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On the Relation Between Maladaptive Personality Traits and Emotional Crying

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Abstract

We take advantage of recent advances in the assessment of maladaptive personality traits to better understand how a broad range of aspects of psychopathology are associated with emotional crying. In two cross-sectional studies, we assessed the Personality Inventory for DSM-5 (PID-5) traits, various aspects of emotional crying (e.g., crying frequency, crying latency, crying proneness, affect improvement after crying, and strategic use of crying), emotion regulation strategies/problems, and measures of perceived social support in individuals with a mental health diagnosis (total $N = 1105$ from the U.S.; Study 2 was preregistered). Our findings revealed replicable and plausible associations between PID-5 traits and emotional crying: Negative affectivity and disinhibition were positively related to crying frequency; antagonism and psychoticism were positively related to the use of strategic crying; and detachment was negatively linked to affect improvement after crying. Additional analyses showed that perceived social support and emotion regulation strategies mediated the negative relation between detachment and affect improvement after crying, suggesting that beneficial emotion regulation is embedded within a social context. By systematically examining the relation between emotional crying and maladaptive personality traits, our findings offer new insights into emotion expression in psychopathology. They help clarify who cries frequently or rarely, who experiences relief after crying and why, and who strategically uses crying to achieve personal goals.

Keywords: PID-5, maladaptive personality traits, emotional crying, catharsis, strategic crying, perceived social support

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Introduction

"Only when tears are shed in a therapy session has it been a really good session." Most psychotherapists have probably thought or jokingly expressed a sentiment along these lines, but there are several intriguing aspects to this statement. Psychopathology and the specific emotional expression of crying are intertwined (Bylsma et al., 2021; Vingerhoets et al., 2007; Vingerhoets & Bylsma, 2016). For example, crying is one of the symptoms assessed by the Beck Depression Inventory-II to screen for depressive symptoms (Beck et al., 1996). Psychopathology is often associated with dysfunctional emotion regulation, and a key task of psychotherapy is to improve or develop emotion regulation skills (Aldao et al., 2010; Cludius & Ehring, 2024; Lincoln et al., 2022; Sheppes et al., 2015). People seek psychotherapy when they are no longer able to cope with their experiences and behaviors on their own. In other words, when they feel distressed (and often cry the most), individuals seek a supportive social context in the form of individual therapy, group therapy, self-help groups, or hospitalization. Despite the apparent connection between these processes, surprisingly little empirical research has examined how they are related. In the present work, we address this gap by examining the association between psychopathology and emotional crying, with a particular focus on the potentially mediating roles of perceived social support and emotion regulation. The conceptual idea underlying this work is depicted in Figure 1. Before presenting the two cross-sectional studies conducted for this purpose, we outline the key concepts and theoretical considerations that frame our research.

Conceptualization of Maladaptive Personality Traits

In this work, we conceptualize psychopathology through maladaptive personality traits, drawing on recent dimensional models of personality disorders. Unlike the categorical ICD-10 and traditional DSM approaches, ICD-11 and the DSM-5 alternative model assess (a) severity on a continuum and (b) specific trait expressions rather than single diagnostic labels. The Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012) consists of 25 facets, of which groups of three can be summarized into the broad traits of negative affectivity, detachment, antagonism, disinhibition, and psychoticism (Maples et al., 2015). The remaining 10 facets provide additional information (e.g., attention seeking). The traits largely correspond to maladaptive variants of the Five-Factor Model (e.g., Suzuki et al., 2017): Negative affectivity includes the facets of emotional lability, anxiousness, and separation insecurity, thereby resembling neuroticism. Detachment encompasses withdrawal, anhedonia, and intimacy avoidance, making it comparable to low extraversion. Antagonism involves manipulativeness, deceitfulness, and grandiosity, corresponding to low agreeableness. Disinhibition captures irresponsibility, impulsivity, and distractibility, aligning with low conscientiousness. In contrast, psychoticism – characterized by unusual beliefs and experiences, and perceptual dysregulation – does not map cleanly onto openness, and recent evidence suggests it

should be treated as distinct from the FFM or HEXACO traits (e.g., Knežević et al., 2024).

