Adult Attachment, Mental Health and the Potential Mitigating Role of Psychological Flexibility

Universiteit Utrecht

Master's thesis Clinical Psychology

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Word count (body text): 5478

Abstract

The association between attachment and mental health has been extensively researched in recent decades (Bowlby, 1969; Kafetsios & Sideridis, 2006; Karreman & Vingerhoets 2012; Magai et al., 2016). An attempt has often been made to understand which aspects of attachment may be particularly important for wellbeing. Acceptance and commitment therapy (ACT) is centralized around the concept of psychological flexibility and its importance in overcoming problems. This thesis examines the possible association of the interaction between psychological flexibility and attachment with mental health by performing a moderator analysis. It was hypothesized that psychological flexibility moderated the association between the insecure attachment style and reduced mental health, such that there would be a lower association between the insecure attachment style and reduced mental health with higher psychological flexibility than at lower levels. The mindful dimension of psychological flexibility in particular was expected to be a potential moderator, which was tested in a second moderator analysis. The regression analyses confirmed a significant association of psychological flexibility with mental health. However, there was no association found of attachment and mental health. Also, no interaction effect was found of psychological flexibility and attachment with mental health. The outcomes are limited by the cross-sectional design of the current study. A clinical experiment is suggested to determine whether psychological flexibility can overrule the potential negative effects of insecure attachment.

Keywords: attachment, psychological flexibility, mental health, ACT.

Inspired by the current line of research that examines the role of attachment in individual mental health (Kafetsios & Sideridis, 2006; Karreman & Vingerhoets, 2012; Magai et al., 2016), this thesis explores the role of psychological flexibility in the association between adult attachment and mental health. Previous studies have extensively shown the impact of attachment on mental health in adult life (Mikulincer & Shaver, 2012; Magai et al., 2016; Hadzic & Kantar, 2021). However, the underlying processes in this interaction have yet to be fully understood. Psychological flexibility has been repeatedly linked to both mental health (Kashdan & Rottenberg, 2010; Palladino et al., 2011; Leahy et al., 2012) and attachment (Salande & Hawkins, 2017; Fischer et al., 2016; Hadzic & Kantar, 2021). Nevertheless, psychological flexibility did not receive the attention it deserves as possible intervening variable in the association between attachment and mental health (Calvo et al., 2020).

According to Bowbly (1969), the attachment a person experiences with his or her caregiver establishes internal working models of relationships and the self. These models become a powerful determinant for the manner in which an individual experiences, processes and expresses emotions in all facets of their life (Bretherton & Munholland, 1999; Palitsky et al., 2013). Differences in adult attachment are mostly categorized through variations in two dimensions: attachment anxiety and attachment avoidance (Bartholomew & Horowitz, 1991). Highly anxious individuals suffer from the fear of being rejected and abandoned. On the contrary, highly avoidant individuals are characterized by a fear of intimacy and dependence on others in relationships (Brennan et al., 1998). High scores on either or both of these dimensions indicate an insecure adult attachment style. By contrast, people with low levels of attachment anxiety and avoidance are assumed to have a secure adult attachment style (Brennan et al., 1998; Lopez & Brennan, 2000; Mallinckrodt, 2000). Insecure attachment has been associated with emotional instability, incoherent self-identity, vulnerability to psychopathology, low social awareness, low self-esteem, symptoms of anxiety, depression, and anger (Hazan & Shaver, 1990; Shaver et al., 2005; Kumar & Mattanah, 2016), while secure attachment has been associated with greater life satisfaction, less depression, less anxiety, higher self- esteem and a better mental health (Griffin & Bartholomew, 1994; Mickelson et al., 1997; Strodl & Noller, 2003; Kumar & Mattanah, 2016; Surcinelli et al., 2010).

Attachment style is regarded as relatively fixed, psychological flexibility, on the contrary, is seen as a skill that can be trained (Hadžić & Kantar, 2021). Following the

principles of Acceptance and Commitment Therapy (ACT), psychological flexibility is considered important when dealing with problems (Hayes et al., 2012). Being psychological flexible means to interact with the present moment more fully as a conscious human being in order to realize meaningful goals and live according to personal values (Bond et al., 2011; Hayes et al., 2006). Hayes (2006) describes psychological flexibility as interrelated processes of two dimensions: mindfulness and acceptance processes (1) and commitment and behavior change processes (2). These processes consist of the following six sub-processes. *Acceptance*, which refers to the willingness to experience uncomfortable thoughts and feelings without avoiding them. *Cognitive defusion*, this is the ability to distance oneself from negative thoughts and realize that they are not facts that call for action. *Being present*, this dimension promotes to stay in a current non-judgmental contact with internal and external experiences. *Self-as-context* refers to the ability to notice one's own flow of experiences without connecting to it or investing in it. *Values*, these are the beliefs that underlie behavior. And *committed action*, this touches upon behavior that is shaped by one's values.

