significant predictors of changes in stress. However, changes in value-based actions (life fulfilment) acted as a significant predictor of decreases in depressive symptoms. Further, changes in anxiety were predicted by changes in mindfulness skills, especially those related to acting with awareness. These findings suggest that changes in certain psychological flexibility skills may predict changes in different kinds of discomfort. These results suggests that reductions in stress are associated with the development of a non-judgmental attitude toward one's emotions and thoughts as well as an increased ability to identify one's own values. Furthermore, engaging more in meaningful actions may lead to decreases in depressive symptoms. It was demonstrated in a recent study by Grégoire et al. (2021) that students who reported being more active in committed actions also reported less discomfort and greater well-being. In addition, increased skills relating to acting with awareness may facilitate decreases in stress symptoms. Our study supports earlier conclusions that associated symptom reduction with identifying values and practicing flexibility and mindfulness (Paliliunas et al., 2018).

The outcomes of **Study III** showed encouraging results in the ACT-based group intervention delivered via videoconference during the COVID-19 pandemic. We used the findings from Study II, which investigated an equivalent in-person group intervention administered before the pandemic, as a reference. Despite challenging times and the relatively minimal support and guidance offered in the online groups, the students decreased their levels of stress and symptoms of depression and anxiety. Previous research has found that videoconferencing psychological interventions may be as effective as in-person treatments (Batastini et al., 2021). The ACT-based five-week videoconference intervention also reduced non-adaptive avoidance of thoughts and emotions and increased the ability to refrain from judging unwanted thoughts, emotions, and sensations and acting in accordance with values. These changes were comparable to the impacts of the pre-pandemic face-to-face workshop. The findings are consistent with those of earlier ACT-based studies reporting positive outcomes in domestic (e.g., Grégoire et al., 2018; Levin et al., 2014, 2016, 2019; Räsänen et al., 2016) and international (Muto et al., 2011; Xu et al., 2020) student populations. Both intervention groups showed beneficial changes and no interaction effect, suggesting that the outcome measures changed in a similar direction. Multiple studies have shown that ACT training has a positive effect on student well-being (Howell & Passmore, 2019). Interestingly, attending all five sessions in the videoconference intervention did not produce larger changes in psychological

inflexibility and stress symptoms compared to attending three or four sessions. This contrasts with the "dose-response effect" observed in Study II in the analysis of the face-to-face intervention and raises the question of whether a three- or four-session videoconference intervention would have been sufficient for the students' needs during the pandemic. However, other factors could have impacted these outcomes. The field would benefit from further developments and investigations of psychological interventions delivered via videoconference in order to examine the pros and cons of telehealth group interventions. Participants in online interventions commonly report a high degree of satisfaction and indicate that online groups are an important source of increased coping (Binford Hopf et al., 2013; Stephen et al., 2013), a point reflected in the feedback given by the students participating in Study III. Group treatments may have engaged people socially while also protecting them from psychological symptoms during the COVID-19 pandemic (Marmarosh et al., 2020). Considering this, Study III showed that it was possible to support students during the pandemic by providing them with a brief online workshop with two individual meetings aimed at improving their overall well-being and increasing their psychological flexibility skills. Many of the observed changes were similar to those obtained in the equivalent face-to-face workshop prior to the pandemic, corroborating the efficacy and acceptability of the videoconference-delivered intervention.

In sum, utilizing an ACT framework and investigating psychological flexibility skills are relevant in analyzing potential predictors of psychological distress among international university students. In addition, the brief group-based ACT intervention proved to be effective in reducing symptoms and enhancing psychological flexibility. Specific dimensions of flexibility, mindfulness, and engaged living skills acted as predictors of changes in symptoms of stress, depression, and anxiety. Furthermore, there were no significant differences in the effectiveness of the interventions, whether delivered in face-to-face format or via videoconference.

4.2 Acceptability and feasibility of the interventions

4.2.1 Attendance and dropout

Dropout, non-completion, and the premature termination of an intervention constitute significant problems that limit the effectiveness of any intervention (Barret et al., 2008). In the current study, the dropout rates in two of the intervention studies were low, which can be explained by the higher levels of satisfaction recorded in the students' feedback.

In **Study I**, a total of 125 students were interested in participating in the well-being workshops. While they were all eligible, 22 (18%) of them dropped out before the pre-measurement. Consequently, a total of 103 students participated in an individual assessment meeting where they completed a set of questionnaires composed of symptoms (stress, depression, and anxiety), process

(psychological inflexibility, mindfulness, and valued living), and demographic measures.

In **Study II**, 68 international university students indicated via email that they were willing to participate in the workshop and were contacted via email to schedule the initial interview. Among them, five (7%) had a busy schedule and declined to participate, and 10 (15%) did not respond. Finally, pre-measurements for the face-to-face intervention groups were collected from 53 students. The attrition rate in this study was relatively low, with 11% of the participants discontinuing the workshops (n = 6, out of 53), three providing no specific reason, and two reporting a busy schedule. Post-measurements were collected seven to eight weeks later from most participants (n = 47, 89%). One participant in the face-to-face group interrupted their participation due to a high level of symptoms. About 83% of the participants attended four to five group meetings, resulting in a relatively high attendance level.

In **Study III**, pre-measurements were collected from 48 students participating in the ACT-based group videoconference intervention. Post-measurements were collected seven to eight weeks later from 43 participants (90%). Thus, the dropout rate was low.

In summary, the overall attrition rate for the two interventions was relatively low. Among those who discontinued their participation (n = 11, 11%), four provided no specific reason, while six reported a busy schedule. The dropout rates were similar in both groups (10% in the videoconference group and 11% in the face-to-face group). Altogether, 89% (n = 90) of the 101 international university students completed the two interventions, face-to-face or videoconference, and were assessed at post-intervention. Eighty-nine percent of the participants in the videoconference group and 83% in the face-to-face group attended four to five group meetings. Thus, the dropout rate was not significantly higher for the ACT-based intervention via videoconference compared to the in-person delivery. This was also reflected in the studies of Yuen and colleagues (2019) and Browning and colleagues (2022), with both losing one participant in the post-assessment. However, it contrasts with observations in the videoconference study of Shepherd and colleagues (2022), which had higher attrition rates in the baseline phase and early in the intervention phase (54%), with only 46% of the participants completing the post-intervention measurements.

4.2.2 Satisfaction with the interventions

Both interventions were well received by the international university students. The overall satisfaction with the workshops was slightly but significantly higher in the ACT face-to-face intervention compared to the ACT videoconference condition. However, there was no difference between the groups in the number of participants who indicated that they would recommend the intervention to others (83% face-to-face vs. 86% videoconference). This is in line with a previous videoconference study from Yuen and colleagues (2019), where all participants (100%) indicated that they would recommend the intervention to a friend and

reported high levels of satisfaction. The few students in our sample who would recommend the intervention with some reservations indicated that they would have liked either more sessions or individual meetings instead of group sessions. This was reflected in quotes such as "*I would have the workshop sessions more often, twice a week, or longer if once a week*" (face-to-face); "*It would be great to do the program face-to-face so we can get a better group feeling*" (videoconference).

The students reported enhanced well-being and an improved sense of how to manage distress. Both groups perceived that learning new psychological flexibility skills and strategies, such as defusion, mindfulness, and value-clarification skills, was most helpful: "*Learning about self-management skills and defusion techniques. Having a space where to compare my own struggles/experiences with other peers*" (face-to-face); "*Values and compassion sessions really helped me to build my daily routine again and remember my goals*" (videoconference). This is in accordance with other study findings, such as those of Shepherd and colleagues (2022), where defusion skills were found to be a useful tool to support participants to cope with difficult experiences during the COVID-19 pandemic. Moreover, values clarification helped the participants recognize that their distress manifested from unworkable action. In the study by Xu and colleagues (2020) with Chinese international students, the discussion of values resonated with the participants as their decision to study abroad came from their values of education, adventure, prestige, among other things. Furthermore, Katajavuori and colleagues (2021) found that values and committed action and mindful presence were identified as important by most of the students taking part in an ACT-based intervention.

In addition, there was a high level of satisfaction in the working relationship with the coaches in both intervention groups (87% vs. 91%). Thus, delivering the ACT intervention via videoconference did not negatively affect the experienced relationship with the coaches. In addition, opportunities to share with others were perceived to be slightly better in the videoconference group (23% vs. 35%). Suggestions for improvement included more time for sharing ideas and interactive group activities (face-to-face 19% vs. videoconference 30%) and more or longer sessions (10% vs. 5%). This was reflected in quotes such as "*I would make the workshop longer as it is not possible to cover all of the things in one month*" (face-to-face); "*I believe it would be better if group sessions lasted longer such as 2–3 months or throughout one academic semester*" (videoconference). In their feedback, the students reported a high degree of satisfaction and indicated that the videoconference group was an important source of increased coping. Among the students in the videoconference group, four expressed the desire for face-to-face group meetings. In sum, the workshops were well accepted by the participants, as illustrated by the following quotes: "*I think this workshop is very inspiring and influential for students, especially in stressful times*" (face-to-face); "*Through these sessions, I could find the aim and value for my life, and it helps me to work better in my daily life*" (videoconference)!

4.3 Limitations

There are several notable limitations in the design of the three studies and other factors that hinder the generalizability of the results. One of the most important limitations is the sample size of all three studies. The representativeness of the sample was problematic as most participants were female university students (around 80%), which appears to be an inherent problem in many online and face-to-face interventions. Female students may experience higher levels of psychological symptoms, such as anxiety and depression, higher stress, and lower resilience than male students (e.g., Adlaf et al., 2001; Lai et al., 2020), all of which were reflected in our results. A larger and more heterogeneous sample would have ensured a more accurate representation of the target population.

Concerning the intervention studies (i.e., **Study II** and **Study III**), the most important limitation was the lack of a control group, which made it impossible to draw firm causal conclusions. The low number of interested students participating per semester did not allow us to create a control group condition. Without a control group, key threats to internal validity such as maturation, measurement effect, and other potential causes for changes cannot be ruled out. Limited recruitment time may have influenced participation since the intervention had to be delivered within one semester. These observations need to be taken into consideration when drawing conclusions from the study. Thus, without a waitlist or alternative treatment comparison, it is impossible to unambiguously attribute the changes in the participants to the ACT components. For example, the clinical skills of the coaches conducting the sessions, such as supportive listening, could have been sufficient to elicit change (Sommers-Flanagan & Sommers-Flanagan, 2015). According to Yalom and Leszcz (2005), being with other group members who experience similar feelings is one of the most curative aspects of groups. Thus, we could not separate the impact of group involvement in our results.

Moreover, in **Study II**, the piloted face-to-face intervention, the pre-measurement value of stress (PSS-10, m = 20.74) was comparable with the pre-measurement value of domestic students at the same university (m = 21.54). The authors previously observed in a randomized controlled trial (offered to the domestic university students) that the change in stress (PSS-10) was small (the within-group ES, d = 0.27) in the control condition, receiving only some attention and repeated measurements. Thus, the research attention with repeated measures may have had an impact on the study results. Nevertheless, based on our earlier findings (Räsänen et al., 2016), we believe that this impact is significantly smaller compared to the changes in the current study (e.g., PSS.10, d = 0.27 vs. d = 0.94). We also observed that the exposure to the intervention was related to the magnitude of the changes in stress. The positive effects of the intervention could be affected by the researchers' allegiance to the treatment model. Thus, the results could be associated with or influenced by the researchers' enthusiasm for the ACT model. However, there are mixed results regarding

allegiance bias, which was mostly directed at the randomized controlled trials when comparing the intervention to other treatment models (Wilson et al., 2011).

In **Study III**, it was not possible to randomize the participants between the two differently delivered interventions. The shift to the videoconference method due to the COVID-19 pandemic and consequent lockdown forced us to deliver this intervention online through the Zoom videoconferencing app. Furthermore, we let the students decide whether they wanted to keep their camera on during mindfulness exercises. This choice may have influenced the workshop engagement. This sudden change is one of the reasons why Study III lacked a control group. However, we used the face-to-face group intervention as a reference to compare these two similar but differently delivered interventions.

The data in all the three studies were collected from international university students who enrolled voluntarily in a program to improve well-being and stress, mostly because of personal difficulties or curiosity regarding the applied approach. Using the word *mindfulness* in the recruitment letters and posters may have attracted students already well-disposed towards mindfulness-oriented approaches. Thus, the participants themselves selected the study group, thereby raising the possibility of self-selection bias. For example, the study participants may have been highly motivated to make changes.

A further limitation was the fact that we only used self-report questionnaires. Self-reported data may lead to inaccuracies (e.g., social desirability bias), which may pose a threat to internal validity. Lastly, in the analyses of the predictors of the levels of and changes in symptoms, we were unable to establish causal conclusions based on the current data. We are aware of the possibility that the relationships revealed in these data could be coincidental or that a third factor could explain the observed associations.

4.4 Future research

There are several interesting and crucial avenues for future research. There have been numerous research studies on international students and their demographic characteristics, such as socio-economic status, provenience, and cultural and educational backgrounds. Their difficulties, vulnerabilities, and mental distress have been investigated at length. Mori (2000) and Wilton and Constantine (2003) reported that adjustment to new social and learning environments can be a stressful experience. This may manifest in communication problems and feelings of isolation, loneliness, and hopelessness, which can lead to elevated risk levels for psychological problems (Brown & Brown, 2013; Jung et al., 2007), including stress, loneliness (e.g., Rosenthal et al., 2006; Russell et al., 2010; Sawir et al., 2008), depressive symptoms (e.g., Rice et al., 2012), and anxiety (Shadowen et al., 2019). Despite this common understanding, there are very few studies investigating counselling and cost-effective preventive interventions for supporting this vulnerable student population. To the best of our knowledge, the studies conducted herein on international university students at JYU during their study

period abroad are one of the few in Europe and globally using an ACT-based group intervention delivered face-to-face and through videoconferencing. More studies with larger samples are needed to investigate whether our findings can be generalized to the overall international student population.

To avoid future threats to internal validity, it would be advisable to randomize the participants to different conditions, for example, into the two formats of delivering the intervention—either in person or via videoconference. It would also be advisable to create control group conditions so that the changes obtained in an ACT intervention in terms of symptoms and flexibility skills could be compared to those in other intervention conditions. Moreover, follow-up measurements at three months or even later following the end of the intervention would show whether the changes were retained in the long term.

It would be interesting to identify the optimal condition for enhancing psychological flexibility and reducing psychological distress. For instance, some of the feedback on the face-to-face intervention suggested longer or more sessions, differing somewhat with the feedback from the videoconference groups. It would be interesting to understand which modality of providing home assignments—paper-based, virtually, or video format—would keep the students engaged in between the weekly group meetings. Further research on the clinical implications of different delivery methods, including their efficacy and acceptability, would be beneficial.

Further larger studies are needed to investigate the role of acceptance, mindfulness, and valued actions in the psychological health of international university students. These process variables and their associations need to be explored further to draw conclusions on the causal relationship between the psychological process variables and psychological distress.

Furthermore, the gender-specific issue may merit future research attention. As our study showed, women are more likely than men to seek help, which has been found in several studies highlighting the vulnerability of female international students to psychological distress (e.g., Khoshlessan & Das, 2017; Misra & McKean, 2000). There may be various reasons, including those of a social and cultural nature, behind the gender differences, and future research should explore this question. We noticed a slight rise in male student participation and that of students at higher levels of education (e.g., doctorate) when the intervention was delivered via videoconference. Future research should explore whether distance delivery may be favorable for the involvement of some students.

In addition, the cultural aspect of providing support is interesting as many international students may be skeptical about counselling centers or other services due to cultural differences regarding beliefs about mental health problems and stigma associated with psychological disturbances (Aguiniga et al., 2016; Forbes-Mewett & Sawyer, 2016; Mori, 2000). More research with larger international student samples is needed to explore whether this type of transdiagnostic intervention would be a more acceptable, low-threshold option for students of certain cultural backgrounds. It would also be interesting to

explore whether students from different cultural backgrounds respond similarly to psychological flexibility skills training.

Furthermore, creating a sense of belonging and cohesion may have an impact on how these students perceive and react to their difficulties and the group feeling, with common experiences potentially being an important source of coping. The COVID-19 pandemic has created a global mental health crisis, fueling short- and long-term stresses and undermining the mental health of millions (WHO, 2022). It has been suggested that group treatments engaged people socially while also protecting them from psychological symptoms during the pandemic (Marmarosh et al., 2020). Against this backdrop, the findings of our videoconference intervention study suggest that students could be helped during the pandemic by receiving brief online training aimed at improving their psychological flexibility skills. Many of the observed changes were equivalent to those obtained in the face-to-face workshop prior to the pandemic. This raises questions about the effectiveness, acceptability, and cost-effectiveness of developing better interventions and counselling services in the future as well as the best options to assist and support international university students during their studies abroad. Recognizing the importance of mental health and well-being as a global priority will hopefully lead to the further development of research and counselling. The possibility of delivering interventions online via videoconferencing applications offers a chance to reach students coming or attending the workshop from overseas, or simply from a different location, to join in and feel part of the college community without losing the aspect of human support. Furthermore, the field is now evolving into looking at individualized patterns rather than group level analyses. Therefore, it would be interesting to explore a more individualized approach and investigate individual differences in intervention effects by identifying profiles of psychological flexibility and distress as well as more personally tailored methods of intervention. It would be interesting to broaden the research to identify the ideal amount of support needed, the intervention length, and the components that may have a stronger impact in terms of delivering effective results. Thus, it would be important to investigate whether the effects of the interventions could be facilitated by focusing on more training relating to the process variables identified in the current study. Further, since it is not possible to separate the impact of the two meetings from that of the group sessions, research could investigate the need, or lack thereof, for individual sessions.

4.5 Clinical implications

All three studies highlight important clinical implications. The current findings add to the previous literature on the clinical importance of preventive interventions for well-being and stress management as well as the positive effects of increased psychological flexibility skills. The data indicated that psychological flexibility skills have a significant impact on individual well-being and

psychological distress and can predict symptom display and changes in distress over the course of an intervention. The findings of this work increase our knowledge of the relationship between symptoms of stress, depression, and anxiety and the psychological skills of students completing their studies abroad. More specifically, the findings of **Study I** (the cross-sectional study before receiving any intervention) suggest that different types of distress may benefit from training skills relating to distinct psychological flexibility dimensions. Emphasis needs to be placed on helping international university students clarify what is important to them (their personal values) in relation to their studies while they are in a foreign country and encouraging them to devote time to the actions, events, social relationships, etc., they consider important (value-based actions). For example, fostering engagement in life (i.e., working with values and engaging in concrete actions) is important for symptoms of stress and depression. Thus, services aimed at international university students should devote attention to improving these students' psychological flexibility skills, incorporating them into guidance and counselling services.

The findings of **Study II** suggest that a group-based face-to-face ACT intervention with two additional individual meetings may be beneficial for international university students who display high levels of psychological distress. The findings indicate that a seven-week intervention, including two individual and five group meetings, can significantly impact mental health. Thus, an ACT-based intervention may help students in acquiring tools to cope with their concerns and promote their well-being, thereby fostering engagement in life, awareness skills, and more openness toward their internal experiences. Further, the results suggest that changes in different psychological flexibility skills may predict changes in different kinds of distress. These results are congruent with findings from Kinnunen et al. (2020) and Gallego (2020), who reported that different aspects of mindfulness and psychological inflexibility may be related to different psychological outcomes.

In an adult population suffering from symptoms of burnout, the mindfulness subskill of non-judging was the most crucial mindfulness aspect for burnout alleviation (Kinnunen et al., 2020). Among undergraduate students reporting public speaking anxiety, openness to experiences seemed to be an important skill (Gallego et al., 2020). According to the study by Räsänen and colleagues (2020), the use of non-reactive practices, which allow thoughts and feelings to come and go without getting caught up in them, is important for improving the well-being of university students. A data analysis showed that changes in the non-reactivity subscale of mindfulness mediated changes in well-being, depression, and stress. Similar findings were reported in the study of Pots et al. (2016), in which change in non-reactivity to inner experiences was the only mediator of change in the treatment effect in an Internet-based ACT intervention for depressive symptoms. Our findings suggest that if students are experiencing stress, attention should be paid to decreasing avoidance of emotions and thoughts. Instead, they could be trained to be more open and accepting toward irrational, inappropriate, and distressing thoughts and emotions. Furthermore,

students with stress symptoms could receive help in clarifying their own values. When students are interested in decreasing their symptoms of depression, the focus of the intervention should be on value-based work, especially in increasing value-based actions. Moreover, if students experience heightened anxiety, training should focus on increasing their skills to be able to better focus attention and be more in the present moment, that is, mindfulness skills. However, since the current study did not include a control condition, the conclusion needs to be treated with caution. In general, our results are congruent with those of previous ACT-based studies that have found positive results for both domestic (e.g., Grégoire et al., 2018; Levin et al., 2014, 2016, 2020; Räsänen et al., 2016) and international (Muto et al., 2011; Xu et al., 2020) student populations.

The findings of **Study III** suggest that a group-based ACT intervention delivered via videoconference is a potential alternative for enhancing the well-being of international university students. Even though it was delivered during arduous times, the relatively limited support and guidance provided online helped the students reduce their stress. Perhaps most importantly, it helped them decrease non-adaptive avoidance of thoughts and emotions and increase the ability to refrain from judging their thoughts, emotions, and sensations and act in accordance with their values. It has been pointed out that group interventions during the COVID-19 pandemic may have kept people socially active while also shielding them from psychological side effects (Marmarosh et al., 2020). Our videoconference intervention study shows that international university students could receive help during the pandemic through brief online training aimed at improving their psychological flexibility skills. Many of the observed changes were comparable to those obtained prior to the pandemic in the face-to-face workshop. Importantly, the videoconference workshop was well received by the students.

Our results are in line with those of Browning and colleagues (2022), who reported beneficial results in student mental health from an ACT-based well-being intervention embedded in university courses and delivered over Zoom. Students participating in the courses rated the intervention as helpful and accessible and reported engagement with the learned skills outside of class. In addition, the study of Yuen and colleagues (2019) found significant improvements in self-reported social anxiety symptoms in an ACT group videoconferencing intervention for public speaking anxiety. These results provide support for group videoconferencing as a viable format for delivering acceptance-based interventions. Contrary to the observations from the face-to-face intervention, attending all five videoconference sessions did not result in more significant changes in stress or psychological inflexibility than attending three or four sessions. This observation raises the option that a well-being intervention during the pandemic may have only required three or four sessions.

Overall, the study sample of the two interventions included nearly 40 nationalities, highlighting the fact that it may not be necessary to make interventions or counselling more culturally appropriate for diverse international student populations, as suggested by Forbes-Mewett (2019). Our

findings and the feedback from the participants demonstrate that an ACT workshop promoting psychological flexibility and combined with issues that international university students perceive as relevant can be effective and well received by participants from a variety of cultural backgrounds. Overall, based on the current findings, a focus on developing students' psychological flexibility skills is recommended. This could include teaching students' skills relating to how to deal with uncomfortable or self-critical thoughts and unpleasant feelings, enabling them to explore and determine what is important to them in life, and motivating them to take meaningful actions. Future programs and counselling services for international university students should include guidance on psychological flexibility skills to improve their chances of adjusting to and coping with the new social and academic environment.

4.6 Future recommendations

Considering the high level of distress in the international student population—a conclusion established in past research and investigated in the current study—it is obvious that these students need particular attention while studying abroad. Learning awareness and acceptance skills, clarifying own's own values in relation to studies abroad, and encouraging students to pursue a value-driven study life and acting accordingly should be integrated into both the curriculum and counselling services targeting international university students in the future. An ACT well-being workshop may be a preventive tool for the onset of several kinds of psychological distress. A brief five-session workshop with an additional one or two individual meetings, as in the current study, is an effective and feasible alternative to support these students. In the current study, however, we could not determine the impact of the five-session group intervention alone. Our earlier pilot studies have shown, however, that a group intervention with one assessment meeting for domestic university students is equally effective in enhancing psychological well-being and psychological flexibility skills. A few sessions in a group intervention model can be easily and cost-effectively implemented in university counselling services. As the workshops can also be effectively delivered through videoconference applications, it would also mean easy access to interventions and optimized time for both counsellors and students. Furthermore, a videoconference intervention can provide access to evidence-based strategies during challenging times.

In addition, a videoconference meeting with international university students prior to their arrival in the host country could be a viable option to provide them with some guidance on the academic and cultural aspects of their new study environment as well as the possibility to ask questions and share doubts and difficulties upon arrival. Moreover, they would benefit from further guidance and psychological flexibility training in their host university. These recommendations would pave the way for a smoother transition and stay in the

host country as well as increase students' general ability to constructively handle various life challenges in the future.

Furthermore, the question of culturally tailoring interventions is interesting as the findings of the current study contrast with those of previous studies on the subject. We believe that it may be less critical to culturally tailor an intervention to students when it relates to process-based approaches focused on teaching generic skills, such as in the ACT intervention.

In conclusion, finding cost-effective and clinically meaningful ways to improve international university students' well-being and stress management would benefit from larger studies with more heterogenous samples. It would be important to further investigate different methods of delivery of brief preventive interventions (in person or via videoconference) as well as further examine the processes explaining changes in students' well-being.

4.7 Conclusions

It is estimated that mental health issues among international students are increasing in occurrence and severity (Forbes-Mewett, 2019). The current study confirmed these concerns, showing that international university students may experience significant mental health challenges, such as elevated symptoms of stress, anxiety, and depression, which can have an adverse impact on their well-being and delay their studies.

The studies suggest that it is possible to help international university students by offering them a brief, cost-effective ACT intervention aimed at increasing their psychological flexibility skills, with significant positive impacts on their mental health. The ACT intervention can be successfully delivered both in person and via videoconference, although the in-person intervention might produce slightly larger changes.

The present studies showed that ACT and more generally process-based approaches could offer valuable insights into the well-being of international university students by identifying psychological processes that can explain experienced symptoms. The results showed that diverse aspects of psychological flexibility predicted the level of symptoms in international university students. Life fulfilment, acting with awareness, and non-judgment played the most important role when experiencing stress and depression, while mindfulness skills were associated with symptoms of anxiety. Overall, the results suggest that international university students who act more in accordance with their values and focus better on the present moment report fewer psychological symptoms during their studies abroad.

In addition, the current studies showed that an ACT-based intervention delivered either in-person or through videoconference impacted positively on the psychological well-being of international university students. Also, the relatively brief ACT-based intervention increased psychological flexibility skills. In explicating the changes in well-being during the ACT in-person intervention,

we found that decreased avoidance of emotions and thoughts and changes in non-judgment and value clarification predicted changes in stress. Further, changes in depression symptoms were explained by increased value-based actions, while changes in anxiety were predicted by changes in acting with awareness. These skills can help students handle different life challenges in the future. There is a clear need for cost-effective and low-threshold solutions to the mental health challenges faced by university students. The studies herein provide a viable option to promote the psychological well-being of international university students

YHTEENVETO (SUMMARY)

Hyväksymis- ja omistautumisterapiaan pohjautuva ryhmäinterventio kansainvälisten yliopisto-opiskelijoiden hyvinvoinnin edistämiseksi

Ulkomailla opiskelu tai työskentely on monille rikastuttava kokemus, joka tarjoaa uusia kokemuksia ja näkökulmia. Opiskelijoille se tarjoaa mahdollisuuden kehittää kielitaitoa, opiskella kansainvälisessä kontekstissa ja kokea vierasta kulttuuria ja ympäristöä. Se voi kuitenkin myös tarjota merkittäviä hyvinvoinnin ja mielenterveyden haasteita (Biswas et al., 2022). Kansainvälisillä opiskelijoilla on usein raportoitu haasteita sopeutumisessa uuteen kulttuuriin ja kieleen (Andrade, 2006; Hechanova-Alampay et al., 2002; Mori, 2000). Sopeutuminen uuteen ympäristöön on stressaava kokemus, joka voi ilmetä kommunikaatioongelmina sekä eristäytymisen, yksinäisyyden ja toivottomuuden tunteina (Mori, 2000; Wilton & Constantine, 2003). Nämä sopeutumisen pulmat voivat johtaa psyykkisen oireilun lisääntymiseen, kuten stressiin, yksinäisyyteen (Rosenthal et al., 2006; Russell et al., 2010; Sawir et al., 2008) sekä masennus- (Rice et al., 2012) ja ahdistusoireiluun (Shadowen et al., 2019). Psyykkinen oireilu voi olla monille merkittävä taakka, joka heikentää toimintakykyä ja akateemista suoriutumista sekä aiheuttaa opintojen viivästymistä tai keskeyttämistä (Hauschildt ym., 2015). Lisäksi psyykkinen oireilu voi aiheuttaa kauaskantoisia vaikutuksia opiskelijoiden elämään aikuisena (Auerbach et al., 2018).

Tämän väitöskirjan yleisenä tavoitteena oli tarkastella kansainvälisten yliopisto-opiskelijoiden psyykkistä hyvinvointia ja tutkia erityisesti sitä, millä tavoin heidän hyvinvointiaan voidaan edistää. Opiskelijoiden psyykkistä hyvinvointia tarkasteltiin stressin, ahdistuksen ja masennuksen itsearviointikyselyillä. Tavoitteena oli lisäksi selvittää, mitkä hyväksymis- ja omistautumisterapiaan liittyvät psykologisen joustavuuden taidot liittyivät stressin, masennuksen ja ahdistuneisuuden oireisiin ja parhaiten ennustivat stressiä, masennusta ja ahdistusta. Psykologisen joustavuuden taitoja tarkasteltiin psykologisella joustamattomuudella, tietoisuustaidoilla sekä arvoihin ja arvojen mukaisiin tekoihin liittyvillä joustavuustaidoilla. Koska tässä tutkittava hyvinvointi-interventio tarjottiin sekä kasvokkain että COVID-19 pandemian aikana videoneuvottelusovellus zoomin kautta, tutkimuksessa selvitettiin kahden samanlaisen, mutta eri tavoin tarjotun intervention vaikutusta oireiluun ja psykologiseen joustavuuteen sekä sitä, miten opiskelijat ottivat nämä interventiot vastaan.

Jyväskylän yliopistossa vuosina 2017–2021 opiskelevia kansainvälisiä opiskelijoita rekrytoitiin hyvinvointi-interventioon, jonka tavoitteena oli auttaa sopeutumiseen liittyvien haasteiden kanssa ja tarjota työkaluja omasta hyvinvoinnista huolehtimiseen. Opiskelijoille tarjottiin hyväksymis- ja omistautumisterapian (HOT) menetelmiin pohjautuva n. 7-8 viikon pituinen lyhytinterventio, joka sisälsi yksilöllisen arviointitapaamisen intervention alussa, viisi kahden tunnin tapaamista ryhmässä sekä yksilöllisen arviointitapaamisen intervention päätteeksi. Tutkimukseen rekrytoitiin kansainvälisiä opiskelijoita, jotka osallistuivat 5–12 henkilöstä koostuviin pienryhmiin vuosien 2017–2021 aikana. Opiskelijat

edustivat noin 40 kansallisuutta. Suurimpana ryhmänä olivat Aasian maista saapuneet opiskelijat, joita oli tutkittavista noin yksi kolmasosa. Noin yksi viidesosa opiskelijoista oli kotoisin Keski-Euroopan ja Baltian maista. Opiskelijat olivat iältään 18–46-vuotiaita (keski-ikä 26 vuotta) ja noin 80 % heistä oli naisia. Noin puolet heistä oli tutkinto-opiskelijoita ja puolet vaihto-opiskelijoita. Osatutkimuksessa I tarkasteltiin ainoastaan alkumittausta, kun taas osatutkimuksissa II ja III tarkasteltiin sekä alkumittausta että 7–8 viikkoa alkumittauksen jälkeen suoritettuja loppukyselyjä. Suurin osa opiskelijoista pysyi mukana tutkimuksen loppuun saakka. Yli 80 % osallistui suurimpaan osaan ryhmätapaamisista ja ainoastaan n. 10 % keskeytti intervention.

Osatutkimukseen I ei liittynyt interventiota. Osatutkimuksissa II ja III kansainvälisille opiskelijoille tarjottiin viidestä n. 1,5–2 tunnin ryhmätapaamisesta koostuva hyväksymis- ja omistautumisterapian menetelmiin pohjautuva interventio, jota ohjasi kaksi ryhmänvetäjää. Ennen ryhmän alkua opiskelijat kutsuttiin osallistumaan henkilökohtaiseen puolistrukturoituun haastatteluun, joka perustui Strosahlin ja kumppaneiden (2021) psykososiaaliseen haastattelumalliin. Haastattelun tarkoituksena oli saada yleiskuva opiskelijoiden tilanteesta ja antaa heille yleistietoa interventiosta. Interventio perustui Jyväskylän yliopiston tutkimusryhmän aiemmin kehittämiin lyhyisiin HOT-interventioihin (esim. Lappalainen ym., 2014; Lappalainen ym., 2021; Räsänen ym., 2016). Ryhmäinterventiossa keskityttiin kullakin viikolla eri HOTin prosessiin. Ensimmäisen viikon aiheena olivat arvot, toisella viikolla tarkasteltiin arvojen mukaisia tekoja ja kolmannella viikolla keskiössä olivat tietoisuustaidot. Neljännellä tapaamisella aiheena oli kognitiivinen defuusio eli ajatusten vaikutuksen omaan toimintaan ja viimeisellä viikolla keskityttiin hyväksynnän harjoitteluun sekä myötätuntotaitoihin. Jokainen tapaaminen alkoi tietoisuustaitoharjoituksella, minkä jälkeen tehtiin yhteenveto kuluneen viikon aiheesta. Seuraavaksi esiteltiin uusi HOTin prosessi ja aihetta käsiteltiin erilaisin kokemuksellisten harjoitusten ja metaforien sekä videoiden avulla. Jokaisen tapaamisen päätteeksi annettiin kotitehtävä ja opiskelijoita pyydettiin soveltamaan oppimiaan taitoja käytäntöön. Ryhmäinterventio tarjottiin aluksi perinteisesti kasvokkain (2017–2019), kunnes COVID-19 pandemia esti lähityöskentelyn. Keväästä 2020 alkaen ryhmäinterventio tarjottiin zoom-videoneuvottelusovelluksen kautta.

Osatutkimus 1 tarkasteli kansainvälisten opiskelijoiden (n = 103) psyykkistä hyvinvointia ja psykologisen joustavuuden taitojen yhteyttä oireiluun. Tavoitteena oli selvittää, mitkä psykologisen joustavuuden taidot mukaan lukien psykologinen joustavuus, tietoisuustaidot ja arvojen mukaiset teot liittyivät stressin, masennuksen ja ahdistuksen oireisiin ja mitkä näistä ennustivat vahvimmin näitä oireita. Kun tarkasteltiin tutkimukseen osallistuneiden opiskelijoiden stressi-, masennus- ja ahdistusoireilun vakavuutta, havaittiin, että lähes 90 % heistä raportoi korkeita stressitasoja ja noin 40 % vähintään keskivaikeaa masennusta ja ahdistusta. Lisäksi havaittiin, että opiskelijat, joilla oli alhainen psykologinen joustavuus, kokivat enemmän oireilua. Psykologista joustavuustaidoista (1) arvojen mukaiset teot (ELS-LF), (2) tietoinen toiminta (FFMQ-AW), (3) hyväksyvä suhtautuminen (FFMQ-NJ) ja (4) reagoinnin välttäminen (FFMQ-NR) ennustivat

vahvimmin oireilua. Arvojen mukaiset teot selittivät 25 % stressin ja masennuksen varianssista. Tämä havainto viittaa siihen, että henkilökohtaisten elämänarvojen tunnistaminen ja erityisesti arvojen mukaisten tekojen toteuttaminen saattaa vaikuttaa stressin ja masennuksen oireita vähentävästi. Lisäksi tietoisen läsnäolon taidon sekä erityisesti hyväksyvän suhtautumisen taidon kehittäminen epämiellyttäviä ajatuksia ja tunteita kohtaan voi vaikuttaa stressin ja masennuksen oireita lievittävästi. Nämä kolme taitoa (arvojen mukaiset teot, tietoinen toiminta ja hyväksyvän suhtautumisen taidot) selittivät yhdessä noin 40 % masennuksen oireiden ja yli 30 % stressin määrästä. Näistä arvojen mukaiset teot ennustivat stressiä ja masennusta vahvimmin. Sen sijaan ahdistusoireilun määrää selittivät vahvimmin tietoisuustaitojen osataidot kuten tietoisen toiminnan taito, reagoinnin välttäminen ja hyväksyvän suhtautumisen taito. Vahvin ahdistuksen ennustaja oli tietoinen toiminta.