Assumed Associations Between Maladaptive Personality Traits and Emotional Crying

It is important to emphasize that we did not attempt to diagnose individuals in this project. Instead, we sought to explore associations between maladaptive personality traits and emotional crying, using the PID-5 as a measure of individual differences. We define emotional crying as the shedding of tears triggered by an emotional stimulus (Vingerhoets et al., 2000). Different aspects of emotional crying can be examined. For example, one can examine how often a person cries and how much time has passed since their last crying episode. These constructs can be labeled "crying frequency" and "crying latency", and they are negatively related: the more often someone cries, the shorter the time since the last crying episode. To date, crying frequency has been investigated empirically much more frequently than crying latency. Studies have consistently shown that women cry more often than men (Barthelmäs & Keller, 2021; Peter et al., 2001; for reviews, see Vingerhoets et al., 2000; Vingerhoets & Bylsma, 2016) and that neuroticism is positively associated with crying frequency (Barthelmäs & Keller, 2021[1]; De Fruyt, 1997; Peter et al., 2001; Vingerhoets et al., 2000). Together, these findings and the core facets of the trait (e.g., emotional lability) suggest a positive association between negative affectivity and crying frequency. Prior research has shown that extraversion was negatively associated with crying frequency (Barthelmäs & Keller, 2021; De Fruyt, 1997), which may reflect that individuals high (vs. low) in this trait are less likely to rely on (or need to rely on) a signal that elicits support from others. Factor-analytic studies integrating PID-5 and Five-Factor Model traits have consistently identified a factor on which extraversion items loaded positively and detachment items loaded negatively (e.g., Suzuki et al., 2015). This pattern suggests that detachment may be positively associated with crying frequency, possibly because individuals high in detachment may need to draw more strongly on a salient social signal such as crying to obtain interpersonal support. However, this association is likely to be modest, as detachment is also characterized by social withdrawal, which should counteract this process. Psychoticism was expected to be positively associated with crying frequency, as previously demonstrated (Barthelmäs & Keller, 2021). For antagonism, we did not expect a strong relation, as neither honesty-humility nor agreeableness was strongly linked to crying frequency (Barthelmäs & Keller, 2021). Disinhibition presents a more complex case. Facets of this trait, such as impulsivity, could imply more frequent crying, for instance, due to more rapid emotional "breakthroughs" and reduced capacity for emotion modulation. However, empirical

[1] Emotionality from the HEXACO framework was measured, which is comparable, but not identical to Neuroticism (Asthon et al., 2014).

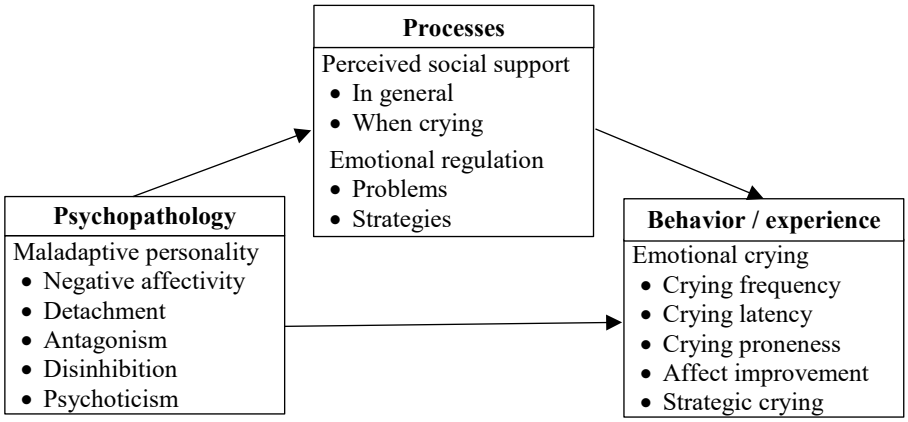
findings for the related Five-Factor Model trait, conscientiousness, are inconsistent. Although conscientiousness was not associated with crying frequency in two studies (Barthelmäs & Keller, 2021; De Fruyt, 1997), one study reported a negative trend (Peter et al., 2001). Given these limited and mixed findings, we refrained from formulating a directional hypothesis regarding disinhibition.