These processes involved in psychological flexibility are also linked to attachment. First of all, *self as context* touches upon the core of insecure attachment: the lack of a coherent sense of the self (Bowbly, 1969; Hayes, 2006). This might lead to the disability to stay in touch with immediate experiences which leads to experiential avoidance (Calvo et al., 2020). This is a typical regulatory strategy used by insecurely attached individuals. It involves trying to avoid, control, or change certain inner experiences in this way (Wegner, 1994). This strategy clearly demonstrates a lack of capability mainly on the components of *acceptance* and *being present,* which relate to the mindfulness and acceptance dimension of psychological flexibility. Previous research confirms that high scores on insecure attachment correlate negatively with mindfulness (Calvo et al., 2020). Avoidantly attached people have trouble connecting with their feelings and limit emotional experiences during their everyday life and in romantic relationships (Cassidy & Kobak, 1988; Girme et al., 2018). Furthermore, they usually respond to stressful events maintaining their autonomy, adopting coping strategies aimed at repressing negative thoughts, emotions and attachment needs (Pascuzzo et al., 2013; Girme et al., 2018). Anxiously attached people often revert to controlling coping mechanisms that are emotion-focused or hyper activating, reinforcing or escalating their worries and keeping their attachment systems activated (Pascuzzo et al., 2013; Girme et al., 2018). These

processes are examples of *cognitive fusion*. A study by Girme et al. (2018) indeed showed that insecurely attached individuals are more likely to use cognitive fusion as a regulatory strategy, which means that those individuals cannot distance oneself from negative thoughts.

Becoming more psychologically flexible thus entails people's ability to actively and conscientiously accept their unpleasant inner experiences and reactions, instead of changing them (Hadžić & Kantar (2021). This could lead anxiously attached individuals to being less overwhelmed by negative experiences, so that they are better able to stay in the moment which enhances their mental health. Better tolerance of their anxious feelings can lead to a decrease in the partner's need for security. This enhances the ability to stay in touch with both one own and other people's emotions. For avoidantly attached individuals, this could mean that in an intimate relationship they stay in touch with feelings and not suppressing them in order to act on their needs rather than avoid them (Pascuzzo et al., 2013). The urge to control and avoid inner experiences is a core characteristic of insecurely attached persons, and often becomes the source of the problem, rather than its solution.

Previous research of Salande & Hawkins (2017) confirmed hypotheses about negative correlations between psychological flexibility and attachment avoidance and anxiety largely. Moreover, Hadžić & Kantar (2021) found that relationships between attachment dimensions and negative affect can be explained through psychological flexibility: higher values of insecure attachment were associated with lower psychological flexibility, which led to higher negative affect. However, as far as the literature review has gone, no study has been found that actually looked at the possible buffering effect of psychological flexibility as a personal skill that might mitigate the relationship between insure attachment and reduced mental health. More research into the possible effect of psychological flexibility can help individuals reduce the impact of attachment patterns without having to change the patterns, which is a more difficult task (Davis et al, 2016). Therefore, this study hypothesizes that psychological flexibility moderates the association between the interaction with the insecure attachment style and reduced mental health, such that there would be a lower association between the insecure attachment style and reduced mental health with higher psychological flexibility than at lower levels. Given the overlap between secure attachment and the mindful dimension, a second hypothesis is formulated as follows: people who are anxiously and avoidantly

attached will benefit in particular from higher scores on the mindful dimension of psychological flexibility.

Methods

Participants

The participants in this study were people of the general population starting from the age of eighteen. The data collection took place from October until December 2021. Before participating in the study, each participant was informed about the content of the study and their voluntary contribution. Exclusion criteria were not signing the informed consent and being younger than eighteen years old. Inclusion criteria were the ability to understand English, Dutch or German as the questionnaire was presented in these three languages. The research was conducted completely anonymously and the data was stored on a secure computer of Utrecht University.

Procedure

The design of the study is a cross-sectional online survey study. It was approved by the ethics board of the faculty of Social and Behavioral Sciences at Utrecht University (21-1948). The data was collected by the members of a research group consisting of eight master's students and a professor. In order to find participants, a direct link was created through which people could participate in the study. This link was distributed via the research group's network through email and social media such as Facebook, Instagram and Whatsapp. By clicking on the link, participants immediately entered the information letter with details about the research including the content of the study and their voluntary contribution. Then demographic information was collected via several questions and afterwards they filled in the questionnaires associated with the studies conducted by the students. These were the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983), the Satisfaction with Life Scale (Diener et al., 1985), the Loneliness Scale (De Jong Gierveld & van Tilburg, 1999), the Short-form Health survey (Ware et al., 1996), the Loss Questionnaire (Brugha & Cragg, 1990), the Perceived Stress Scale (Cohen et al., 1994), the Big Five Inventory (John et al., 1991), the Coping through Emotional Approach Scale (Stanton et al., 2000), FIT-24 (Van Hoek et al., 2021) and the Experience of Close Relationships Questionnaire (Lafontaine et al., 2015). The following section elaborates on the questionnaires used in this study.