Osatutkimus II selvitti, oliko lyhyt, ryhmässä kasvokkain toteutettu HOT-hyvinvointi-interventio tehokas vähentämään kansainvälisten opiskelijoiden kokemia psyykkisiä oireita ja lisäämään heidän psykologisen joustavuuden taitojaan. Oletuksena oli, että osallistuminen viiden viikon interventioon vähentäisi koetun stressin, masennuksen ja ahdistuksen oireita ja lisäisi psykologisia joustavuutta. Toisena tavoitteena oli lisätä ymmärrystämme psykologisista prosesseista ja tarkemmin sanottuna oireisiin suotuisasti yhteydessä olevista psykologisen joustavuuden taidoista. Oletimme, että psykologisen joustamattomuuden väheneminen sekä tietoisuustaitojen ja arvojen mukaisten tekojen lisääntyminen ennustaisivat stressin, masennuksen ja ahdistuksen oireiden vähenemistä. Lisäksi tutkimme sitä, miten kansainväliset opiskelijat ottivat intervention vastaan. Tulokset osoittivat, että lähes 90 % tutkimukseen osallistuneista opiskelijoista koki kohtalaisen paljon tai paljon stressiä ja noin puolet vähintään vakavaa masennusoireilua. Noin 40 % heistä raportoi kohtalaisen vakavaa tai vakavaa ahdistusta. Tulokset osoittivat lisäksi, että opiskelijoiden kokema stressi, masennus ja ahdistus vähenivät merkitsevästi intervention aikana. Kun tarkasteltiin intervention vaikutuksen suuruutta, havaittiin stressioireilun vähenemisen olleen suurta ($d > 0,80$) sekä ahdistuksen ja masennuksen vähenemisen keskisuurta ($d > 0,50$). Prosessimuuttujien osalta havaittiin, että psykologinen joustamattomuus (AFQ) väheni merkitsevästi ja muutos oli suuri. Tietoisuustaidot (FFMQ) ja arvotyöskentely (ELS kokonaispistemäärä) lisääntyivät ja muutoksen suuruus oli keskisuuri. Tietoisuustaitojen osa-alueiden osalta havaittiin merkitsevä muutos neljässä viidestä osa-alueesta. Muutos hyväksyvän suhtautumisen taidossa (FFMQ-NJ) oli keskisuuri, kun taas muilla osa-alueilla muutoksen suuruus oli pientä. Muutos arvojen selkiyttämisen taidoissa (ELS-VL) oli pieni ja arvojen mukaisissa teoissa (ELS-LF) kohtalainen. Kun tarkasteltiin sitä, mitkä psykologiset prosessit toimivat oireiden muutoksen ennustajina, havaittiin, että psykologisen joustamattomuuden väheneminen ennusti muutoksia stressissä. Masennuksen oireiden muutoksia selitti puolestaan arvotyöskentelyn lisääntyminen, kun taas tietoisuustaitojen lisääntyminen ennusti ahdistusoireilun vähenemistä. Opiskelijat ottivat hyvinvointi-intervention hyvin vastaan. Kaikki olivat yhtä mieltä siitä, että interventio auttoi heitä selviytymään paremmin heidän kohtaamistaan haas-

teista. Lähes 90 % opiskelijoista koki hyvinvointinsa parantuneen ja olevansa tyytyväisempi elämäänsä.

Osatutkimuksen III tavoitteena oli tutkia COVID-19 pandemian seurauksena, saadaanko samanlaisella, mutta videoneuvottelusovellus zoomin kautta ryhmässä tarjotulla HOT-hyvinvointi-interventiolla samanlaisia tuloksia kuin kasvokkaisella HOT-ryhmäinterventiolla. Lisäksi selvitettiin interventioon sitoutumista, sen toimivuutta ja hyväksyttävyyttä. Tulokset osoittivat, että videoneuvottelun avulla tarjotulla ryhmäinterventiolla oli samanlaisia myönteisiä vaikutuksia kansainvälisten opiskelijoiden oireiluun ja psykologisiin joustavuustaitoihin kuin perinteisesti tarjotulla ryhmäinterventiolla. HOT-hyvinvointi-interventio, joka tarjottiin videoneuvottelusovellus zoomin avulla, vähensi opiskelijoiden stressi-, masennus- ja ahdistusoireilua ja psykologista joustamattomuutta sekä lisäsi heidän tietoisuustaitojaan ja arvojen mukaisia tekoja. Nämä muutokset olivat verrattavissa referenssiryhmän eli pandemiaa edeltävän kasvokkain tarjotun intervention vaikutuksiin. Kun tarkasteltiin interventioon sitoutumista, havaittiin, että opiskelijat sitoutuivat lähes yhtä hyvin videoneuvottelun kautta tarjottuun ryhmäinterventioon. Keskeyttämisprosentti molemmissa ryhmissä oli lähes sama (10 %) ja kaikkiaan lähes 90 % ilmoittautuneista opiskelijoista suoritti intervention loppuun. Ryhmien välillä ei ollut merkitsevää eroa myöskään siinä, kuinka moneen tapaamiseen opiskelijat osallistuivat. Osallistuminen kaikkiin viiteen zoomin avulla tarjottuun ryhmätapaamiseen ei kuitenkaan johtanut suurempiin muutoksiin stressioireilussa tai psykologisessa joustavuudessa kuin osallistuminen kolmeen tai neljään tapaamiseen. Opiskelijat ottivat molemmat interventiot hyvin vastaan ja suosittelivat niitä samansuuntaisesti. Vaikka kasvokkainen ryhmä raportoi hieman korkeampaa tyytyväisyyttä hyvinvointi-interventioon, ryhmien välillä ei ollut tyytyväisyydessä merkitsevää eroa. Yhteenvetona voidaan todeta, että lyhyt, videoneuvottelusovelluksen avulla tarjottu HOT-ryhmäinterventio kohensi kansainvälisten opiskelijoiden hyvinvointia ja muutokset olivat samaa tasoa kuin kasvokkain tarjotussa ryhmäinterventiossa.

Kokonaisuudessaan tämän tutkimuksen tulokset osoittivat, että tutkimukseen osallistuneet kansainväliset yliopisto-opiskelijat kokivat paljon stressiä sekä masennus- ja ahdistusoireilua. Parantamalla heidän psykologisen joustavuuden taitojaan ja kiinnittämällä huomiota erityisesti arvojen mukaisiin tekoihin ja tietoiseen toimintaan oireilua voitaisiin vähentää ja heidän hyvinvointiaan edistää. Kansainvälisten opiskelijoiden ohjauksessa tulisi kiinnittää huomiota erityisesti arvojen mukaisiin tekoihin sekä tietoisuustaitojen osa-alueisiin tietoiseen toimintaan ja hyväksyvän suhtautumisen taitoon, mikäli halutaan vaikuttaa heidän kokemaansa stressin määrään ja masennusoireiluun. Kun puolestaan halutaan vaikuttaa heidän masennusoireiluunsa, tulisi keskittyä erityisesti arvojen mukaisten tekojen lisäämiseen. Mikäli halutaan lievittää ahdistusoireilua, opiskelijoiden tulisi harjoittaa tietoisuustaitojen osataitoja kuten harjoitella toimimaan tietoisesti ja suhtautumaan ajatuksiin ja tunteisiin hyväksyvästi. Tulokset osoittivat lisäksi, että on mahdollista vaikuttaa kansainvälisten opiskelijoiden stressin, masennuksen ja ahdistuksen oireita lievittävästi tarjoamalla heille viiden tapaamisen HOT-ryhmäinterventio joko kasvokkain tai vi-

deoneuvottelusovelluksen avulla ja yhdistämällä siihen kaksi henkilökohtaista arviointitapaamista, jotka voidaan tehdä myös etänä. Lisäksi molemmat HOT-hyvinvointi-interventiot lisäsivät opiskelijoiden psykologista joustavuutta eli vähensivät ajatusten ja tunteiden välttämistä, lisäsivät kykyä hyväksyä ottaa vastaan kaikenlaisia tunteita ja ajatuksia sekä kykyä toimia arvojensa mukaisesti. Myönteiset muutokset sekä kasvokkaisessa että videoneuvottelun avulla tarjotussa ryhmässä olivat samansuuntaiset. Opiskelijat sitoutuivat molempiin interventioihin yhtä hyvin ja suosittelivat niitä muille opiskelijoille. Saatu näyttö tukee näin ollen HOT-ryhmäinterventioiden toteuttamista eri muodoissa kansainvälisten yliopisto-opiskelijoiden hyvinvoinnin edistämiseksi.

REFERENCES

ACBS (2023). ACT Randomized Controlled Trials 1986 to present. https://contextualscience.org/act_randomized_controlled_trials_1986_to_present

Adlaf, E., Gliksman, L., Demers, A., & Newton-Taylor, B. (2001). The Prevalence of Elevated Psychological Distress Among Canadian Undergraduates: Findings from the 1998 Canadian Campus Survey. *Journal of American College Health, 50*, 67–72. https://doi.org/10.1080/07448480109596009

A-Tjak, J. G. L., Davis, M. L., Morina, N., Powers, M. B., Smits, J. A. J., & Emmelkamp, P. M. G. (2015). A Meta-Analysis of the Efficacy of Acceptance and Commitment Therapy for Clinically Relevant Mental and Physical Health Problems. *Psychotherapy and Psychosomatics*, *84*(1), 30–36. https://doi.org/10.1159/000365764

Aguiniga, D. M., Madden, E. E., & Zellmann, K. T. (2016). An exploratory analysis of students' perceptions of mental health in the media. *Social Work in Mental Health*, *14*(4), 428–444. https://doi.org/10.1080/15332985.2015.1118002

Allen, R., Kannangara, C., Vyas, M., & Carson, J. (2022). European university students' mental health during Covid-19: Exploring attitudes towards Covid-19 and governmental response. *Current Psychology*, 1–14. https://doi.org/10.1007/S12144-022-02854-0/FIGURES/1

Altinyelken, H. K., Hoek, L., & Jiang, L. (2019). Improving the psychosocial wellbeing of international students: the relevance of mindfulness. *British Journal of Guidance and Counselling*, *0*(0), 1–13. https://doi.org/10.1080/03069885.2019.1600189

Andersson, G., Carlbring, P., Titov, N., & Lindefors, N. (2019). Internet interventions for adults with anxiety and mood disorders: a narrative umbrella review of recent meta-analyses. *The Canadian Journal of Psychiatry*, *64*(7), 465-470. https://doi.org/10.1177/0706743719839381

Andrade, M. S. (2006). International students in English-speaking universities. *Journal of Research in International Education*, *5*(2), 131–154. https://doi.org/10.1177/1475240906065589

Auerbach, R. P., Mortier, P., Bruffaerts, R., Alonso, J., Benjet, C., Cuijpers, P., Demyttenaere, K., Ebert, D. D., Green, J. G., Hasking, P., Murray, E., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Stein, D. J., Vilagut, G., Zaslavsky, A. M., & Kessler, R. C. (2018). WHO world mental health surveys international college student project: Prevalence and distribution of mental disorders. *Journal of Abnormal Psychology*, *127*(7), 623–638. https://doi.org/10.1037/abn0000362

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, *13*(1), 27–45. https://doi.org/10.1177/1073191105283504

Baloch, G. M., Sundarasen, S., Chinna, K., Nurunnabi, M., Kamaludin, K., Khoshaim, H. B., Hossain, S. F. A., & AlSukayt, A. (2021). COVID-19:

exploring impacts of the pandemic and lockdown on mental health of Pakistani students. *PeerJ*, 9. https://doi.org/10.7717/PEERJ.10612
Banbury, A., Nancarrow, S., Dart, J., Gray, L., & Parkinson, L. (2018). Telehealth Interventions Delivering Home-based Support Group Videoconferencing: Systematic Review. *J Med Internet Res*. https://doi.org/10.2196/JMIR.8090
Barrett, M. S., Chua, W. J., Crits-Christoph, P., Gibbons, M. B., & Thompson, D. (2008). Early withdrawal from mental health treatment: Implications for psychotherapy practice. *Psychotherapy: Theory, research, practice, training*, *45*(2), 247. https://doi.org/10.1037/0033-3204.45.2.247
Batastini, A. B., Paprzycki, P., Jones, A. C. T., & MacLean, N. (2021). Are videoconferenced mental and behavioral health services just as good as in-person? A meta-analysis of a fast-growing practice. *Clinical Psychology Review*, 83. https://doi.org/10.1016/J.CPR.2020.101944
Bi, D., & Li, X. (2021). Psychological flexibility profiles, college adjustment, and subjective well-being among college students in China: A latent profile analysis. *Journal of Contextual Behavioral Science*, *20*, 20–26. https://doi.org/10.1016/J.JCBS.2021.01.008
Biglan, A., Hayes, S. C., & Pistorello, J. (2008). Acceptance and Commitment: Implications for Prevention Science. *Prevention Science : The Official Journal of the Society for Prevention Research*, *9*(3), 139. https://doi.org/10.1007/S11121-008-0099-4
Billingsley, L. (2020). Using Video Conferencing Applications to Share the Death Experience During the COVID-19 Pandemic. *Journal of Radiology Nursing*, *39*(4), 275–277. https://doi.org/10.1016/J.JRADNU.2020.08.001
Binford Hopf, R. B., Grange, D. Le, Moessner, M., & Bauer, S. (2013). Internet-based chat support groups for parents in family-based treatment for adolescent eating disorders: a pilot study. *European Eating Disorders Review : The Journal of the Eating Disorders Association*, *21*(3), 215–223. https://doi.org/10.1002/ERV.2196
Biswas, T., Mäkelä, L., & Andresen, M. (2022). Work and non-work-related antecedents of expatriates' well-being: A meta-analysis. Human Resource Management Review, 32(3), 100889. https://doi.org/10.1016/j.hrmr.2021.100889
Brown, J., & Brown, L. (2013). The international student sojourn, identity conflict and threats to well-being. *British Journal of Guidance and Counselling*, *41*(4), 395–413. https://doi.org/10.1080/03069885.2012.729026
Browning, M.E., Morena, A., Gould, E. R., Lloyd-Richardson, E. R. (2022). Brief ACT for Undergraduates: A Mixed-Methods Pilot Investigation of Acceptance and Commitment Therapy Delivered over Zoom. Online: Journal of College Student Psychotherapy. https://doi.org/10.1080/87568225.2022.2029659
Cao, J., Ji, Y., & Zhu, Z. (2013). Reliability and validity of the Chinese version of the acceptance and action questionnaire-second edition (AAQ-II) in college students. Chinese Mental Health Journal, 27(11), 873–877.

Chase, J. A., Houmanfar, R., Hayes, S. C., Ward, T. A., Vilardaga, J. P., & Follette, V. (2013). Values are not just goals: Online ACT-based values training adds to goal setting in improving undergraduate college student performance. *Journal of Contextual Behavioral Science, 2*(3–4), 79–84. https://doi.org/10.1016/j.jcbs.2013.08.002

Chen, Y. Y., Bakar, S. M. A., Saimon, R., & Safii, R. (2022). The Use of Online-based Acceptance and Commitment Therapy (e-ACT) to Improve the Psychological Wellbeing among University Students. https://doi.org/10.1080/87568225.2022.2134073

Christodoulou, V., Flaxman, P. E., & Lloyd, J. (2021). Acceptance and Commitment Therapy in Group Format for College Students. *Journal of College Counseling*, *24*(3), 210–223. https://doi.org/10.1002/JOCC.12192

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396. https://doi.org/10.2307/2136404Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the US. In S. Spacapam & S. Oskamp (Eds.), The social psychology of health: The Claremont Symposium on Applied Social Psychology. Sage Publications.

Crasta, D., Daks, J. S., & Rogge, R. D. (2020). Modeling suicide risk among parents during the COVID-19 pandemic: Psychological inflexibility exacerbates the impact of COVID-19 stressors on interpersonal risk factors for suicide. *Journal of Contextual Behavioral Science*, *18*, 117–127. https://doi.org/10.1016/J.JCBS.2020.09.003

Cuijpers, P., Smit, F., Aalten, P., Batelaan, N., Klein, A., Salemink, E., Spinhoven, P., Struijs, S., Vonk, P., Wiers, R. W., de Wit, L., Gentili, C., Ebert, D. D., Bruffaerts, R., Kessler, R. C., & Karyotaki, E. (2021). The Associations of Common Psychological Problems With Mental Disorders Among College Students. *Frontiers in psychiatry*, *12*, 573637. https://doi.org/10.3389/fpsyt.2021.573637

Danitz, S. B., Suvak, M. K., & Orsillo, S. M. (2016). The Mindful Way Through the Semester: Evaluating the Impact of Integrating an Acceptance-Based Behavioral Program Into a First-Year Experience Course for Undergraduates. *Behavior Therapy*, *47*(4), 487–499. https://doi.org/10.1016/j.beth.2016.03.002

Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis: *Https://Doi.Org/10.1177/0047239520934018*, *49*(1), 5–22. https://doi.org/10.1177/0047239520934018

Di Consiglio, M., Merola, S., Pascucci, T., Violani, C., & Couyoumdjian, A. (2021). The impact of covid-19 pandemic on italian university students' mental health: Changes across the waves. *International Journal of Environmental Research and Public Health*, *18*(18). https://doi.org/10.3390/IJERPH18189897/S1

Doorley, J. D., Goodman, F. R., Kelso, K. C., & Kashdan, T. B. (2020). Psychological flexibility: What we know, what we do not know, and what

we think we know. *Social and Personality Psychology Compass*, *14*(12), 1–11. https://doi.org/10.1111/SPC3.12566
Duan, L., & Zhu, G. (2020). Psychological interventions for people affected by the COVID-19 epidemic. *The Lancet Psychiatry*, *7*(4), 300–302. https://doi.org/10.1016/S2215-0366(20)30073-0
Essadek, A., & Rabeyron, T. (2020). Mental health of French students during the Covid-19 pandemic. *Journal of Affective Disorders*, *277*, 392–393. https://doi.org/10.1016/J.JAD.2020.08.042
Fernández-Álvarez, J., & Fernández-Álvarez, H. (2021). Videoconferencing Psychotherapy During the Pandemic: Exceptional Times With Enduring Effects? *Frontiers in Psychology*, *12*, 138. https://doi.org/10.3389/FPSYG.2021.589536/BIBTEX
Finkelstein-Fox, L., Pavlacic, J. M., Buchanan, E. M., Schulenberg, S. E., & Park, C. L. (2020). Valued Living in Daily Experience: Relations with Mindfulness, Meaning, Psychological Flexibility, and Stressors. *Cognitive Therapy and Research*, *44*(2), 300–310. https://doi.org/10.1007/s10608-019-10062-7
Flesia, L., Monaro, M., Mazza, C., Fietta, V., Colicino, E., Segatto, B., & Roma, P. (2020). Predicting perceived stress related to the covid-19 outbreak through stable psychological traits and machine learning models. *Journal of Clinical Medicine*, *9*(10), 1–17. https://doi.org/10.3390/JCM9103350
Forbes-Mewett, H. (2019). *Mental health and international students: Issues, challenges and effective practice*. International Education Association of Australia (IEAA). Retrieved from: https://www.researchgate.net/publication/334721342_Mental_Health_and_International_Students_Issues_challenges_effective_practice
Forbes-Mewett, H., & Sawyer, A.-M. (2016). International Students and Mental Health. *Journal of International Students*, *6*(3), 661–677. https://doi.org/10.32674/jis.v6i3.348
Frögéli, E., Djordjevic, A., Rudman, A., Livheim, F., & Gustavsson, P. (2016). A randomized controlled pilot trial of acceptance and commitment training (ACT) for preventing stress-related ill health among future nurses. *Anxiety, Stress, and Coping*, *29*(2), 202–218. https://doi.org/10.1080/10615806.2015.1025765
Gallagher, M. W., Zvolensky, M. J., Long, L. J., Rogers, A. H., & Garey, L. (2020). The Impact of Covid-19 Experiences and Associated Stress on Anxiety, Depression, and Functional Impairment in American Adults. *Cognitive Therapy and Research*, *44*(6), 1043–1051. https://doi.org/10.1007/S10608-020-10143-Y/TABLES/4
Gallego, A., McHugh, L., Villatte, M., & Lappalainen, R. (2020). Examining the relationship between public speaking anxiety, distress tolerance and psychological flexibility. *Journal of Contextual Behavioral Science*, *16*, 128–133. https://doi.org/10.1016/j.jcbs.2020.04.003
Gentry, M. T., Lapid, M. I., Clark, M. M., & Rummans, T. A. (2019). Evidence for telehealth group-based treatment: A systematic review. *Journal of*

Telemedicine and Telecare, *25*(6), 327–342. https://doi.org/10.1177/1357633X18775855

Gershkovich, M., Herbert, J. D., Forman, E. M., & Glassman, L. (2016). Guided Internet-Based Self-Help Intervention for Social Anxiety Disorder With Videoconferenced Therapist Support. *Cognitive and Behavioral Practice*, *23*(2), 239–255. https://doi.org/10.1016/J.CBPRA.2015.08.005

Glick, D. M., Millstein, D. J., & Orsillo, S. M. (2014). A preliminary investigation of the role of psychological inflexibility in academic procrastination. *Journal of Contextual Behavioral Science*, *3*(2), 81–88. https://doi.org/10.1016/J.JCBS.2014.04.002

Gloster, A. T., Meyer, A. H., & Lieb, R. (2017). Psychological flexibility as a malleable public health target: Evidence from a representative sample. *Journal of Contextual Behavioral Science*, *6*(2), 166–171. https://doi.org/10.1016/J.JCBS.2017.02.003

Gloster, A. T., Walder, N., Levin, M., Twohig, M., & Karekla, M. (2020). The empirical status of acceptance and commitment therapy: A review of meta-analyses. *Journal of Contextual Behavioral Science, 18*, 181–192. https://doi.org/10.1016/j.jcbs.2020.09.009

Greco, L. A., Lambert, W., & Baer, R. A. (2008). Psychological inflexibility in childhood and adolescence: Development and evaluation of the Avoidance and Fusion Questionnaire for Youth. *Psychological Assessment, 20(2)*, 93–102. https://doi.org/10.1037/1040-3590.20.2.93

Grégoire, S., Beaulieu, F., Lachance, L., Bouffard, T., Vezeau, C., & Perreault, M. (2022). An online peer support program to improve mental health among university students: A randomized controlled trial. *Journal of American College Health*. https://doi.org/10.1080/07448481.2022.2099224/SUPPL_FILE/VACH_A_2099224_SM8370.DOCX

Grégoire, S., Doucerain, M., Morin, L., & Finkelstein-Fox, L. (2021). The relationship between value-based actions, psychological distress and well-being: A multilevel diary study. *Journal of Contextual Behavioral Science*, *20*, 79-88. https://doi.org/10.1016/j.jcbs.2021.03.006

Grégoire, S., Lachance, L., Bouffard, T., & Dionne, F. (2018). The Use of Acceptance and Commitment Therapy to Promote Mental Health and School Engagement in University Students: A Multisite Randomized Controlled Trial. *Behavior Therapy*, *49*(3). https://doi.org/10.1016/j.beth.2017.10.003

Han, X., Han, X., Luo, Q., Jacobs, S., & Jean-Baptiste, M. (2012). Report of a Mental Health Survey Among Chinese International Students at Yale University, *61*(1), 1–8. https://doi.org/10.1080/07448481.2012.738267

Harris, R. (2019). *ACT made simple: an easy-to-read primer on acceptance and commitment therapy* (2nd ed.). New Harbinger Publications.

Harris, R. (2020). FACE COVID: How to respond effectively to the Corona crisis. https://www.actmindfully.com.au/wp-

content/uploads/2020/03/FACE-COVID-eBook-by-Russ-Harris-March-2020.pdf
Hauschildt, K., Gwosc, C., Netz, N., & Mishra, S. (2015). *Social and economic conditions of student life in Europe: Synopsis of indicators. Eurostudent V 2012–2015*. W. Bertelsmann Verlag. https://www.eurostudent.eu/download_files/documents/EVSynopsisofIndicators.pdf
Hayes, S. C. (2016). Acceptance and Commitment Therapy, Relational Frame Theory, and the Third Wave of Behavioral and Cognitive Therapies – Republished Article. *Behavior Therapy*, *47*(6), 869–885. https://doi.org/10.1016/J.BETH.2016.11.006
Hayes, S. C. (2019). Acceptance and commitment therapy: towards a unified model of behavior change. *World psychiatry*, *18*(2), 226. https://doi.org/10.1002/wps.20626
Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and Commitment Therapy: Model, processes and outcomes. *Behaviour Research and Therapy*, *44*(1), 1–25. https://doi.org/10.1016/j.brat.2005.06.006
Hayes, S. C., Pistorello, J., & Levin, M. E. (2012). Acceptance and Commitment Therapy as a Unified Model of Behavior Change. *The Counseling Psychologist*, *40*(7), 976–1002. https://doi.org/10.1177/0011000012460836
Hayes, S. C., Strosahl, K., Wilson, K. G., Bissett, R. T., Pistorello, J., Toarmino, D., Polusny, M. A., Dykstra, T. A., Batten, S. V., Bergan, J., Stewart, S. H., Zvolensky, M. J., Eifert, G. H., Bond, F. W., Forsyth, J. P., Karekla, M., & Mccurry, S. M. (2004). Measuring experiential avoidance: A preliminary test of a working model. *Psychological Record*, *54*(4), 553–578. https://doi.org/10.1007/BF03395492/METRICS
Hechanova-Alampay, R., Beehr, T. A., Christiansen, N. D., & Van Horn, R. K. (2002). Adjustment and strain among domestic and international student sojourners: A longitudinal study. *School Psychology International*, *23*(4), 458-474. https://doi.org/10.1177/0143034302234007
Herbert, M. S., Afari, N., Liu, L., Heppner, P., Rutledge, T., Williams, K., ... & Wetherell, J. L. (2017). Telehealth versus in-person acceptance and commitment therapy for chronic pain: a randomized noninferiority trial. *The Journal of Pain*, *18*(2), 200-211. https://doi.org/10.1016/j.jpain.2016.10.014
Herbert, M. S., Dochat, C., Wooldridge, J. S., Materna, K., Blanco, B. H., Tynan, M., Lee, M. W., Gasperi, M., Camodeca, A., Harris, D., & Afari, N. (2022). Technology-supported Acceptance and Commitment Therapy for chronic health conditions: A systematic review and meta-analysis. *Behaviour Research and Therapy*, *148*, 103995. https://doi.org/10.1016/J.BRAT.2021.103995
Hernández-López, M., Cepeda-Benito, A., Díaz-Pavón, P., & Rodríguez-Valverde, M. (2021). Psychological inflexibility and mental health symptoms during the COVID-19 lockdown in Spain: A longitudinal study.

Journal of Contextual Behavioral Science, *19*, 42–49. https://doi.org/10.1016/J.JCBS.2020.12.002

Howell, A. J., & Passmore, H. A. (2019). Acceptance and commitment training (ACT) as a positive psychological intervention: A systematic review and initial meta-analysis regarding ACT's role in well-being promotion among university students. *Journal of Happiness Studies*, *20*(6), 1995–2010. https://doi.org/10.1007/s10902-018-0027-7

Jiang, X., Deng, L., Zhu, Y., Ji, H., Tao, L., Liu, L., Yang, D., & Ji, W. (2020). Psychological crisis intervention during the outbreak period of new coronavirus pneumonia from experience in Shanghai. *Psychiatry Research*, *286*, 112903. https://doi.org/10.1016/J.PSYCHRES.2020.112903

Jung, E., Hecht, M. L., & Wadsworth, B. C. (2007). The role of identity in international students' psychological well-being in the United States: A model of depression level, identity gaps, discrimination, and acculturation. *International Journal of Intercultural Relations*, *31*(5), 605–624. https://doi.org/10.1016/j.ijintrel.2007.04.001

Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review*, *30*(4), 865–878. https://doi.org/10.1016/J.CPR.2010.03.001

Kaparounaki, C. K., Patsali, M. E., Mousa, D. P. V., Papadopoulou, E. V., Papadopoulou, K. K., & Fountoulakis, K. N. (2020). University students' mental health amidst the COVID-19 quarantine in Greece. *Psychiatry research*, *290*, 113111. https://doi.org/10.1016/j.psychres.2020.113111

Katajavuori, N., Vehkalahti, K., & Asikainen, H. (2021). Promoting university students' well-being and studying with an acceptance and commitment therapy (ACT)-based intervention. *Current Psychology 2021*, 1–13. https://doi.org/10.1007/S12144-021-01837-X

Kawamoto, A., Youn, S. J., Bartholomew, T. T., Castonguay, L. G., &Locke, B. D. (2018). Inter- and intra-group differences in psychological concerns among international students. CounsellingPsychologyQuarterly, 31(2), 186–204.

Khoshlessan, R., & Das, K. P. (2017). Analyzing international students' study anxiety in higher education. *Journal of International Students*, *7*(2), 311–328. https://doi.org/10.32674/jis.v7i2.383

Kim, Y. K., Maleku, A., Lemieu, C., Du, X., & Chen, Z. (2019). Behavioral health risk and resilience among international students in the united states: A study of sociodemographic differences. *Journal of International Students*, *9*(1), 282–305. https://doi.org/10.32674/jis.v9i1.264

Kingston, J., Clarke, S., & Remington, B. (2010). Experiential avoidance and problem behavior: a mediational analysis. *Behavior Modification*, *34*(2), 145–163. https://doi.org/10.1177/0145445510362575

Kinnunen, S. M., Puolakanaho, A., Tolvanen, A., Mäkikangas, A., & Lappalainen, R. (2020). Improvements in Mindfulness Facets Mediate the Alleviation of Burnout Dimensions. *Mindfulness*, *11*(12), 2779–2792. https://doi.org/10.1007/s12671-020-01490-8

Knirsch, P. (2015). *Measuring values and committed action with the Engaged Living Scale (ELS): psychometric evaluation in populations with minor depression and chronic pain.* essay.utwente.nl. Retrieved from http://essay.utwente.nl/68632/

KOTT survey (2021). The Finnish Student Health and Wellbeing Survey. Retrieved from https://thl.fi/en/web/thlfi-en/research-and-development/research-and-projects/the-finnish-student-health-and-wellbeing-survey-kott-

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*(9), 606–613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x

Kroenke, K., Spitzer, R. L., & Williams, J. W. (2002). The PHQ-15: Validity of a new measure for evaluating the severity of somatic symptoms. Psychosomatic Medicine, 64(2), 258–266.

Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., & Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. PloS One, 8(8), e69841. https://doi.org/10.1371/journal.pone.0069841

Kutner, M. H., Neter, J., Nachtsheim, C. J., & Li, W. (2004). *Applied linear statistical models*, 5th Edition. McGraw- Hill Irwin, Boston.

Lai, A. Y., Lee, L., Wang, M., Feng, Y., Lai, T. T., Ho, L., Lam, V. S., Ip, M. S., & Lam, T. (2020). Mental Health Impacts of the COVID-19 Pandemic on International University Students, Related Stressors, and Coping Strategies. *Frontiers in Psychiatry*, *11*, 584240. https://doi.org/10.3389/fpsyt.2020.584240

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology, 4*. https://doi.org/10.3389/FPSYG.2013.00863

Landi, G., Pakenham, K. I., Mattioli, E., Crocetti, E., Agostini, A., Grandi, S., & Tossani, E. (2022). Post-traumatic growth in people experiencing high post-traumatic stress during the COVID-19 pandemic: The protective role of psychological flexibility. *Journal of Contextual Behavioral Science*, *26*, 44–55. https://doi.org/10.1016/J.JCBS.2022.08.008

Lappalainen, P., Granlund, A., Siltanen, S., Ahonen, S., Vitikainen, M., Tolvanen, A., & Lappalainen, R. (2014). ACT Internet-based vs face-to-face? A randomized controlled trial of two ways to deliver Acceptance and Commitment Therapy for depressive symptoms: An 18-month follow-up. *Behaviour Research and Therapy*, *61*, 43–54. https://doi.org/10.1016/J.BRAT.2014.07.006

Lappalainen, P., Lappalainen, R., Keinonen, K., Kaipainen, K., Puolakanaho, A., Muotka, J., & Kiuru, N. (2023). In the shadow of COVID-19: A randomized controlled online ACT trial promoting adolescent psychological flexibility and self-compassion. *Journal of Contextual Behavioral Science*, *27*, 34–44. https://doi.org/10.1016/J.JCBS.2022.12.001

Lappalainen, P., Pakkala, I., & Nikander, R. (2019). CareACT - internet-based intervention for enhancing the psychological well-being of elderly caregivers - a study protocol of a controlled trial. *BMC Geriatrics*, *19*(1). https://doi.org/10.1186/S12877-019-1071-9

Lappalainen, R., Lappalainen, P., Puolakanaho, A., Hirvonen, R., Eklund, K., Ahonen, T., Muotka, J., & Kiuru, N. (2021). The Youth Compass -the effectiveness of an online acceptance and commitment therapy program to promote adolescent mental health: A randomized controlled trial. *Journal of Contextual Behavioral Science*, *20*, 1–12. https://doi.org/10.1016/J.JCBS.2021.01.007

Lavelle, J., Storan, D., Murthy, V. E., De Dominicis, N., Mulcahy, H. E., & McHugh, L. (2022). Brief and Telehealth Acceptance and Commitment Therapy (ACT) Interventions for Stress in Inflammatory Bowel Disease (IBD): A Series of Single Case Experimental Design (SCED) Studies. *Journal of Clinical Medicine*, *11*(10). https://doi.org/10.3390/JCM11102757

Lee, J.-S., Koeske, G. F., & Sales, E. (2004). Social support buffering of acculturative stress: A study of mental health symptoms among Korean international students. International Journal of Intercultural Relations, 28, 399–414. https://doi.org/10.1016/j.ijintrel.2004.08.005

Lee, J. K., & Orsillo, S. M. (2014). Investigating cognitive flexibility as a potential mechanism of mindfulness in Generalized Anxiety Disorder. *Journal of Behavior Therapy and Experimental Psychiatry*, *45*(1), 208–216. https://doi.org/10.1016/j.jbtep.2013.10.008

Levin, M. E., Haeger, J. A., Pierce, B. G., & Twohig, M. P. (2017). Web-Based Acceptance and Commitment Therapy for Mental Health Problems in College Students: A Randomized Controlled Trial. *Behavior Modification*, *41*(1), 141–162. https://doi.org/10.1177/0145445516659645

Levin, M. E., Hayes, S. C., Pistorello, J., & Seeley, J. R. (2016). Web-Based Self-Help for Preventing Mental Health Problems in Universities: Comparing Acceptance and Commitment Training to Mental Health Education. *Journal of Clinical Psychology*, *72*(3), 207–225. https://doi.org/10.1002/jclp.22254

Levin, M. E., Hildebrandt, M. J., Lillis, J., & Hayes, S. C. (2012). The Impact of Treatment Components Suggested by the Psychological Flexibility Model: A Meta-Analysis of Laboratory-Based Component Studies. *Behavior Therapy*, *43*(4), 741–756.