The tendency to cry over positive or negative events is referred to as "crying proneness" (Denckla et al., 2014). Previous research has consistently shown that this aspect was positively associated with neuroticism, leading us to expect a positive association with negative affectivity (Peter et al., 2001; Rottenberg et al., 2008). Because associations with other traits have been more heterogeneous, we restricted our hypotheses for crying proneness to negative affectivity.

Another aspect of crying that has been the focus of research is whether, and under what circumstances, people feel better after crying, that is, whether it has a cathartic effect (e.g., Gračanin et al., 2015). In this work, we refer to this phenomenon as "affect improvement". Findings suggest that this effect takes time to develop (Gračanin et al., 2015), and it appears more likely when crying occurs in the presence of a close other (Bylsma et al., 2008, 2011). Barthelmäs and Keller (2021) and De Fruyt (1997) found a positive association between extraversion and affect improvement (although Peter et al., 2001, and Rottenberg et al., 2008, did not find this relation). This suggests that detachment may be negatively associated with affect improvement. Emotionality was not associated with affect improvement (Barthelmäs & Keller, 2021; Peter et al., 2001), which is why we did not expect a relation between negative affectivity and affect improvement either. Although honesty-humility and agreeableness were positively associated with affect improvement (Barthelmäs & Keller, 2021; Peter et al., 2001), it remains unclear whether this translates into a negative relation with antagonism. Therefore, we did not propose a hypothesis for antagonism.

Figure 1

Conceptual Idea Underlying the Present Work



The fact that emotional crying can be used strategically has been discussed in the literature (Becker et al., 2018; Kottler, 1996; Messmer, 2009), and studies have examined whether real crying has a different effect on observers than fake crying (Pittarello & Motro, 2024; Van Roeyen et al., 2020). However, little is known about how often people use crying strategically to achieve personal goals and which individuals use this strategy. In the following, we refer to this type of crying behavior as "strategic crying." We expected strategic crying to be particularly associated with antagonism, as it fits the deceptive and manipulative behavioral repertoire of this trait. Because it is unclear how frequently this behavior is exhibited (we suspect it is very rare), and it is considered socially undesirable (we suspect it is reported less often than it occurs), it was difficult to make additional predictions.

Potential Processes in the Psychopathology-Crying Association

The above considerations suggest that maladaptive personality traits and emotional crying are related, but the underlying processes are not well understood. In this work, we examined two concepts that may play a role as mediators, namely perceived social support and emotion regulation strategies.

Perceived social support refers to a person's subjective impression of the support available to them, particularly in times of challenge (Fydrich et al., 2009; Lin et al., 2019). Several studies have shown that perceived social support serves a protective function against psychopathology (Norris & Kaniasty, 1996; Rueger et al., 2016; Wang et al., 2018). In the context of emotional crying, evidence suggests that crying is associated with affect improvement, particularly when a close companion is present (Bylsma et al., 2008, 2011). Based on this, one might assume that affect improvement following crying is positively associated with perceived social support. Considering the PID-5 traits, we expected detachment to be negatively associated with perceived social support. This assumption is supported by evidence showing a positive relation between extraversion and perceived social support (Barańczuk, 2019), as well as research indicating negative associations between perceived social support and social withdrawal (Xiong et al., 2023) and between perceived social support and loneliness (Zhang & Dong, 2022). We therefore proposed that perceived social support mediates the relation between detachment and affect improvement.

Emotion regulation refers to the process by which individuals influence which emotions they experience, when they experience them, and how they express them (Gross, 1998; Gross & Thompson, 2007; Webb et al., 2012). The process model of emotion regulation posits that emotions unfold over time in a general sequence, with regulation strategies available at different stages of this process (Barrett et al., 2007; Gross, 2015). For instance, suppressing emotional expression targets the final stage of this sequence and has been consistently linked to psychopathology (Aldao et al., 2010; Lincoln et al., 2022). Notably, crying is a form of emotional expression and therefore a plausible downstream outcome of emotion regulation processes. From