Instruments

Psychological flexibility was measured with the *24-item Flexibility Index (FIT-24)* (Van Hoek, 2020). This is a newly developed questionnaire derived from the Flexibility Index Test (FIT-60) (Batink & Delespaul, 2015) from which 24 questions have been distilled. Eight questions from the original English version were used, sixteen questions were back translated from Dutch to English. In accordance with Hayes's article (2006), these questions can be traced back to two factors that make up psychological flexibility. Sixteen items measured the mindfulness and acceptance processes and eight items measured commitment and behavior change processes (Van Hoek, 2020). Each question was answered on a seven-point scale ranging from strongly disagree (0) to strongly agree (6). Example items included "I often feel limited by everything I need of myself" (mindful and acceptance processes) and "My life is well balanced" (commitment and behavior change processes). Higher scores on the FIT-24 indicated a higher level of psychological flexibility. In this study, the Cronbach's Alpha of the Fit-24 was .89 (n=317) for the overall psychological flexibility scale. All scores above .80 are considered good (Field, 2018). For the commitment dimension of the FIT-24 the Cronbach's Alpha was .79 and for the mindful dimension .89. Although the generally accepted value of .80 is regarded appropriate, according to Kline (1999) a cut-off point at .70 for psychological tests is more suitable. This has to do with the diversity of constructs being measured. This means that both dimensions were reliable according to Cronbach's Alpha.

Mental health was indicated with the Short Form Health Survey (SF-12) (Ware, 2020). This questionnaire is derived from the Short Form Health Survey (SF-36) (Ware & Sherbourne, 1992) and includes twelve questions. The questions covered eight scales, namely: two items measured physical functioning (e.g. items on limitations doing moderate activities and climbing several stairs), two items indicated limitations due to physical problems, one item related to bodily pain, one item measured general health, one item corresponded with vitality, one item measured social functioning, two items measured emotional functioning role limitations due to emotional problems and two items indicated perceived mental health (Jenkinson & Layte, 1997). The scores on these questions were used to calculate both physical and mental health. In this study, only the score on mental health was used. In the current study, Cronbach's Alpha of the mental health scale was .78, which indicates a good internal consistency (Connelly, 2011).

Attachment was measured via the Short Form Experiences in Close Relationships (ECR-12) (Lafontaine et al., 2015). This is a self-report questionnaire consisting of twelve items. Six items measured attachment anxiety and the other half measured attachment avoidance. All items are measured on a seven-point-scale ranging from "totally disagree" (1) to "totally agree" (7). Example items included "I worry a lot about my relationship" (anxiety) and "I feel comfortable sharing my private thoughts and feelings with people" (avoidance). High attachment-related anxiety and avoidance scores indicated insecure attachment, while secure attachment is reflected by low scores. For each dimension, an increased mean score indicated higher attachment anxiety or attachment avoidance. With an internal reliability of .74 or higher for both ECR-R scales, this questionnaire proves to be a reliable method to measure attachment in adults. In this study, the Cronbach's Alpha of the anxious dimension items was .88. The Cronbach's alpha of the avoidant dimension was .75. The overall Cronbach's Alpha of the 12 items of the ECR-12 was .79. In short, it can be established that the collected scores on the questionnaires all meet the minimum requirements set for reliability. Also, the construct validity and the test-retest reliability of the ECR-R turned out to be good (Lafontaine et al., 2015).

Statistical Analyses

The results of the research were analyzed using the Statistical Package for Social Sciences (SPSS) version 24. All analyses had a significance criterion of $p < .05$. Before the analysis could be performed, it was checked whether the data met the assumptions for performing a regression analysis. The data was analyzed for normality in two ways. First, by visually assessing the score distribution in histograms plotted in SPSS. Second, by looking at the Skweness and the Kurtosis, of which a value between -1 and 1 can be regarded as an indicator of a normal distribution in large sample sizes (Kim, 2013). In order to investigate both the dimensions of the FIT-24, the scores were examined with exploratory factor analyses (EFA) using Principal Axis Factoring (PAF) with direct oblimin rotation because the items of different dimensions were expected to correlate (Field, 2018; Hayes et al., 2006). To determine the number of factors, several aspects were considered: the content of the items, the eigenvalue criterion >1, the scree plot and the pattern of factor charges (Field, 2018). To be included within a factor, the items had to load on one factor .40 or more and on the other factors less than .30 (Peterson, 2000).