Levin, M. E., Krafft, J., Davis, C. H., & Twohig, M. P. (2021). Evaluating the effects of guided coaching calls on engagement and outcomes for online acceptance and commitment therapy, *50*(5), 395–408. https://doi.org/10.1080/16506073.2020.1846609

Levin, M. E., Krafft, J., Seifert, S., & Lillis, J. (2020). Tracking Valued and Avoidant Functions with Health Behaviors: A Randomized Controlled Trial of the Acceptance and Commitment Therapy Matrix Mobile App. *Behavior Modification*. https://doi.org/10.1177/0145445520913987

Levin, M. E., Pistorello, J., Seeley, J. R., & Hayes, S. C. (2014). Feasibility of a Prototype Web-Based Acceptance and Commitment Therapy Prevention Program for College Students. *Journal of American College Health*, *62*(1), 20–30. https://doi.org/10.1080/07448481.2013.843533

Li, S., Wang, Y., Xue, J., Zhao, N., & Zhu, T. (2020). The impact of COVID-19 epidemic declaration on psychological consequences: a study on active Weibo users. *International journal of environmental research and public health*, *17*(6), 2032. https://doi.org/10.3390/IJERPH17062032

López, J., Perez-Rojo, G., Noriega, C., Carretero, I., Velasco, C., Martinez-Huertas, J. A., López-Frutos, P., & Galarraga, L. (2020). Psychological well-being among older adults during the COVID-19 outbreak: a comparative study of the young-old and the old-old adults. *International Psychogeriatrics*, *32*(11), 1365–1370. https://doi.org/10.1017/S1041610220000964

Lovibond, S. H., & Lovibond, P. F. (1995b). Manual for the Depression Anxiety Stress Scales. Sydney, Australia: Psychology Foundation.

Lu, S. H., Dear, B. F., Johnston, L., Wootton, B. M., & Titov, N. (2014). An internet survey of emotional health, treatment seeking and barriers to accessing mental health treatment among Chinese-speaking international students in Australia, *27*(1), 96–108. https://doi.org/10.1080/09515070.2013.824408

Ma, L., Wang, Y., Pan, L., Cui, Z., & Schluter, P. J. (2022). Mindfulness-informed (ACT) and Mindfulness-based Programs (MBSR/MBCT) applied for college students to reduce symptoms of depression and anxiety. *Journal of Behavioral and Cognitive Therapy*. https://doi.org/10.1016/j.jbct.2022.05.002

Mallett, R., Coyle, C., Kuang, Y., & Gillanders, D. T. (2021). Behind the masks: A cross-sectional study on intolerance of uncertainty, perceived vulnerability to disease and psychological flexibility in relation to state anxiety and wellbeing during the COVID-19 pandemic. *Journal of Contextual Behavioral Science*, *22*, 52–62. https://doi.org/10.1016/J.JCBS.2021.09.003

Marmarosh, C. L., Forsyth, D. R., Strauss, B., & Burlingame, G. M. (2020). The psychology of the COVID-19 pandemic: A group-level perspective. *Group Dynamics: Theory, Research, and Practice*, *24*(3), 122. https://doi.org/10.1037/GDN0000142

Masuda, A., Hayes, S. C., Fletcher, L. B., Seignourel, P. J., Bunting, K., Herbst, S. A., Twohig, M. P., & Lillis, J. (2007). Impact of acceptance and commitment therapy versus education on stigma toward people with psychological disorders. *Behaviour Research and Therapy*, *45*(11), 2764–2772. https://doi.org/10.1016/J.BRAT.2007.05.008

Masuda, A., Muto, T., Tully, E. C., Morgan, J., & Hill, M. L. (2014). Comparing Japanese College Students' and U.S. College Students' Disordered Eating, Distress, and Psychological Inflexibility. *Journal of Cross-Cultural Psychology*, *45*(7), 1162–1174. https://doi.org/10.1177/0022022114534982

Masuda, A., & Tully, E. C. (2012). The role of mindfulness and psychological flexibility in somatization, depression, anxiety, and general psychological

distress in a nonclinical college sample. *Journal of Evidence-Based Complementary and Alternative Medicine*, *17*(1), 66–71. https://doi.org/10.1177/2156587211423400

McCracken, L. M., Badinlou, F., Buhrman, M., & Brocki, K. C. (2021). The role of psychological flexibility in the context of COVID-19: Associations with depression, anxiety, and insomnia. *Journal of Contextual Behavioral Science*, *19*, 28–35. https://doi.org/10.1016/J.JCBS.2020.11.003

McCracken, L. M., & Velleman, S. C. (2010). Psychological flexibility in adults with chronic pain: A study of acceptance, mindfulness, and values-based action in primary care. *Pain*, *148*(1), 141–147. https://doi.org/10.1016/j.pain.2009.10.034

McGuire, P. (2020). My anxiety tiger is back on the prowl: Online counselling can help us to control our responses to the Coronavirus crisis. The Irish Times. https://www.irishtimes.com/life-and-style/health-family/here-is- a-list-of-counselling-services-if-you-want-to-talk-to-someone-1.4211976

Meda, N., Pardini, S., Slongo, I., Bodini, L., Zordan, M. A., Rigobello, P., Visioli, F., & Novara, C. (2021). Students' mental health problems before, during, and after COVID-19 lockdown in Italy. *Journal of Psychiatric Research*, *134*, 69–77. https://doi.org/10.1016/J.JPSYCHIRES.2020.12.045

Misra, R., & McKean, M. (2000). College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *American journal of Health studies*, *16*(1), 41. Retrieved from https://www.proquest.com/scholarly-journals/college-students-academic-stress-relation-their/docview/210480531/se-2

Mori, S. C. (2000). Addressing the Mental Health Concerns of International Students. *Journal of Counseling & Development*, *78*(2), 137–144. https://doi.org/10.1002/j.1556-6676.2000.tb02571.x

Morin, C. M., Bjorvatn, B., Chung, F., Holzinger, B., Partinen, M., Penzel, T., Ivers, H., Wing, Y. K., Chan, N. Y., Merikanto, I., Mota-Rolim, S., Macêdo, T., De Gennaro, L., Léger, D., Dauvilliers, Y., Plazzi, G., Nadorff, M. R., Bolstad, C. J., Sieminski, M., … Espie, C. A. (2021). Insomnia, anxiety, and depression during the COVID-19 pandemic: an international collaborative study. *Sleep Medicine*, *87*, 38–45. https://doi.org/10.1016/J.SLEEP.2021.07.035

Muscara, F., McCarthy, M. C., Rayner, M., Nicholson, J. M., Dimovski, A., McMillan, L., Hearps, S. J. C., Yamada, J., Burke, K., Walser, R., & Anderson, V. A. (2020). Effect of a Videoconference-Based Online Group Intervention for Traumatic Stress in Parents of Children With Life-threatening Illness: A Randomized Clinical Trial. *JAMA Network Open*, *3*(7), e208507–e208507. https://doi.org/10.1001/JAMANETWORKOPEN.2020.8507

Muthén, L. K. (1998). *Mplus user's guide*. Muthén & Muthén.

Muto, T., Hayes, S. C., & Jeffcoat, T. (2011). The Effectiveness of Acceptance and Commitment Therapy Bibliotherapy for Enhancing the Psychological

Health of Japanese College Students Living Abroad. *Behavior Therapy*, *42*(2), 323–335. https://doi.org/10.1016/j.beth.2010.08.009
OECD. (2019). Education at a Glance 2019. In *Education at a Glance: OECD Indicators*. OECD. https://doi.org/10.1787/f8d7880d-en
OECD (2022), *Education at a Glance 2022: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/3197152b-en
Pakenham, K. I., Landi, G., Boccolini, G., Furlani, A., Grandi, S., & Tossani, E. (2020). The moderating roles of psychological flexibility and inflexibility on the mental health impacts of COVID-19 pandemic and lockdown in Italy. *Journal of Contextual Behavioral Science*, *17*, 109–118. https://doi.org/10.1016/J.JCBS.2020.07.003
Paliliunas, D., Belisle, J., & Dixon, M. R. (2018). A Randomized Control Trial to Evaluate the Use of Acceptance and Commitment Therapy (ACT) to Increase Academic Performance and Psychological Flexibility in Graduate Students. *Behavior Analysis in Practice 2018 11:3*, *11*(3), 241–253. https://doi.org/10.1007/S40617-018-0252-X
Pappa, S., Yada, T., & Perälä-Littunen, S. (2020). International Master's Degree Students' Well-being at a Finnish University during COVID-19. *Open Education Studies*, *2*(1), 240–251. https://doi.org/10.1515/EDU-2020-0128/MACHINEREADABLECITATION/RIS
Phan, J. M., Kim, S., Linh, Đ. T. T., Cosimi, L. A., & Pollack, T. M. (2022). Telehealth Interventions for HIV in Low- and Middle-Income Countries. *Current HIV/AIDS Reports*, *19*(6), 600–609. https://doi.org/10.1007/S11904-022-00630-0/FIGURES/1
Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., Kontopantelis, E., Webb, R., Wessely, S., McManus, S., & Abel, K. M. (2020). Mental health before and during the COVID-19 pandemic: a longitudinal probability sample survey of the UK population. *The Lancet Psychiatry*, *7*(10), 883–892. https://doi.org/10.1016/S2215-0366(20)30308-4
Pistorello, J. (Ed.). (2013). *Mindfulness and acceptance for counseling college students: Theory and practical applications for intervention, prevention, and outreach*. New Harbinger Publications.
Pots, W., Trompetter, H. R., Schreurs, K. M., & Bohlmeijer, E. T. (2016). How and for whom does web-based acceptance and commitment therapy work? Mediation and moderation analyses of web-based ACT for depressive symptoms. *BMC psychiatry*, *16*(1), 1-13. https://doi.org/10.1186/s12888-016-0841-6
Prowse, R., Sherratt, F., Abizaid, A., Gabrys, R. L., Hellemans, K. G. C., Patterson, Z. R., & McQuaid, R. J. (2021). Coping With the COVID-19 Pandemic: Examining Gender Differences in Stress and Mental Health Among University Students. *Frontiers in Psychiatry*, *12*, 439. https://doi.org/10.3389/fpsyt.2021.650759
Puolakanaho, A., Lappalainen, R., Lappalainen, P., Muotka, J. S., Hirvonen, R., Eklund, K. M., Ahonen, T. P. S., & Kiuru, N. (2019). Reducing Stress and Enhancing Academic Buoyancy among Adolescents Using a Brief Web-

based Program Based on Acceptance and Commitment Therapy: A Randomized Controlled Trial. *Journal of Youth and Adolescence*, *48*(2), 287–305. https://doi.org/10.1007/s10964-018-0973-8

Radyani, A. M., Indra, G. H., & Oriza, I. I. D. (2022). Psychological Inflexibility Moderates Stress and Loneliness in Depression Among Indonesian College Students During the COVID-19 Pandemic. *KnE Social Sciences*, 168-188. https://doi.org/10.18502/kss.v7i1.10210

Räsänen, P., Lappalainen, P., Muotka, J., Tolvanen, A., & Lappalainen, R. (2016). An online guided ACT intervention for enhancing the psychological wellbeing of university students: A randomized controlled clinical trial. *Behaviour Research and Therapy*, *78*, 30–42. https://doi.org/10.1016/j.brat.2016.01.001

Räsänen, P., Muotka, J., & Lappalainen, R. (2020). Examining mediators of change in wellbeing, stress, and depression in a blended, Internet-based, ACT intervention for university students. *Internet Interventions*, *22*, 100343. https://doi.org/10.1016/j.invent.2020.100343

Rawal, A., Park, R. J., & Williams, J. M. G. (2010). Rumination, experiential avoidance, and dysfunctional thinking in eating disorders. *Behaviour Research and Therapy*, *48*(9), 851–859. https://doi.org/10.1016/J.BRAT.2010.05.009

Recabarren, R. E., Gaillard, C., Guillod, M., & Martin-Soelch, C. (2019). Short-term effects of a multidimensional stress prevention program on quality of life, well-being and psychological resources. A randomized controlled trial. *Frontiers in psychiatry*, *10*, 88. https://doi.org/10.3389/fpsyt.2019.00088

Rice, K. G., Choi, C.-C., Zhang, Y., Morero, Y. I., & Anderson, D. (2012). Self-Critical Perfectionism, Acculturative Stress, and Depression Among International Students. *The Counseling Psychologist*, *40*(4), 575–600. https://doi.org/10.1177/0011000011427061

Rienties, B., Beausaert, S., Grohnert, T., Niemantsverdriet, S., & Kommers, P. (2012). Understanding academic performance of international students: The role of ethnicity, academic and social integration. *Higher Education*, *63*(6), 685–700. https://doi.org/10.1007/S10734-011-9468-1/TABLES/4

Rosenthal, D. A., Russell, V. J., & Thomson, G. D. (2006). A growing experience: The health and well-being of international students at the University of Melbourne. Melbourne: The University of Melbourne. Also available online at www.kcwh.unimelb.edu.au/news/reportsandnonpeer

Rosenthal, D. A., Russell, J., & Thomson, G. (2008). The health and wellbeing of international students at an Australian university. *Higher Education*, *55*(1), 51–67. https://doi.org/10.1007/s10734-006-9037-1

Ruiz, F. J. (2014). *The relationship between low levels of mindfulness skills and pathological worry: The mediating role of psychological inflexibility*. *30*, 887–897. https://doi.org/10.6018/analesps.30.3.150651

Ruiz, F. J., & Odriozola-González, P. (2015). Comparing Cognitive, Metacognitive, and Acceptance and Commitment Therapy Models of

Depression: a Longitudinal Study Survey. *The Spanish Journal of Psychology*, *18*, E39. https://doi.org/10.1017/sjp.2015.31
Russell, J., Rosenthal, D., & Thomson, G. (2010). The international student experience: Three styles of adaptation. *Higher Education*, *60*(2), 235–249. https://doi.org/10.1007/s10734-009-9297-7
Sandhu, D. S., & Asrabadi, B. R. (1994). Development of an acculturative stress scale for international students: Preliminary findings. *Psychological reports*, *75*(1), 435-448. https://doi.org/10.2466/pr0.1994.75.1.435
Sawir, E., Marginson, S., Deumert, A., Nyland, C., & Ramia, G. (2008). Loneliness and International Students: An Australian Study. *Journal of Studies in International Education*, *12*(2), 148–180. https://doi.org/10.1177/1028315307299699
Shadowen, N. L., Williamson, A. A., Guerra, N. G., Ammigan, R., & Drexler, M. L. (2019). Prevalence and correlates of depressive symptoms among international students: Implications for university support offices. *Journal of International Students*, *9*(1), 129–148. https://doi.org/10.32674/jis.v9i1.277
Shepherd, K., Golijani-Moghaddam, N., & Dawson, D. L. (2022). ACTing towards better living during COVID-19: The effects of Acceptance and Commitment therapy for individuals affected by COVID-19. *Journal of Contextual Behavioral Science*, *23*, 98–108. https://doi.org/10.1016/J.JCBS.2021.12.003
Sherry, M., Thomas, P., & Chui, W. H. (2010). International students: A vulnerable student population. *Higher Education*, *60*(1), 33–46. https://doi.org/10.1007/s10734-009-9284-z
Smith, A. C., Thomas, E., Snoswell, C. L., Haydon, H., Mehrotra, A., Clemensen, J., & Caffery, L. J. (2020). Telehealth for global emergencies: Implications for coronavirus disease 2019 (COVID-19). *Journal of Telemedicine and Telecare*, *26*(5), 309–313. https://doi.org/10.1177/1357633X20916567
Sommers-Flanagan, J., & Sommers-Flanagan, R. (2015). *Clinical interviewing* (5th ed.). John Wiley & Sons, Inc.
Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, *166*(10), 1092–1097. https://doi.org/10.1001/archinte.166.10.1092
Stabbe, O. K., Rolffs, J. L., & Rogge, R. D. (2019). Flexibly and/or inflexibly embracing life: Identifying fundamental approaches to life with latent profile analyses on the dimensions of the Hexaflex model. *Journal of Contextual Behavioral Science*, *12*, 106–118. https://doi.org/10.1016/j.jcbs.2019.03.003
Stafford-Brown, J., & Pakenham, K. I. (2012). The Effectiveness of an ACT Informed Intervention for Managing Stress and Improving Therapist Qualities in Clinical Psychology Trainees. *Journal of Clinical Psychology*, *68*(6), 592–513. https://doi.org/10.1002/JCLP.21844

Stephen, J., Rojubally, A., MacGregor, K., McLeod, D., Speca, M., Taylor–Brown, J., ... & Mackenzie, G. (2013). Evaluation of CancerChatCanada: a program of online support for Canadians affected by cancer. *Current Oncology*, *20*(1), 39-47. https://doi.org/10.3747/co.20.1210

Stockton, D., Kellett, S., Berrios, R., Sirois, F., Wilkinson, N., & Miles, G. (2019). Identifying the Underlying Mechanisms of Change During Acceptance and Commitment Therapy (ACT): A Systematic Review of Contemporary Mediation Studies. *Behavioural and Cognitive Psychotherapy*, *47*(3), 332–362. https://doi.org/10.1017/S1352465818000553

Strosahl, K. D., Robinson, P. J., & Gustavsson, T. (2012). *Brief interventions for radical change: Principles and practice of focused acceptance and commitment therapy*. New Harbinger Publications.

Sümer, S., Poyrazli, S., & Grahame, K. (2008). Predictors of depression and anxiety among international students. *Journal of counseling & development*, *86*(4), 429-437. https://doi.org/10.1002/j.1556-6678.2008.tb00531.x

Tavakoli, N., Broyles, A., Reid, E. K., Sandoval, J. R., & Correa-Fernández, V. (2019). Psychological inflexibility as it relates to stress, worry, generalized anxiety, and somatization in an ethnically diverse sample of college students. *Journal of Contextual Behavioral Science*, *11*, 1-5. https://doi.org/10.1016/j.jcbs.2018.11.001

Thomas, N., McDonald, C., de Boer, K., Brand, R. M., Nedeljkovic, M., & Seabrook, L. (2021). Review of the current empirical literature on using videoconferencing to deliver individual psychotherapies to adults with mental health problems. *Psychology and Psychotherapy: Theory, Research and Practice*, *94*(3), 854–883. https://doi.org/10.1111/PAPT.12332

Trompetter, H. R. (2014). *ACT with pain: measurement, efficacy and mechanisms of acceptance & commitment therapy*. Universiteit Twente. https://doi.org/10.3990/1.9789036537087

Trompetter, H. R., Bohlmeijer, E. T., Fox, J. P., & Schreurs, K. M. G. (2015). Psychological flexibility and catastrophizing as associated change mechanisms during online Acceptance & Commitment Therapy for chronic pain. *Behaviour Research and Therapy*, *74*, 50–59. https://doi.org/10.1016/J.BRAT.2015.09.001

Twohig, M. P., Vilardaga, J. C. P., Levin, M. E., & Hayes, S. C. (2015). Changes in psychological flexibility during acceptance and commitment therapy for obsessive compulsive disorder. *Journal of Contextual Behavioral Science*, *4*(3), 196–202. https://doi.org/10.1016/j.jcbs.2015.07.001

UNESCO (2020). *COVID-19 educational disruption and response*. Paris: UNESCO. https://en.unesco.org/covid19/educationresponse.

Varker, T., Brand, R. M., Ward, J., Terhaag, S., & Phelps, A. (2018). Efficacy of Synchronous Telepsychology Interventions for People With Anxiety, Depression, Posttraumatic Stress Disorder, and Adjustment Disorder: A Rapid Evidence Assessment. *Psychological Services*. https://doi.org/10.1037/SER0000239

Venta, A., Sharp, C., & Hart, J. (2012). The relation between anxiety disorder and experiential avoidance in inpatient adolescents. *Psychological Assessment*, *24*(1), 240–248. https://doi.org/10.1037/A0025362

Viskovich, S., Pakenham, K. I., & Fowler, J. A. (2021). A mixed-methods evaluation of experiential intervention exercises for values and committed action from an Acceptance and Commitment Therapy (ACT) mental health promotion program for university students. *Journal of Contextual Behavioral Science*, *22*, 108–118. https://doi.org/10.1016/J.JCBS.2021.10.001

Wang, C., & Zhao, H. (2020). The Impact of COVID-19 on Anxiety in Chinese University Students. *Frontiers in Psychology*, *11*, 1168. https://doi.org/10.3389/FPSYG.2020.01168/BIBTEX

Ward, C., Bochner, S., & Furnham, A. (2001). *The psychology of culture shock.* London: Routledge.

Ward, C., & Kennedy, A. (1999). The measurement of sociocultural adaptation. International Journal of Intercultural Relations, 23(4), 659–677. https://doi.org/10.1016/S0147-1767(99)00014-0

Ward, C., & Rana-Deuba, A. (1999). Acculturation and adaptation revisited. *Journal of Cross-Cultural Psychology*, *30*(4), 422–442. https://doi.org/10.1177/0022022199030004003

White, R. G., & Boor, C. Van Der. (2020). Impact of the COVID-19 pandemic and initial period of lockdown on the mental health and well-being of adults in the UK. *BJPsych Open*, *6*(5), e90. https://doi.org/10.1192/BJO.2020.79

Wilson, G. T., Wilfley, D. E., Agras, W. S., & Bryson, S. W. (2011). Allegiance bias and therapist effects: Results of a randomized controlled trial of binge eating disorder. *Clinical Psychology: Science and Practice, 18*(2), 119–125. https://doi.org/10.1111/j.1468-2850.2011.01243.x

Wilton, L., & Constantine, M. G. (2003). Length of Residence, Cultural Adjustment Difficulties, and Psychological Distress Symptoms in Asian and Latin American International College Students. *Journal of College Counseling*, *6*(2), 177–186. https://doi.org/10.1002/J.2161-1882.2003.TB00238.X

World Health Organization. (2018). World Mental Health Day 2018: Young people and mental health in a changing world. https://www.who.int/news-room/events/detail/2018/10/10/default-calendar/world-mental-health-day-2018

World Health Organization. (2022). World Mental Health Day 2022: Make mental health & well-being for all a global priority. https://www.who.int/campaigns/world-mental-health-day/2022

Wright, K. P., Jr., Linton, S. K., Withrow, D., Casiraghi, L., Lanza, S. M., de la Iglesia, H., & Depner, C. M. (2020). Sleep in university students prior to and during COVID-19 stay-at-home orders. *Current Biology*, 30(14), R797–R798. https://www.cell.com/current-biology/pdf/S0960-9822(20)30838-1.pdf

Xu, H., O'Brien, W. H., & Chen, Y. (2020). Chinese international student stress and coping: A pilot study of acceptance and commitment therapy. *Journal*

of Contextual Behavioral Science, *15*, 135–141. https://doi.org/10.1016/j.jcbs.2019.12.010

Yalom, I. D., & Leszcz, M. (2005). *The theory and practice of group psychotherapy*. Basic Books.

Yao, X., Xu, X., Chan, K. L., Chen, S., Assink, M., & Gao, S. (2022). Associations between psychological inflexibility and mental health problems during the COVID-19 pandemic: A three-level meta-analytic review. *Journal of affective disorders*. https://doi.org/10.1016/j.jad.2022.09.116

Yuen, E. K., Goetter, E. M., Stasio, M. J., Ash, P., Mansour, B., McNally, E., Sanchez, M., Hobar, E., Forte, S., Zulaica, K., & Watkins, J. (2019). A pilot of acceptance and commitment therapy for public speaking anxiety delivered with group videoconferencing and virtual reality exposure. *Journal of Contextual Behavioral Science*, 12, 47–54. https://doi.org/10.1016/j.jcbs.2019.01.006

Yuen, E. K., Herbert, J. D., Forman, E. M., Goetter, E. M., Juarascio, A. S., Rabin, S., Goodwin, C., & Bouchard, S. (2013). Acceptance based behavior therapy for social anxiety disorder through videoconferencing. *Journal of Anxiety Disorders*, *27*(4), 389–397. https://doi.org/10.1016/J.JANXDIS.2013.03.002

Zandifar, A., & Badrfam, R. (2020). Iranian mental health during the COVID-19 epidemic. *Asian Journal of Psychiatry*, *51*. https://doi.org/10.1016/J.AJP.2020.101990

Zemestani, M., Hosseini, M., Petersen, J. M., & Twohig, M. P. (2022). A pilot randomized controlled trial of culturally-adapted, telehealth group acceptance and commitment therapy for Iranian adolescent females reporting symptoms of anxiety. *Journal of Contextual Behavioral Science*, *25*, 145–152. https://doi.org/10.1016/J.JCBS.2022.08.001

Zhai, Y., & Du, X. (2020). Addressing collegiate mental health amid COVID-19 pandemic. *Psychiatry Research*, *288*, 113003. https://doi.org/10.1016/J.PSYCHRES.2020.113003

Zhang, Y., & Ma, Z. F. (2020). Impact of the COVID-19 Pandemic on Mental Health and Quality of Life among Local Residents in Liaoning Province, China: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, *17*(7). https://doi.org/10.3390/IJERPH17072381

Zhou, X., Snoswell, C. L., Harding, L. E., Bambling, M., Edirippulige, S., Bai, X., & Smith, A. C. (2020). The Role of Telehealth in Reducing the Mental Health Burden from COVID-19. *Https://Home.Liebertpub.Com/Tmj*, *26*(4), 377–379. https://doi.org/10.1089/TMJ.2020.0068

Zimmerman, M., Ward, M., D'avanzato, C., & Tirpak, J. W. (2022). Telehealth Treatment of Patients With Borderline Personality Disorder in a Partial Hospital Setting During the COVID-19 Pandemic: Comparative Safety, Patient Satisfaction, and Effectiveness of In-Person Treatment, *36*(3), 277–295. https://doi.org/10.1521/PEDI_2021_35_539

APPENDIX

TABLE A1 Items of the Five Facet Mindfulness Questionnaire (Baer et al., 2006)

Facet	Items
Observing	1. "When I'm walking, I deliberately notice the sensations of my body moving." 2. "When I take a shower or a bath, I stay alert to the sensations of water on my body." 3. "I notice how foods and drinks affect my thoughts, bodily sensations, and emotions." 4. "I pay attention to sensations, such as the wind in my hair or sun on my face." 5. "I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing." 6. "I notice the smells and aromas of things." 7. "I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow." 8. "I pay attention to how my emotions affect my thoughts and behavior."
Describing	1. "I'm good at finding the words to describe my feelings." 2. "I can easily put my beliefs, opinions, and expectations into words." 3. "It's hard for me to find the words to describe what I'm thinking." (R) 4. "I have trouble thinking of the right words to express how I feel about things." (R) 5. "When I have a sensation in my body, it's hard for me to describe it because I can't find the right words." (R) 6. "Even when I'm feeling terribly upset, I can find a way to put it into words." 7. "My natural tendency is to put my experiences into words." 8. "I can usually describe how I feel at the moment in considerable detail."
Acting with awareness	1. "I find it difficult to stay focused on what's happening in the present." (R) 2. "It seems I am "running on automatic" without much awareness of what I'm doing." (R) 3. "I rush through activities without being really attentive to them." (R) 4. "I do jobs or tasks automatically, without being aware of what I'm doing." (R) 5. "I find myself doing things without paying attention." (R) 6. "When I do things, my mind wanders off and I'm easily distracted." (R) 7. "I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted." (R) 8. "I am easily distracted." (R)
Non-judging	1. "I criticize myself for having irrational or inappropriate emotions." (R) 2. "I tell myself that I shouldn't be feeling the way I'm feeling." (R)

	3. "I believe some of my thoughts are abnormal or bad and I shouldn't think that way." (R) 4. "I make judgments about whether my thoughts are good or bad." (R) 5. "I tell myself I shouldn't be thinking the way I'm thinking." (R) 6. "I think some of my emotions are bad or inappropriate and I shouldn't feel them." (R) 7. "I disapprove of myself when I have irrational ideas." (R) 8. "Usually when I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about." (R)
Non-reacting	1. "I perceive my feelings and emotions without having to react to them." 2. "I watch my feelings without getting lost in them." 3. "In difficult situations, I can pause without immediately reacting." 4. "Usually when I have distressing thoughts or images, I am able just to notice them without reacting." 5. "Usually when I have distressing thoughts or images, I feel calm soon after." 6. "Usually when I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it." 7. "Usually when I have distressing thoughts or images, I just notice them and let them go."

Note. R = reverse scored.

TABLE A2 Items of the Engaged Living Scale (Trompetter, 2014)

Facet	**Items**
Valued Living	1. "I have values that give my life more meaning." 2. "I know what motivates me in life." 3. "I believe that I've found important values to live according to." 4. "I know exactly what I want to do with my life." 5. "I make choices based on my values, even if it is stressful." 6. "I know how I want to live my life." 7. "I know what I want to do with my life." 8. "I believe that my values are really reflected in my behavior." 9. "I believe that how I behave fits in with my personal wants and desires." 10. "My emotions don't hold me back from doing what's important to me."
Life Fulfillment	11. "I live the way I always intended to live." 12. "I am satisfied with how I live my life." 13. "Nothing can stop me from doing something that's important to me." 14. "I believe that I am living life to the full right now." 15. "I make time for the things that I consider important." 16. "I feel that I am living a full life."

ORIGINAL PAPERS

I

UNDERSTANDING AND EXPLAINING PSYCHOLOGICAL DISTRESS IN INTERNATIONAL STUDENTS

by

Brandolin, F., Lappalainen, P., Gallego, A., Gorinelli, S., and Lappalainen, R., 2023

International Journal of Psychology & Psychological Therapy, 23 (1), 17-29

https://www.ijpsy.com/volumen23/num1/627/understanding-and-explaining-psychological-EN.pdf

International Journal of Psychology & Psychological Therapy, 2023, *23*, 1, 17-29

Understanding and Explaining Psychological Distress in International Students

Francesca Brandolin, Päivi Lappalainen, Ana Gallego
Simone Gorinelli, Raimo Lappalainen
University of Jyväskylä, Finland

Abstract

Research indicates that international students report more psychological distress than domestic students. The aim of our research was to investigate levels of stress, depression, and anxiety, and in particular, psychological predictors for these symptoms among international students. International students (N= 103) from the University of Jyväskylä (Finland) completed questionnaires assessing their stress (PSS-10), depression (PHQ-9), anxiety (GAD-7), psychological inflexibility (AFQ-Y), mindfulness (FFMQ), and engaged living (ELS). A significant proportion of students experienced high levels of psychological distress, and those with elevated symptoms reported higher levels of psychological inflexibility, lower levels of mindfulness skills and value-based actions. Regression analyses suggested that living according to one's values and value-based actions was the strongest predictor of stress and depression (approx. 25% of variance explained). On the other hand, the strongest predictor for symptoms of anxiety was acting with awareness (approx. 20% of variance explained). This study suggests that students with different types of distress might benefit from training in distinct psychological flexibility skills, and these skills could be embedded into the university counselling services.
Key words: international students, psychological flexibility, anxiety, depression, stress, predictors.

How to cite this paper: Brandolin F, Lappalainen P, Gallego A, Gorinelli S, & Lappalainen R (2023). Understanding and Explaining Psychological Distress in International Students. *International Journal of Psychology & Psychological Therapy, 23, 1,* 17-29.

Novelty and Significance

What is already known about the topic?

- International students report more anxiety, stress, sleeping problems, and homesickness and have less social support than domestic students.
- Consequently, mental health is currently considered one of the leading concerns among international students.
- A limited number of studies have investigated the relationship between different psychological flexibility skills and symptoms among foreign students.

What this paper adds?

- The results show among international students how different components of psychological flexibility predicted different type of symptoms.
- Also indicate that different type of distress may require training of specific combination of psychological flexibility skills.

The number of students worldwide who pursue higher education studies abroad has more than doubled in the last two decades (OECD, 2019). Studying abroad offers students the opportunity to develop language skills, study in an international context, and experience a foreign culture and environment. However, international students are frequently faced with adaptation challenges associated with difficulties adjusting to a new culture and language (Andrade, 2006; Hechanova-Alampay, Beehr, Christiansen, & Van Horn, 2002; Mori, 2000). Adjustment to new social and learning environments can be a stressful experience, which may manifest in communication problems and feelings of isolation, loneliness, and hopelessness (Mori, 2000; Wilton & Constantine, 2003).

* Correspondence: Francesca Brandolin, Department of Psychology, FIN-40014 University of Jyväskylä, Finland. Email: francesca.f.brandolin@jyu.fi. *Acknowledgements*: The authors would like to thank the international students who participated in this study. The study was partially funded by Student Life, a unit of the University of Jyväskylä, Finland

International students report more anxiety, stress, sleeping problems, and homesickness and have less social support than domestic students (e.g., Forbes-Mewett, 2019; Mori, 2000; Russell, Rosenthal, & Thomson, 2010; Shadowen, Williamson, Guerra, Ammigan, & Drexler, 2019; Sherry, Thomas, & Chui. 2010). Consequently, mental health is currently considered one of the leading concerns among international students (Forbes-Mewett, 2019). For example, an Australian study found that nearly 41% of international students adapted to their experience somewhat negatively and displayed high levels of stress, anxiety, and depression (Russell *et alia,* 2010). Sümer, Poyrazli, and Grahame (2008) explored distress in international students studying in the United States and found that students with lower levels of support experienced higher levels of depression and anxiety. A study by Rice, Choi, Zhang, Morero, and Anderson (2012) on Chinese and Indian students reported that around 37% of these students met the clinical cut-off point for depression. A more recent study showed elevated levels of acculturative stress, depression, and anxiety in this population (Kim, Maleku, Lemieu, Du, & Chen, 2019). Similarly, Shadowen *et alia* (2019) found high levels of depressive and anxiety symptoms in international students, with around 45% of them meeting the clinically significant cut-off point for depression, which has been associated with acculturative stress, perceived discrimination, and poor English fluency. Psychological distress can be a significant burden for many, impairing their social functioning and academic performance and causing study delays or dropout (Hauschildt, Gwosc, Netz, & Mishra, 2015).

However, most of the studies with the international students have been conducted outside of the European context. Consequently, there is a need to examine the mental health and psychological functioning of international students pursuing their higher education studies in Europe.

During the last decades, transdiagnostic approaches that provide novel insights into how we could understand mental health symptoms and improve psychological functioning have emerged (Hayes & Hofmann, 2018; Levin, Krafft, Pistorello, & Seeley, 2014; Zvolensky & Leventhal, 2016). One of the key elements of psychological health is considered psychological flexibility (Hayes, Strosahl, & Wilson, 2012; Kashdan & Rottenberg, 2010), which is the ability to recognize and adapt to changing life circumstances by engaging in adaptive behaviors to pursue personally meaningful values and goals (Hayes *et alia*, 2012; Knirsch, 2015). Psychological flexibility is a core concept in the acceptance and commitment therapy (ACT) model. The ACT model describes psychological flexibility through six related skills or core processes: (1) acceptance, (2) defusion, (3) being present, (4) self as context, (5) values, and (6) committed action (Hayes *et alia*, 2012). Acceptance involves being actively open about and aware of one's own experiences, especially in relation to unpleasant thoughts and emotions. Defusion entails undermining the negative effects of cognition by teaching skills aimed at creating distance from thoughts. Defusion and acceptance are, in turn, connected to the principle of self-as-context, a perspective from which individuals can become aware of their inner experiences (thoughts and emotions) without becoming overly attached to them. Contact with the present moment is about flexibly attending to all experiences happening in the now (also referred as mindfulness). Furthermore, a connection to one's own values is represented by the ability to choose what matters and act in service of these choices by performing value-oriented actions. Several studies have found higher levels of psychological flexibility to be associated with lower levels of health-related symptomatology, including stress, depression, and anxiety (e.g., Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Lee & Orsillo, 2014). Higher levels of

psychological flexibility have also been found to predict better mental health, indicating that better flexibility skills may lead to improved psychological well-being and better quality of life (Hayes, 2019).

In contrast, individuals high in psychological inflexibility tend to avoid or control their psychological reactions, such as thoughts, emotions, and sensations. and act in ways that are inconsistent with what is important to them. Psychological inflexibility has been found to be associated to a wide range of mental health problems, such as depression, anxiety, trauma, worry and stress (e.g., Kashdan & Rottenberg, 2010; Levin et alia, 2014; Tavakoli, Broyles, Reid, Sandoval, & Correa Fernández, 2019; Tyndall, Waldeck, Pancani, Whelan, Roche, & Pereira, 2020). In the context of university students, numerous studies have suggested that higher levels of psychological inflexibility are associated with poor psychological health and several mental health problems, such as substance abuse, general psychological distress, depressive and anxiety disorders, eating disorders, sleep problems (Levin *et alia*, 2014; Masuda, Muto, Tully, Morgan, & Hill 2014; Masuda & Tully, 2012; Peltz, Rogge, Bodenlos, Kingery, & Pigeon, 2020), and academic procrastination (Eisenbeck, Carreno, & Uclés Juárez, 2019; Glick, Millstein, & Orsillo, 2014). For example, Levin *et alia* (2014) found that psychological inflexibility was associated with a wide range of psychological disorders and comorbidities, in particular depression and anxiety. In line with these findings, Tavakoli *et alia* (2019) reported that stress, worry, somatization, and generalized anxiety were associated with psychological inflexibility among ethnically diverse samples of college students.