this perspective, emotion regulation difficulties may manifest as dysregulated crying, whereas reduced crying may indicate a habitual tendency to suppress emotional expression. More broadly, difficulties in emotion regulation are considered transdiagnostic mechanisms underlying various forms of psychopathology and are a key focus of psychotherapeutic interventions (Cludius & Ehring, 2024; Sheppes et al., 2015). Psychopathology has also been linked to crying. Although findings on emotional crying in depression are mixed (Vingerhoets et al., 2007), crying-related symptoms are included in most depression screening instruments, suggesting clinical relevance. In addition, at least one study reported a negative association between subjective well-being and crying (Barthelmäs & Keller, 2021). Taken together, these considerations render it plausible that emotion regulation mediates the association between psychopathology and crying. However, in contrast to our specific prediction regarding perceived social support, it is challenging to determine which particular emotion regulation strategies or difficulties mediate the specific associations between psychopathology and crying. Therefore, we investigated the role of emotion regulation in this relation in an exploratory manner, without formulating specific hypotheses.

Study Overview

In two cross-sectional studies, we examined the relation between maladaptive personality traits and emotional crying, and studied perceived social support and emotion regulation as mediators in this relation. For both studies, we report all measures, data exclusions, and the procedures used to determine sample size. All data, materials, analytic methods, and code reported in this article can be accessed via the Open Science Framework (https://osf.io/p7d3g). The preregistration for Study 2 is available at https://aspredicted.org/55sq-63pt.pdf.

Study 1

Materials and Methods

The study was approved by the local ethics committee. All participants provided informed consent and received £ 2.00 (approx. $2.50) as compensation. We withdrew the preregistration for Study 1 (see details in the supplemental material; https://osf.io/p7d3g).

Sample

All participants were recruited via Prolific. The sample comprised N = 545 native English-speaking participants from the United States (256 women, 269 men, 20 non-binary), ranging in age from 20 to 76 years (M_{age} = 42.3, SD_{age} = 11.9). To

ensure sufficient variance in PID-5 traits, we recruited individuals from Prolific who had indicated "yes" when asked, "Are you currently diagnosed with a mental health condition?" Because there were no prior findings on this topic, the sample size was determined arbitrarily. However, it falls within a range where stable estimates for correlations can be assumed (Schönbrodt & Perugini, 2013). Additional descriptive information is depicted in the supplemental material.

Procedure

We first collected information on emotional crying. Next, participants filled in the PID-5 (Maples et al., 2015), the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003), the Difficulties in Emotion Regulation Scale (DERS; Hallion et al., 2018), the Satisfaction with Life Scale (SWLS; Diener et al., 1985), the Perceived Social Support Questionnaire (PSSQ; Lin et al., 2019), and the "expression of emotion is a sign of weakness (EESW)" subscale from the Attitudes Towards Emotional Expression Scale (AEE; Joseph et al., 1994). The study included three attention check items. Participants were excluded if they answered at least one of the items incorrectly ($n = 15$).

Measurements

Unless otherwise stated, all items were measured on a 7-point Likert scale, with answers ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Crying Variables. Before assessing the crying variables, we defined emotional crying to ensure that all participants had the same concept in mind: "By 'crying,' we mean that you had at least teary eyes due to an emotional reason. In this study, we are interested in all intensities of crying, whether it was an incident in which you 'only' got wet eyes or a situation in which you sobbed profusely."

Crying latency was assessed with the following item: "When was the last time you cried?" and 12 multiple choice options (1 = *today*, 12 = *I have never cried in the last 5 years*; Becht & Vingerhoets, 2002). Crying frequency was measured with the item "How often have you cried during the last 4 weeks?" (open-ended response; Becht & Vingerhoets, 2002). To keep the study within a feasible length and reduce compensation costs, we assessed crying proneness for positive and negative events with a single item each ("Positive experiences make me cry"; "Negative experiences make me cry") measured on 7-point Likert scales with answers ranging from 1 (*never*) to 7 (*often*). Affect improvement after crying was assessed as in Barthelmäs and Keller (2021). Participants read the following instruction: "Please indicate how you typically feel after crying. We are interested in the long-term effects of crying, that is, how you feel 2 hours after crying compared to just before crying." Participants could rate their affective state by selecting one of nine graphical illustrations, ranging from 1 (*more negative*) through 5 (*same*), to 9 (*more positive*). The use of strategic crying was measured with four items: "I sometimes shed tears, perhaps to turn a