Looking at descriptive statistics in SPSS provided an overview of the mean scores

and the standard deviations on the attachment scores, the scores on mental health and psychological flexibility. These scores were interpreted and put in perspective by using relevant literature. To assess the univariate associations between the two attachment styles, the anxious and avoidant dimension, and the overall attachment score were related to mental health, an analysis of correlations was first performed. In this analysis were also demographic data included regarding age, education level and gender. This was measured to select possible covariates for the moderator analysis. Subsequently, the correlation between the one significant covariate (age) and the independent (attachment style) and moderator (psychological flexibility) variable was measured.

To examine whether the aspects underlying psychological flexibility moderated the association between attachment style and mental health, a linear regression analysis with 1000 bootstrap samples was executed using the Process macro (version 4.0) of Hayes (2013). To meet the condition of homogeneity of the variance, the Levene's Test was performed. Before regression analysis, predictor variables were centered. Age was added as covariate, together with attachment dimensions and the psychological flexibility dimensions. The scores on age were dichotomized in order to use them for the regression analysis. Respondents of the age between 18-30 were reported as the 'young' category, the rest of age groups were placed under 'old'. Mental health was added in this model as the outcome variable. Subsequently, graphs were plotted to interpret the association between attachment and mental health in the presence of the moderator. This was done in two levels: high and low scores on the variables (Aiken & West, 1991).

Results

The score distribution of all variables was tested and found normal: the skewness and the Kurtosis of every variable was between -1 and 1. Given the large sample size, this indicates that the normal distribution condition was met in this sample (Kim, 2013). The boxplots in SPSS indicated seven outliers. The scores of these outliers were all studied separately. Two outliers represented by two respondents were excluded from the dataset because they had answered all questions with the same answer on several questionnaires. It contained questions that were asked in reverse. This suggested that the questionnaires were not filled in seriously or with sufficient attention. In five of the seven cases, the scores appeared to have been seriously answered. Indication for that were the time spent on the test and the variability in answers. The only thing that stood

out about the scores was the extremity, therefore, they were not excluded from the dataset. Only the data of participants who filled in all items were included in the study. The data used to perform the further analyzes consisted of 317 participants. Characteristics of the participants (e.g. age, gender, level of education and relationship status) are presented in table 1.

Table 1. *Demographic and medical characteristics of all participants (N = 393)*

Characteristics	Included participants (*N=317*)	Excluded participants (*N=76)*
Age group*, n* (%)		
18-30	181 (57.1)	54 (71.1)
31-40	45 (14.2)	7 (9.21)
41-50	29 (9.1)	4 (5.26)
51-60	43 (13.6)	7 (9.21)
61 or older	19 (6.0)	4 (5.26)
Age category, *n (%)*		
Young	181 (57.1)	
Old	136 (42.9)	
Gender, *n (%)*		
Female	217 (68.5)	49 (64.5)
Male	100 (31.5)	27 (36.55)
Student, *n (%)*		
Yes	131 (41.3)	35 (46.1)
No	186 (58.7)	41 (53.9)
Level of education*, n (%)*		
Less than high school		1 (1.3)
High school graduate	31 (9.8)	12 (15.8)
Prof. degree/apprenticeship	42 (13.2)	7 (12.5)
Bachelor/undergraduate studies	113 (35.0)	28 (36.8)
Master	108 (34.1)	23 (30.3)
Doctorate	25 (7.9)	5 (6.6)
Relationship status, *n (%)*		
Single	105 (33.1)	31 (40.8)
In a relationship (cohabiting)	61 (19.1)	9 (11.8)
In a relationship (living apart)	65 (20.5)	20 (26.3)
Married	68 (21.5)	15 (19.7)
Divorces/separated	15 (4.7)	1 (1.3)
Widowed	3 (0.9)	

Chronic illness, *n (%)*		
Yes	38 (12.0)	9 (11.84)
No	279 (88.0)	67 (88.16)
Nationality, *n (%)*		
Dutch	91 (28.7)	17 (22.37)
German	75 (23.7)	15 (19.74)
English/Irish	32 (10.1)	18 (23.68)
Greek/Cypriot	84 (26.5)	19 (25)
Other	35 (11.0)	5 (6.58)
Missing		2 (2.63)
Self-report measures, *mean (SD)*		
Mental Health (SF-12) [1]	41.35 (11.56)	37.59 (9.11)
Psychological flexibility (FIT-24) [2]		
Total flexibility	3.62 (0.82)	3.21 (0.86)
Mindful factor	3.25 (1.05)	2.77 (1.07)
Commitment factor	4.38 (0.79)	4.09 (0.87))
Attachment style (ECR-12) [3]		
Anxious attachment	3.70 (1.53)	4.70 (1.58)
Avoidant attachment	2.92 (1.07)	3.11 (1.08)

[1] Short Form Health Survey
[2] 24-item Flexibility Index
[3] Short Form Experiences in Close Relationships

The data from the group of participants who did not answer all questions, the excluded group, differs in a few respects from the included group. The group of excluded participants contained more people in the age group 18-30, i.e. 71.1 percent compared to 57.1 percent in the group of included participants. There were also more single people in the excluded group, i.e. 40.8 percent compared to 33.1 percent in the group of included participants. In addition, it is striking that the group that stopped prematurely scored one point higher on the attachment score, namely 4.70 compared to 3.70. Insight into the data does not go so far that it can be investigated why these people stopped prematurely. With regard to the included group, it is clear that the vast majority of the included participants were female (68.5%). In addition, more than half of the group belonged to the category of young adults (57.1%). The surveyed group also consisted largely of highly educated people with 77.0% of people who have an education level of bachelor or higher and 41.3% of the total group that currently studies.