Based on these observations, we concluded that it is important to examine and pay attention to the potential contribution of psychological inflexibility or alternatively flexibility to the psychological distress of international students as they are considered a vulnerable student population (Sherry *et alia*, 2010), which are at a risk of psychological problems. In addition, there is limited research on the mental health of this student population in European countries. Thus, this study focused on how the process of psychological inflexibility was associated with psychological distress in international students. In particular we wanted to better understand which psychological skills were associated with and could possibly predict psychological symptomatology among international students. This knowledge could help us develop interventions and counseling services that could enhance the overall well-being of students when they pursue education abroad. Thus, in the context of international students, this study aimed to (1) examine which psychological flexibility skills based on the ACT model were associated with symptoms of stress, depression, and anxiety and (2) determine which of these skills could most strongly predict stress, depression, and anxiety.

Method

Participants

A total of 125 students were interested in participating in the well-being workshops. All of them were eligible, however, 22 students dropped out before the pre-measurement, therefore the final sample of participants in the study was 103. The participants had an average age of 25.93 (*SD*= 5.78) and were mostly female (*n*= 82; 80%). Nearly half of them were on exchange (*n*= 47; 46%), and the other half were degree students (*n*= 56; 54%). The students belonged to more than 40 different nationalities, with most students coming from Asia (*n*= 29; 28%), Central Europe, and Baltic countries (*n*= 22; 21%). Detailed characteristics are reported in Table 1. The participants were required

to be (a) enrolled international students at the University of Jyväskylä, (b) at least 18 years old, and (c) have access to the internet, and were excluded if they participated simultaneously in any psychological intervention. All participants provided written informed consent and the study was approved by Central Finland Healthcare District's Ethics Committee (registration number 14U/2012).

Table 1. Participant Characteristics (*N*=103)

Baseline characteristic		*n*	%	(*SD*)
Age	*M* (*SD*)	25.93	--	5.78
	18-25	62	60.2	
	26-30	23	22.3	
	31-35	13	12.6	
	36-46	5	4.9	
Gender	Female	82	79.6	
	Male	21	20.4	
Educational program	Degree	56	54.4	
	Exchange	47	45.6	
Educational level	Bachelor	35	34.0	
	Master	62	60.2	
	Doctorate	6	5.8	
Faculty	Education & Psychology	37	35.9	
	Humanities & Social Sciences	27	26.2	
	Business & Economics	13	12.6	
	Mathematics & Science	10	9.7	
	Sport & Health Sciences	7	6.8	
	Information & Technology	9	8.7	
Country of origin	Asia	29	28.2	
	Central Europe, Baltics & UK	22	21.4	
	East Europe & Russia	16	15.5	
	Mediterranean Europe	16	15.5	
	Middle East	12	11.7	
	America North & South	8	7.8	
Length of stay	Less than 6 months	63	61.2	
	6 months to 1 year	19	18.4	
	Up to 2 years	9	8.7	
	More than 2 years	12	11.7	

Measures

Perceived Stress Scale (PSS-10; Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988). Stress was measured with the PSS-10, a 10-item scale in which respondents' rate on a 5-point Likert scale (0= never, 4= very often) how stressful they perceive their lives to have been within the past month. Total scores of 0-13 indicate low levels of stress, 14-26 moderate stress, and 27-40 high stress. The PSS-10's internal consistency has ranged from .74 to .91 (Lee, 2012); in the current study, it was α= .81

Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001). The PHQ-9 is a depression module that scores each of the nine DSM-IV depression criteria from 0 (not at all) to 3 (nearly every day). It is not a screening tool for depression, but it is used to monitor the severity of depression and response to treatment and has been validated for use in primary care. A total score of 0–4 represents no to minimal levels of depressive symptomatology, 5-9 mild symptomatology, 10–14 moderate, 15–19 moderately severe, and 20 or greater severe symptomatology. The PHQ-9's internal consistency has been shown to be high (Kroenke *et alia*, 2001, 2002). In our sample, α= .80.

General Anxiety Disorder-7 (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006). The GAD-7 is a 7-item scale that measures symptoms of generalized anxiety disorder. Respondents rate how often specific problems related to anxiety have bothered them over the last 2 weeks on a scale from 0 (not at all) to 3 (nearly every day). A total score of less than 4 represents minimal levels of symptom burden, 5–9 mild burden, 10–14 moderate, and 15 or greater severe anxiety. The scale has shown excellent

internal consistency (α= .92; Spitzer *et alia*, 2006). In this sample, α= .88.

Avoidance and Fusion Questionnaire for Youth (AFQ-Y; Greco, Lambert, & Baer 2008). The AFQ-Y measures psychological inflexibility, a construct referring to overarching and non-adaptive avoidance of thoughts and feelings and present in numerous psychopathologies. The AFQ-Y includes 17 different statements on a 5-point scale from 0= not at all true to 4= very true. Lower scores mean better outcomes, showing less fusion with thoughts, less overthinking, and more kindness toward the self (Valdivia Salas, Martín, Zaldívar, Lombas, & Jiménez, 2017). The AFQ-Y has shown adequate reliability and validity in adult university student samples (Schmalz & Murrell, 2010), and in predicting psychological symptoms (Fergus *et alia*, 2012). In the current study, α= .83.

Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The FFMQ measures mindfulness and consists of 39 statements on a scale ranging from 1 to 5 (1= rarely or never true, 5= very often true or always true). The FFMQ has five subscales: (1) observe, (FFMQ-Ob, noticing sensations, emotions, and thoughts); (2) describe (FFMQ-De, labeling these stimuli with words); (3) non-judgement (FFMQ-Nj, refraining from evaluating one's thoughts, emotions, and sensations); (4) non-reactivity (FFMQ-Nr, allowing thoughts, feelings, sensations, and urges to come and go without impulsive reactivity); and (5) act with awareness (FFMQ-Aw, attending to and/or noticing one's actions). Higher scores (range of 39-195) indicate greater mindfulness skills. The FFMQ has an adequate internal consistency (Baer *et alia*, 2008). In this study, the Cronbach's alpha for total FFMQ scores was α= .79 and for the subscales α= .81 (observe), α= .89 (describe), α= .88 (act with awareness), α= .89 (non-judgement), and α= .78 (non-reactivity).

Engaged Living Scale (ELS-16; Trompetter, 2014). The ELS-16 is a measure of engaged living, defined as the evaluation and performance of valued life activities. This measure features two subscales, Valued Living (ELS-VL) for learning to identify values, and Life Fulfilment (ELS-LF) for living according to them. All items are scored on a 5-point Likert scale ranging from completely disagree to completely agree. The ELS presents adequate to good psychometric properties (Trindade, Ferreira, Pinto Gouveia, & Nooren, 2016). In our sample, α= .92 (ELS-16, total), α= .89 (ELS-VL) and α= .88 (ELS-LF).

Procedure

This study was part of the Student Life concept, an organizational unit that is part of the University of Jyväskylä, offering a cluster of wellbeing support activities to promote the overall wellbeing of students. This paper outlines the findings from the pre-measurements of the first twelve groups of international students who participated in a wellbeing workshop. International students were recruited from the University of Jyväskylä between fall 2017 and fall 2021 by posting ads and flyers online, and on campus, that invited international students to participate in a 5-week wellbeing workshop in groups. The ad stated that the workshop aimed to promote student wellbeing by covering topics such as: how to adapt and cope with life and study-related stressors more effectively, and how to engage in life and studies in a more meaningful way. Additionally, it specified that the workshop included mindfulness practices and advice how to integrate it into daily life.

All participants attended an evaluation meeting in an individual assessment meeting prior the workshop where they completed a set of online questionnaires composed of symptom (stress, depression, and anxiety), process (psychological inflexibility, mindfulness, and valued living), and demographic measures. The measures were administered in English.

Data Analysis

Statistical analyses were conducted using IBM SPSS (version 24 and 26). The

analyses were accomplished per the following steps. First, to describe the amount of psychological distress among the participants, the numbers of students reporting minimal, low, moderate, and high amounts of symptoms were recorded. Second, the association between symptom measures (PSS-10, PHQ-9, GAD-7) and process measures (AFQ-Y, FFMQ, ELS) were examined using Pearson's correlations. Correlations r <0.30 were considered small, correlations r ≥0.30 and r <0.50 medium, and correlations r ≥0.50 strong (Kraemer, Morgan, Leech, Gliner, Vaske, & Harmon, 2003). Linear regression analyses were performed to investigate which components of psychological flexibility FFMQ subscales (FFMQ-Ob, FFMQ-De, FFMQ-Nj, FFMQ-NR, FFMQ-Aw), and ELS subscales (ELS-VL, ELS-LF) made significant contributions to the prediction of stress (PSS-10), depression (PHQ-9), and anxiety (GAD-7). Thus, AFQ-Y was not included in the regression analysis since the total score in AFQ-Y reflects general psychological flexibility skills and we wanted to understand the subskills in psychological flexibility as predictors. The FFMQ and ELS total scores were not included in the regression analysis because of their high correlation with the subscales. We included in the regression analysis such components that significantly correlated with stress, depression, and anxiety, and the correlation coefficient was at least medium (r ≥0.30). We employed first the Enter-method and entered the predictors in order of the level of correlation coefficient, starting from the strongest correlation. After identifying the significant predictors, we applied the stepwise method and investigated the contribution of the individual predictors (FFMQ and ELS subscales). The variance inflation factors (VIF) were in acceptable range (VIF <2.5), indicating that the multi-collinearity was not a problem.

RESULTS

When investigating the symptoms of stress, depression, and anxiety, nearly 90% of the students experienced moderate or high levels of stress (PSS-10), 43% at least moderate depressive symptoms (PHQ-9), and nearly 38%= at least moderate anxiety (GAD-7).

The first aim of this study was to explore which psychological flexibility skills were associated with symptoms of stress, depression, and anxiety among international students. As shown in Table 2, psychological inflexibility (AFQ-Y) had a significant and moderate positive correlation (r= 0.31-0.38) with perceived stress (PSS-10) and depression (PHQ-9), and anxiety (GAD-7). Similarly, high levels of symptoms were associated with low levels of mindfulness. The mindfulness subscales act with awareness (FFMQ-Aw) and non-judgement (FFMQ-Nj) showed moderate negative correlations (r= -0.37; -0.47) with all symptom measures, while non-reactivity (FFMQ-Nr) had significant, but slightly smaller correlations (r= -0.30; -0.34). For engaged living (ELS, Total), there was a significant, moderate (r= -0.30; r= -0.47), negative correlation with stress (PSS-10), depression (PHQ-9), and anxiety (GAD-7; r= -0.30). Valued living (ELS-VL) correlated moderately and negatively with depression (r= -0.39), correlations with stress and anxiety were lower (r <0.30). Life fulfilment (ELS-LF) correlated strongly and negatively with stress and depression (r= -0.52, r= -0.53, respectively), and moderately and negatively with anxiety (r= -0.35). Interestingly, the FFMQ subscales observe (FFMQ-Ob) and describe (FFMQ-De) showed either very low or low correlations with the symptom measures. Overall, students with higher levels of symptoms reported higher psychological inflexibility and lower scores in mindfulness and living according to their values. See Table 2 for further details.

Table 2. Correlations between symptom (stress, depression, anxiety) and process measures (engaged living, psychological inflexibility, and mindfulness skills). Mean values and standard deviations (SD).

	PSS-10	PHQ-9	GAD-7	ELS	ELS-VL	ELS-LF	AFQ-Y	FFMQ	FFMQ -Ob	FFMQ -De	FFMQ -Aw	FFMQ -Nj	FFMQ -Nr
PSS-10	_	.63**	.55**	-.39**	-.29**	-.52**	.31**	-.45**	-.06	-.13	-.43**	-.38**	-.30**
PHQ-9		_	.65**	-.47**	-.39**	-.53**	.38**	-.53**	-.12	-.21*	-.47**	-.41**	-.32**
GAD-7			_	-.30**	-.24*	-.35**	.32**	-.40**	-.03	-.07	-.43**	-.37**	-.34**
ELS				_	.97**	.86**	-.33**	.51**	.26**	.27**	.40**	.23*	.34**
ELS-VL					_	.70**	-.31**	.49**	.25**	.28**	.38**	.18	.35**
ELS-LF						_	-.28*	.45**	.22*	.20*	.36**	.27**	.26**
AFQ-Y							_	-.48**	.04	-.13	-.46**	-.59**	-.15
FFMQ								_	.55**	.53**	.67**	.57**	.60**
FFMQ-Ob									_	.17	.18	-.01	.32**
FFMQ-De										_	.12	-.01	.21*
FFMQ-Aw											_	.36**	.28**
FFMQ-Nj												_	.19
FFMQ-Nr													_
M	20.80	8.85	8.67	54.20	38.24	15.96	26.32	119.71	26.87	26.74	24.84	24.74	16.59
SD	5.64	5.04	4.91	11.90	8.40	4.39	10.57	17.90	6.19	6.61	6.30	7.23	4.24

Notes: *= p <.05 level; **= p < .01 level; AFQ-Y= Avoidance and Fusion Questionnaire-for Youth; ELS= Engaged Living Scale; ELS-LF= Life Fulfillment; ELS-VL= Valued living; FFMQ Five Facets Mindfulness Questionnaires; FFMQ-Aw= FFMQ Acting with Awareness; FFMQ-De= FFMQ Describe; FFMQ-Nj= FFMQ Non-Judgement FFMQ-Nr= FFMQ Non-Reactivity; FFMQ-Ob= FFMQ Observe; GAD-7= Generalized Anxiety Disorder-7 items; PHQ-9= Patient Health Questionnaire-9 items; PSS-10= Perceived Stress Scale- 10 items.

When investigating the total scores of mindfulness (FFMQ), psychological inflexibility (AFQ-Y) and engaged living (ELS) as predictors for stress (PSS), we observed a significant model, $F(3, 97)= 10.058$, p <.001. The model explained 21% of the variance of PSS (Adjusted R^2= 0.214). However, only the FFMQ total was a significant predictor (Standardized β, β= -0.294, p= 0.010). For depression (PHQ-9) we obtained a significant model $F(3, 97)= 16.967$, p <.001, explaining 32% of the variance. For depression, both FFMQ Total and ELS Total acted as significant predictors (β= -0.333, p =.002; β= -0.240, p=.014, respectively). For anxiety symptoms (GAD-7), we also observed a significant model $F(3, 97)= 7.466$, p <.001, explaining 16% of the variance. Only the FFMQ total was a significant predictor (Standardized β, β= -0.282, p=.016). The analyses suggested that psychological inflexibility (AFQ-Y) was not a significant predictor for stress (PSS), depression (PHQ-9), and anxiety (GAD-7) when investigated together with the FFMQ and ELS.

Second, we investigated the subscales of the FFMQ and the ELS as predictors. In relation to perceived stress (PSS-10), four subscales (ELS-LF, FFMQ-Aw, FFMQ-Nj and FFMQ-Nr) correlated significantly and at least moderately ($r \geq 0.30$) with PSS-10 and were entered in the regression analyses. These four subscales explained 35% of the variance in PSS-10, $F(4, 96)= 13.817$, p <.001. Further, ELS-LF (β= -0.347, p <.001), FFMQ-Aw (β= -0.208, p= .027) and FFMQ-Nj (β= -0.188, p= .037) acted as significant predictors, but not FFMQ-Nr. The stepwise method with these significant predictors indicated that the ELS-LF explained 25% of the variance in PSS-10, the FFMQ-Aw an additional 7% and FFMQ-Nj an additional 3% (see Table 3 for details).

Regarding the symptoms of depression (PHQ-9), five subscales (ELS-LF, FFMQ-Aw, FFMQ-Nj, ELS-VL and FFMQ-Nr) correlated significantly and at least moderately ($r \geq 0.30$) with PHQ-9 and were entered in the regression analyses. These five subscales explained almost 40% of the variance in PHQ-9, $F(5, 95)= 13.361$, p <.001. Further, ELS-LF (β= -0.384, p <.001), FFMQ-Aw (β= -0.250, p= .007) and FFMQ-Nj (β= -0.198, p= .024) acted as significant predictors, but not ELS-VL and FFMQ-Nr. The

Table 3. Linear regression analysis. Role of mindfulness and engaged living skills in predicting stress, depression, and general anxiety.

DV	Significant predictors (IV)	Std β	R^2	Adjusted R^2	Change R^2
PSS-10	1. Model ESL-LF	-0.365***	0.249	0.241	0.249***
	2. Model FFMQ-Aw	-0.228*	0.322	0.308	0.073**
	3. Model FFMQ-Nj	-0.197*	0.355	0.335	0.033*
PHQ-9	1. Model ELS-LF	-0.366***	0.266	0.259	0.266***
	2. Model FFMQ-Aw	-0.263**	0.361	0.348	0.094***
	3. Model FFMQ-Nj	-0.212*	0.399	0.380	0.038*
GAD-7	1. Model FFMQ-Aw	-0.300**	0.190	0.182	0.190***
	2. Model FFMQ-Nr	-0.212*	0.241	0.225	0.051*
	3. Model FFMQ-Nj	-0.216*	0.281	0.259	0.040*

Notes: ***= $p \leq .001$; **= $p < .01$; *= $p < .05$; AFQ-Y= Avoidance and Fusion Questionnaire-for Youth; DV= dependent variable ELS= Engaged Living Scale; ELS-LF= Life Fulfillment; ELS-VL= Valued living; FFMQ Five Facets Mindfulness Questionnaires; FFMQ-Aw= FFMQ Acting with Awareness; FFMQ-De= FFMQ Describe; FFMQ-Nj= FFMQ Non-Judgement FFMQ-Nr= FFMQ Non-Reactivity; FFMQ-Ob= FFMQ Observe; GAD-7= Generalized Anxiety Disorder-7 items; IV= independent variable PHQ-9= Patient Health Questionnaire-9 items; PSS-10= Perceived Stress Scale- 10 items.

stepwise method with these significant predictors indicated that the ELS-LF explained 26% of the variance in PHQ-9, the FFMQ-Aw an additional 9%, and the FFMQ-Nj an additional 4% (Table 3).

When investigating symptoms of anxiety (GAD-7), four subscales (FFMQ-Aw, FFMQ-Nj, ELS-LF, and FFMQ-Nr) correlated significantly and at least moderately ($r \geq 0.30$) with GAD-7 and were entered in the regression analyses. These four subscales explained 28% of the variance in GAD-7, $F(4, 96)= 9.999$, $p < .001$. Further, FFMQ-Aw ($\beta= -0.267$, $p= .007$), FFMQ-Nj ($\beta= -0.197$, $p= .038$) and FFMQ-Nr ($\beta= -0.193$, $p= .036$) acted as significant predictors, but not ELS-LF. The stepwise method with these significant predictors indicated that the FFMQ-Aw explained 19% of the variance in GAD-7, the FFMQ-Nr an additional 5% and the FFMQ-Nj an additional 4% (Table 3).

DISCUSSION

The current study sought to examine psychological distress in international students, and in particular which psychological skills were associated with and could possibly predict psychological symptomatology among international students. We believe that knowledge of predictors could help us develop interventions and counseling services that could enhance the overall well-being of international students. In general, we found that a significant proportion of students in the current sample experienced high levels of stress and elevated levels of depression and anxiety. In terms of psychological skills, the results revealed, in particular that four psychological flexibility skills were associated with different dimensions of psychological distress: (1) life fulfillment, (2) act with awareness, (3) non-judgement, and (4) non-reactivity.

There is ample evidence indicating that adjustment to challenges may lead to psychological distress, such as stress, depression, and anxiety, among international students (e.g., Forbes-Mewett, 2019; Shadowen *et alia*, 2019), which is also reflected in this study. Although the current study sought out international students interested in a program to help cope with study-related stressors and integrate mindfulness into their daily lives, many participants, unexpectedly, experienced high levels of psychological distress. Almost all of them experienced at least moderate stress, and nearly half of them displayed moderate to high levels of depression and anxiety. This is in accordance with the studies of Khoshlessan and Das (2019), Rice *et alia* (2012) and Shadowen *et*

alia (2019), which found equivalent, high levels of depressive and anxiety symptoms in international students. The results of this study also raise concerns about the effects of psychological distress on studies. Ill-being can make it difficult to keep adequate levels of energy and focus on studies (Russell *et alia*, 2010).

In addition, the results of the current study suggested that students who had lower flexibility and mindfulness skills (fusion with thoughts, lack of awareness, avoidance, unclear values, and less value-based actions) experienced heightened levels of stress, depression, and anxiety, thereby corroborating earlier findings (e.g., Lee & Orsillo, 2014; Levin *et alia*, 2014, 2019; Roemer, Salters, Raffa, & Orsillo, 2005; Tavakoli *et alia*, 2019; Tull, Gratz, Salters, & Roemer, 2004). These earlier studies concluded that psychological inflexibility was associated with higher stress, depression, and generalized anxiety among student populations. The current study added to this knowledge by investigating the different dimensions of psychological flexibility and mindfulness associated with stress, depression, and anxiety symptoms. In addition, these results substantiate those of previous studies that have examined associations between mindfulness and the psychological well-being of university students (e.g., Baer *et alia*, 2006; Brown & Ryan, 2003). These findings are also in accordance with a study by Räsänen, Muotka, & Lappalainen (2020), which observed that increased meaningfulness (i.e., how students viewed their life in stressful situations) mediated changes in stress and depression.

Further, we analyze which psychological skills, e.g., general psychological flexibility/inflexibility, mindfulness and engaged living, were the strongest predictors of symptoms of stress, depression, and anxiety. Both symptoms of stress and depression were explained by the degree of life fulfillment, which accounted for approximately 25% of the variance in stress and depression. This finding suggest that identifying what matters to oneself (personal values) and, in particular engaging in meaningful actions based on these values could reduce symptoms of stress and depression. Second, practicing being focused on the present moment and developing awareness skills as well as non-judgmental attitude toward unwanted thoughts and feelings may offer a more resilient perspective for relating to stress and depression. In accordance with our results, increased non-judgmental awareness of the present moment has been found to be associated with lower perceived stress over time in students (Mayer, Im, Stavas, & Hazlett-Stevens, 2019). These three skills (life fulfillment, behavioral awareness, and non-judgement) together explained about 40% of symptoms of depression, and over 30% of stress. Of these three, life fulfillment acted as the strongest predictor. Interestingly, life fulfillment was not a significant predictor for symptoms of anxiety. Instead, act with awareness, non-judgment, and non-reactivity predicted symptoms of anxiety, together accounting for approximately 28% of the variability. Of these three mindfulness-related skills, act with awareness was the strongest predictor for anxiety.

Overall, the findings suggest that the transdiagnostic process of psychological flexibility is a key factor in managing psychological distress and promoting wellbeing in international students. Students with low psychological flexibility skills are at risk of experiencing elevated levels of psychological distress, such as stress, depression, and anxiety. Therefore, training in skills such as identifying what matters to oneself and engaging in meaningful actions as well as developing awareness skills and a non-judgmental attitude toward emotions could prevent the development of psychological distress. As Masuda and Tully (2012) recommend, interventions targeting not only psychological symptoms but also mindfulness and psychological flexibility are needed.

Andrade (2006) has called for assessment data that will help make informed decisions about support programs for international students. The results herein highlight the skills that can be included in services for international students and inform interventions for international students.

However, the present study does come up against several limitations, the most important being the sample size and representativeness of the sample, as most participants were female university students. A larger and more heterogeneous sample would have ensured a more accurate representation of the target population. Also, data was collected from international students who decided voluntarily to enroll in a well-being workshop. A further limitation was the fact that we only used self-report questionnaires. Self-reported data may lead to inaccuracies (e.g., social desirability bias) which may pose a threat to internal validity. Lastly, we were unable to establish causal conclusions based on the current data. We are aware of the fact that relationships found in this data could be coincidental, or a third factor may explain the observed associations.

It is advisable that services aimed at international students devote attention to improving these students' psychological flexibility and mindfulness skills and incorporate these skills into their guidance and counselling services. Emphasis needs to be placed on helping international students engage in life, clarify what is important for them (personal values) in relation to their studies while they are in a foreign country, and on encouraging them to make time for the things they consider important (value-based actions). For example, an ACT intervention (Hayes *et alia*, 2012) may assist them in acquiring tools to cope with their concerns and promote their well-being, thus fostering engagement in life, awareness skills, and more openness toward their internal and external experiences while studying abroad. The current study increases knowledge of the relationship between symptoms of stress, depression, and anxiety and the psychological skills of students completing their studies abroad. In addition, the study suggests that different types of distress may benefit from training skills of distinct psychological flexibility dimensions. For example, fostering engagement in life (i.e., working with values and engaging in concrete actions) is important for symptoms of stress and depression and may play a minor role in symptoms of anxiety. Still, more studies with larger samples are needed to investigate whether our findings can be generalized to the overall international student population.

REFERENCES

Andrade MS (2006). International students in English-speaking universities: Adjustment factors. *Journal of Research in International Education, 5*, 131-154. Doi: 10.1177/1475240906065589

Baer RA, Smith G, Lykins E, Button D, Krietemeyer J, Sauer S, Walsh E, Duggan J, & Williams J (2008). Construct Validity of the Five Facet Mindfulness Questionnaire in Meditating and Nonmeditating Samples. *Assessment, 15*, 329-342 Doi: 10.1177/1073191107313003.

Baer RA, Smith GT, Hopkins J, Krietemeyer J, & Toney L (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27-45. Doi: 10.1177/1073191105283504

Brown KW & Ryan RM (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*, 822-848. Doi: 10.1037/0022-3514.84.4.822

Cohen S, Kamarck T, & Mermelstein R (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 38-396. Doi: 10.2307/2136404

Cohen S & Williamson G (1988). Perceived stress in a probability sample of the US In: Spacapam S, Oskamp S, editors. The social psychology of health: *Claremont Symposium on Applied Social Psychology*.

Eisenbeck N, Carreno DF, & Uclés Juárez R (2019). From psychological distress to academic procrastination:

Exploring the role of psychological inflexibility. *Journal of Contextual Behavioral Science*, *13*, 103-108. Doi: 10.1016/j.jcbs.2019.07.007

Fergus TA, Valentiner DP, Gillen MJ, Hiraoka R, Twohig MP, Abramowitz JS, & McGrath PB (2012). Assessing psychological inflexibility: The psychometric properties of the Avoidance and Fusion Questionnaire for Youth in two adult samples. *Psychological Assessment*, *24*, 402-408. Doi: 10.1037/a0025776

Forbes-Mewett H (2019). *Mental Health and International Students: Issues, challenges and effective practice*. International Education Association of Australia (IEAA). Retrieved from: https://www.researchgate.net/publication/334721342_Mental_Health_and_International_Students_Issues_challenges_effective_practice

Glick DM, Millstein DJ, & Orsillo SM (2014). A preliminary investigation of the role of psychological inflexibility in academic procrastination. *Journal of Contextual Behavioral Science*, *3*, 81-88. Doi: 10.1016/j.jcbs.2014.04.002

Greco LA, Lambert W, & Baer RA (2008). Psychological inflexibility in childhood and adolescence: Development and evaluation of the Avoidance and Fusion Questionnaire for Youth. *Psychological Assessment, 20*, 93-102. Doi: 10.1037/1040-3590.20.2.93

Hauschildt K, Gwosc C, Netz N, & Mishra S (2015). *Social and Economic Conditions of Student Life in Europe: Synopsis of Indicators. Eurostudent V 2012-2015*. W. Bertelsmann Verlag. Retrieved from: https://www.eurostudent.eu/download_files/documents/EVSynopsisofIndicators.pdf

Hayes SC (2019). Acceptance and commitment therapy: towards a unified model of behavior change. *World Psychiatry*, *18*, 226. Doi: 10.1002/wps.20626

Hayes SC & Hofmann SG (2018). *Process-based CBT: The science and core clinical competencies of cognitive behavioral therapy*. Oakland, CA: New Harbinger Publications

Hayes SC, Luoma, JB, Bond FW, Masuda A, & Lillis J (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour research and therapy*, *44*, 1-25. Doi: 10.1016/j.brat.2005.06.006

Hayes SC, Strosahl KD, & Wilson KG (2012). *Acceptance and Commitment Therapy: The process and practice of mindful change. 2nd Ed*. New York: The Guilford Press.

Hechanova-Alampay R, Beehr TA, Christiansen ND, & Van Horn RK (2002). Adjustment and Strain among Domestic and International Student Sojourners: A Longitudinal Study. *School Psychology International*, *23*, 458-474. Doi: 10.1177/0143034302234007

Kashdan TB & Rottenberg J (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review*, *30*, 865-878. Doi: 10.1016/j.cpr.2010.03.001

Khoshlessan R & Das KP (2019). Analyzing international students' study anxiety in higher education. *Journal of International Students*, *7*, 311-328. Doi: 10.32674/jis.v7i2.383

Kim YK, Maleku A, Lemieu C, Du X, & Chen Z (2019). Behavioral health risk and resilience among international students in the united states: A study of sociodemographic differences. *Journal of International Students*, *9* 282-305. Doi: 10.32674/jis.v9i1.264

Knirsch P (2015). *Measuring values and committed action with the Engaged Living Scale (ELS): psychometric evaluation in populations with minor depression and chronic pain*. Master's thesis, Department of Behavioral Sciences, University of Twente.

Kraemer HC, Morgan GA, Leech NL, Gliner JA, Vaske JJ, & Harmon RJ (2003). Measures of clinical significance. *Journal of the American Academy of Child and Adolescent Psychiatry*, *42*, 1524-1529. Doi: 10.1097/00004583-200312000-00022

Kroenke K, Spitzer RL, & Williams JB (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of General Internal Medicine*, *16*, 606-613. Doi: 10.1046/j.1525-1497.2001.016009606.x

Kroenke K, Spitzer RL, & Williams JB (2002). The PHQ-15: Validity of a new measure for evaluating the severity of somatic symptoms. *Psychosomatic Medicine*, *64*, 258-266. Doi: 10.1097/00006842-200203000-00008

Lee EH (2012). Review of the psychometric evidence of the perceived stress scale. *Asian Nursing Research*, *6*, 121-127. Doi: 10.1016/j.anr.2012.08.004

Lee JK & Orsillo SM (2014). Investigating cognitive flexibility as a potential mechanism of mindfulness in Generalized Anxiety Disorder. *Journal of Behavior Therapy and Experimental Psychiatry*, *45*, 208-216. Doi: 10.1016/j.jbtep.2013.10.008

Levin ME, Krafft J, Pistorello J, & Seeley JR (2019). Assessing psychological inflexibility in university students: Development and validation of the acceptance and action questionnaire for university students (AAQ-US). *Journal of Contextual Behavioral Science, 12*, 199-206. Doi: 10.1016/j.jcbs.2018.03.004

Levin, M. E., MacLane C, Daflos S, Seeley JR, Hayes SC, Biglan A, & Pistorello J (2014). Examining psychological inflexibility as a transdiagnostic process across psychological disorders. *Journal of Contextual Behavioral Science, 3*, 155-163. Doi: 10.1016/j.jcbs.2014.06.003

Masuda A, Muto T, Tully EC, Morgan J, & Hill ML (2014). Comparing Japanese College Students' and US College Students' Disordered Eating, Distress, and Psychological Inflexibility. *Journal of Cross-Cultural Psychology*, *45*, 1162-1174. Doi: 10.1177/0022022114534982

Masuda A & Tully EC (2012). The role of mindfulness and psychological flexibility in somatization, depression, anxiety, and general psychological distress in a nonclinical college sample. *Journal of Evidence-Based Complementary & Alternative Medicine*, *17*, 66-71. Doi: 10.1177/2156587211423400

Mayer C, Im S, Stavas J, & Hazlett-Stevens H (2019). Mindfulness facets associated with perceived stress: The role of nonreactivity. *Journal of Depression and Anxiety Forecast, 2*, *1009*.

Mori S (2000). Addressing the mental health concerns of international students. *Journal of Counseling and Development*, *78*, 137-144. Doi: 10.1002/j.1556-6676.2000.tb02571.x

OECD (2019). *Education at a Glance 2019: OECD Indicators*, Paris: OECD Publishing.

Peltz JS, Rogge RD, Bodenlos JS, Kingery JN, & Pigeon WR (2020). Changes in psychological inflexibility as a potential mediator of longitudinal links between college students' sleep problems and depressive symptoms. *Journal of Contextual Behavioral Science, 15*, 110-122. Doi: 10.1016/j.jcbs.2019.12.003

Räsänen P, Muotka J, & Lappalainen R (2020). Examining mediators of change in wellbeing, stress, and depression in a blended, Internet-based, ACT intervention for university students. *Internet Interventions*, *22,* 100343. Doi: 10.1016/j.invent.2020.100343

Rice G, Choi CC, Zhang Y, Morero YI, & Anderson D (2012). Self-critical perfectionism, acculturative stress, and depression among international students. *The Counselling Psychologist, 40*, 575-600.