situation in my favor"; "Occasionally I tend to cry, perhaps in the hope that it will make someone else do something"; "Sometimes I shed tears in order to better achieve my goals"; and, "I cry on purpose, e.g., to give myself an advantage." These items were measured on a 7-point Likert scale with answers ranging from 1 (*never*) to 7 (*often*). A McDonald's omega of ω = .92 indicated that the scale was reliable. To our best knowledge, no established measure is available to assess this aspect of crying, which is why we developed these items. We measured how regularly participants feel ashamed when crying and how often they receive support from others when crying, each with a single item ("Is it typical for you to feel ashamed when you cry?"; "Do you usually receive comfort from others when you cry?"). These items were also measured on a 7-point Likert scale, with answers ranging from 1 (*never*) to 7 (*most of the time*).

We also collected information on the last crying episode, including its duration, intensity, location, what triggered the crying, whether others were present, how close the participant felt to them, and whether support was provided.

Personality Inventory for DSM-5. We used parts of the 100-item version of the PID-5 (Maples et al., 2015) to assess maladaptive personality traits, namely negative affectivity (ω = .91), detachment (ω = .92), antagonism (ω = .93), disinhibition (ω = .92), and psychoticism (ω = .92). Because only 60 items are needed to construct the five higher order factors, we administered only these items due to resource constraints and omitted the remaining 40 items that assess additional facets of maladaptive personality (e.g., risk taking, attention seeking, and callousness).

Perceived Social Support Questionnaire. We used a brief version of the PSSQ (ω = .92; Lin et al., 2019[2]) with six items to assess perceived social support. A sample item reads "I receive a lot of understanding and security from others."

Emotion Regulation Questionnaire. The ERQ consists of ten items, with four items assessing the suppression facet (ω = .85) and six items assessing the reappraisal facet (ω = .93; Gross & John, 2003). A sample item for reappraisal reads "When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about." A sample item for suppression reads, "I keep my emotions to myself."

Difficulties in Emotion Regulation Scale. Emotion regulation problems were assessed using the DERS, which consists of 36 items (ω = .96; Hallion et al., 2018). A sample item reads "I am clear about my feeling (reversed)". These items were

[2] In the literature, the questionnaire is also referred to as F-SozU K-6, which refers to the original German title of the scale (Fragebogen zur Sozialen Unterstützung Kurzform mit sechs Items).

measured with a 7-point Likert scale, with answers ranging from 1 (*never*) to 7 (*often*).

Satisfaction with Life Scale. We used the SWLS (ω = .95; Diener et al., 1985) to assess subjective well-being with five items. A sample item reads, "In most ways my life is close to my ideal."

Expression of Emotion is a Sign of Weakness. We measured the "expression of emotion is a sign of weakness (EESW)" subscale from the Attitudes Towards Emotional Expression Scale (AEE; Joseph et al., 1994) using five items (ω = .90). A sample item reads, "I think getting emotional is a sign of weakness."

Data Analytic Strategy

We examined the associations between the measured variables using Pearson correlation coefficients (e.g., the relations between crying frequency and the PID-5 traits), mediation analyses (e.g., to test whether social support mediated the negative relation between detachment and affect improvement), and group mean differences (e.g., mean differences on detachment depending on whether participants cried alone or in the presence of others). Crying frequency was highly skewed. Values exceeding 50 crying episodes within the past 4 weeks were trimmed to 50, this adjustment affected three cases in which participants originally reported 60, 100, and 280 episodes. Additional analyses in which we regressed the crying variables on the PID-5 traits are reported in the supplemental material.

Analyses were conducted using R (R Core Team, 2024; version 4.4.1) within RStudio (Posit Team, 2024; 2024.4.2.764). We used the PROCESS macro (for R; version 4.3.1; model 4) provided by Hayes (2013) for the mediation analyses. When interpreting the effect sizes of the correlations, we adapted the cutoff values from Funder and Ozer (2019; $r \approx .05$ very small effect; $r \approx .10$ small effect; $r \approx .20$ medium effect; $r \approx .30$ large effect; $r \approx .40$ very large effect).