The mean score for attachment anxiety was of 3.70 (*SD* = 1,53, *min* = 1, *max* = 7) and for attachment avoidance was of 2.92 (*SD* = 1.07, *min* = 1, *max* = 5.83). To determine

how many respondents had elevated levels of attachment insecurity, the cut-offs based on the ECR-36 were looked at (Brassard et al., 2012). Clinical thresholds for these two subscales are operationalized as follows: a score above 3.5 for attachment anxiety and above 2.5 for attachment avoidance is indicative of high levels of these attachment dimensions (Petricone-Westwood et al., 2021). According to the cut-off of 2.5 for attachment avoidance, 59,6% of the sample had elevated attachment avoidance. For attachment anxiety, the cut-off is at 3.5 which indicates that 49,8% of the sample reported elevated attachment anxiety. For the mental health scale, the mean was 41,35 (*SD=11.56, min = 13.26, max = 68.86*). In the general population, a score of 50 marks the cut-off point meaning that scores lower than 50 reflect a worse mental health status than the average population (Vilagut at al., 2013). In this group of participants, the average score is almost one standard deviation lower which indicates that the mental health of this research group was considerably lower than in the average population.

Exploratory factor analysis for the FIT-24

To investigate whether the FIT-24 actually distinguished two dimensions of psychological flexibility, the mindful and the commitment dimension, an EFA was performed. The EFA was run with a restriction of 2 factors for the items of the FIT-24. The factor loadings of all items on both factors are shown in Table 2. The eigenvalues were 7.22 (30,1%) and 2.67 (11.2%) with a total explained variance of 41.2%. The outcome of the loadings on the two factors showed a clear pattern in which almost all items assigned to the mindful dimension indeed load on the same factor. Only item 5 and item 6 do not reach the factor loading criterion >.40. On the second factor, all the items remain well below the .30 limit. It was decided not to remove the two deviating items from the scale for several reasons. Firstly, because the purpose of the EFA was to replicate whether the FIT-24 actually measures two dimensions, and not to improve the questionnaire. In addition, both items do not load highly with the other factor and item 5 only makes a slight difference to the set limit. On the commitment dimension, following the EFA, all eight items clearly load on factor two, with each item loading above .40 and on the factor 1 staying well below .30.

Table 2. *Results from a factor analysis of the 24-item Flexibility Index Test (FIT-24)*

Items	**1**	**2**
Mindful dimension		
13. I believe that some of my thoughts are abnormal or bad and I should not think that way	.70	-.02
22. It is such a struggle to let go of upsetting thoughts even when I know that letting go would be helpful	.68	.15
15. I tend to react very strongly to my own negative thoughts	.67	-.15
17. Emotions (such as anger, sadness) cause problems in my life	.67	-.01
21. I am afraid of my feelings	.66	.10
24. I think that my emotions are bad or inappropriate and that I should not feel them	.65	.00
10. If I allow painful feelings to arise, I am afraid they will not go away	.64	,17
23. I get upset with myself for having certain thoughts	.64	.04
3. My thoughts cause me distress or emotional pain	.62	,18
7. I suffer from a negative self-image	.61	.17
16. I disapprove of myself when I have strange thoughts	.59	-.16
1. I often feel limited by all that I feel I must do	.53	-.02
8. When I am doing something wrong, I blame myself	.48	-.05
11. I have to control the thoughts that come to me	.48	-.07
5. I find it difficult to keep focused on being in the here and now	.36	.19
6. I think I should always be nice	.27	.04
Commitment dimension		
14. I am on my way to fulfil my goals and dreams	-.11	.73
19. I enjoy taking on new challenges	-.10	.66
18. I do several things that I find important	.04	.61

12. I find my life valuable	.14	.54
4. If I do not succeed in something, I push through and try to tackle it in a different way	.07	.53
9. I realize that the things I do, I have chosen myself	-.06	.47
20. I find support in the people around me	.07	.46
2. My life is well balanced	.22	.43