Roemer L, Salters K, Raffa SD, & Orsillo SM (2005). Fear and avoidance of internal experiences in GAD: Preliminary tests of a conceptual model. *Cognitive Therapy and Research*, *29*, 71-88. Doi: 10.1007/s10608-005-1650-2

Russell J, Rosenthal D, & Thomson G (2010). The international student experience: Three styles of adaptation. *Higher Education*, *60*, 235-249. Doi: 10.1007/s10734-009-9297-7

Schmalz JE & Murrell AR (2010). Measuring experiential avoidance in adults: The Avoidance and Fusion Questionnaire. *International Journal of Behavioral Consultation and Therapy*, *6*, 198. Doi: 10.1037/h0100908

Shadowen NL, Williamson AA, Guerra NG, Ammigan R, & Drexler ML (2019). Prevalence and correlates of depressive symptoms among international students: implications for university support offices. *Journal of International Students, 9*, 130-149. Doi: 10.32674/jis.v9i1.277

Sherry M, Thomas P, & Chui WH (2010). International students: a vulnerable student population. *Higher Education, 60*, 33-46. Doi: 10.1007/s10734-009-9284-z

Spitzer RL, Kroenke K, Williams JBW, & Löwe B (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, *166*, 1092-1097. Doi: 10.1001/archinte.166.10.1092

Sümer S, Poyrazli S, & Grahame K (2008). Predictors of Depression and Anxiety Among International Students. *Journal of Counseling & Development, 86*(4), 429-437. Doi: 10.1002/j.1556-6678.2008.tb00531.x

Tavakoli N, Broyles A, Reid EK, Sandoval JR, & Correa Fernández V (2019). Psychological inflexibility as it relates to stress, worry, generalized anxiety, and somatization in an ethnically diverse sample of college students. *Journal of Contextual Behavioral Science*, *11*, 1-5. Doi: 10.1016/j.jcbs.2018.11.001

Trindade IA, Ferreira C, Pinto Gouveia J, & Nooren L (2016). Clarity of Personal Values and Committed Action: Development of a Shorter Engaged Living Scale. *Journal of Psychopathology and Behavioral Assessment*, *38*, 258-265. Doi: 10.1007/s10862-015-9509-7

Trompetter HR (2014). *ACT with pain: measurement, efficacy and mechanisms of acceptance & commitment therapy*. [PhD Thesis - Research UT, graduation UT, University of Twente]. Universiteit Twente. Doi: 10.3990/1.9789036537087

Tull MT, Gratz KL, Salters K, & Roemer L (2004). The Role of Experiential Avoidance in Posttraumatic Stress Symptoms and Symptoms of Depression, Anxiety, and Somatization. *The Journal of Nervous and Mental Disease*, *192*, 754-761. Doi: 10.1097/01.nmd.0000144694.30121.89

Tyndall I, Waldeck D, Pancani L, Whelan R, Roche B, & Pereira A (2020). Profiles of Psychological Flexibility: A Latent Class Analysis of the Acceptance and Commitment Therapy Model. *Behavior Modification*, *44*, 365-393. Doi: 10.1177/0145445518820036

Valdivia Salas S, Martín Albo J, Zaldívar P, Lombas AS, & Jiménez TI (2017). Spanish Validation of the Avoidance

and Fusion Questionnaire for Youth (AFQ-Y). *Assessment, 24*, 919-931. Doi: 10.1177/1073191116632338

Wilton L & Constantine MG (2003). Length of Residence, Cultural Adjustment Difficulties, and Psychological Distress Symptoms in Asian and Latin American International College Students. *Journal of College Counseling, 6*, 177-186. Doi: 10.1002/j.2161-1882.2003.tb00238.x

Zvolensky MJ & Leventhal AM (2016). Affect and Health Behavior co-Occurrence: The Emerging Roles of Transdiagnostic Factors and Sociocultural Factors. *Behavior Modification, 40*, 3-6. Doi: 10.1177/0145445515627307

Received, September 16, 2022
Final Acceptance, December 16, 2022

II

THE EFFECTIVENESS OF A FIVE-SESSION WORKSHOP ON THE DISTRESS OF INTERNATIONAL STUDENTS IN FINLAND – A PILOT STUDY

by

Brandolin, F., Lappalainen, P., Gorinelli, S., Muotka, J., Räsänen, P., and Lappalainen, R., 2023

British Journal of guidance and counselling, 1-18

https://doi.org/10.1080/03069885.2023.2165636

BRITISH JOURNAL OF GUIDANCE & COUNSELLING
https://doi.org/10.1080/03069885.2023.2165636

Routledge
Taylor & Francis Group

The effectiveness of a five-session workshop on the distress of international students in Finland – a pilot study

Francesca Brandolin, Päivi Lappalainen, Simone Gorinelli, Joona Muotka, Panajiota Räsänen and Raimo Lappalainen

Department of Psychology, University of Jyväskylä, Jyväskylä, Finland

ABSTRACT

The mental health of international students has become a concern, as they face high levels of psychological distress. We designed a five-week acceptance and commitment therapy (ACT) workshop with two additional individual assessment meetings. The intervention aimed at helping international students attending a Finnish university to reduce their symptoms of stress, depression, and anxiety, and enhance skills of psychological flexibility. The post-assessment was conducted seven weeks after the pre-measurement. Using data from 53 participants, an evaluation indicated that statistically and clinically significant reductions in symptoms were observed, and the workshop was well received. Regression analyses revealed that changes in psychological inflexibility, mindfulness, and value-based living acted as predictors of change in symptoms. Furthermore, changes in these psychological skills predicted changes in different kinds of distress. This study suggests that a brief group intervention might be a feasible alternative for enhancing the psychological well-being of international students.

ARTICLE HISTORY
Received 8 December 2021
Revised 21 December 2022
Accepted 2 January 2023

KEYWORDS
Mental health; international students; acceptance and commitment therapy; psychological flexibility

Introduction

According to Forbes-Mewett (2019), mental health is one of the leading contemporary concerns regarding international students. Indeed, studies suggest that international students face a range of challenges, which may result in feelings of isolation, loneliness, homesickness, and psychological distress, such as stress, anxiety, and depression (e.g. Brown & Brown, 2013; Mori, 2000; Russell, Rosenthal, & Thomson, 2010; Sawir, Marginson, Deumert, Nyland, & Ramia, 2008). For example, 41% of international students in Australia reported having experienced a significant level of stress as a result of homesickness, cultural shock, or discrimination. In terms of depression, Rice, Choi, Zhang, Morero, and Anderson (2012) investigated international college students in the US and found that close to 40% of them met the clinical cut-off point of depressive symptoms. In line with Rosenthal, Russell, and Thomson (2006), Shadowen, Williamson, Guerra, Ammigan, and Drexler (2019) found that nearly 50% of international students reported clinically significant depression and that approximately 25% reported moderate to severe symptoms of anxiety. The psychological distress experienced by international students may ultimately cause poor academic performance, delay, withdrawal, or study interruptions (Hauschildt, Gwosc, Netz, & Mishra, 2015).

In addition to coping in a different cultural context, Forbes-Mewett and Sawyer (2016) identified another critical factor to the mental health of international students: recognising and seeking

CONTACT Francesca Brandolin francesca.f.brandolin@jyu.fi Department of Psychology, University of Jyväskylä, Seminaarinkatu 15, Jyväskylä, Finland

professional help for mental health problems. International students may be reluctant to seek help from counselling centres or other services (Aguiniga, Madden, & Zellmann, 2016; Forbes-Mewett & Sawyer, 2016). For example, Lu, Dear, Johnston, Wootton, and Titov (2014) found that 54% of the Chinese international students reported high levels of psychological distress, but only 9% of these students had received mental health services. Cultural differences in beliefs about mental health problems and stigma associated with psychological disturbances may inhibit international students from seeking help (Mori, 2000). Acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 2012) is a process-based cognitive behavioural therapy approach that has been used effectively to alleviate stigma and to treat psychological distress (A-Tjak et al., 2015; Gloster, Walder, Levin, Twohig, & Karekla, 2020; Masuda et al., 2007).

The aim of ACT is to foster psychological flexibility through six related skills: acceptance, defusion, being present, self as context, values, and committed action (Hayes, 2019). Acceptance is about being open to one's own experiences, especially in relation to unpleasant thoughts and emotions. Defusion involves undermining the negative effects of cognitions by teaching skills that enable people to take distance from thoughts. Defusion, in turn, is facilitated by self as context, a perspective from which an individual can become aware of their experiences without becoming overly attached to them, while contact with the present moment is about flexibly attending to an experience as it is happening in the now. Furthermore, a connection to one's own values is represented by the ability to choose what matters and acting in service of them by performing value-oriented actions. Psychological inflexibility, the counterpart to psychological flexibility, has been associated with greater levels of psychological distress, rumination, and physical health problems (Lee & Orsillo, 2014; Ruiz & Odriozola-González, 2015; Stabbe, Rolffs, & Rogge, 2019). Among university students, inflexibility has been found to be linked to academic procrastination and negative emotional states, such as stress, depression, and anxiety (Levin et al., 2014; Ruiz, 2014; Tavakoli, Broyles, Reid, Sandoval, & Correa-Fernández, 2019). Masuda and Tully (2012) demonstrated that both mindfulness and psychological flexibility were inversely associated with somatic symptoms, depression, and anxiety among a non-clinical sample of college students, suggesting that psychological inflexibility is associated with a wide range of psychological distress.

Regarding ACT interventions for higher education students, a systematic review showed that ACT training, implemented in various formats, has a positive, albeit small effect ($d = 0.29$), on student well-being (Howell & Passmore, 2019). ACT may alleviate anxiety and depression (e.g. Grégoire, Lachance, Bouffard, & Dionne, 2018; Levin et al., 2014, 2016, 2020), enhance well-being and decrease stress (Katajavuori, Vehkalahti, & Asikainen, 2021; Räsänen, Lappalainen, Muotka, Tolvanen, & Lappalainen, 2016), and can be used as a treatment in combination with counselling services (Levin, Hayes, Pistorello, & Seeley, 2016; see also Pistorello, 2013). In the context of international students, research on ACT remains scarce. ACT has been examined among Japanese international students attending college in the US (Muto, Hayes, & Jeffcoat, 2011). Muto et al. (2011) conducted a study with 70 Japanese international students in the US who were randomly assigned to a waitlist or to receive an ACT self-help book bibliotherapy intervention. Students who received the self-help book showed significantly better general mental health at post and follow up measurements (general mental health, within group ES $d = 0.98$; Muto et al., 2011). Recently, a study piloted an ACT-based group intervention focused on helping Chinese students manage stress when studying abroad. The intervention protocol was developed from a well-established ACT work-stress protocol and adapted for the Chinese international student population. The results showed reductions in depression (within group ES $d = 2.68$), stress ($d = 2.17$), anxiety ($d = 1.71$), and physical symptoms ($d = 1.04$) at post-intervention and these changes were maintained at a one-month follow-up (Xu, O'Brien, & Chen, 2020).

In summary, several studies have revealed concerning rates of psychological distress among international students. Therefore, brief interventions that support their well-being are warranted. There is also a need for interventions that do not only target psychological symptoms but also enhance skills

of mindfulness and psychological flexibility (Masuda & Tully, 2012), as these skills are associated with psychological well-being. An ACT approach would provide a treatment that specifically targets these aims.

Aim of the current study

The main objective of this pilot study was to examine whether a brief group-based ACT workshop would be effective at reducing psychological symptoms and increasing psychological flexibility skills among international students experiencing study-related stressors. We hypothesised that participation in a five-week workshop would decrease symptoms of perceived stress, depression, and anxiety and increase psychological flexibility skills. The second objective of our study was to enhance our understanding of psychological processes or, more precisely, skills connected to favourable changes in psychological symptoms among international students. We expected that a decrease in psychological inflexibility and an increase in mindfulness and engaged living skills would predict a reduction in symptoms of stress, depression, and anxiety. Furthermore, we were interested in identifying which of these psychological skills acted as the strongest predictors of change in psychological symptoms.

Methods

Recruitment and participants

International students were recruited from the University of Jyväskylä following the posting of ads and flyers online and on campus, inviting them to participate in a group workshop composed of five weekly meetings. The ad specified that the workshop aimed to promote student well-being by covering topics such as how to more effectively cope with life and study-related stressors and how to engage in life and studies in a more meaningful way. The participants were required to be enrolled as international students at the University of Jyväskylä and be at least 18 years old. Students who were simultaneously receiving psychological therapy were excluded.

Sixty-eight international students indicated via email that they were willing to participate in the workshop and were contacted via email to schedule the initial interview. Among them, five potential participants had a busy schedule and declined to participate, and ten students did not respond (Figure 1). Finally, pre-measurements were collected from 53 students. The post-measurement was completed seven to eight weeks after the pre-measurement. All participants provided written informed consent, and the study was approved by Central Finland Healthcare District's Ethics Committee (registration number 14U/2012).

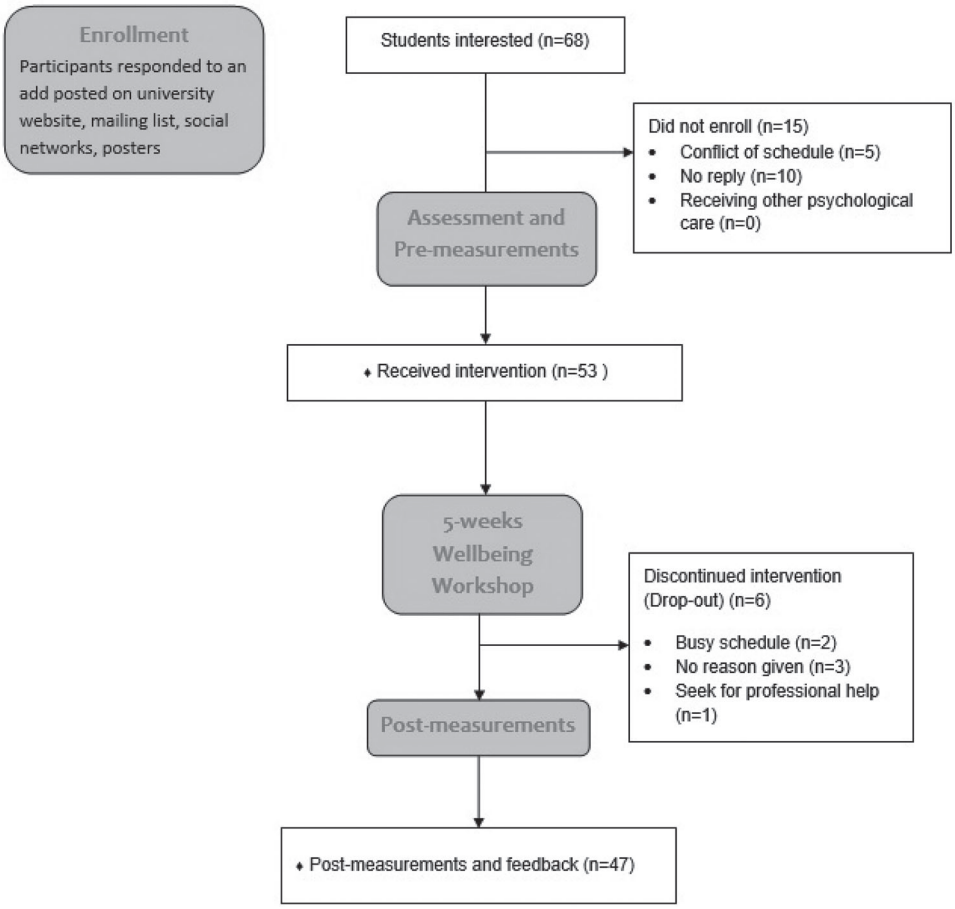
Participant characteristics

The participants' ages ranged from 18 to 46 years, with most of them being female ($n = 44$; 83%) and between 18 and 25 ($n = 31$; 58.5%). Around half of the students were pursuing degree programmes ($n = 29$; 54.7%), and the other half were exchange students ($n = 24$; 45.3%). The students belonged to a variety of ethnicities and 28 nationalities, with most students coming from Asia ($n = 17$; 32%). See Table 1.

Intervention

The intervention was offered once per semester between 2017 and 2019 and completed in face-to-face groups of five to 10 students (totally seven groups). The content of the 10-hour intervention (Table 2) was as follows: an individual pre-assessment interview (60–90 mins), five weekly workshops lasting 90 mins each, and a closing individual meeting for post-measurements and feedback

Figure 1. CONSORT flow diagram of the progress through the phases of the intervention (that is, enrolment, assessment and pre-measurements, intervention period, post-measurement and feedback). Available at: http://www.consort-statement.org/consort-statement/flow-diagram



(60 mins, one week after the last workshop; see Figure 1). Prior to the workshop, the students were invited to participate in an individual semi-structured interview based on the model adapted from Strosahl, Robinson, and Gustavsson (2012) and pre-assessment including a set of online questionnaires. Each weekly workshop meeting introduced a new ACT process (Table 2) and started with a mindfulness exercise. Second, the past week's theme was summarised, followed by a discussion in pairs. Next, the topic and core message of ACT was introduced, and a variety of experiential exercises and metaphors, including animated videos, were utilised, followed by discussion in pairs or in groups. The content was related to issues relevant to international students, such as values related to studying abroad, frustration, procrastination, and feelings of being an outsider (see Table 2). Each workshop closed with a home assignment to be conducted throughout the week, including handouts and ACT skills for application in daily life (Table 2). Thus, the intervention was not only psychoeducational but included a large amount of interaction and discussion and provided the core components of the ACT model in practical experiential and interactive exercises. The content of the intervention was based on earlier ACT interventions developed by the research team and conducted by two leaders, who were two of the authors (F.B. and S.G.) of this article. The persons delivering the intervention were former international students at the University of Jyväskylä, and they

Table 1. Participant characteristics ($n = 53$).

Baseline characteristic	n	%
Age		
1. M (SD)	26.09	(SD = 6.49)
Gender		
1. Female	44	83
2. Male	9	17
Educational programme		
1. Degree	29	54.7
2. Exchange	24	45.3
Educational level		
1. Bachelor	15	28.3
2. Master	37	69.8
3. Doctorate	1	1.9
Faculty		
1. Education & Psychology	18	34
2. Humanities & Social Sciences	18	34
3. Business & Economics	7	13.2
4. Mathematics & Science	5	9.4
5. Sport & Health Sciences	3	5.6
6. Information & Technology	2	3.8
Area of origin		
1. Asia	17	32
2. Central Europe, Baltic, and UK	9	17
3. East Europe & Russia	8	15.1
4. Mediterranean Europe	8	15.1
5. Middle East	6	11.3
6. America North & South	5	9.5
Length of stay		
1. Less than 6 months	30	56.6
2. 6 months to 1 year	9	17
3. Up to 2 years	6	11.3
4. More than 2 years	8	15.1

were trained and supervised in ACT methods by the researchers who were experts in ACT with 10–20 years of experience (P.L., P.R., R.L.).

Measurements

Outcome measures

The Perceived Stress Scale-10 (PSS-10) was used to measure symptoms of stress (Cohen & Williamson, 1988; Cohen, Kamarck, & Mermelstein, 1983), and it was our main outcome measurement. The PSS-10 is a 10-item scale in which respondents' rate how stressful they perceive their lives to have been in the past month through a 5-point Likert scale (0 = *never*, 4 = *very often*). Total scores (min 0, max 40). up to 13 denote low level, 14–26 moderate, and 27–40 high stress. The PSS has been used in college student populations (Tavakoli et al., 2019). The PSS-10's internal consistency in previous studies has ranged from .74 to .91 (Lee, 2012). In the current study, α = pre .81, post .85.

The Generalized Anxiety Disorder Assessment (GAD-7) is a seven-item questionnaire for assessing generalised anxiety disorder (Spitzer, Kroenke, Williams, & Löwe, 2006). The items are linked to the DSM-IV criteria, and a score of 10 or greater is considered to represent a cut point for identifying cases of General Anxiety Disorder (Spitzer et al., 2006). Respondents rate how

Table 2. Structure and content of the intervention.

Theme	Module content	Home assignment
Individual Pre-Assessment	Informed consent. Psychosocial interview to get a sense of the participant's current situation, problems, and level of functionality.	Pre-measurements: Online questionnaires
Group Meeting 1: Introduction and Values	**Find out what is important for you** Introduction, introducing each other, experiences of international students. Discussion: Why are you here as an international student? Defining values. Exercises: Two kids in a car, Value cards, 80th Birthday. Video: Values vs goals	Clarifying one's own values: Find out which areas are a priority now. Video: The Unwelcome Party Guest
Group Meeting 2: Take action	**Engage with the important things in your life** Value-based actions. SMART goals, FEAR and DARE moves. Obstacles to actions. Discussion: How do you connect your actions to your values? Videos: The choice point, Zorg the alien. Discussion: Feelings of being an outsider	Defining goals: Immediate, short, semi-long and long term. Committing to take value-based actions. Video: Ted Talk: Becoming a mad scientist with your life
Group Meeting 3: Mindfulness	**Be present in this moment** How to be mindful in the here and now, in daily life. Videos: Mindfulness is a superpower, How Mindfulness empowers us. Exercises: Body scan, Mindfulness of the hand, Time machine. Discussion: How to be more engaged and focused on this experience here and now.	Being mindful in daily activities: eat, cook, shower. Audio exercise: "Hexaflex" Video: Ted Talk Want to be happier stay in the moment
Group Meeting 4: Get out of your mind (Cognitive Defusion)	**Watch your thinking and dońt get caught up in it** An observer's perspective towards thoughts and feelings. Exercises: Watch your thinking, I'm having the thought that … Mind as storyteller, Say it in another language, Weakening of language control. Videos: Internal struggle, Struggle switch. Discussion: How to take distance from thoughts and negative judgements about studying abroad?	Taking distance from your thoughts: Defusion techniques sheet. Audio exercise: "Leaves on the stream" Video: Ted Talk: How to make stress your friend
Group Meeting 5: Acceptance and Compassion	**Embrace all your thoughts and feelings** Acceptance of thoughts and feelings Exercises: The Sky, The Continuous You. Connection to Values, Values card. Connection to Self-Compassion. Video, Three happiness myths, Sadness comforts Bing Bong. Summary of psychological flexibility. Discussion: How to reconnect the studying abroad experience with values and a more open attitude.	Write down three things you learned from this workshop. Video: Ted Talk: How love turns pain into purpose
Individual meeting: Post-measurements and feedback	Final interview Evaluating the student's situation.	Post-measurements: Online questionnaires and feedback

often specific problems related to anxiety have bothered them over the preceding two weeks. The responses are scored from 0 (not at all) to 3 (nearly every day), with a sum score of max 21. Scores of less than 4 represent minimal symptoms, 5–9 mild, 10–14 moderate, and > 15 severe anxiety. The scale has shown excellent internal consistency ($\alpha = 0.92$; Spitzer et al., 2006) including university students (Kim, Maleku, Lemieu, Du, & Chen, 2019). In this study, α = pre 0.86, post 0.85.

The Patient Health Questionnaire (PHQ-9) is a depression instrument that scores each of the nine DSM-IV depression criteria from 0 (*not at all*) to 3 (*nearly every day*) (Kroenke, Spitzer, & Williams, 2001). A PHQ-9 score of ≥ 10 has a sensitivity and specificity of 88% for major depression. A sum score

(min 0, max 27) is then calculated. A total score of less than 4 represents none to minimal level of depressive symptomatology, 5–9 mild, 10–14 moderate, 15–19 moderately severe, and 20 or greater severe symptomatology. Internal consistency has been shown to be high in general, clinical (Kroenke et al., 2001, 2002) and university student populations (Tavakoli et al., 2019). In our sample, α = pre 0.79, post 0.86.

Process measures

The Five Facet Mindfulness Questionnaire (FFMQ) measures mindfulness using 39 statements rated on a scale ranging from 1 to 5 (1 = *rarely or never true*, 5 = *very often true or always true*) (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). The FFMQ (scores ranging from 39–195) has five subscales: observing (FFMQ-Ob); describing (FFMQ-De); non-judging of inner experience (FFMQ-Nj); non-reactivity of inner experience (FFMQ-Nr); and acting with awareness (FFMQ-Aw). Higher scores indicate greater mindfulness skills. The FFMQ has an adequate internal consistency (Baer et al., 2008), and is a valid measure of mindfulness with university students (Baer et al., 2006; Carmody, Baer, Lykins, & Olendzki, 2009). Cronbach's alpha for the total score was α = pre 0.90, post 0.93; for the subscales, it was α = pre 0.83, post 0.84 (observe), α = pre 0.93, post 0.91 (describe), α = pre 0.87, post 0.82 (act with awareness), α = pre 0.89, post 0.95 (non-judgement), and α = pre 0.82, post 0.88 (non-reactivity).

The Avoidance and Fusion Questionnaire for Youth (AFQ-Y) measures psychological inflexibility, a construct referring to avoidance of thoughts and feelings (Greco, Lambert, & Baer, 2008). The AFQ-Y includes 17 statements on a 5-point Likert scale ranging from 0 to 4 (0 = *not at all true*, 4 = *very true)*. The AFQ-Y scores are obtained by summing all 17 items (min 0, max 68). Lower scores indicate better outcomes. The AFQ-Y was initially developed for use with children and adolescents. Following the example of Levin et al. (2014), we used the AFQ-Y for the student population in this study. The AFQ-Y has shown adequate reliability and validity in samples of university students (Schmalz & Murrell, 2010). In the current study, α = pre 0.85. post 0.92.

The Engaged Living Scale (ELS) is a measure of the process of engaged living, choices we make about how we want to live our lives (Trompetter, 2014). This measure features two subscales, learning to identify values (Valued Living, ELS-VL) and living according to them (Life Fulfilment, ELS-LF). All items are scored on a 5-point Likert scale ranging from 1 to 5 (1 = *completely disagree*, 5 = *completely agree)*. Total scores can be calculated for each subscale and the main scale (min 0, max 80). Previous studies including students have shown that the ELS-16 presents adequate to good psychometric properties (Grégoire, Doucerain, Morin, & Finkelstein-Fox, 2021; Trindade, Ferreira, Pinto-Gouveia, & Nooren, 2016). In our sample α = pre 0.93, post 0.92. For the subscales, α = pre 0.90, post 0.89 (ELS-VL) and α = pre 0.87, post 0.86 (ELS-LF).

Participant satisfaction and motivation

The participants' feedback was collected using a self-constructed feedback questionnaire. They rated their satisfaction with the intervention on a 10-point Likert scale, with 0 indicating very dissatisfied and 10 very satisfied. Participants were also asked if they would recommend the intervention to other international students, and they expressed their opinion on a 1–5 Likert scale (1 = would advise against it; 2 = would not recommend it; 3 = would recommend it with some reservations; 4 = would recommend it; 5 = would highly recommend it). Additional feedback from the participants was collected using a 1–5-point Likert scale (1 = strongly disagree, 5 = strongly agree), including questions related to the coaches and the workshop, a selection of yes and no questions about the skills learned during the workshop (e.g. *Participating in the workshop has helped me cope better with issues that have been challenging to me earlier*) and open-ended questions focusing on the perceived benefits (e.g. *What did you find most helpful in the workshop?*) and suggestions for improvements (e.g. *If you would change anything about the workshop, what would it be?*)

Statistical analyses

Statistical analyses were conducted using SPSS and Mplus, version 8 (Muthén & Muthén, 2017). Descriptive statistics were carried out to provide an overview of the mean values and change scores from the pre- to post-measurements of the symptom and process measures. The within-group changes from the pre- to post-measurements were investigated using structural equation modelling (SEM). The analysis included all the participants who completed the pre-measurement ($n = 53$). Thus, the within-group changes were described using estimated mean values. In addition, within-group effect sizes (ESs) were reported using Cohen's (1988) d in order to obtain an estimation of the magnitude of the changes. An effect size of $d = 0.20$ was considered small, $d = 0.50$ medium, and $d = 0.80$ large. We investigated further clinical significance of the intervention by studying the number of students who reported moderate or higher levels of symptoms of anxiety (GAD-7) and depression (PHQ-9) at pre- and post-measurement ($n = 47$).

In addition, we conducted multiple (linear) regression analyses in SPSS ($n = 47$) to determine whether changes in the psychological flexibility measures (AFQ-Y, FFMQ, ELS) predicted changes in the symptoms of stress (PSS-10), depression (PHQ-9), and anxiety (GAD-7). Two separate analyses were performed. First, the total scores of the AFQ-Y, FFMQ, and ELS were used as independent (predictor) variables. Second, the subscales of the FFMQ and ELS were investigated as independent (predictor) variables. For the regression analyses, we selected only those process variables that significantly correlated ($p < 0.05$) with the symptom measures. We performed the regression analyses using the stepwise model and verified the results using the enter method. Both methods resulted in identical conclusions. Furthermore, we tested whether multicollinearity was a problem by calculating tolerance and variance inflation factors (VIF; Kutner, Neter, Nachtsheim, & Li, 2004). The selected variables did not represent a problem of multicollinearity, with VIF scores being under 3.0.

Results

Treatment adherence

As shown in Figure 1, the attrition rate was relatively low. 11% of the participants discontinued the workshops ($n = 6$, out of 53), three gave no specific reason, whereas two reported a busy schedule. One participant interrupted their participation due to a high level of symptoms. About 83% of the participants attended four to five group meetings. Further, there was no trend indicating larger changes in the seven treatment groups towards the end of study period (from 2017 to 2019).

Severity of symptoms

At pre-measurement, approximately 87% ($n = 46$) of the students reported moderate to high stress; 40% ($n = 21$) moderate to severe anxiety (GAD-7); and 51% ($n = 27$) moderate to high depressive symptoms (PHQ-9). Approximately half of the students (51%) reported major level of depression (≥ 10).

Changes in symptoms and psychological flexibility

Significant decreases in all the symptom variables, stress, anxiety, and depression were found from the baseline to post-treatment (Table 4). According to effect size values, stress (PSS-10) showed a large decrease ($d > 0.80$), whereas the reductions in anxiety (GAD-7) and depression (PHQ-9) were moderate ($d > 0.50$). For the process variables, we observed a significant and large decrease in psychological inflexibility (AFQ-Y), and moderate increases in total mindfulness skills (FFMQ) and in engaged living (ELS). Regarding the subscales, we observed a significant increase in four of five of the mindfulness subskills (FFMQ description, awareness, non-judgement, non-reacting). The

subscale observing showed no change (Table 4). The change in non-judgement was moderate, while the changes in the other three scales were small. Regarding the subscales for the engaged living measure (ELS), there was a small effect in valued living (ELS-VL) and a moderate effect in life-fulfilment (ELS-LF).

In addition, we investigated the clinical significance of the intervention by studying the number of students who reported moderate or higher levels of symptoms of anxiety (GAD-7) and depression (PHQ-9) at pre- and post-measurement ($n = 47$). Scores of 10 or greater in GAD-7 and PHQ-9 are considered to represent a reasonable cut point for identifying cases of General Anxiety Disorder (Spitzer et al., 2006), and for major depression (Kroenke et al., 2001). At post-intervention ($n = 47$) approximately 11% ($n = 5$) of the students reported moderate to high anxiety compared to 40% ($n = 21$) at the beginning of the intervention. Accordingly, 19% ($n = 9$) reported moderate to severe depression at the post-measurement compared to 51% ($n = 27$) at the pre-measurement (See Figure 2) Tables 3 and 4.

Students attending all five sessions of the workshops showed higher improvement compared to students who attended three or four sessions only. In our main outcome measure, PSS-10, the changes were as follows: three sessions ($n = 8$), mean change, $m = 3.75$; four sessions ($n = 15$), $m = 4.53$; five sessions ($n = 24$), $m = 6.00$. Similar trends were observed in our process measures: AFQ-Y, three sessions, $m = 7.63$; four sessions, $m = 6.27$; five sessions, $m = 11.92$; FFMQ, three sessions, $m = 3.00$; four sessions, $m = 7.27$; five sessions, $m = 16.36$; ELS, three sessions, $m = 2.88$; four sessions, $m = 4.67$; five sessions, $m = 6.63$.

Predictors of changes in symptoms

When investigating the predictors, only those psychological flexibility measures showing significant correlation with the changes in stress, depression, and anxiety were selected for the regression analysis (see Table 3). In relation to perceived stress (PSS-10), we investigated the total change scores of the AFQ-Y, FFMQ, and ELS as predictors (Table 5) and found two significant models. Changes in psychological inflexibility (AFQ-Y; Model 1: F (1,43) = 21.736, $p < 0.001$) made a significant contribution and explained 32% of the variance in changes of stress symptoms. The second model (F (2,42) = 14.390, $p < 0.001$), which included changes in mindfulness (FFMQ total), outlined an additional seven percent of the variance. In total, changes in these two process measures accounted for close to 40% of the variance in changes of the PSS-10. Two significant models (Model 1: F (1,43) =

Figure 2. Clinical cut-off values of the symptom measures of stress (PSS-10), Depression (PHQ-9) and anxiety (GAD-7) showing the decrease in symptoms at post intervention for the severe and moderate symptoms categories.

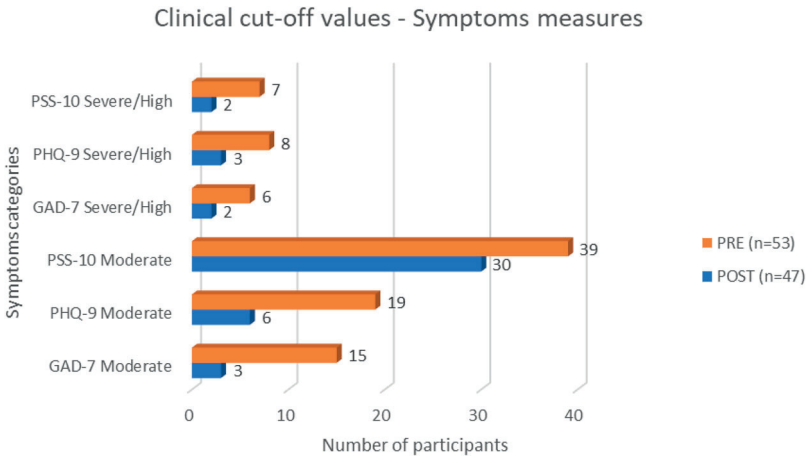


Table 3. Correlation between change score in symptom (anxiety, depression, stress) and process measures (valued living, psychological flexibility, and mindfulness skills) between pre and post intervention. Mean values for the change scores (pre to post) and standard deviations (SD) are also presented.

	PSS-10	PHQ-9	GAD-7	ELS	ELS-VL	ELS-LF	AFQ-Y	FFMQ	FFMQ -Ob	FFMQ -De	FFMQ -Aw	FFMQ-Nj	FFMQ-Nr
PSS-10	1	0.53**	0.50**	−0.46**	−0.44**	−0.40**	0.58**	−0.56**	−0.06	−0.44**	−0.46**	−0.51**	−0.29*
PHQ-9		1	0.43**	−0.39**	−0.36*	−0.36*	0.25	−0.35*	−0.13	−0.21	−0.30*	−0.28	−0.19
GAD-7			1	−0.18	−0.15	−0.19	0.11	−0.31*	−0.15	−0.09	−0.31*	0.25	−0.21
ELS				1	0.97**	0.88**	−0.41**	0.51**	0.35*	0.45**	−0.28	0.34*	0.26
ELS-VL					1	0.75**	−0.43**	0.48**	0.35*	0.39**	0.26	0.31*	0.23
ELS-LF						1	−0.28	0.50**	0.28	0.47**	0.29	0.33	0.28
AFQ-Y							1	−0.60**	−0.02	−0.34*	−0.55**	−0.66**	−0.30*
FFMQ								1	0.54**	0.63**	0.81**	0.70**	0.70**
FFMQ-Ob									1	0.05	0.25	0.16	0.28
FFMQ-De										1	0.36*	−0.26	0.36*
FFMQ-Aw											1	0.50**	0.56**
FFMQ-Nj												1	0.28
FFMQ-Nr													1
Mean (SD)	5.15 (4.88)	3.06 (5.49)	3.19 (4.30)	−5.36 (9.56)	−2.81 (6.70)	−2.55 (3.46)	9.38 (8.82)	−10.96 (17.19)	−0.57 (5.12)	−2.36 (5.07)	−1.66 (5.14)	−4.47 (6.24)	−1.85 (3.92)

Note: PSS-10 (Perceived Stress Scale- 10 items); PHQ-9 (Patient Health Questionnaire-9 items); GAD-7 (Generalized Anxiety Disorder-7 items); AFQ-Y (Acceptance and Fusion Questionnaire-for Youth); FFMQ (Five Facets Mindfulness Questionnaires); FFMQ-Ob (Observe); FFMQ-De (Describe); FFMQ-Aw (Acting with Awareness); FFMQ-Nj (Non-Judgement); FFMQ-Nr (Non-Reactivity); ELS (Engaged Living Scale); ELS-VL (Valued living); ELS-LF (Life Fulfillment).

Table 4. Changes in outcome and process variables during the intervention (pre-post).

	Pre ($n = 53$) M (SD)	Post ($n = 47$) M (SD)	W df = 1	p	d
Stress (PSS-10)*	20.74 (5.31)	15.61 (5.49)	54.23	< 0.001	0.94
Anxiety (GAD-7)*	8.72 (4.51)	5.60 (3.64)	26.14	< 0.001	0.76
Depression (PHQ-9)*	9.47 (5.02)	6.39 (4.80)	15.91	0.001	0.63
Psych.inflexibility (AFQ-Y)	26.45 (11.36)	17.08 (10.56)	56.32	< 0.001	0.84
Mindfulness total (FFMQ)	118.48 (20.02)	129.58 (19.21)	20.12	< 0.001	−0.57
FFMQ-Observing	26.85 (6.26)	27.45 (5.76)	0.69	0.406	−0.10
FFMQ-Describing	26.08 (7.57)	28.48 (6.31)	11.37	0.001	−0.34
FFMQ-Awareness	24.45 (5.97)	26.15 (4.46)	5.64	0.018	−0.32
FFMQ-Non-judging	24.52 (7.06)	29.00 (7.07)	24.92	< 0.001	−0.63
FFMQ-Non-reacting	16.59 (4.22)	18.44 (4.12)	11.22	0.001	−0.44
Engaged Living total	54.23 (12.59)	60.02 (9.95)	18.76	< 0.001	−0.51
ELS-Valued Living	37.87 (8.74)	40.97 (6.79)	10.91	0.001	−0.39
ELS-Life Fulfillment	16.36 (4.51)	19.05 (3.84)	29.73	< 0.001	−0.64

Note: Estimated mean values, standard deviations, Wald test, p-values and within group effect sizes. The cut-off values of stress, anxiety and depressions are presented under the table.