Results

Descriptive Statistics

Descriptive statistics and bivariate correlation coefficients among the involved variables are depicted in Table 1. In the past 4 weeks, participants cried an average of 4.13 times (SD = 6.45), with the most recent crying episode occurring approximately 1 week ago (M = 4.24, SD = 2.57). On average, affect after crying improved slightly (M = 5.30, SD = 1.76). Strategic crying was used seldom (M = 1.69, SD = 1.22). Means for the PID-5 traits ranged between $M_{\text{antagonism}} = 2.13$ (SD = 1.20) and $M_{\text{negative affectivity}} = 3.48$ (SD = 1.40).

Table 1

Descriptive Statistics and Bivariate Correlation Coefficients for Study 1

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Crying latency		**-.42**	**-.24**	**-.32**	-.08	.00	.03	-.09	.03	.06	**-.20**	**.21**	**.11**	.02	**-.27**	**-.16**	.05	**-.12**	**-.11**
2. Crying frequency			**.23**	**.30**	-.04	-.04	**-.13**	**.11**	.01	-.07	**.20**	**-.21**	**-.19**	.02	**.19**	**.13**	-.06	**.13**	.05
3. Crying proneness pos				**.26**	**.23**	**.24**	**.16**	.00	**-.09**	.04	.04	**.18**	**.17**	-.07	**.17**	-.06	.06	.09	.09
4. Crying proneness neg					-.02	**.16**	**.10**	.08	-.05	**-.10**	**.15**	.00	-.05	.00	**.41**	.01	.03	**.15**	**.13**
5. Affect improvement						**.11**	**.21**	**-.15**	**-.16**	**.17**	**-.20**	**.22**	**.23**	**-.15**	**-.09**	**-.19**	-.04	-.07	**-.09**
6. Strategic crying							**.28**	**.21**	**15**	.08	**.21**	**.26**	**.09**	**.34**	**.33**	**.14**	**.60**	**.38**	**.48**
7. Support when crying								**-.09**	**-.23**	**.20**	**-.24**	**.46**	**.52**	**-.18**	.04	**-.34**	**.16**	-.06	.05
8. Shame when crying									**.27**	**-.13**	**.45**	**-.17**	**-.23**	**.46**	**.34**	**.29**	**.23**	**.34**	**.28**
9. ERQ suppression										.03	**.38**	**-.23**	**-.33**	**.43**	**.16**	**.44**	**.21**	**.24**	**.30**
10. ERQ reappraisal											**-.42**	**.33**	**.31**	**-.14**	**-.24**	**-.29**	.05	**-.22**	-.04
11. DERS												**-.44**	**-.45**	**.51**	**.62**	**.61**	**.26**	**.67**	**.49**
12. SWLS													**.58**	**-.16**	**-.20**	**-.52**	**.14**	**-.22**	**-.09**
13. PSSQ														**-.33**	**-.17**	**-.55**	.06	**-.21**	**-.17**
14. EESW															**.31**	**.45**	**.43**	**.47**	**.50**
15. Negative affectivity																**.37**	**.30**	**.53**	**.46**
16. Detachment																	**.21**	**.49**	**.39**
17. Antagonism																		**.54**	**.53**
18. Disinhibition																			**.65**
19. Psychoticism																			
M	4.24	4.13	3.69	4.85	5.30	1.69	3.70	3.22	3.76	4.63	3.10	3.81	4.70	2.29	3.48	3.12	2.13	2.58	2.45
SD	2.57	6.45	1.70	1.54	1.76	1.22	1.83	1.89	1.51	1.38	1.13	1.86	1.65	1.38	1.40	1.45	1.20	1.24	1.30

Note. ERQ = Emotion Regulation Questionnaire; DERS = Difficulties in Emotion Regulation Scale; SWLS = Satisfaction with Life Scale; PSSQ = Perceived Social Support Questionnaire; EESW = Expression of Emotion is a Sign of Weakness.
bold: $p < .05$.

Associations Between PID-5 and Crying Variables

Negative affectivity, detachment, disinhibition, and psychoticism were negatively associated with crying latency. Given the strong negative association between crying latency and crying frequency, these traits showed inverse associations with crying frequency, with a large correlation for negative affectivity and small correlations for the other traits. Crying proneness (both due to positive [small effect] and negative reasons [very large effect]) was associated with negative affectivity. Additionally, detachment was negatively associated with affect improvement after crying (small effect). Strategic crying was most strongly associated with antagonism (very large effect), and showed positive associations with negative affectivity, disinhibition, and psychoticism (large to very large effects). All PID-5 traits were positively associated with feeling ashamed when crying (medium to large effects), but only detachment was negatively associated with receiving support when crying (large effect). Additional analyses in which we regressed these crying variables on the PID-5 traits are reported in the supplemental material (Tables S1, S2, S3, S4, S5, and S6).