Correlations between attachment, psychological flexibility and mental health

To assess the univariate associations between the variables, Pearson correlations were computed (see table 3). In this analysis were also demographic data included regarding age, education level and gender. There was no significant correlation found between education level and mental health (r=.10 p<.01) and also not between gender and mental health (r=-.10 p<.01). Age correlated significantly with mental health and was therefore included in further analysis (r=*.27,* p<.01). The table shows significant negative correlations between total attachment style and mental health (r=-.36, p<.01), anxious attachment and mental health (r=-.35, p<.01) and avoidant attachment and mental health (r=-.16, p<.01). Furthermore, it indicates significant positive correlations between psychological flexibility and mental health (r=.60, p<.01), same counts for the two dimensions of flexibility: mindful dimension (r=.57, p<.01) and the commitment dimension (r=.40, p<.01)

Table 3. *Correlations between the variables*

	1	2	3	4	5	6	7	8
1. Age category	-							
2. Anxiety dim.	*-.32***	-						
3. Avoidant dim.	*.10*	*.11*	-					
4.Total attachment	*-.19***	*.84***	*.63***	-				
5. Mental health	*.27***	*-.35***	*-.16***	*-.36***	-			
6. Mindful dimension	*.34***	*-.57***	*-.16***	*-.53***	*.57***	-		

7. Commit. dimension	*.05*	*-.31***	*-.25***	*-.38***	*.40***	*.38***	-	
8. Total flexibility	*.30***	*-.57***	*-.21***	*-.56***	*.60***	*.96***	*.64***	-

** Correlation is significant at the .01 level (2-tailed)

The moderator effect of psychological flexibility in the association between attachment style and mental health

The homogeneity of the variance was tested with the Levene's Test. The test indicated a non-significant result which means the variances are homogeneous divided, and so this requirement for regression analysis is met (Field, 2018). Table 4 shows the results from the regression analysis with bootstrapping (1000 samples). The regression model indicates a significant association between psychological flexibility and mental health (p<.001), but no significant associations between attachment score with mental health (p=.51). There was also no interaction effect found between psychological flexibility and attachment on mental health (p=.66), this is also depicted in Figure 1. The regression analysis further did not indicate an association between age and mental health (p=.07).

Table 4. *Results of regression analysis for attachment and psychological flexibility to mental health*

Effect	*B*	*SE B*	*95 % CI*		*P*
			LL	*UL*	
Constant	*40.37*	*.76*	*38.88*	*41.87*	*<.001*
Total attachment	*-.39*	*.65*	*-1.67*	*.89*	*.51*
Total flexibility	*7.73*	*.77*	*6.21*	*9.25*	*<.001*
Attachment * psy flexibility	*-.28*	*.64*	*-1.53*	*.97*	*.66*
Age category	*1.97*	*1.10*	*-.19*	*4.14*	*.07*

N = 317. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

Given the expected mitigating role of the mindful dimension of psychological flexibility, a second regression analysis with bootstrapping (1000 samples) was performed to investigate whether this mindful dimension had a moderating effect on mental health (see table 5). The regression model indicates a significant association between the mindful dimension of flexibility and mental health (p<.001). There was no interaction effect found between attachment and the mindful dimension mental health (p=.62), this is also shown in figure 1. The regression analysis further indicates nonsignificant associations between attachment (p=.13) and age (p=.15) with mental health.

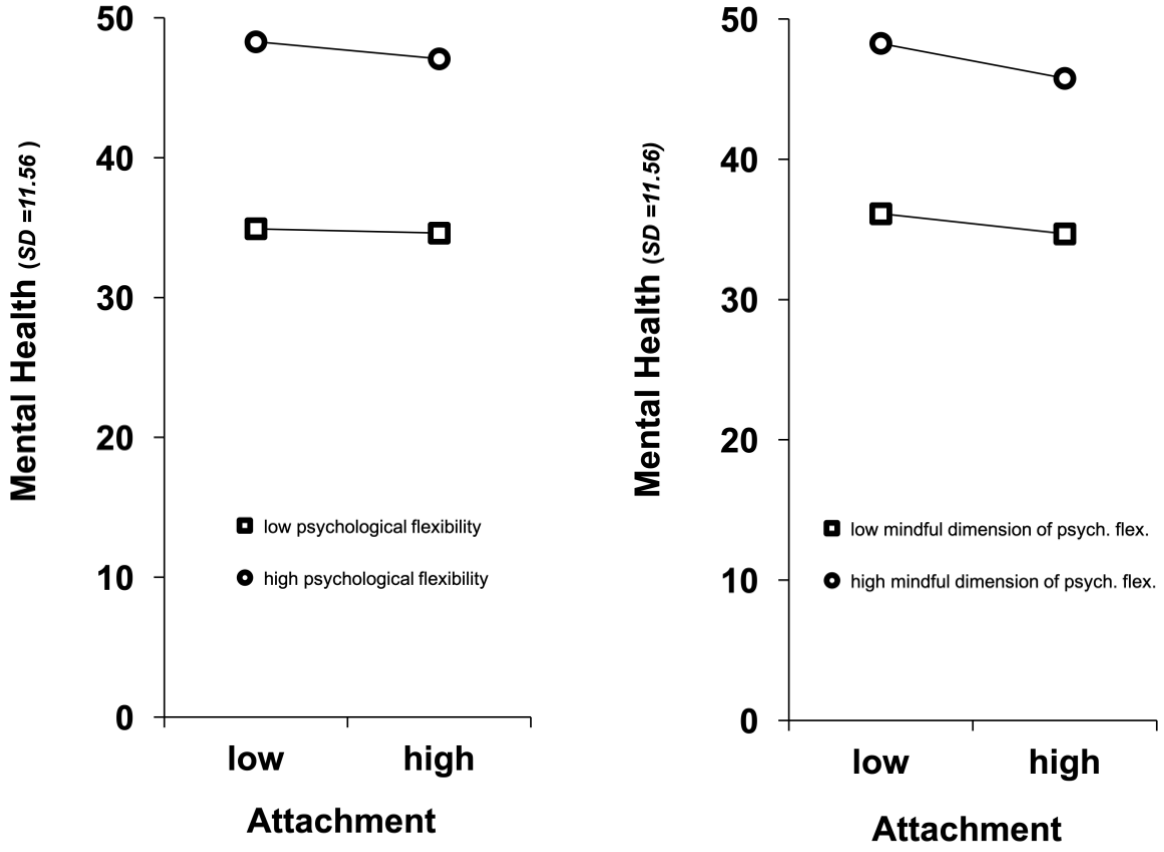
Table 5. *Results of regression analysis for attachment and the mindful dimension of psychological flexibility to mental health*