Note:*PSS-10: 14–26 moderate stress, and 27–40 high stress.

*GAD-7: 5–9 mild, 10–14 moderate, and > 15 severe anxiety.

*PHQ-9: 5–9 mild, 10–14 moderate, 15–19 moderately severe, and 20 or greater severe symptomatology.

PSS-10 (Perceived Stress Scale- 10 items); PHQ-9 (Patient Health Questionnaire-9 items); GAD-7 (Generalized Anxiety Disorder-7 items); AFQ-Y (Acceptance and Fusion Questionnaire-for Youth); FFMQ (Five Facets Mindfulness Questionnaires); FFMQ-Ob (Observe); FFMQ-De (Describe); FFMQ-Aw (Acting with Awareness); FFMQ-Nj (Non-Judgement); FFMQ-Nr (Non-Reactivity); ELS (Engaged Living Scale); ELS-VL (Valued living); ELS-LF (Life Fulfillment).

15.416, $p < 0.001$; Model 2: F (2,42) = 12.033, $p < 0.001$) resulted from examining the changes in the subscales and including, in the analyses, the six scales that correlated significantly with changes in stress (Table 5). Changes in the mindfulness skill of non-judgement (FFMQ-Nj) explained 25%, and changes in the value subscale Valued living (ELS-VL) explained 10% of the changes in stress symptoms.

Concerning changes in symptoms of depression (PHQ-9), we included the total scores of the ELS and FFMQ in the regression analysis and found that changes in values (ELS total) acted as a significant predictor (F (1,43) = 8.360, $p = 0.006$) and explained 14% of the variance in depression. After including the three subscales (ELS-VL, ELS-LF and FFMQ-Aw) that correlated moderately in the analyses, only changes in life fulfilment acted as a significant predictor (ELS-LF; F (1,45) = 6.889, $p =$ 0.011), explaining 11% of the variance in depressive symptoms.

In terms of general anxiety (GAD-7), of the three total scores, only changes in the FFMQ total score was a significant predictor of the changes in anxiety (F (1,43) = 11.971, $p = 0.001$). Changes in the FFMQ total score explained nine percent of the variance in anxiety symptoms. Of all the subscales, only changes in the FFMQ-Acting with Awareness (Aw) was a significant predictor of the changes in anxiety (F (1,45) = 4.758, $p = 0.034$). Changes in the FFMQ-Aw explained nine percent of the changes in anxiety symptoms.

Participant satisfaction and motivation

The students evaluated their satisfaction with the workshop with a mean value of 8.57 (SD = 1.30) on a scale from 1 to 10 (positive). With a rating of at least three ("Would recommend it with some reservation"; 1–5 Likert scale), 83% ($n = 39$) of students were likely to recommend the intervention to other international students. Over half of them (55%, $n = 26$) would highly recommend the workshop to others (value 5 in 1–5 Likert scale). Those few students who recommended the intervention with some reservations, wished either more sessions or individual meetings instead of group sessions. All participants ($n = 47$) agreed that the workshop helped them cope better with previously challenging issues. Nearly all students ($n = 46$, 97.9%) reported that they had gained new perspectives that had helped them clarify certain issues in their life. Similarly, most students ($n = 41$; 87.2%) perceived that

Table 5. Multiple regression analysis of intervention change scores.

Dependent variables	Predictors tested	Significant predictors	Std β	R^2	Adjusted R^2	change
PSS-10	**Total scores**					
	AFQ-Y FFMQ Total ELS Total	1. Model AFQ-Y	0.381*	0.336***	0.320	0.336***
		2. Model FFMQ Total	−0.332*	0.407***	0.378	0.071*
	Subscales					
	FMMQ-DE FFMQ-AW FFMQ-NJ FFMQ-NR	1. Model FFMQ-NJ	−0.409**	0.264***	0.247	0.264***
	ELS-VL ELS-LF	2. Model ELS-VL	−0.334*	0.364***	0.334	0.100*
PHQ-9	**Total scores**					
	ELS Total FFMQ Total	1. Model ELS Total	−0.403**	0.163**	0.143	0.163**
	Subscales					
	ELS-VL ELS-LF FFMQ-AW	2. Model ELS-LF	−0.364*	0.133*	0.113	0.133*
GAD-7	**Total scores**					
	FFMQ Total	1. Model FFMQ Total	−0.308*	0.095*	0.074	0.095*
	Subscales FFMQ-AW	2. Model FFMQ-AW	0.309*	0.096*	0.076	0.076*

Note: Role of psychological inflexibility, mindfulness, and values skills in predicting changes in stress, depression, and general anxiety

Note: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

[1] For the regressions, only those flexibility and mindfulness scales where the correlation coefficients were significant with symptom measures (PSS-10, PHQ-9 and GAD-7) were considered.

[2] Significant F change is represented with * in the R^2 Change.

PSS-10 (Perceived Stress Scale-10 items); PHQ-9 (Patient Health Questionnaire-9 items); GAD-7 (Generalized Anxiety Disorder-7 items); AFQ-Y (Acceptance and Fusion Questionnaire-for Youth); FFMQ (Five Facets Mindfulness Questionnaires); FFMQ-Ob (Observe); FFMQ-De (Describe); FFMQ-Aw (Acting with Awareness); FFMQ-Nj (Non-Judgement); FFMQ-Nr (Non-Reactivity); ELS (Engaged Living Scale); ELS-VL (Valued living); ELS-LF (Life Fulfillment).

they felt more satisfied with their life and their well-being had increased. In terms of what was perceived helpful, the students reported, among others, the skill of learning different strategies to handle thoughts and emotions constructively, learning present moment skills, and clarification of values. Negative aspects and suggestions for improvement included the need for longer or additional sessions, smaller groups, and more discussions or group activities to improve the group cohesion.

Discussion

The first aim of this study was to examine whether a brief group-based ACT workshop was effective at decreasing psychological symptoms and increasing psychological flexibility skills among international students interested in dealing with daily stressors. Prior to the intervention, the participants reported high distress with nearly 90% of the students experiencing moderate to high stress, approximately 50% reporting moderate to high symptoms of depression, and 40% experiencing moderate to severe anxiety.

The ACT-based workshops significantly reduced psychological symptoms of stress, depression, and anxiety. After the seven-week intervention period, we observed over 30% reduction in the number of students reporting either moderate or severe levels of symptoms of depression or anxiety. However, the current study did not include a control condition and the conclusion needs to be treated with caution. On the other hand, our results are congruent with earlier ACT-based studies reporting positive outcomes in general student (e.g. Grégoire et al., 2018; Levin et al.,

2014, 2016, 2020; Räsänen et al., 2016) as well as in international student populations (Muto et al., 2011; Xu et al., 2020). For example, our results were in line with the within-group effect sizes in the Levin et al. (2104) study ($d = 0.81–0.97$, vs. the current study, $d = 0.63–0.94$).

Second, we expected that the workshop would increase psychological flexibility skills among the students. This hypothesis was also supported. The five-week intervention decreased psychological inflexibility and enhanced mindfulness skills, specifically non-judging, suggesting that the intervention fostered a less negative evaluation of thoughts and feelings. The intervention increased engaged living, in particular, life fulfilment. This implies that the intervention was able to promote a more meaningful, values-oriented life, and a non-critical attitude. Earlier ACT-based studies have shown that the training of psychological flexibility and mindfulness skills can increase the ability to respond more adequately to stressful situations, which may lead to improvements in a wide range of mental health outcomes (see e.g. Danitz, Suvak, & Orsillo, 2016; Grégoire et al., 2018; Lee & Orsillo, 2014; Levin et al., 2014, 2016).

In addition, a clarification of values and increases in cognitive, emotional, and behavioural flexibility have been found to be partial mediators of the relationship between mindfulness training and symptom reduction (Carmody et al., 2009; Carmody & Baer, 2008). Accordingly, it has also been shown in a recent study by Grégoire et al. (2021) that when students reported being more engaged in committed actions, they also reported lower distress and greater well-being. Our study corroborates these findings, suggesting that clarifying values and working on flexibility and mindfulness skills are associated with symptom reduction (Paliliunas, Belisle, & Dixon, 2018).

Moreover, we hypothesised that a decrease in psychological inflexibility and an increase in mindfulness and engaged living skills would predict decreases in psychological symptoms. We investigated significant predictors of changes in symptoms of stress, depression, and anxiety and found that, in line with the findings of Masuda and Tully (2012), psychological flexibility and mindfulness accounted for a unique variance in measures of distress. More precisely, our findings indicated that changes in psychological inflexibility and overall mindfulness skills predicted changes in perceived stress over the course of the intervention. However, change in psychological inflexibility was a stronger predictor of changes in stress than changes in overall mindfulness skills. When we investigated more closely specific sub skills as predictors, we found that changes in non-judgment (e.g. "I tell myself that I shouldn't be thinking the way I'm thinking") and valued living acted (e.g. "I know what motivates me in life") as a significant predictor of stress. Conversely, while changes in overall inflexibility and mindfulness predicted changes in stress, they did not predict changes in depressive symptoms. Instead, changes in values and especially in value-based actions (e.g. "I make time for the things that I consider important"), acted as significant predictors of depressive symptoms. Changes in anxiety were predicted by changes in mindfulness skills, especially the skill acting with awareness (e.g. "I rush through activities without being really attentive to them"). These results suggest that changes in different psychological flexibility skills may predict changes in different kind of distress, which is congruent with Gallego, McHugh, Villatte, and Lappalainen (2020) and Kinnunen, Puolakanaho, Tolvanen, Mäkikangas, and Lappalainen (2020), who found that different aspects of mindfulness and psychological inflexibility may be related to different psychological outcomes. Overall, these findings suggest that enhancing skills to stay focused in the present moment and acquiring a non-judging attitude to one's emotions and thoughts are associated with positive changes in anxiety and stress, whereas engaging more in meaningful actions may lead to changes in depressive symptoms. Thus, when experiencing stress and anxiety, students need to be trained to acquire an accepting stance toward their thoughts and feelings while they stay focused on the present moment, and to commit to value-based actions if the target is to alleviate mood. It is possible that psychological flexibility skills could be enhanced methods other than ACT. Further studies are needed to investigate the role of acceptance, mindfulness, and valued actions in psychological health of international students.

With regard to adherence to workshops, we observed a low drop-out rate of 11% among the international students in this sample. A similarly low drop-out rate (9%) was reported in an earlier

study that employed a similar approach to university students (Räsänen et al., 2016). Importantly, the workshop was well received by the students, who evaluated their satisfaction with an average of 8.6 of a possible 10. In addition, all of them agreed that the workshop helped them cope better with previously challenging issues. Based on our findings including 28 nationalities, it may not be needed to make interventions or counselling more culturally appropriate for the diverse international student population, which was suggested by Forbes-Mewett (2019). Our results, as well as participant feedback, show that a process-based ACT workshop combined with issues that international students perceive relevant can be effective and well received by the participants.

However, the present study does come up against several limitations, the most important being the lack of a control group, and lack of representativeness, as most participants were female university students (83%). Female students may experience higher levels of psychological symptoms, such as anxiety and depression, than their male counterparts (e.g. Adlaf, Gliksman, Demers, & Newton-Taylor, 2001), and our results may reflect this. Moreover, the pre-measurement value of stress in the current study (PSS-10, $m = 20.74$) is comparable with the pre-measurement value of domestic students in the same university ($m = 21.54$).

The lack of a control group makes it impossible to draw firm causal conclusions. Without a control group, key threats to internal validity such as maturation, measurement-effect and regression toward the mean cannot be ruled out. Additionally, without a waitlist or alternative treatment comparison, it is impossible to unambiguously attribute the participants' change to the ACT components. For example, the clinical skills of the coaches conducting the sessions, such as supportive listening, could have been sufficient to elicit change (Sommers-Flanagan & Sommers-Flanagan, 2015). The low number of interested students participating per semester did not allow us to create a control group condition. However, the authors have previously observed in a randomised controlled trial (offered to the domestic university students) that the change in stress (PSS-10) was small ($d = 0.27$) in the control condition receiving only some attention and repeated measurements. Thus, the research attention with repeated measures may possibly have had an impact on results in the current study. But, based on our earlier findings (Räsänen et al., 2016), we believe that this impact is significantly smaller compared to the changes in the current study (e.g. PSS.10, $d = 0.27$ vs. $d = 0.94$). In addition, we observed that the exposure to the intervention was related to magnitude of changes in stress. The positive effects of the intervention could be affected by the researcher's positive allegiance to the investigated treatment model. Thus, the results could be associated with or influenced by the researchers' enthusiasm for the ACT-model. However, there are mixed results of allegiance bias, and the bias is mostly directed to the randomised controlled trials when comparing the intervention to other treatment models (Wilson, Wilfley, Agras, & Bryson, 2011). Furthermore, the participants joined the study voluntarily. Thus, the participants selected themselves to the study group, and there is a possibility of self-selection-bias. For example, those students who were highly motivated to make changes participated in the study. Limited number of questions about negative aspects of the workshop is also a limitation. Additionally, the participants may have responded to the post-treatment questionnaires in a socially desirable manner. More studies with larger samples are needed to investigate whether our findings can be generalised to the overall international student population. The relatively low uptake rate of students joining the intervention may be since international students were adapting to the new cultural and academic environment, reducing their willingness to participate in extra activities. Some students might also be more skeptical towards psychological interventions due to their cultural background.

Conclusion

The current study suggested that it is possible to help international students who display high levels of psychological symptoms by offering them a brief workshop with the aim of increasing their psychological flexibility skills and significantly impacting their mental health outcomes. Therefore, emphasis needs to be placed on fostering students' acceptance skills, for example, skills to handle

their unpleasant thoughts and emotions, assisting them in exploring and discovering what is important to them in life, and encouraging them toward meaningful actions. Learning these skills should be integrated into both the curriculum and counselling services targeting international students in the future so as to increase the likelihood of better adaptation and coping in the new cultural and academic environment.

Data availability statement

The data of this study are available on request from the corresponding author.

Acknowledgements

The authors would like to thank the international students who participated in this study.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

The study was partially funded by Student Life, a unit of the University of Jyväskylä, Finland; Jyvaskylan Yliopisto Psykologian laitos.

Notes on contributors

Francesca Brandolin, doctoral researcher at the Department of Psychology, University of Jyväskylä, Finland. A licensed clinical psychologist, in Italy. Previous studies are bachelor in Psychological Sciences and Techniques and an international master's degree in Clinical Psychology. During the last year of the master and post-graduate internship she got involved in different research projects dealing with brief psychological interventions for student's wellbeing and stress management, and virtual reality (VR) interventions for social anxiety and public speaking at the department of Psychology, University of Jyväskylä. Her ongoing research in the past six years involve the efficacy of a brief low-threshold workshop on the distress of international students, both delivered face-to-face or online through videoconference during the COVID-19 pandemic. Currently, she has the first two articles of her dissertation accepted for publication and the third one in submission. Brandolin is an active member in the Association for Contextual Behavioural Science.

Päivi Lappalainen, PhD. PostDoctoral Researcher has published over 40 papers in the area of web-based and mobile eHealth interventions based on Acceptance and Commitment Therapy (ACT). She has also been the digital content lead (psychology) for 18 web-based and mobile interventions, including web and mobile applications for preventing stress and promoting well-being of working age individuals, depressive symptoms, insomnia and chronic conditions. Therefore, she is one of the world leading experts in the field of digital ACT interventions. During the last 11 years she has been involved in and managed research projects dealing with web-based and mobile interventions at the department of Psychology, University of Jyväskylä. Her ongoing research projects involve the efficacy of a web-based psychological intervention for parents experiencing stress and burnout, a web-based psychological rehabilitation programme for working age individuals suffering from depressive symptoms, and virtual reality (VR) interventions for social anxiety and public speaking. Dr. Lappalainen has been in charge of several randomised controlled trials investigating digital solutions for people of all ages. Currently, she is co-supervising three doctoral students in psychology and several Bachelor and Master's students. Lappalainen is an active member in the Association for Contextual Behavioural Science.

Simone Gorinelli, doctoral and project researcher at the Department of Psychology, University of Jyväskylä, Finland. His research focuses on the effectiveness of Virtual Reality (VR) exposure, acceptance and commitment therapy (ACT) and Relational Frame Theory (RFT) training on social and public speaking interaction of university students aimed to increase performing skills of university students through an integration between Psychology and Technology. Project researcher in an international research project VRperGENERE, in which the aim is to reduce intimate partner violence through the deployment of cost-effective prevention and rehabilitation tools based on immersive Virtual Reality (VR). Co-facilitator in the Student Compass wellbeing group workshop for international students.

Joona Muotka, university lecturer and researcher specialised in statistics and research methods for social sciences at the Department of Psychology, University of Jyväskylä, Finland. He collaborated in many research projects and papers in various area of psychology such as: MOTILEAD - The importance of leadership motivation in the career paths and well-being of highly educated people, Reducing the workload and usefulness of remote team meetings with physiological metrics, STAIRWAY – From Primary School to Secondary School/Youth COMPASS study promoting learning, school well-being and successful educational transitions.

Panajiota Räsänen, Project Researcher (student wellbeing) and Student Life's Study- and Wellbeing expert at the Department of Psychology, University of Jyväskylä, Finland. She has been actively involved in the development and implementation of the innovative SL's three-step wellbeing support model offered at JYU to students. She has been training and supervising over 250 psychology Master's level students to work as well-being coaches in delivering an acceptance and mindfulness-based intervention called The Student Compass. The programme is a permanent service of the university and part of Student Life's wider cluster of three-step wellbeing support. Her research primarily focuses on the area of brief, blended Acceptance and Commitment Therapy interventions for university students to enhance their psychological, emotional, social wellbeing and alleviate depression, anxiety, and stress. One recent collaboration involves Integra, which is a project funded by the Finnish Ministry of Education and Culture. Integra is an educational model that integrates university language and content studies for immigrants who have completed or are qualified for higher education. Räsänen offers psychosocial workshops and counselling to the programme's participants.

Raimo Lappalainen, Ph.D. in clinical psychology. Professor in clinical psychology and psychotherapy at the Department of Psychology, University of Jyväskylä, Finland. A licensed psychologist and psychotherapist. He has acted as the vice head and the head of the Department of Psychology between years 2008-2013. He has over 25 years' experience of Cognitive Behavioural Therapies (CBT) with expertise especially in the third wave CBT, acceptance and value –based interventions. Author of more than 100 scientific articles and books. He has special expertise in applying and constructing web- and mobile-based psychological interventions. His main research interests are development of brief psychological interventions, including web- and mobile -based interventions for wellbeing and wellness management. Received the Public Information Award (2015) by the Jyväskylä University Foundation for his research group's achievement of developing web and mobile interventions.

ORCID

Francesca Brandolin http://orcid.org/0000-0003-4079-3669
Päivi Lappalainen http://orcid.org/0000-0001-9038-894X
Simone Gorinelli http://orcid.org/0000-0003-0895-2295
Joona Muotka http://orcid.org/0000-0002-7113-903X
Panajiota Räsänen http://orcid.org/0000-0003-0554-8086
Raimo Lappalainen http://orcid.org/0000-0001-6683-134X

References

Adlaf, E., Gliksman, L., Demers, A., & Newton-Taylor, B. (2001). The prevalence of elevated psychological distress among Canadian undergraduates: Findings from the 1998 Canadian campus survey. *Journal of American College Health*, *50*, 67–72.

Aguiniga, D. M., Madden, E. E., & Zellmann, K. T. (2016). An exploratory analysis of students' perceptions of mental health in the media. *Social Work in Mental Health*, *14*(4), 428–444.

A-Tjak, J. G. L., Davis, M. L., Morina, N., Powers, M. B., Smits, J. A. J., & Emmelkamp, P. M. G. (2015). A meta-analysis of the efficacy of acceptance and commitment therapy for clinically relevant mental and physical health problems. *Psychotherapy and Psychosomatics*, *84*(1), 30–36.

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, *13*(1), 27–45.

Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., … Williams, J. M. (2008). Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment*, *15*(3), 329–342.

Brown, J., & Brown, L. (2013). The international student sojourn, identity conflict and threats to well-being. *British Journal of Guidance & Counselling*, *41*(4), 395–413.

Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine*, *31*(1), 23–33.

Carmody, J., Baer, R. A., Lykins, E. L. B., & Olendzki, N. (2009). An empirical study of the mechanisms of mindfulness in a mindfulness-based stress reduction program. *Journal of Clinical Psychology*, *65*(6), 613–626.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates Inc.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*(4), 385–396.

Cohen, S., & Williamson, C. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan, & S. Oskamp (Eds.), *The social psychology of health: Claremont symposium on applied social psychology* (pp. 31–67). Newbury Park: Sage.

Danitz, S. B., Suvak, M. K., & Orsillo, S. M. (2016). The mindful way through the semester: Evaluating the impact of integrating an acceptance-based behavioral program into a first-year experience course for undergraduates. *Behavior Therapy*, *47*(4), 487–499.

Forbes-Mewett, H. (2019). *Mental health and international students: Issues, challenges and effective practice*. International Education Association of Australia (IEAA). https://www.researchgate.net/publication/334721342_Mental_Health_and_International_Students_Issues_challenges_effective_practice.

Forbes-Mewett, H., & Sawyer, A.-M. (2016). International students and mental health. *Journal of International Students*, *6* (3), 661–677.

Gallego, A., McHugh, L., Villatte, M., & Lappalainen, R. (2020). Examining the relationship between public speaking anxiety, distress tolerance and psychological flexibility. *Journal of Contextual Behavioral Science*, *16*, 128–133.

Gloster, A. T., Walder, N., Levin, M., Twohig, M., & Karekla, M. (2020). The empirical status of acceptance and commitment therapy: A review of meta-analyses. *Journal of Contextual Behavioral Science*, *18*, 181–192.

Greco, L. A., Lambert, W., & Baer, R. A. (2008). Psychological inflexibility in childhood and adolescence: Development and evaluation of the avoidance and fusion questionnaire for youth. *Psychological Assessment*, *20*(2), 93–102.

Grégoire, S., Doucerain, M., Morin, L., & Finkelstein-Fox, L. (2021). The relationship between value-based actions, psychological distress and well-being: A multilevel diary study. *Journal of Contextual Behavioral Science*, *20*, 79–88.

Grégoire, S., Lachance, L., Bouffard, T., & Dionne, F. (2018). The Use of acceptance and commitment therapy to promote mental health and school engagement in university students: A multisite randomized controlled trial. *Behavior Therapy*, *49*(3), 360–372.

Hauschildt, K., Gwosc, C., Netz, N., & Mishra, S. (2015). *Social and economic conditions of student life in Europe: Synopsis of indicators. Eurostudent V 2012*–2015. W. Bertelsmann Verlag. https://www.eurostudent.eu/download_files/documents/EVSynopsisofIndicators.pdf

Hayes, S. C. (2019). Acceptance and commitment therapy: Towards a unified model of behavior change. *World Psychiatry*, *18*(2), 226.

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (2012). *Acceptance and commitment therapy: The process and practice of mindful change* 2nd ed. New York: The Guilford Press.

Howell, A. J., & Passmore, H. A. (2019). Acceptance and commitment training (ACT) as a positive psychological intervention: A systematic review and initial meta-analysis regarding ACT's role in well-being promotion among university students. *Journal of Happiness Studies*, *20*(6), 1995–2010.

Katajavuori, N., Vehkalahti, K., & Asikainen, H. (2021). Promoting university students' well-being and studying with an acceptance and commitment therapy (ACT)-based intervention. *Current Psychology*, *40*, 1–13.

Kim, Y. K., Maleku, A., Lemieu, C., Du, X., & Chen, Z. (2019). Behavioral health risk and resilience among international students in the United States: A study of sociodemographic differences. *Journal of International Students*, *9*(1), 282–305.

Kinnunen, S. M., Puolakanaho, A., Tolvanen, A., Mäkikangas, A., & Lappalainen, R. (2020). Improvements in mindfulness facets mediate the alleviation of burnout dimensions. *Mindfulness*, *11*(12), 2779–2792.

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9. *Journal of General Internal Medicine*, *16*(9), 606–613.

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2002). The PHQ-15: Validity of a new measure for evaluating the severity of somatic symptoms. *Psychosomatic Medicine*, *64*(2), 258–266.

Kutner, M. H., Neter, J., Nachtsheim, C. J., & Li, W. (2004). *Applied linear statistical models* (5th ed.). Boston.: McGraw- Hill Irwin.

Lee, E. H. (2012). Review of the psychometric evidence of the perceived stress scale. *Asian Nursing Research*, *6*(4), 121–127.

Lee, J. K., & Orsillo, S. M. (2014). Investigating cognitive flexibility as a potential mechanism of mindfulness in generalized anxiety disorder. *Journal of Behavior Therapy and Experimental Psychiatry*, *45*(1), 208–216.

Levin, M. E., Hayes, S. C., Pistorello, J., & Seeley, J. R. (2016). Web-Based self-help for preventing mental health problems in universities: Comparing acceptance and commitment training to mental health education. *Journal of Clinical Psychology*, *72*(3), 207–225.

Levin, M. E., Krafft, J., Seifert, S., & Lillis, J. (2020). Tracking valued and avoidant functions with health behaviors: A randomized controlled trial of the acceptance and commitment therapy matrix mobile app. *Behavior Modification*, doi:10.1177/0145445520913987

Levin, M. E., MacLane, C., Daflos, S., Seeley, J., Hayes, S. C., Biglan, A., & Pistorello, J. (2014). Examining psychological inflexibility as a transdiagnostic process across psychological disorders. *Journal of Contextual Behavioral Science*, *3* (3), 155–163.

Lu, S. H., Dear, B. F., Johnston, L., Wootton, B. M., & Titov, N. (2014). An internet survey of emotional health, treatment seeking and barriers to accessing mental health treatment among Chinese-speaking international students in Australia. *Counselling Psychology Quarterly*, *27*(1), 96–108.

Masuda, A., Hayes, S. C., Fletcher, L. B., Seignourel, P. J., Bunting, K., Herbst, S. A., … Lillis, J. (2007). Impact of acceptance and commitment therapy versus education on stigma toward people with psychological disorders. *Behaviour Research and Therapy*, *45*(11), 2764–2772.

Masuda, A., & Tully, E. C. (2012). The role of mindfulness and psychological flexibility in somatization, depression, anxiety, and general psychological distress in a nonclinical college sample. *Journal of Evidence-Based Complementary & Alternative Medicine*, *17*(1), 66–71.

Mori, S. (2000). Addressing the mental health concerns of international students. *Journal of Counseling & Development*, *78*(2), 137–144.

Muthén, L. K., & Muthén, B. (2017). *Mplus user's guide: Statistical analysis with latent variables, user's guide*. Los Angeles, CA: Muthén & Muthén.

Muto, T., Hayes, S. C., & Jeffcoat, T. (2011). The effectiveness of acceptance and commitment therapy bibliotherapy for enhancing the psychological health of Japanese college students living abroad. *Behavior Therapy*, *42*(2), 323–335.

Paliliunas, D., Belisle, J., & Dixon, M. R. (2018). A randomized control trial to evaluate the Use of acceptance and commitment therapy (ACT) to increase academic performance and psychological flexibility in graduate students. *Behavior Analysis in Practice*, *11*(3), 241–253.

Pistorello, J. (Ed.). (2013). *Mindfulness and acceptance for counseling college students: Theory and practical applications for intervention, prevention, and outreach*. Oakland, CA: New Harbinger Publications.

Räsänen, P., Lappalainen, P., Muotka, J., Tolvanen, A., & Lappalainen, R. (2016). An online guided ACT intervention for enhancing the psychological wellbeing of university students: A randomized controlled clinical trial. *Behaviour Research and Therapy*, *78*, 30–42.

Rice, K. G., Choi, C.-C., Zhang, Y., Morero, Y. I., & Anderson, D. (2012). Self-Critical perfectionism, acculturative stress, and depression Among international students. *The Counseling Psychologist*, *40*(4), 575–600.

Rosenthal, D. A., Russell, V. J., & Thomson, G. D. (2006). *A growing experience: The health and well-being of international students at The University of Melbourne*. Melbourne: The University of Melbourne.

Ruiz, F. J. (2014). The relationship between low levels of mindfulness skills and pathological worry: The mediating role of psychological inflexibility. *Anales de Psicologia*, *30*(3), 887–897.

Ruiz, F. J., & Odriozola-González, P. (2015). Comparing cognitive, metacognitive, and acceptance and commitment therapy models of depression: A longitudinal study survey. *The Spanish Journal of Psychology*, *18*, E39.

Russell, J., Rosenthal, D., & Thomson, G. (2010). The international student experience: Three styles of adaptation. *Higher Education*, *60*(2), 235–249.

Sawir, E., Marginson, S., Deumert, A., Nyland, C., & Ramia, G. (2008). Loneliness and international students: An Australian study. *Journal of Studies in International Education*, *12*(2), 148–180.

Schmalz, J. E., & Murrell, A. R. (2010). Measuring experiential avoidance in adults: The avoidance and fusion questionnaire. *International Journal of Behavioral Consultation and Therapy*, *6*(3), 198.

Shadowen, N. L., Williamson, A. A., Guerra, N. G., Ammigan, R., & Drexler, M. L. (2019). Prevalence and correlates of depressive symptoms among international students: Implications for university support offices. *Journal of International Students*, *9*(1), 129–149.

Sommers-Flanagan, J., & Sommers-Flanagan, R. (2015). *Clinical interviewing* (5th ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder. *Archives of Internal Medicine*, *166*(10), 1092–1097.

Stabbe, O. K., Rolffs, J. L., & Rogge, R. D. (2019). Flexibly and/or inflexibly embracing life: Identifying fundamental approaches to life with latent profile analyses on the dimensions of the hexaflex model. *Journal of Contextual Behavioral Science*, *12*, 106–118.

Strosahl, K. D., Robinson, P. J., & Gustavsson, T. (2012). *Brief interventions for radical change: Principles and practice of focused acceptance and commitment therapy*. Oakland, CA: New Harbinger Publications.

Tavakoli, N., Broyles, A., Reid, E. K., Sandoval, J. R., & Correa-Fernández, V. (2019). Psychological inflexibility as it relates to stress, worry, generalized anxiety, and somatization in an ethnically diverse sample of college students. *Journal of Contextual Behavioral Science*, *11*, 1–5.

Trindade, I. A., Ferreira, C., Pinto-Gouveia, J., & Nooren, L. (2016). Clarity of personal values and committed action: Development of a shorter engaged living scale. *Journal of Psychopathology and Behavioral Assessment*, *38*(2), 258–265.

Trompetter, H. R. (2014). *ACT with pain: Measurement, efficacy and mechanisms of acceptance & commitment therapy*. Enschede: Universiteit Twente.

Wilson, G. T., Wilfley, D. E., Agras, W. S., & Bryson, S. W. (2011). Allegiance bias and therapist effects: Results of a randomized controlled trial of binge eating disorder. *Clinical Psychology: Science and Practice*, *18*(2), 119–125.

Xu, H., O'Brien, W. H., & Chen, Y. (2020). Chinese international student stress and coping: A pilot study of acceptance and commitment therapy. *Journal of Contextual Behavioral Science*, *15*, 135–141. http://doi.org/10.1016/j.jcbs.2019.12.010

III

EXAMINING THE EFFECTIVENESS AND ACCEPTABILITY OF A GROUP-BASED ACT INTERVENTION DELIVERED BY VIDEOCONFERENCE TO INTERNATIONAL UNIVERSITY STUDENTS DURING THE COVID-19 PANDEMIC

by

Brandolin, F., Lappalainen, P., Gorinelli, S., Muotka, J. and Lappalainen, R., 2023

Submitted manuscript

Abstract

Studies have shown that international students are at increased risk of experiencing poor mental health. The COVID-19 pandemic has had further negative impacts on the psychological well-being of students.

In this quasi-experimental study, we examined the impact of a brief acceptance and commitment therapy (ACT) -based group intervention delivered to international students by videoconference during the COVID-19 pandemic (ACT videoconference; n = 48). In our investigation, we used an equivalent in-person group intervention administrated prior to the pandemic as a reference group (ACT face-to-face; n = 53). In addition, we investigated the exposure–response relationship, dropout attrition, acceptability, and user experiences.

International students participated in five online group meetings using a videoconferencing app during the COVID-19 pandemic and were compared with students participating in five face-to-face group meetings prior to the pandemic.

Symptoms (stress, anxiety, depression) and process measures (psychological inflexibility, mindfulness, engaged living) indicated close to equivalent positive changes in both groups (e.g., PSS-10, ACT videoconference $d_w = 0.54$; ACT face-to face $d_w = 0.94$; AFQ-Y, ACT videoconference $d_w = 0.55$; ACT face-to-face, $d_w = 0.84$,), with a slightly larger effect in the ACT face-to-face group.

This study suggests that brief ACT-based group workshops can be well received and effective in enhancing the psychological flexibility of international students, and decreasing symptoms of stress, depression and anxiety whether delivered by videoconference or face-to-face format.

Keywords: COVID-19, international students, acceptance and commitment therapy, videoconference, intervention

Introduction

The impact of the COVID-19 pandemic on university students

The COVID-19 pandemic placed new and unforeseen stress on individuals, resulting in increased feelings of overwhelm, social isolation, and worry about our own health and that of others. Mental health problems have increased due to the COVID-19 pandemic, prompting numerous disruptions to daily life, unique stressors, increased mental health concerns, and decreased quality of life (Gallagher et al., 2020; White & Van Der Boor, 2020). Furthermore, university students have been deeply affected by the pandemic, reporting moderate to severe levels of depression and anxiety (e.g., Di Consiglio et al., 2021; Meda et al., 2021). Similarly, students' mobility and study experiences worldwide have been significantly impacted by the COVID-19 pandemic. Preventive measures, such as closing campuses, canceling classes, and transitions to online teaching have adversely affected students' mental health, particularly that of international students (Lai et al., 2020). Lai et al. (2020) found that international students who stayed in their host country during the pandemic experienced higher stress related to personal health and lack of social support, perceived stress, and more severe symptoms of insomnia than students who returned to their home country. Their survey indicated that more than 80% of the students perceived moderate-to-high stress, with females showing higher stress and lower resilience than males (Lai et al., 2020). Even without the challenges and burden imposed by the global pandemic, the mental health of international students raises considerable concerns (Forbes-Mewett, 2019) as they face many challenges that might negatively affect their psychological well-being and quality of life (Hauschildt et al., 2015). International students are considered at an elevated risk for psychological problems (Brown & Brown, 2013; Jung et al., 2007; Mori, 2000), including stress, loneliness (e.g., Rosenthal et al., 2006; Russell et al., 2010; Sawir et al., 2008), depressive symptoms (e.g., Rice et al., 2012), and anxiety (Shadowen et al., 2019) and their distress has been found to be even higher than that of domestic students (Forbes-Mewett & Sawyer, 2016).

Coping with the effects of the stressful situation caused by the pandemic has the potential to diminish the ability to successfully respond to or be flexible in the face of adversity (Centers for Disease Control and Prevention, 2021). Skills related to health, adaptation, resilience, and flexibility are considered protective factors in mental health (Biglan et al., 2008). Indeed, research has demonstrated a strong positive association between COVID-19-related hardship and distress (Pierce et al., 2020). One potential mediating factor of this relation is psychological flexibility, a modifiable transdiagnostic process (Hernández-López et al., 2021). There are indications that psychological flexibility and four of its sub-processes (self-as-context, defusion, values, committed action) may mitigate the detrimental impacts of COVID-19 risk factors on mental health such as COVID-19 peritraumatic distress, and symptoms of anxiety and depression (Pakenham et al., 2020). Individuals high in psychological flexibility may be less affected by the adverse consequences of the COVID-19 pandemic (e.g., McCracken et al., 2021). Psychological flexibility can alleviate suffering and clarify how individuals deal with adversity while also being a potential factor in improving well-being (Mallett et al., 2021). In contrast, lower levels of psychological flexibility have been found to be associated with higher levels of depression, anxiety, and COVID-19-related distress (Dawson & Golijani-Moghaddam, 2020; Gloster et al., 2020; Mallett et al., 2021). In addition, psychological flexibility has been proven to be a moderating factor in the relationships between social isolation and depression and

anxiety (Smith et al., 2020), COVID-19 risk factors and mental health difficulties (Pakenham et al., 2020), and COVID-19 stressors and suicide risk (Crasta et al., 2020).