Associations Between PID-5 and Emotion Regulation, Well-Being, and Social Support

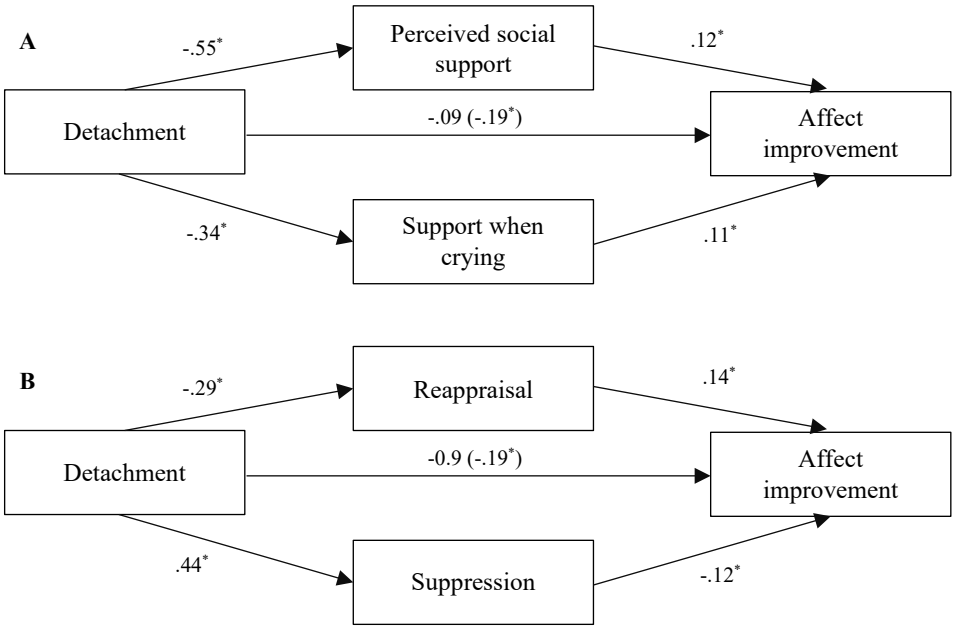
All PID-5 traits were positively associated with emotion suppression, with the strongest association observed for detachment (very large effect). Negative affectivity, detachment, and disinhibition were associated with lower levels of reappraisal (medium effects). All PID-5 traits showed positive associations with emotion regulation problems (DERS; medium to very large effects) and the belief that expressing emotions is a sign of weakness (EESW; large to very large effects). Except for antagonism, all PID-5 traits were associated with lower subjective well-being (SWLS; small to very large effects) and lower perceived social support (PSSQ; medium to very large effects), with detachment showing the strongest negative associations. Among the crying variables, affect improvement showed the strongest relations to suppression and reappraisal of emotions, which is why we only report on the respective mediation model for affect improvement.

Mediators in the Association Between Detachment and Affect Improvement

The relation between detachment and affect improvement was mediated by perceived social support (both in general and when crying) and by reappraisal and suppression of emotions (see Figure 2).

Figure 2

Relation Between Detachment and Affect Improvement Mediated by (A) Perceived Social Support and Support When Crying, and by (B) Reappraisal and Suppression



Note. Standardized regression coefficients are reported and total effects are shown in parentheses. *$p < .05$; indirect effects: perceived social support: *ab* = -.07, *BootSE* = 0.03, 95% CI [-0.13; -0.003], support when crying: *ab* = -.04, *BootSE* = 0.02, 95% CI [-0.08; -0.001], reappraisal: *ab* = -.04, *BootSE* = 0.01, 95% CI [-0.07; -0.02], suppression: *ab* = -.05, *BootSE* = 0.02, 95% CI [-0.10; -0.01].