Effect	*B*	*SE B*	*95 % CI*		*P*
			LL	*UL*	
Constant	*40.50*	*.77*	*38.98*	*42.02*	*<.001*
Total attachment	*-1.01*	*.65*	*-2.29*	*.28*	*.13*
Mindful dimension	*5.53*	*.63*	*4.31*	*6.77*	*<.001*
Attachment*Mindful dimension	*-.26*	*.52*	*-1.28*	*.77*	*.62*
Age category	*1.66*	*1.15*	*-.59*	*3.91*	*.15*

N = 317. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

Figure 1

Mental health in association with high/low attachment and high/low (mindful dimension of) psychological flexibility



Note. This figure shows mental health for participants with low (-1 *SD*) and high (+1 *SD*) attachment and low (-1 *SD*) and high (+1 *SD*) scores on the overall psychological flexibility factor (left) or on the mindful dimension of psychological flexibility (right). The interaction effect between attachment and psychological flexibility was not significant (p = .66), neither the interaction effect between attachment and the mindful dimension of psychological flexibility (p = .62).

Discussion

The aim of this study was to clarify the possible mitigating role of psychological flexibility in the association between attachment and mental health. It was expected that there would be a lower association between the insecure attachment style and reduced mental health with higher psychological flexibility than at lower levels. Furthermore, given previous research linking mindfulness and attachment (Calvo et al., 2020), it was also expected that in particular insecure attached people would benefit from higher scores on the mindful dimension of psychological flexibility. In accordance with previous research (Hazan & Shaver, 1990); Kumar & Mattanah, 2016; Mickelson et al., 1997; Surcinelli et al., 2010; Salande & Hawkins, 2017), significant negative correlations were found between attachment scores and mental health, and significant positive correlations were found between psychological flexibility and mental health. Results did also confirm a significant association between psychological flexibility and mental health, both for overall and the mindful dimension specifically. Nevertheless, the regression analysis did not confirm the association between adult attachment and mental health. Moreover, the results did not indicate an association between the interaction of psychological flexibility and attachment with mental health, neither for general psychological flexibility nor for the mindful dimension specifically. The two hypotheses formulated were therefore not confirmed in this study.

The findings regarding the correlation and association between psychological flexibility and mental health are in accordance with previous research (Kashdan & Rottenberg, 2010; Salande & Hawkins, 2017). In addition, the results of this study confirm correlations between higher levels of attachment and lower levels of mental health, as has been amply confirmed in previous studies (Mikulincer & Shaver, 2012; Magai et al., 2016; Hadzic & Kantar, 2021). However, it is important to note that correlations and associations do not directly indicate anything about the underlying relationship between constructs. For example, there may be another construct related to one's attachment style and one's mental health, which indirectly links these constructs together. One possibility could be a personality trait such as neuroticism. This is defined as proneness to experience unpleasant and disturbing emotions and indicates difficulties dealing with and adapting to major life stresses (Costa & McCrae, 1999; Robinson & Marwit, 2006). Since this cross-sectional study does not rule out the influence of a third variable, future research of an experimental nature could provide more insight into a possible third

variable linked to both attachment and psychological flexibility.