Psychological flexibility and the ACT the model

Empirical evidence supports psychological flexibility as the mechanism of action in acceptance and commitment therapy (ACT; Hayes, 2016; Doorley et al., 2020; Mallett et al., 2021; Stockton et al., 2019; Trompetter et al., 2015). The aim of ACT is to foster psychological flexibility through six related skills: (1) acceptance, (2) defusion, (3) being present, (4) self as context, (5) values, and (6) committed action (Hayes, 2019). Acceptance is about being open to one's own experiences, especially in relation to unpleasant thoughts and emotions. Defusion involves undermining the negative effects of cognitions by teaching skills that enable people to take distance from thoughts. Self as context is a perspective from which an individual can become aware of their experiences without becoming overly attached to them, while contact with the present moment is about flexibly attending to an experience as it is happening in the now. Furthermore, a connection to one's own values is represented by the ability to choose what matters and acting in service of them by performing value-oriented actions. These six components have also been grouped into two main dimensions of psychological flexibility: (1) Mindfulness and acceptance processes (including acceptance, defusion, being present, self as context) and (2) Commitment and behavior change processes (including values and committed actions). ACT has been found to be effective in a variety of conditions (Gloster et al., 2020), this review on the empirical status of ACT showed that it is efficacious for all conditions examined, including anxiety, depression, substance use, pain, and transdiagnostic groups. Overall, ACT or its components has more than 1,000 randomized controlled trials up to date.

ACT interventions for national and international students

ACT can provide valuable tools to enhance psychological flexibility and well-being, including college settings (Pistorello, 2013; Viskovich et al., 2021). A recent systematic review showed that ACT training, implemented in various formats, has a positive, albeit small effect (d = .29) on student well-being (Howell & Passmore, 2019), improving the psychological health and well-being of college students (see also Levin et al., 2014; Muto et al., 2011; Räsänen et al., 2016; Stafford-Brown & Pakenham, 2012). A recent ACT-based online course enhanced student well-being and decreased stress (Katajavuori et al., 2021). Similarly, students showed significantly reduced levels of general psychological distress and negative emotional symptoms at follow-up, and these outcomes were mediated by increases in psychological flexibility and mindfulness (Christodoulou et al., 2021). A self-help digital intervention conducted during the COVID-19 pandemic improved well-being in students who reported persistent experiences of COVID-related distress but felt better able to cope with general psychological distress, such as anxiety (Shepherd et al., 2022). In general, ACT interventions with students showed positive outcomes.

ACT has been researched in most continents, a vast majority of the studies is set in the USA (Levin et al., 2014; Muto et al., 2011), but there are many studies also in Europe (Christodoulou et al., 2021; Katajavuori et al., 2021; Räsänen et al., 2016; Shepherd et al., 2022), Asia and Australia (Wang et al., 2017, Stafford-Brown & Pakenham, 2012). In the context of international students, however, ACT has been scarcely examined. For example, ACT has been explored among Japanese international students attending college in the United States, with favourable results (Muto et al., 2011), and Chinese students studying

abroad in the USA (Xu et al., 2020). In Muto et al. (2011), students who received the bibliotherapy self-help intervention showed enhancements in general mental health, stress levels, and psychological flexibility. Similarly, in the ACT-based study by Xu et al. (2020), students showed reductions in depression, stress, anxiety, and physical symptoms at post-intervention, with the changes being maintained at one-month follow-up.

Videoconference interventions during the pandemic

The COVID-19 pandemic challenged the education system across the world and forced schools, colleges, and universities to discontinue in-person teaching and shift to online teaching (Dhawan, 2020). In addition, the use of technology became the only way to offer psychological services (Duan & Zhu, 2020; Jiang et al., 2020; Li et al., 2020; McGuire, 2020; Zhou et al., 2020). Indeed, the use of videoconferencing applications was noticeably accelerated during the COVID-19 pandemic (Billingsley, 2020). Meta-analyses suggest that videoconferencing interventions consistently produce treatment effects largely equivalent to those of in-person interventions (Batastini et al., 2021; Varker et al., 2019). Furthermore, online group interventions have grown exponentially with COVID-19 (Marmarosh et al., 2020), suggesting that they are effective at reducing depression, anxiety, and stress and that they allow group cohesion similar to that in in-person group therapy (Gentry et al., 2019; López et al., 2020). Group cohesion helps people survive during distressing times (Marmarosh et al., 2020); therefore, groups can be important when treating people suffering during COVID-19 and can bring benefits critical to mental health and coping with COVID-19 (Marmarosh et al., 2020). Previous studies suggest that ACT group training could be an effective mental health intervention in educational settings, reducing levels of general psychological distress and negative emotional symptoms and decreasing procrastination (Christodoulou et al., 2021; Wang et al., 2017) as well reducing anxiety and depression symptoms as shown in Iranian adolescents in a videoconference group intervention (Zemestani et al., 2022).

Aim of the study

Considering the large number of students, including international students, who experience psychological problems, there is a need for more research on various types of interventions and the ways to deliver them. Overall, ACT-based interventions targeting students have been found to be effective in promoting students' overall well-being and psychological flexibility (Howell & Passmore, 2019). However, research investigating ACT in the context of international students remains scarce. Therefore, there is a need for more research on how ACT can be delivered to international students in an effective and acceptable way. In particular, during times of immense difficulty, such as the COVID-19 pandemic, there is a need for effective psychological procedures to enhance mental well-being. We observed earlier that a five-week in-person ACT group workshop was effective at reducing psychological symptoms of stress, depression, and anxiety (Brandolin et al., 2023). In the spring of 2020, the pandemic forced us to shift a group-based in-person intervention offered to international students into a group-based intervention delivered through the Zoom videoconferencing platform.

The aim of the current study was to investigate the impact of variously delivered ACT-based group interventions (videoconference vs. face-to-face) in terms of effectiveness and acceptability. As we were unable to randomize the participants to the two interventions, and the context of the delivery differed (no-pandemic vs. pandemic), the comparison

between the procedures was problematic. However, we were interested in whether the distance intervention (ACT videoconference) during a distressing period would be beneficial to a group of vulnerable students (i.e., international students) during the pandemic. To evaluate the usefulness of the intervention, we used our previous face-to-face intervention as a reference group (ACT face-to-face). The reference group offered us the possibility to control the effect of attention and repeated measurements and increase the validity of the findings. We were particularly interested in studying the effectiveness of the videoconference intervention on symptoms of stress, anxiety, and depression as well as on psychological flexibility skills reflected by the mindfulness and acceptance processes, and commitment and behavior change processes. Based on the earlier studies that have applied the ACT- and psychological flexibility model among students, we expected the intervention to decrease these symptoms and to increase psychological flexibility skills. This expectation was based on the findings suggesting that psychological flexibility and four of its sub-processes (self-as-context, defusion, values, committed action) may mitigate the detrimental impacts of COVID-19 risk factors on mental health such as symptoms of anxiety and depression (Pakenham et al., 2020).

We also wanted to study the adherence to the intervention, that is, the relationship between the number of sessions completed and the magnitude of change in symptoms of stress and psychological flexibility. More specifically, we compared whether the changes in stress and psychological flexibility were larger when the students had completed all five sessions compared to if they had completed three or four sessions. We expected larger changes in stress and psychological flexibility when students had completed more sessions. Moreover, low dropout rate (9%) was observed in our earlier study employing a supported online approach to national university students during a non-pandemic period (Räsänen et al., 2016). In the current study completed during the pandemic, we were interested in studying the dropout rates (number of completed workshops), and the acceptability, defined here as satisfaction to the intervention and whether they recommended the intervention to others as well as user experiences, for example, what skills they had learned during the intervention. The findings of this study can be used to promote the mental health of international students and provide insight into whether engagement in an ACT intervention delivered via videoconference could be a feasible alternative.

Method

Procedure

To recruit the participants, flyers were advertised on the campus of the university of Jyväskylä and on social media platforms such as Facebook and Instagram, and ads were posted in university newsletters directed to international students, inviting them to participate in a group intervention consisting of five weekly meetings. The ad specified that the aim of the workshop was to promote student well-being and that it would cover topics such as how to more effectively adapt and cope with life and study-related stressors, mindfulness, and how to engage in life and studies in a more meaningful way. The inclusion criteria were (a) to be enrolled international students at the University of Jyväskylä, (b) to be at least 18 years old, and (c) to have access to the Internet. Students receiving a simultaneous psychological intervention were excluded from the study. However, the pre-existing mental health diagnoses or psychiatric medication was not asked. Students who indicated via email or registration form that they were willing to participate in the workshop were then contacted via email to schedule the first interview. Between the falls of 2017 and

2019, the workshops were administered through in-person group-based sessions (the reference group), and during the COVID-19 pandemic (i.e., from the spring of 2020 to the fall of 2021), they were organized through zoom videoconference workshops in group format (the ACT videoconference), which was also specified in the ad. Thus, the participants were not randomly divided into the intervention conditions.

Participants characteristics

A total of 125 international students were interested in participating in the workshops (ACT videoconference, n = 57; ACT face-to-face, n = 68). However, a total of 24 students dropped out before the pre-measurement. Among them, 16 did not reply, and eight reported a busy schedule (Figure 1). Therefore, pre-measurements were collected from 48 students participating in the ACT videoconference and 53 students participating in the ACT face-to-face group, who started the five-week intervention. Post-measurements were collected seven to eight weeks later from 43 participants (90%) in the ACT videoconference workshop and 47 participants (89%) in the ACT face-to-face workshop. A flowchart of the participants is presented in Figure 1.

Figure 1 here (Flowchart)

Most participants were female (n = 80; 79%) and had a mean age of 26.09 (SD = 6.49; range 18–46). About half of them were degree students (n = 55, 55%), representing 40 nationalities, with nearly 30% of them coming from Asia (n = 29; 29%). Over 60% of the students stayed in Finland for less than six months (n = 62; 61%). The most common faculties and majors were education and psychology (n = 35; 35%), followed by humanities and social sciences (n = 27; 27%). The participants' characteristics are shown in Table 1. There were no statistical differences between the two intervention groups in terms of background variables.

Table 1 here

The interventions

The ACT intervention conditions differed in terms of delivery format: workshops in group format through the Zoom videoconference application (ACT videoconference) or in-person group workshops (ACT face-to-face). However, both workshops followed a 90-min workshop format, with five group meetings, including a total of 7.5 hours for the workshops and a total of 2–2.5 hours for individual assessment and feedback (2 × 1–1.5 hours). Prior to the workshops (i.e., one week before the start), both groups of students were invited to participate in an individual semi-structured psychosocial interview (either videoconference or face-to-face) based on the model adapted from Strosahl et al. (2012). The purpose was to obtain an overview of the students' situation and provide general information about the intervention. During the pre-assessment, they either received a link to complete a set of online questionnaires (ACT videoconference) or completed online questionnaires on site (ACT face-to-face). The intervention was completed in groups of five to 12 students, with two group facilitators in each group. The meetings were conducted in English and led by the first and third authors (FB, SG), who were first international trainee psychologists (2017-2019) trained in administering interviews and the application of ACT models, later (2020-2021) becoming licensed psychologist and postgraduate researchers. They were trained and supervised in ACT methods by the researcher who was a licensed psychologist and expert in ACT with 20 years of experience (RL).

The structure and content of the intervention were constructed by the University of Jyväskylä research group specialized in brief ACT interventions (see, e.g., Lappalainen et

al., 2014; Lappalainen et al., 2021; Räsänen et al., 2016). During the intervention, the workshop facilitators were supervised by a psychologist and supervisor with more than 20 years of experience in ACT. All participants provided written informed consent, and the study was approved by the board of Central Finland Healthcare District's Ethics Committee (registration number 14U/2012).

The videoconference intervention

During the COVID-19 pandemic (i.e., starting from the spring of 2020 to the fall of 2021), we offered the workshops (n = 5) remotely through the Zoom videoconferencing tool. A different ACT process was introduced each week (Table 2). Each workshop meeting started with a mindfulness exercise aimed at fostering focus on the contents of the meeting. Second, at the beginning of each session, the past week's theme was summarized, followed by a discussion in pairs. Next, the topic and core message of ACT were introduced, and a variety of experiential exercises and metaphors, including animated videos, were utilized (Table 2). Each group meeting closed with a home assignment to be conducted throughout the week, including ACT skills for application in daily life. Minor adjustments were made due to the delivery format and the COVID-19 lockdown. For example, mindfulness exercises were kept shorter, and the Face Covid protocol (Harris, 2020) was introduced (including for example, a set of practical steps for responding effectively to the Corona crisis using the ACT principles). In addition, in the discussions, the participants were encouraged to talk about the current COVID-19 situation (see Table 2 for details). A website (https://ok.jyu.fi/en) was introduced to provide text and audio exercises on the concepts discussed and the ACT skills to be practiced. Extra material was sent to the students via email the day after each workshop (see Table 2).

The reference group: The in-person face-to-face intervention

Prior to the COVID-19 pandemic, between the falls of 2017 and 2019, the workshops (n = 7) were administered through face-to-face group sessions. The protocol of the face-to-face group intervention followed the same structure and content as that of the videoconference group intervention (see Table 2).

Table 2 here

Measurements

Symptom measures

The Perceived Stress Scale (PSS-10) was used to measure symptoms of stress (Cohen et al., 1983; Cohen & Williamson, 1988). It includes 10 items on a 5-point Likert scale (0 = never, 4 = very often) prompting the respondents to indicate the level of stress perceived in their daily life in the last month. The PSS-10 score is obtained by reversing the values of four items and then summing up the 10 items (minimum 0, maximum 40). The total score with a minimum of 13 indicates low, 14 to 26 moderate, and 27 to 40 high levels of stress. The PSS has been used in student populations (Tavakoli et al., 2019), with an internal consistency ranging from .74 to .91 (Lee, 2012). In this study, the scale demonstrated good reliability (10 items; $\alpha = .81$).

The Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) is a tool that allows the evaluation of the presence or absence of the nine criteria of major depression according to the DSM-IV (American Psychiatric Association, 2013) on a scale of 0 (not at all) to 3 (nearly every day). A score of 10 or more indicates symptoms typical of major depression. The total

score is obtained by the sum of the items ranging from 0 to 27. A total score of less than 4 is indicative of an absence of minimal levels of depressive symptoms, 5 to 9 mild, 10 to 14 moderate, 15 to 19 moderately severe, and over 20 severe depression. The validity and reliability of the PHQ-9 have been found to be good in previous studies, including student samples (Kroenke et al., 2001; Tavakoli et al., 2019). In this study, the scale demonstrated good reliability (9 items; α = .80).

The Generalized Anxiety Disorder Assessment (GAD-7) is a self-administered questionnaire that evaluates the level of generalized anxiety (Spitzer et al., 2006). The respondent is asked to rate on a scale from 0 (not at all) to 3 (nearly every day) how often they have experienced anxiety symptoms in the last two weeks (minimum 0, maximum 21). Scores below 5 indicate minimum levels of anxiety, scores from 5 to 9 mild, 10 to 14 moderate, and above 15 high levels of anxiety. The internal consistency of the GAD-7 has been found to be excellent (α = .92; Spitzer et al., 2006), including in studies of university students (Kim et al., 2019). In this study, the reliability of the scale at baseline was excellent (7 items; α = .88).

Process measures

Below the mindfulness and acceptance processes (measured by AFQ-Y and FFMQ) and commitment and behavior change processes (measured by ELS) are described in more detail.

The Avoidance and Fusion Questionnaire for Youth (AFQ-Y) measures psychological inflexibility, a construct that refers to the non-adaptive avoidance of thoughts and emotions, typical of many psychopathologies such as anxiety and mood disorders (Greco et al., 2008). The AFQ-Y includes 17 statements on a scale from 0 to 4 (0 = not at all true, 4 = very true). The score is obtained by summing up all 17 items (minimum 0, maximum 68). Higher scores indicate higher levels of psychological inflexibility (i.e., a higher tendency of cognitive fusion and rumination). The AFQ-Y has shown adequate reliability and validity in child and adolescent (Greco et al., 2008) and university student samples (Schmalz & Murrell, 2010) and in predicting psychological symptoms (Fergus et al., 2012). In this study, the reliability of the scale at baseline was excellent (17 items; α = .83).

The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) was used to measure the participants' mindfulness skills. It consists of 39 statements prompting respondents to indicate their degree of agreement on a scale from 1 to 5 (1 = rarely or never, 5 = often true or always true). The questionnaire is divided into five subscales: observing (FFMQ-Ob); describing (FFMQ-De); non-judging of inner experience (FFMQ-Nj); non-reactivity of inner experience (FFMQ-Nr); and acting with awareness (FFMQ-Aw). The total score of the FFMQ is obtained by reversing the scores of the positive items and summing up the 39 items to obtain scores ranging from 39–195. Higher scores are indicative of higher levels of mindfulness. The FFMQ has an adequate internal consistency (Baer et al., 2008) and is a valid measure of mindfulness among university students (Baer et al., 2006; Carmody et al., 2009). In this study, the FFMQ showed high reliability for the total score (39 items; α = .88) and for observing (8 items; α = .81), describing (8 items; α = .89), non-judging (8 items; α = .89), non-reacting (7 items; α = .74), and acting with awareness (8 items; α = .88).

The Engaged Living Scale (ELS) measures the ability to engage in actions in accordance with their values (Trompetter, 2014). It includes 16 items and consists of two subscales: valued living (ELS-VL), which measures the ability to identify one's own values, and life fulfillment (ELS-LF), which evaluates the ability to act in accordance with one's values. All items are rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The total

scores are calculated for each subscale and the main scale (minimum 0, maximum 80). Higher scores indicate higher levels of engagement in valued actions. Studies with student samples have shown adequate to good psychometric properties (Grégoire et al., 2021). In this study, the ELS showed excellent reliability for the total score (16 items; α = .92), valued living (11 items; α = .90) and life fulfilment (5 items; α = .85).

Participant satisfaction and experiences

The participants' feedback relating to their satisfaction with the intervention was collected using a self-constructed feedback questionnaire with rating scales, yes and no questions, and open-ended questions that reflected how students perceived and responded to the intervention. They rated their satisfaction with the intervention on a 10-point Likert scale, with 0 indicating *very dissatisfied* and 10 *very satisfied, and reported whether they recommended the intervention to others or not (1= would not recommend, 5= would highly recommend)*. Additional feedback from the participants was collected using a 1–5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*), including questions related to the coaches and the workshop, a selection of yes and no questions about the skills learned during the workshop, and open-ended questions focusing on the perceived benefits (e.g., *What did you find most helpful in the workshop?*) and suggestions for improvements (e.g., *If you could change anything about the workshop, what would it be?*).

Statistical analyses

Statistical analyses were conducted using Mplus (version 8.4, Muthén, 1998) and IBM SPSS Statistics 26. The baseline differences between the groups were explored with *t-tests* and *chi-square* tests. Latent change score (*LCS*) models were used to investigate whether changes in the face-to-face and videoconference groups differed from the pre- to post-measurement. They were represented by the *Wald test* score and the associated *p-value, significant p-value reflecting an interaction effect (equivalent to repeated ANOVA)*. All the available information was used in the analyses, and missing data were assumed to be missing at random. Thus, all the participants who completed the pre-measurements were included in the analyses.

Effect sizes (*ESs*) were reported using *Cohen's d*. The corrected between-group *ES* was calculated by dividing the change in the mean difference between the face-to-face and videoconference groups by the mean of the standard deviation of the pre-measurement (Face:MPre – Mpost + Online: Mpost-MPre) divided by ((Face:SDpre + Online: SDpre) divided by 2), the Excel formula: A4-C4+H4-F4)/((B4+G4)/2). To interpret *Cohen's* between- and within-group *d*, an *ES* of 0.20 was considered small, 0.50 moderate, and equal to or above 0.80 large (Cohen & Williamson, 1988). When calculating *Cohen's d* for the within-subjects *ESs*, we used the average standard deviation of both repeated measures as a standardizer, as recommended by Lakens (2013). Because we expected both interventions to have an impact on our outcome variables, we interpreted that the intervention had shown beneficial effects when the within-group 95% confidence interval (*CI*) for the within-group *ESs* did not include zero; thus, the lower range of the 95% *CI* for the d-value was positive and larger than zero.

Results

Dropout rates

As shown in Figure 1, the overall dropout rate was relatively low. Altogether, 89% (n = 90) of the 101 international students completed the workshops and were assessed at post-

intervention. Among those who discontinued their participation (n = 11, 11%), four provided no specific reason, while six reported a busy schedule. One participant in the face-to-face group interrupted their participation due to a high level of symptoms. The dropout rates were highly similar in both groups (10% videoconference group; 11% face-to-face group). Eighty-nine percent of the participants in the videoconference group and 83% in the face-to-face group attended four to five group meetings. Thus, there were no statistical differences between the groups in the number of sessions attended (videoconference, M = 4.28, SD = 0.67; face-to-face, M = 4.34, SD = 0.76).

Severity of symptoms at pre-measurements

At pre-measurement, 91% (n = 44) of the students in the videoconference group and 87% (n = 46) in the face-to-face group reported moderate to high stress (PSS-10 scores higher than 14). Moderate to high depressive symptom levels (PHQ-9 ≥ 10) were reported by 33% (n = 16) of the students in the videoconference group and 51% (n = 27) in the face-to-face group. Moderate to high anxiety (GAD-7, score of 10 or more) was reported by 35% (n = 17) of the students in the videoconference group and 40% (n = 21) in the face-to-face group. Based on the total scores of PSS-10, PHQ-9, and GAD-7, there were no statistical differences between the groups in the severity of symptoms reported prior to the interventions (p > 0.10).

Changes in symptoms and psychological flexibility

There were no significant interaction effects since both intervention groups showed beneficial changes (Table 3). Although the groups did not change statistically differently from pre- to post-intervention, the between- (d_b) and within- (d_w) group ESs indicated slightly larger positive changes in the face-to-face intervention group. The between-group *ESs* were either very small (d = 0.05 to 0.19) or small (d = 0.20 to 0.36) in favor for the face-to-face intervention. The within-group *ESs* varied from d = 0.10 to 0.55 in the ACT videoconference condition and d = 0.10 to 0.94 in the ACT face-to-face condition. Based on the within-group *ESs* (Table 3), and upon interpreting the 95% *CI* that did not include zero as a meaningful change and as an indicator for statistical significance, we observed that both intervention groups showed comparable decreases in symptoms of stress and psychological inflexibility and increases in the mindfulness total scores, the mindfulness non-judgement subscale, and the engaged living subscale life fulfillment. Moreover, there were no differences in how much the symptoms changed in the different cultural groups. For example, between the subgroups of students form Asia and students from Central Europe, UK and Baltics, the t-test showed no differences (PSS: t = 1.237 (38), p = 0.224; GAD: t = -0.496 (38), p = 0.623; PHQ-9: t = 0.415 (38), p = 0.681). When comparing the six cultural groups (Asia, n = 24; Central Europe, Baltics & UK, n = 16; East Europe & Russia, n = 16; Mediterranean Europe, n = 15; Middle East, n = 12, and America North & South, n = 7), the changes did not differ significantly for each other (PSS: F(5,84) = 0.980, p = 0.435; GAD: F(5,84) = 1.448, p = 0.216; PHQ-9: F(5,84) = 0.334, p = 0.891). However, the results must be taken with caution because of the low number of students.

Table 3 here

Adherence to the intervention

We further investigated the number of sessions attended and the response to the intervention relationship (Figure 2) regarding stress (PSS-10) and psychological inflexibility

(AFQ-Y). Of the 43 students in the videoconference group, 11% completed three sessions, 49% four sessions, and 40% five sessions. The corresponding numbers in the face-to-face group were 17%, 32%, and 51%, respectively. In the videoconference group, we observed that those who completed all five sessions (n = 17) did not report larger decrease in stress and psychological inflexibility compared to those who completed three or four sessions (n = 26, Figure 2). However, in our reference group (the face-to-face intervention group), those who completed all five sessions (n = 24) also reported larger changes compared to those who completed fewer sessions (n = 23). This was true, in particular, for psychological inflexibility where the difference was significant (t = -2.083, df = 45, p = 0.043) in the face-to-face intervention. The pre-post change in AFQ-Y when completing 3 to 4 sessions (M = 6.74, SD = 9.82) was significantly smaller compared to when completing 5 sessions (M = 11.92, SD = 7.06). In the videoconference group, the corresponding values were for 3 to 4 sessions, M = 6.58, SD = 11.72, and for 5 sessions, M = 4.29, SD = 11.43 (p = 0.532).

Figure 2 here

Participant satisfaction and experiences

The overall satisfaction with the intervention was slightly but significantly higher in the ACT face-to-face intervention (M = 8.57, SD = 1.30, n = 47) compared to the ACT videoconference condition (M = 7.88, SD = 1.76, n = 43; t (88) = 2.130, p = 0.039). There was no difference between the groups in the number of participants who recommended the intervention to others (videoconference, 86%, n = 37; face-to-face, 83%, n = 39). The working relationship with the coaches was evaluated equally in both groups (videoconference, 91%, n = 39; face-to-face, 87%, n = 41). Both groups perceived that learning new skills and strategies was most helpful: skills in general (videoconference, 33%, n = 14; face-to-face, 28%, n = 13); defusion (n = 4 vs. 9, 9% vs. 19%); mindfulness (n = 11 vs. 6, 26% vs. 13%); and values (n = 9 vs. 4, 20% vs. 9%). In addition, opportunities to share with others were perceived in a quite similar way (videoconference, 35%, n = 15; face-to-face, 23%, n = 11). The need for improvement included more time for sharing ideas and interactive group activities (videoconference, 30%, n = 13 vs. face-to-face, 19%, n = 9) and more or longer sessions (n = 2 vs. 5, 5% vs. 10%). Among the students in the videoconference group, four expressed the desire for face-to-face group meetings. In sum, the workshops were well accepted by the participants, as illustrated by one of the students in the videoconference group in an open-ended feedback question (e.g., *What did you find most helpful in the workshop?*): "*Through these sessions, I could find the aim and value for my life, and it helps me to work better in my daily life!*"

Discussion

We were interested in exploring whether a psychological intervention delivered by videoconference during the distressing COVID-19 pandemic could decrease psychological symptoms and increase psychological flexibility skills among international students. The acceptance and commitment therapy (ACT) -based five-week videoconference workshop reduced symptoms of stress, decreased psychological inflexibility, and increased mindfulness skills and valued-based actions. These changes were comparable to the impact of the face-to-face workshop convened prior to the pandemic. These findings were consistent with earlier ACT-based studies reporting positive outcomes in general (e.g., Grégoire et al., 2018; Levin et al., 2014, 2016, 2019; Räsänen et al., 2016) and international (Muto et al., 2011; Xu et al., 2020) student populations. Multiple studies have shown that ACT training has a positive effect on student well-being (Howell & Passmore, 2019). The

current evidence supports the implementation of ACT in various formats for student well-being. For instance, a self-help ACT-based digital intervention conducted during the COVID-19 pandemic helped improve well-being in students who reported COVID-related distress (Shepherd et al., 2022). However, studies investigating group-based ACT videoconferencing interventions for international students during the pandemic are hitherto non-existent.

Overall, research on interventions examining the well-being of international students during the pandemic remains limited. Our findings point to encouraging benefits of the ACT intervention delivered during the pandemic. Even though it was delivered during arduous times, the relatively limited support and guidance provided online helped the students reduce their stress and, perhaps most importantly, decrease non-adaptive avoidance of thoughts and emotions and increase the ability to refrain from judging their thoughts, emotions, and sensations and act in accordance with their values. Interestingly, attending all five videoconference sessions did not produce larger changes compared to attending three or four sessions on psychological inflexibility and stress symptoms. This observation raises the question whether three or four sessions might be sufficient for a well-being intervention during the pandemic. This contrasts with the "dose-response effect" observed in the face-to-face intervention and raises the question of whether a three- or four-session videoconference intervention would have been sufficient for the students' needs during the pandemic. Also, the differences in changes in psychological inflexibility after 5 sessions compared to after 3-4 sessions between the groups could be because of the COVID-19 pandemic. The pandemic might have negatively affected the changes in psychological flexibility. In other videoconference studies with students, Yuen and colleagues (2019) found that a 12-session ACT group videoconferencing intervention decreased social anxiety symptoms. On the other hand, a brief 5-session ACT videoconference training for university students during the COVID-19 pandemic (Browning et al., 2022) decreased symptoms of stress and anxiety. The sufficient length of videoconference interventions during pandemic remains to be investigated.

The ubiquitous use of web conferencing apps for meetings, classes, training, and delivering interventions shows how important it is to develop and further investigate psychological interventions delivered via videoconference. As counselors and therapists shifted to telehealth during COVID-19, it is important to examine the benefits and limits of online group interventions (Weinberg, 2020). Users commonly reported a high degree of satisfaction and indicated that the online group was an important source of increased coping (Hopf et al., 2013; Stephen et al., 2013), a point also reflected in our feedback.

We observed a low dropout rate of approximately 10% among the international students in both intervention groups, indicating that nearly 90% of the participants completed the intervention. A similarly low dropout rate (9%) was reported in an earlier study employing a supported online approach to university students during a non-pandemic period (Räsänen et al., 2016). Importantly, the videoconference workshop was well received by the students, although delivered by less experienced psychologists. Based on our findings, which included nearly 40 nationalities, it may not be necessary to make interventions or counseling more culturally appropriate for diverse international student populations, as suggested by Forbes-Mewett (2019). Our results, as well as the participants' feedback, show that a process-based ACT workshops, combined with issues that international students deem relevant, can be effective and well received by participants regardless of cultural background. We believe that it may be less critical to culturally tailor

an intervention to students when applying process-based approaches focused on teaching generic skills, such as in this intervention. Moreover, we found that there were no differences in the impact of the intervention on symptoms between the different cultural groups, for example, between the subgroups of student from Asia and students from Central Europe, UK and Baltics.

Limitations

There were several notable limitations that hinder the generalizability of the results, the most important being the lack of a randomized control group and the small sample size. Moreover, most of the study participants were female (around 80% total), which appears to be an inherent problem in many online and face-to-face interventions, limiting generalizability of our results. Female students may experience higher levels of psychological symptoms, such as anxiety and depression, higher stress, and lower resilience than male students (e.g., Adlaf et al., 2001; Lai et al., 2020), all of which were arguably reflected in our results. The lack of a control group made it impossible to draw firm causal conclusions. Without a control group, key threats to internal validity such as history, maturation, and regression toward the mean cannot be ruled out. According to Yalom and Leszcz (2005), being with others in the group who experience similar feelings is one of the most curative aspects of groups. Thus, we were not able to separate the impact of group involvement in our results. However, our studies suggest among students the changes in stress (PSS) were comparable whether the interventions were delivered individually (within group d = 0.76, Räsänen et al., 2016) or in group (d = 0.54 - 0.94, the current study). Future studies are needed in this area. Furthermore, this study included a diverse and heterogeneous student sample who voluntarily decided to participate in a program to improve well-being and stress, limiting again generalizability, mostly because of personal difficulties or curiosity regarding the applied approach. Limited recruitment time may have influenced participation since the intervention had to be delivered within one semester. These observations need to be taken into consideration when drawing conclusions from the study. Further studies with larger samples are needed to investigate whether our findings can be generalized to the overall international student population. Furthermore, the difficult context related to the COVID-19 pandemic and the adjustments made to the protocol may have impacted the results of the intervention. Interestingly, the effect of the videoconference intervention was no different on psychological flexibility skills whether the participants attended all five sessions or three/four sessions. The within group change was significant and moderate while in the face-to-face intervention it was large. This difference could be because of the last session. Further studies are needed to investigate the change mechanisms in videoconference interventions.

Conclusions

University students have been deeply affected by the pandemic (e.g., Di Consiglio et al., 2021; Meda et al., 2021) and international students even more so due to their temporary status in their host countries and disruptions to their daily life (Gomes & Forbes-Mewett, 2021). Preventive measures, such as closing campuses and transitions to online teaching, have adversely affected students' mental health, particularly that of international students (Lai et al., 2020). It is estimated that mental health issues among international students are increasing in both occurrence and severity (Forbes-Mewett, 2019). The current study confirmed this, showing that these students may, indeed, experience significant mental

health challenges, which can have adverse impacts on their well-being and delay their studies.

It has been suggested that group treatments engaged people socially while also protecting them from psychological symptoms during the COVID-19 pandemic (Marmarosh et al., 2020). Against this backdrop, this study showed that it was possible to help students during the pandemic by offering them a brief online workshop with the aim of increasing their psychological flexibility skills. Our sample included nearly 40 nationalities suggesting that the investigated intervention is appropriate for students with diverse backgrounds. Many of the observed changes were equivalent to those obtained in a similar face-to-face workshop prior to the pandemic. Learning acceptance skills and encouraging students to pursue a value-driven study life and acting accordingly should be integrated into both the curriculum and counseling services targeting international students in the future. The possibility of effectively delivering similar services online via videoconferencing applications offers a chance to reach those students coming and/or attending the workshop from overseas, or simply from a different location. It would be interesting to broaden the research to identify the ideal amount of support needed, the intervention length, and the components that may have a stronger impact in terms of delivering effective results.

References

Adlaf, E. M., Gliksman, L., Demers, A., & Newton-Taylor, B. (2001). The prevalence of elevated psychological distress among Canadian undergraduates: Findings from the 1998 Canadian Campus Survey. *Journal of American College Health, 50*(2), 67–72. https://doi.org/10.1080/07448480109596009

Baer, R., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., Walsh, E., Duggan, D., & Williams, M. G. (2008). Construct validity of the Five Facet Mindfulness Questionnaire in meditating and nonmeditating samples. *Assessment, 15*(3), 329–342. https://doi.org/10.1177/1073191107313003

Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27–45. https://doi.org/10.1177/1073191105283504

Batastini, A. B., Paprzycki, P., Jones, A. C. T., & MacLean, N. (2021). Are videoconferenced mental and behavioral health services just as good as in-person? A meta-analysis of a fast-growing practice. *Clinical Psychology Review, 83*. https://doi.org/10.1016/J.CPR.2020.101944

Biglan, A., Hayes, S. C., & Pistorello, J. (2008). Acceptance and commitment: Implications for prevention science. *Prevention Science, 9*(3), 139–152. https://doi.org/10.1007/s11121-008-0099-4

Billingsley, L. (2020). Using video conferencing applications to share the death experience during the COVID-19 pandemic. *Journal of Radiology Nursing, 39*(4), 275–277. https://doi.org/10.1016/J.JRADNU.2020.08.001

Brandolin, F., Lappalainen, P., Gorinelli, S., Muotka, J., Räsänen, P., & Lappalainen, R. (2023). The effectiveness of a five-session workshop on the distress of international students in Finland–a pilot study. *British Journal of Guidance & Counselling*, 1-18. https://doi.org/10.1080/03069885.2023.2165636

Brown, J., & Brown, L. (2013). The international student sojourn, identity conflict and threats to well-being. *British Journal of Guidance and Counselling, 41*(4), 395–413. https://doi.org/10.1080/03069885.2012.729026

Browning, M.E., Morena, A., Gould, E. R., Lloyd-Richardson, E. R. (2022). Brief ACT for Undergraduates: A Mixed-Methods Pilot Investigation of Acceptance and Commitment Therapy Delivered over Zoom. Online: Journal of College Student Psychotherapy. https://doi.org/10.1080/87568225.2022.2029659

Carmody, J., Baer, R. A., Lykins, E. L. B., & Olendzki, N. (2009). An empirical study of the mechanisms of mindfulness in a mindfulness-based stress reduction program. *Journal of Clinical Psychology, 65*(6), 613–626. https://doi.org/10.1002/jclp.20579

Centers for Disease Control and Prevention Coronavirus (COVID-19). https://www.cdc.gov/coronavirus/2019-ncov/index.html

Christodoulou, V., Flaxman, P. E., & Lloyd, J. (2021). Acceptance and commitment therapy in group format for college students. *Journal of College Counseling, 24*(3), 210–223. https://doi.org/10.1002/JOCC.12192

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396. https://doi.org/10.2307/2136404

Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the US. In S. Spacapam & S. Oskamp (Eds.), *The social psychology of health: The Claremont Symposium on Applied Social Psychology*. Sage Publications.

Crasta, D., Daks, J. S., & Rogge, R. D. (2020). Modeling suicide risk among parents during the COVID-19 pandemic: Psychological inflexibility exacerbates the impact of COVID-19 stressors on interpersonal risk factors for suicide. *Journal of Contextual Behavioral Science, 18*, 117–127. https://doi.org/10.1016/J.JCBS.2020.09.003

Dawson, D. L., & Golijani-Moghaddam, N. (2020). COVID-19: Psychological flexibility, coping, mental health, and wellbeing in the UK during the pandemic. *Journal of Contextual Behavioral Science, 17*, 126–134. https://doi.org/10.1016/J.JCBS.2020.07.010

Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems, 49*(1), 5–22. https://doi.org/10.1177/0047239520934018

Di Consiglio, M., Merola, S., Pascucci, T., Violani, C., & Couyoumdjian, A. (2021). The impact of covid-19 pandemic on Italian university students' mental health: Changes across the waves. *International Journal of Environmental Research and Public Health, 18*(18). https://doi.org/10.3390/IJERPH18189897/S1

Doorley, J. D., Goodman, F. R., Kelso, K. C., & Kashdan, T. B. (2020). Psychological flexibility: What we know, what we do not know, and what we think we know. *Social and Personality Psychology Compass, 14*(12), 1–11. https://doi.org/10.1111/spc3.12566

Duan, L., & Zhu, G. (2020). Psychological interventions for people affected by the COVID-19 epidemic. *Lancet, 7*(4), 300–302. https://doi.org/10.1016/S2215-0366(20)30073-0

Fergus, T. A., Valentiner, D. P., Gillen, M. J., Hiraoka, R., Twohig, M. P., Abramowitz, J. S., & McGrath, P. B. (2012). Assessing psychological inflexibility: The psychometric properties of the Avoidance and Fusion Questionnaire for Youth in two adult samples. *Psychological Assessment, 24*(2), 402–408. https://doi.org/10.1037/a0025776

Forbes-Mewett, H. (2019). *Mental health and international students: Issues, challenges and effective practice*. International Education Association of Australia (IEAA). https://www.researchgate.net/publication/334721342_Mental_Health_and_International_Students_Issues_challenges_effective_practice

Forbes-Mewett, H., & Sawyer, A.-M. (2016). International students and mental health. *Journal of International Students, 6*(3), 661–677. https://doi.org/10.32674/jis.v6i3.348

Gallagher, M. W., Zvolensky, M. J., Long, L. J., Rogers, A. H., & Garey, L. (2020). The impact of Covid-19 experiences and associated stress on anxiety, depression, and functional impairment in American adults. *Cognitive Therapy and Research, 44*(6), 1043–1051. https://doi.org/10.1007/S10608-020-10143-Y/TABLES/4

Gentry, M. T., Lapid, M. I., Clark, M. M., & Rummans, T. A. (2019). Evidence for telehealth group-based treatment: A systematic review. *Journal of Telemedicine and Telecare, 25*(6), 327–342. https://doi.org/10.1177/1357633X18775855

Gloster, A. T., Walder, N., Levin, M. E., Twohig, M. P., & Karekla, M. (2020). The empirical status of acceptance and commitment therapy: A review of meta-analyses. *Journal of Contextual Behavioral Science, 18*, 181–192. https://doi.org/10.1016/j.jcbs.2020.09.009

Gomes, C., & Forbes-Mewett, H. (2021). International students in the time of COVID-19. *Journal of International Students, 11*(2), 1–5. https://doi.org/10.32674/JIS.V11IS2.4292

Greco, L. A., Lambert, W., & Baer, R. A. (2008). Psychological inflexibility in childhood and adolescence: Development and evaluation of the Avoidance and Fusion Questionnaire for Youth. *Psychological Assessment, 20(2)*, 93–102. https://doi.org/10.1037/1040-3590.20.2.93

Grégoire, S., Doucerain, M., Morin, L., & Finkelstein-Fox, L. (2021). The relationship between value-based actions, psychological distress and well-being: A multilevel diary study. *Journal of Contextual Behavioral Science, 20*, 79–88. https://doi.org/10.1016/J.JCBS.2021.03.006

Grégoire, S., Lachance, L., Bouffard, T., & Dionne, F. (2018). The use of acceptance and commitment therapy to promote mental health and school engagement in university students: A multisite randomized controlled trial. *Behavior Therapy, 49*(3), 360–372. https://doi.org/10.1016/j.beth.2017.10.003

Harris, R. (2020). FACE COVID: How to respond effectively to the Corona crisis. https://www.actmindfully.com.au/wp-content/uploads/2020/03/FACE-COVID-eBook-by-Russ-Harris-March-2020.pdf

Hauschildt, K., Gwosc, C., Netz, N., & Mishra, S. (2015). *Social and economic conditions of student life in Europe: Synopsis of indicators. Eurostudent V 2012–2015*. W. Bertelsmann Verlag. https://www.eurostudent.eu/download_files/documents/EVSynopsisofIndicators.pdf

Hayes, S. C. (2016). Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies: Corrected version. *Behavior Therapy, 47*(6). https://doi.org/10.1016/j.beth.2016.11.006

Hernández-López, M., Cepeda-Benito, A., Díaz-Pavón, P., & Rodríguez-Valverde, M. (2021). Psychological inflexibility and mental health symptoms during the COVID-19 lockdown in Spain: A longitudinal study. *Journal of Contextual Behavioral Science, 19*, 42–49. https://doi.org/10.1016/J.JCBS.2020.12.002

Howell, A. J., & Passmore, H. A. (2019). Acceptance and commitment training (ACT) as a positive psychological intervention: A systematic review and initial meta-analysis regarding ACT's role in well-being promotion among university students. *Journal of Happiness Studies, 20*(6), 1995–2010. https://doi.org/10.1007/s10902-018-0027-7

Jiang, X., Deng, L., Zhu, Y., Ji, H., Tao, L., Liu, L., Yang, D., & Ji, W. (2020). Psychological crisis intervention during the out- break period of new coronavirus pneumonia from

experience in Shanghai. *Psychiatry, 286*, 1–3. https://doi.org/10.1016/j.psychres.2020.112903

Jung, E., Hecht, M. L., & Wadsworth, B. C. (2007). The role of identity in international students' psychological well-being in the United States: A model of depression level, identity gaps, discrimination, and acculturation. *International Journal of Intercultural Relations, 31*(5), 605–624. https://doi.org/10.1016/j.ijintrel.2007.04.001

Katajavuori, N., Vehkalahti, K., & Asikainen, H. (2021). Promoting university students' well-being and studying with an acceptance and commitment therapy (ACT)-based intervention. *Current Psychology,* 1–13. https://doi.org/10.1007/S12144-021-01837-X

Kim, Y. K., Maleku, A., Lemieu, C., Du, X., & Chen, Z. (2019). Behavioral health risk and resilience among international students in the united states: A study of sociodemographic differences. *Journal of International Students, 9*(1), 282–305. https://doi.org/10.32674/jis.v9i1.264

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*(9), 606–613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x

Lai, A. Y.-K., Lee, L., Wang, M.-P., Feng, Y., Lai, T. T.-K., Ho, L.-M., Lam, V. S.-F., Ip, M. S.-M., & Lam, T.-H. (2020). Mental health impacts of the COVID-19 pandemic on international university students, related stressors, and coping strategies. *Frontiers in Psychiatry, 11*. https://doi.org/10.3389/fpsyt.2020.584240

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. *Frontiers in Psychology, 4*. https://doi.org/10.3389/FPSYG.2013.00863

Lappalainen, P., Granlund, A., Siltanen, S., Ahonen, S., Vitikainen, M., Tolvanen, A., & Lappalainen, R. (2014). ACT Internet-based vs face-to-face? A randomized controlled trial of two ways to deliver acceptance and commitment therapy for depressive symptoms: An 18-month follow-up. *Behaviour Research and Therapy, 61*, 43–54. https://doi.org/10.1016/J.BRAT.2014.07.006

Lappalainen, R., Lappalainen, P., Puolakanaho, A., Hirvonen, R., Eklund, K., Ahonen, T., Muotka, J., & Kiuru, N. (2021). The Youth Compass – The effectiveness of an online acceptance and commitment therapy program to promote adolescent mental health: A randomized controlled trial. *Journal of Contextual Behavioral Science, 20*, 1–12. https://doi.org/10.1016/j.jcbs.2021.01.007

Lee, E. H. (2012). Review of the psychometric evidence of the perceived stress scale. *Asian Nursing Research, 6*(4), 121–127. https://doi.org/10.1016/j.anr.2012.08.004

Levin, M. E., Hayes, S. C., Pistorello, J., & Seeley, J. R. (2016). Web-based self-help for preventing mental health problems in universities: Comparing acceptance and commitment training to mental health education. *Journal of Clinical Psychology, 72*(3), 207–225. https://doi.org/10.1002/jclp.22254

Levin, M. E., Krafft, J., Pistorello, J., & Seeley, J. R. (2019). Assessing psychological inflexibility in university students: Development and validation of the acceptance and action questionnaire for university students (AAQ-US). *Journal of Contextual Behavioral Science, 12*, 199–206. https://doi.org/10.1016/j.jcbs.2018.03.004

Levin, M. E., MacLane, C., Daflos, S., Seeley, J. R., Hayes, S. C., Biglan, A., & Pistorello, J. (2014). Examining psychological inflexibility as a transdiagnostic process across psychological disorders. *Journal of Contextual Behavioral Science, 3*(3), 155–163. https://doi.org/10.1016/j.jcbs.2014.06.003

Li, W., Yang, Y., Liu, Z.-H., Zhao, Y.-J., Zhang, Q., Zhang, L., Cheung, T., & Xiang, Y.-T. (2020). Progression of mental health services during the COVID-19 outbreak in China. *International Journal of Biological Sciences, 16*(10), 1732–1738. https://doi.org/10.7150/ijbs.45120

López, J., Perez-Rojo, G., Noriega, C., Carretero, I., Velasco, C., Martinez-Huertas, J. A., López-Frutos, P., & Galarraga, L. (2020). Psychological well-being among older adults during the COVID-19 outbreak: A comparative study of the young-old and the old-old adults. *International Psychogeriatrics, 32*(11), 1365–1370. https://doi.org/10.1017/S1041610220000964

Mallett, R., Coyle, C., Kuang, Y., & Gillanders, D. T. (2021). Behind the masks: A cross-sectional study on intolerance of uncertainty, perceived vulnerability to disease and psychological flexibility in relation to state anxiety and wellbeing during the COVID-19 pandemic. *Journal of Contextual Behavioral Science, 22*, 52–62. https://doi.org/10.1016/J.JCBS.2021.09.003

Marmarosh, C. L., Forsyth, D. R., Strauss, B., & Burlingame, G. M. (2020). The psychology of the COVID-19 pandemic: A group-level perspective. *Group Dynamics: Theory, Research, and Practice, 24*(3), 122–138. https://doi.org/10.1037/GDN0000142

McCracken, L. M., Badinlou, F., Buhrman, M., & Brocki, K. C. (2021). The role of psychological flexibility in the context of COVID-19: Associations with depression, anxiety, and insomnia. *Journal of Contextual Behavioral Science, 19*, 28–35. https://doi.org/10.1016/J.JCBS.2020.11.003

McGuire, P. (2020). My anxiety tiger is back on the prowl: Online counselling can help us to control our responses to the Coronavirus crisis. *The Irish Times*. https://www.irishtimes.com/life-and-style/health-family/here-is- a-list-of-counselling-services-if-you-want-to-talk-to-someone-1.4211976.

Meda, N., Pardini, S., Slongo, I., Bodini, L., Zordan, M. A., Rigobello, P., Visioli, F., & Novara, C. (2021). Students' mental health problems before, during, and after COVID-19 lockdown in Italy. *Journal of Psychiatric Research, 134*, 69–77. https://doi.org/10.1016/J.JPSYCHIRES.2020.12.045

Mori, S. (2000). Addressing the mental health concerns of international students. *Journal of Counseling and Development, 78*(2), 137–144. https://doi.org/10.1002/j.1556-6676.2000.tb02571.x

Muthén, L. K. (1998). *Mplus user's guide*. Muthén & Muthén.

Muto, T., Hayes, S. C., & Jeffcoat, T. (2011). The effectiveness of acceptance and commitment therapy bibliotherapy for enhancing the psychological health of Japanese college students living abroad. *Behavior Therapy, 42*(2), 323–335. https://doi.org/10.1016/j.beth.2010.08.009

Pakenham, K. I., Landi, G., Boccolini, G., Furlani, A., Grandi, S., & Tossani, E. (2020). The moderating roles of psychological flexibility and inflexibility on the mental health impacts of COVID-19 pandemic and lockdown in Italy. *Journal of Contextual Behavioral Science, 17*, 109–118. https://doi.org/10.1016/J.JCBS.2020.07.003

Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., Kontopantelis, E., Webb, R., Wessely, S., McManus, S., & Abel, K. M. (2020). Mental health before and during the COVID-19 pandemic: A longitudinal probability sample survey of the UK population. *The Lancet Psychiatry, 7*(10), 883–892. https://doi.org/10.1016/S2215-0366(20)30308-4

Pistorello, J. (Ed.). (2013). *Mindfulness and acceptance for counseling college students: Theory and practical applications for intervention, prevention, and outreach*. New Harbinger Publications.

Räsänen, P., Lappalainen, P., Muotka, J., Tolvanen, A., & Lappalainen, R. (2016). An online guided ACT intervention for enhancing the psychological wellbeing of university students: A randomized controlled clinical trial. *Behaviour Research and Therapy, 78*, 30–42. https://doi.org/10.1016/j.brat.2016.01.00

Rice, G., Choi, C. C., Zhang, Y., Morero, Y. I., & Anderson, D. (2012). Self-critical perfectionism, acculturative stress, and depression among international students. *The Counseling Psychologist, 40*(4), 575–600. https://doi.org/10.1177/0011000011427061

Rosenthal, D. A., Russell, V. J., & Thomson, G. D. (2006). *A growing experience: The health and well-being of international students at the University of Melbourne*. University of Melbourne.

Russell, J., Rosenthal, D., & Thomson, G. (2010). The international student experience: Three styles of adaptation. *Higher Education, 60*(2), 235–249. https://doi.org/10.1007/s10734-009-9297-7

Sawir, E., Marginson, S., Deumert, A., Nyland, C., & Ramia, G. (2008). Loneliness and international students: An Australian study. *Journal of Studies in International Education, 12*(2), 148–180. https://doi.org/10.1177/1028315307299699

Schmalz, J. E., & Murrell, A. R. (2010). Measuring experiential avoidance in adults: The Avoidance and Fusion Questionnaire. *International Journal of Behavioral Consultation and Therapy, 6*(3), 198–213. http://dx.doi.org/10.1037/h0100908

Shadowen, N. L., Williamson, A. A., Guerra, N. G., Ammigan, R., & Drexler, M. L. (2019). Prevalence and correlates of depressive symptoms among international students: Implications for university support offices. *Journal of International Students, 9*(1), 130–149. https://doi.org/10.32674/jis.v9i1.277

Shepherd, K., Golijani-Moghaddam, N., & Dawson, D. L. (2022). ACTing towards better living during COVID-19: The effects of acceptance and commitment therapy for individuals affected by COVID-19. *Journal of Contextual Behavioral Science, 23*, 98–108. https://doi.org/10.1016/J.JCBS.2021.12.003

Smith, B. M., Twohy, A. J., & Smith, G. S. (2020). Psychological inflexibility and intolerance of uncertainty moderate the relationship between social isolation and mental health outcomes during COVID-19. *Journal of Contextual Behavioral Science, 18*, 162–174. https://doi.org/10.1016/j.jcbs.2020.09.005

Spitzer, R. L., Kroenke, K., Williams, J. B. W., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine, 166*(10), 1092–1097. https://doi.org/10.1001/archinte.166.10.1092

Stafford-Brown, J., & Pakenham, K. I. (2012). The effectiveness of an ACT informed intervention for managing stress and improving therapist qualities in clinical psychology trainees. *Journal of Clinical Psychology, 68*(6), 592–613. https://doi.org/10.1002/jclp.21844

Stockton, D., Kellett, S., Berrios, R., Sirois, F., Wilkinson, N., & Miles, G. (2019). Identifying the underlying mechanisms of change during acceptance and commitment therapy (ACT): A systematic review of contemporary mediation studies. *Behavioural and Cognitive Psychotherapy, 47*(3), 332–362. https://doi.org/10.1017/S1352465818000553

Strosahl, K. D., Robinson, P. J., & Gustavsson, T. (2012). *Brief interventions for radical change: Principles and practice of focused acceptance and commitment therapy*. New Harbinger Publications.

Tavakoli, N., Broyles, A., Reid, E. K., Sandoval, J. R., & Correa-Fernández, V. (2019). Psychological inflexibility as it relates to stress, worry, generalized anxiety, and somatization in an ethnically diverse sample of college students. *Journal of Contextual Behavioral Science, 11*, 1–5. https://doi.org/10.1016/j.jcbs.2018.11.001

Trompetter, H. R. (2014). *ACT with pain: measurement, efficacy and mechanisms of acceptance & commitment therapy*. Universiteit Twente. https://doi.org/10.3990/1.9789036537087

Trompetter, H. R., Bohlmeijer, E. T., Veehof, M. M., & Schreurs, K. M. (2015). Internet-based guided self-help intervention for chronic pain based on acceptance and commitment therapy: A randomized controlled trial. *Journal of Behavioral Medicine, 38*(1), 66–80. https://doi.org/10.1007/s10865-014-9579-0

Varker, T., Brand, R. M., Ward, J., Terhaag, S., & Phelps, A. (2019). Efficacy of synchronous telepsychology interventions for people with anxiety, depression, posttraumatic stress disorder, and adjustment disorder: A rapid evidence assessment. *Psychological Services, 16*(4), 621–635. https://doi.org/10.1037/ser0000239

Viskovich, S., Pakenham, K. I., & Fowler, J. A. (2021). A mixed-methods evaluation of experiential intervention exercises for values and committed action from an acceptance and commitment therapy (ACT) mental health promotion program for university students. *Journal of Contextual Behavioral Science, 22*, 108–118. https://doi.org/10.1016/J.JCBS.2021.10.001

Wang, S., Zhou, Y., Yu, S., Ran, L. W., Liu, X. P., & Chen, Y. F. (2017). Acceptance and commitment therapy and cognitive–behavioral therapy as treatments for academic procrastination: A randomized controlled group session. *Research on Social Work Practice*, *27*(1), 48-58. https://doi.org/10.1177/1049731515577890

White, R. G., & Boor, C. Van Der. (2020). Impact of the COVID-19 pandemic and initial period of lockdown on the mental health and well-being of adults in the UK. *BJPsych Open, 6*(5). https://doi.org/10.1192/BJO.2020.79

Xu, H., O'Brien, W. H., & Chen, Y. (2020). Chinese international student stress and coping: A pilot study of acceptance and commitment therapy. *Journal of Contextual Behavioral Science, 15*, 135–141. https://doi.org/10.1016/j.jcbs.2019.12.010

Yalom, I. D., & Leszcz, M. (2005). *The theory and practice of group psychotherapy*. Basic Books.

Yuen, E. K., Goetter, E. M., Stasio, M. J., Ash, P., Mansour, B., McNally, E., Sanchez, M., Hobar, E., Forte, S., Zulaica, K., & Watkins, J. (2019). A pilot of acceptance and commitment therapy for public speaking anxiety delivered with group videoconferencing and virtual reality exposure. *Journal of Contextual Behavioral Science*, 12, 47–54. https://doi.org/10.1016/j.jcbs.2019.01.006

Zemestani, M., Hosseini, M., Petersen, J. M., & Twohig, M. P. (2022). A pilot randomized controlled trial of culturally-adapted, telehealth group acceptance and commitment therapy for Iranian adolescent females reporting symptoms of anxiety. *Journal of Contextual Behavioral Science*, *25*, 145–152. https://doi.org/10.1016/J.JCBS.2022.08.001

Zhou, X., Harding, L. E., Edirippulige, S., & Smith, A. C. (2020). The role of telehealth in reducing the mental health burden from COVID-19. *Telemedicine and E-Health, 26*(4), 1–3. https://doi.org/10.1089/tmj.2020.0068

Table 1

Participant Characteristics

Baseline characteristics	ACT videoconf. (n=48)	ACT face-to-face (n=53)	All (n=101)
Age			
M (SD)	25.81 (SD=5.04)	26.09 (*SD*=6.49)	25.95 (SD=5.77)
Gender			
Female	36 (75%)	44 (83%)	80 (79.2%)
Male	12 (25%)	9 (17%)	21 (20.8%)
Educational program			
Degree	26 (54.2%)	29 (52.8%)	55 (54.5%)
Exchange	22 (45.8%)	24 (47.2%)	46 (45.5%)
Educational level			
Bachelor's	19 (39.6%)	15 (28.3%)	34 (33.7%)
Master's	24 (50%)	37 (69.8%)	61 (60.4%)
Doctorate	5 (10.4%)	1 (1.9%)	6 (5.9%)
Faculty			
Education & Psychology	17 (35.4%)	18 (34%)	35 (34.7%)
Humanities & Social Sciences	9 (18.8%)	18 (34%)	27 (26.7%)
Business & Economics	6 (12.5%)	7 (13.2%)	13 (12.9%)
Mathematics & Science	5 (10.4%)	5 (9.4%)	10 (9.9%)
Sport & Health Sciences	4 (8.3%)	3 (5.6%)	7 (6.9%)
Information & Technology	7 (14.6%)	2 (3.8%)	9 (8.9%)
Area of origin			
Asia	12 (25%)	17 (32%)	29 (28.7%)
Central Europe, Baltic, and UK	12 (25%)	9 (17%)	21 (20.8%)
East Europe & Russia	8 (16.6%)	8 (15.1%)	16 (15.8%)
Mediterranean Europe	9 (18.7%)	8 (15.1%)	17 (16.8%)
Middle East	4 (8.3%)	6 (11.3%)	10 (9.9%)
America North & South	3 (6.3%)	5 (9.5%)	8 (7.9%)
Length of stay			
Less than 6 months	32 (66.7%)	30 (56.6%)	62 (61.4%)
6 months to 1 year	9 (18.8%)	9 (17%)	18 (17.8%)
Up to 2 years	3 (6.3%)	6 (11.3%)	9 (8.9%)
More than 2 years	4 (8.4%)	8 (15.1%)	12 (11.9%)

Table 2
Structure and Content of the Intervention (the ACT face-to-face group vs. the ACT videoconference group)

Theme	*Module content*	*Home assignment*	*Adjustment and additional resources for the Videoconference intervention*
Individual Pre-Assessment	Informed consent. Psychosocial interview to get a sense of the participant's current situation, problems, and level of functionality	Pre-measurements: online questionnaires	Informed consent sent via email, signed digitally or printed and scanned. Interviews via the Zoom videoconference app
Group Meeting 1: Introduction and Values	**Find out what is important to you** Introduction, introducing each other, experiences of international students. Discussion: Why are you here as an international student? Defining values. Exercises: Two kids in a car, Value cards, 80th birthday. Video: Values vs goals	Clarifying one's own values – Find out which areas are a priority now. Video: The unwelcome party guest	Introduction of the Face Covid protocol and related discussion. Additional exercises on the website: The Compass; Scary passengers; Clarifying your values
Group Meeting 2: Take action	**Engage with the important things in your life** Value-based actions. SMART goals, FEAR and DARE moves. Obstacles to actions. Discussion: How do you connect your actions to your values? Exercise: Zorg the alien. Videos: The choice point Discussion: Feelings of being an outsider	Defining goals: Immediate, short, semi-long, and long term. Commitment to taking value-based actions. Video: Ted Talk – Becoming a mad scientist with your life	Additional exercises on the website: Trip to the theme park; The dice; Three steps to setting goals
Group Meeting 3: Mindfulness	**Be present in this moment** How to be mindful in the here and now in daily life. Videos: Mindfulness is a superpower; How mindfulness empowers us. Exercises: Body scan; Mindfulness of the hand; Time machine. Discussion: How to be more engaged and focused on this experience here and now.	Being mindful in daily activities: eat, cook, shower. Audio exercise: "Hexaflex" Video: Ted Talk – Want to be happier; stay in the moment	Additional exercises on the website: Mindful breathing; Three senses; Mindful listening; Dropping the anchor

Group Meeting 4: Get out of your mind (Cognitive Defusion)	**Watch your thinking and don't get caught up in it** An observer's perspective on thoughts and feelings. Exercises: Watch your thinking; I'm having the thought that… Mind as storyteller; Say it in another language – Weakening of language control. Videos: Internal struggle; Struggle switch. Discussion: How to take distance from thoughts and negative judgements about studying abroad?	Taking distance from your thoughts: Defusion techniques sheet. Audio exercise "Leaves on the stream" Video: Ted Talk – How to make stress your friend	Additional exercises on the website: Terrier thoughts; Observer; Treat your mind as a separate person; Do the opposite; Label your thoughts; The lecture room
Group Meeting 5: Acceptance and Compassion	**Embrace all your thoughts and feelings** Acceptance of thoughts and feelings Exercises: The sky; The continuous you. Connection to values, value cards. Connection to self-compassion. Videos: Three happiness myths; Sadness Comforts Bing Bong. Summary of psychological flexibility. Discussion: How to reconnect the studying abroad experience with values and a more open attitude.	Write down three things you learned from this workshop. Video: Ted Talk – How love turns pain into purpose	Additional exercises on the website: Exploring emotional strategies; Giving space to your emotions; Two friends; What am I willing to accept?
Individual Post-measurements and feedback	Final interview Evaluating the student's situation.	Post-measurements: online questionnaires and feedback	Interviews via the Zoom video conference app. Questionnaire link was delivered via email.

Table 3

Pre–post values for symptoms, psychological inflexibility, mindfulness, and engaged living in the vid eoconference (n = 48) and face-to-face (n = 53) groups. Estimated mean values, standard deviations Wald test, p-values, between- and within-group effect sizes (including 95% confidence intervals).

	Pre *M (SD)*	**Post** *M (SD)*	***W*(*df*=1) p**	d_b	d_w	d_w *95% CI*
Stress (PSS-10)						
ACT videoconf	20.73 (5.96)	17.50 (5.93)	2.23		0.54	0.13; 0.95
ACT face-to-face	20.74 (5.32)	15.61 (5.63)	0.135	0.34	0.94	0.53; 1.33
Anxiety (GAD-7)						
ACT videoconf	8.58 (5.30)	7.23 (3.83)	3.82		0.29	-0.11; 0.69
ACT face-to-face	8.72 (4.52)	5.60 (3.70)	0.051	0.36	0.76	0.36; 1.14
Depression (PHQ-9)						
ACT videoconf	8.17 (4.79)	6.85 (3.98)	3.16		0.30	-0.11; 0.70
ACT face-to-face	9.47 (5.05)	6.39 (4.81)	0.076	0.36	0.63	0.23; 1.01
Psych. inflex. AFQ-Y						
ACT videoconf	26.38 (9.66)	20.75 (10.86)	3.12		0.55	0.14; 0.95
ACT face-to-face	26.45 (11.33)	17.08 (10.88)	0.077	0.36	0.84	0.44; 1.23
FFMQ Total						
ACT videoconf	121.23 (15.94)	128.55 (16.73)	1.32		0.45	0.04; 0.85
ACT face-to-face	118.48 (19.61)	129.58 (19.43)	0.251	0.21	0.57	0.18; 0.95
FFMQ-Obs						
ACT videoconf	26.90 (5.93)	27.78 (5.98)	0.07		0.15	-0.25; 0.55
ACT face-to-face	26.85 (6.44)	27.45 (5.91)	0.789	0.05	0.10	-0.28; 0.48
FFMQ-Desc						
ACT videoconf	27.48 (5.33)	28.31 (5.53)	3.33		0.15	-0.25; 0.55
ACT face-to-face	26.08 (7.58)	28.48 (6.55)	0.068	0.24	0.34	-0.05; 0.72
FFMQ-Awa						
ACT videoconf	25.27 (6.63)	25.93 (6.30)	0.87		0.10	-0.30; 0.50
ACT face-to-face	24.45 (5.99)	26.15 (4.57)	0.352	0.16	0.32	-0.07; 0.70
FFMQ-Nonjudg						
ACT videoconf	24.96 (7.52)	28.74 (7.43)	0.27		0.51	0.10; 0.91
ACT face-to-face	24.52 (6.99)	29.00 (7.14)	0.604	0.10	0.63	0.24; 1.02
FFMQ-Nonreact						
ACT videoconf	16.63 (4.23)	17.69 (3.54)	0.80		0.27	-0.13; 0.67
ACT face-to-face	16.59 (4.25)	18.44 (4.21)	0.371	0.19	0.44	0.05; 0.82
Engaged Living ELS Total						
ACT videoconf	53.98 (11.10)	57.37 (8.60)	1.80		0.34	-0.06; 0.74
ACT face-to-face	54.23 (12.62)	60.02 (10.12)	0.180	0.20	0.51	0.12; 0.89
Valued Living						
ACT videoconf	38.60 (8.05)	39.86 (5.86)	2.04		0.18	-0.22; 0.58
ACT face-to-face	37.87 (8.72)	40.97 (6.92)	0.153	0.22	0.39	0.01; 0.78
Life Fulfillment						
ACT videoconf	15.38 (4.17)	17.51 (4.03)	0.65		0.52	0.11; 0.92
ACT face-to-face	16.36 (4.52)	19.05 (3.87)	0.420	0.13	0.64	0.24; 1.02

d_b = between-group effect size

d_w = within-group effect size

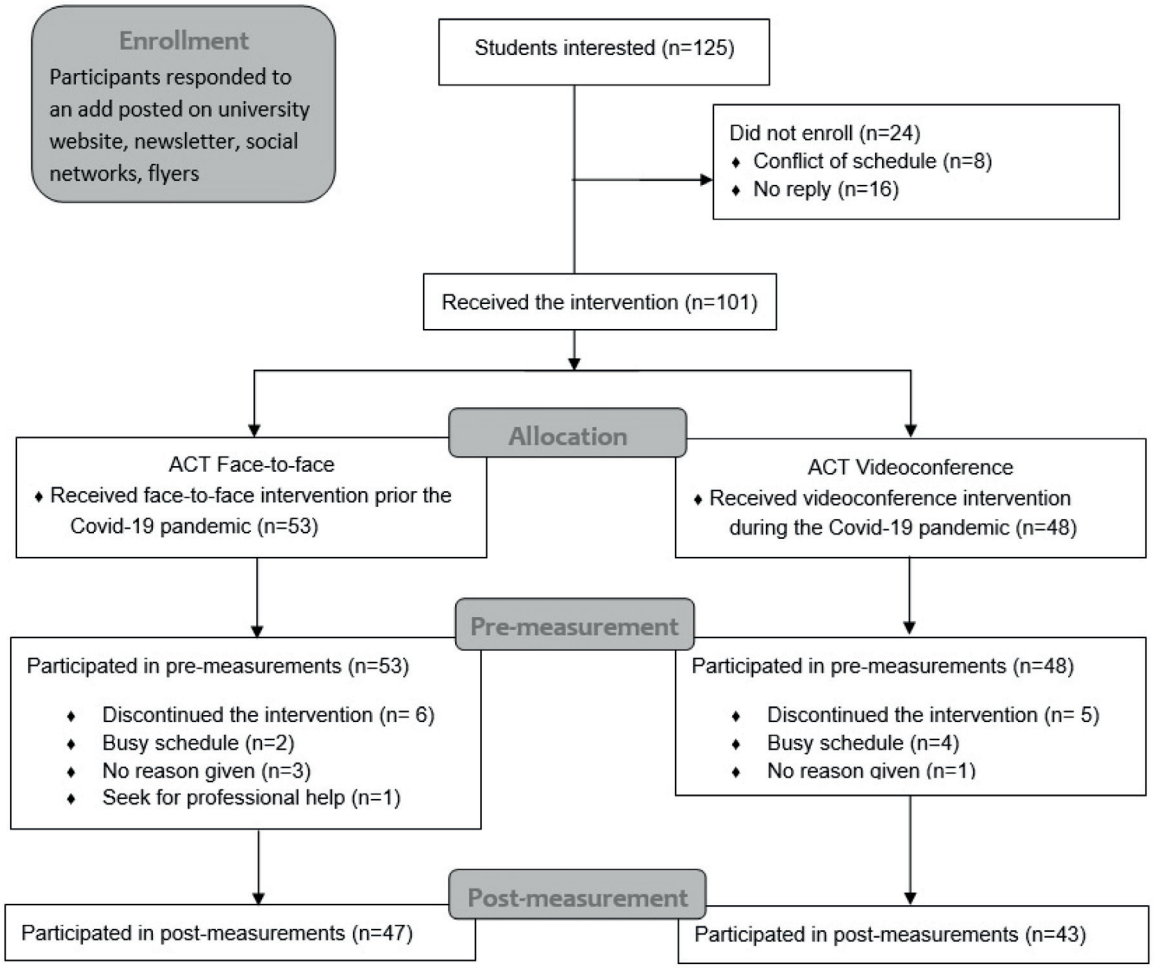


Figure 1. Flow of participants

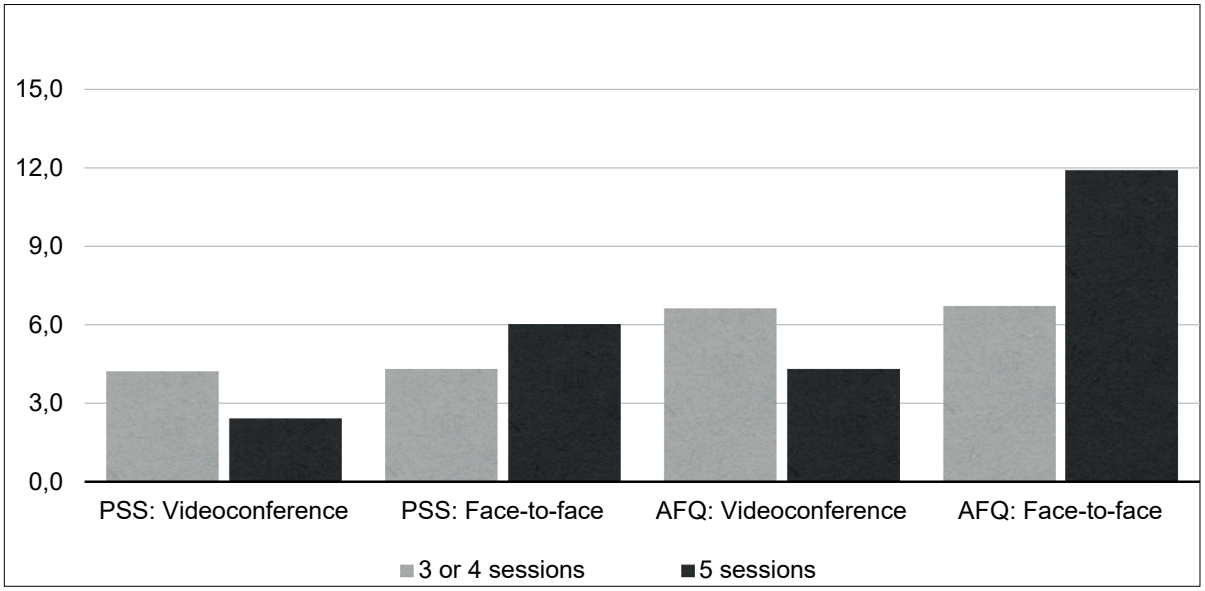


Figure 2. The exposure-response relationship in the videoconference and face-to-face groups. Mean changes of stress (PSS) and psychological inflexibility (AFQ-Y)