The results of the regression analysis show something striking: the relationship between attachment and mental health disappears when psychological flexibility and age are added to the regression model. This indicates that psychological flexibility and age partly overlap with the explained variance attributed to attachment (Field, 2018). A possible explanation for the absence of a direct association between attachment and mental health in this regression model may be that attachment is at the basis of our well-being and therefore cannot be measured as detached in an interaction measurement. This means that attachment not only has impact on mental health, but also on one's psychological flexibility. This ties in with the observation that attachment style directly influences the way people experiences, processes and expresses emotions in all aspects of their life (Bowlby, 1969; Bretherton & Munholland, 1999). Securely attached people have a broad spectrum of strategies to regulate their emotions. Research confirms that psychological flexibility could be understood as an approach of securely attached people, as it benefits psychological and emotional well-being (Kashdan & Rottenberg, 2010; Wolgast, 2014), the aspects related to this quality of attachment. Research by Calvo et al., (2020) also confirms that attachment has an effect on the extent to which a person can act psychologically flexible. In this study, this is reflected in the significant correlation between the extent to which someone is psychologically flexible and someone's attachment score. High attachment scores, especially on anxious attachment and overall attachment, are associated with low psychological flexibility scores, and vice versa. As previously indicated, no conclusions can be drawn from correlations in this study between these two constructs. However, it is a sign of interdependence and thus points in the direction of previous research confirming associations between attachment and psychological flexibility (Kashdan & Rottenberg, 2010; Wolgast, 2014; Salande & Hawkins, 2017; Calvo et al., 2020). Consistent with what Salande & Hawkins (2017) state in their conclusion, it is highly likely that one's psychological flexibility is not independent of one's attachment style. This line of thought explains why the moderator analysis does not show any mitigating effect of higher psychological flexibility on the effect of attachment scores on mental health.

It is highly relevant to understand whether psychological flexibility is a skill that can be learned and that can reduce the impact of attachment patterns without having to change the patterns themselves (Davis et al, 2016). This study has attempted to make an

exploratory step in this regard. To better investigate this, a clinical experiment over a cross-sectional study is advised. In this experiment, an intervention could be applied that seeks to increase psychological flexibility in order to overrule the impact of attachment. As a design for such a study, I would propose a two-group (experimental/control) between-subjects design, with pre- and post-intervention measures taking place at the within-subject level. A suitable research group for this would be a sample from the general population. In line with the above suggestion that psychological flexibility is not independent of one's attachment, learning skills that increase psychological flexibility is expected to have a positive effect on mental health, but does not overrule the effect of one's attachment.

From a methodological point of view, there are a number of aspects of this study to consider. The sample size (N=317) meets the guidelines for statistically reliable research (Field, 2018). For the measurement of attachment, the ECR-12 is considered appropriate and of sufficient psychometric quality (Riggs et al., 2017). This also applies to the SF-12, which has proven to be a good tool for measuring mental health (Vilagut et al., 2013). However, the fit-24 is newly developed questionnaire, and while its reliability was adequate, there is no extensive research that can confirm the validity of the measuring instrument. In addition, the sample is not a representative reflection of society. This concerns above-average numbers of highly educated, young and female participants. As a result, the research outcome cannot be regarded as representative of the average population. For follow-up research, it is useful to guarantee more diversity in the sample. This can be guaranteed by including people from all kinds of social and cultural backgrounds and a fairer distribution from the age groups. It is also important to bear in mind that the results of the current study are based on self-report lists. With this method, participants are expected to make a good and truthful estimate of their own behavior. However, the question is whether each participant is capable of this (Simon et al., 2018). In order to guarantee the validity of the scores, it can be decided that the scores should not only depend on self-reporting, but also on the assessment of a professional, such as a psychologist. One might consider conducting (semi)structured interviews in which questions can be asked about the attachment and psychological flexibility of participants. However, this method is very time-consuming and can therefore only be performed with sufficient capacity. As mentioned earlier, the group of participants appeared to score significantly lower on mental well-being than the average population. It is easy to imagine

that this has to do with the timing of the study, this took place during the Covid-19 pandemic. The uncertainty surrounding Covid-19 may have had an impact on the mood and resilience of the participants, especially given the topicality of the subject at the time the study took place. Finally, although widely used in previous research (see e.g. Calco et al., 2020; Petricone-Westwood et al., 2021;), Buck et al., (2014) argue that the ECR-R was not designed with the purpose to divide people into two dimensions of attachment. It is therefore conceivable that the way participants were classified influenced the results of this study. The further exploration of possibilities to assign people to one of the two dimensions of attachment is one of the recommendations arising from this study.

In summary, this current study has shed light on the association between attachment and mental health and the potential mitigating role of psychological flexibility. Although the hypotheses put forward could not be confirmed, some clear correlations have been proven. This invites further research. A clinical experiment has been suggested to measure whether psychological flexibility can overrule the influence of attachment.

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