Additional analyses of the most recent crying episode further highlighted the role of social support. Detachment was negatively associated with the extent to which individuals felt close to another person (or people) present during the episode (r_S = -.20; Table S7). Participants who cried alone had higher detachment scores than those who cried in company (*d* = .31; Table S8). Individuals who did not receive help had higher detachment scores than those who did (*d* = .17; Table S9). For these analyses, mean differences/associations for the other PID-5 traits were smaller.

Discussion

The PID-5 trait of negative affectivity showed the strongest association with both crying frequency and crying latency, consistent with similar findings for emotionality (Barthelmäs & Keller, 2021) and neuroticism (De Fruyt, 1997; Peter et al., 2001; Vingerhoets et al., 2000). Detachment was negatively associated with affect improvement after crying. Additional analyses, including mediation analyses, suggested that this may be due to lower perceived social support. This is consistent with previous findings showing that crying is perceived as especially cathartic when a close companion is present (Bylsma et al., 2008, 2011). This supports the idea that the cathartic and social functions of emotional crying are intertwined, so affect after crying is most likely to improve when support is received (Gračanin et al., 2018). Further mediation analyses showed that the association between detachment and affect improvement could also be explained by emotion regulation. Detachment was negatively associated with reappraisal and positively associated with suppression, both of which had indirect effects on affect improvement. This aligns with findings evaluating reappraisal as a more functional emotion regulation strategy compared to suppression (e.g., Gross & John, 2003). Taken together, these findings suggest that beneficial emotion regulation does not occur in isolation, but rather within a supportive social context (e.g., Williams et al., 2018).

Strategic crying had a low prevalence and was most strongly associated with the PID-5 trait antagonism. This aligns with the conceptualization of the trait and, to our knowledge, is reported here for the first time. Strategic crying was also positively related to negative affectivity, disinhibition, and psychoticism, but when all traits were considered together in a regression analysis (see Table S6), antagonism had the strongest effect. Overall, all PID-5 traits were associated with problematic emotion regulation (e.g., suppression), dysfunctional attitudes toward emotional expression (i.e., viewing it as a sign of weakness), and reduced subjective well-being (except for antagonism). These associations highlight the importance of addressing emotion regulation strategies in the treatment of psychopathologies (Aldao et al., 2010; Cludius & Ehring, 2024; Lincoln et al., 2022; Sheppes et al., 2015).

In designing this study, we assumed that emotion regulation might be relevant in explaining the associations between PID-5 traits and crying. Except for affect improvement, the present study did not allow for a more in-depth examination of these processes, primarily due to two aspects. First, no (or only small) bivariate associations were found between the remaining crying variables and the ERQ dimensions of suppression and reappraisal. Second, the DERS and EESW were strongly associated with all PID-5 traits, raising concerns about whether they can be distinguished from PID-5 traits in terms of discriminant validity. Although statistical analyses did indicate indirect effects via the DERS for nearly every association between PID-5 traits and crying latency/frequency, we refrained from reporting and interpreting these analyses due to the questionable distinction between the predictor and the potential mediator.

Given that we examined a large number of associations in Study 1, there is a risk that some of the findings may represent false positives, which could render the results and their interpretation open to question.

Study 2

We conducted a second, preregistered study to test the robustness of the associations between the PID-5 traits and the crying variables. We also updated our hypotheses; specifically, we additionally expected a positive association between disinhibition and crying frequency as well as a negative association between disinhibition and crying latency. Furthermore, we expected positive associations between strategic crying and negative affectivity, disinhibition, and psychoticism. Additionally, we employed all items from the PID-5 to further explore associations between maladaptive personality and emotional crying. We also aimed to gain a deeper understanding of the role of emotion regulation strategies. Instead of using the DERS, the ERQ, or the EESW, we employed the Process Model of Emotion Regulation Questionnaire (PMERQ; Olderbak et al., 2023), for which construct validity has been demonstrated and which allows for the differentiation between individual differences in the strategy stage and the orientation of emotion regulation. Specifically, five distinct families of emotion regulation strategies are proposed, each corresponding to different stages of the emotional sequence (Gross, 2015; Olderbak et al., 2023).

The first family, situation selection, includes strategies applied before an emotion-eliciting situation occurs, such as actively confronting or avoiding it. The second family, situation modification, consists of strategies aimed at altering the situation itself, such as problem-solving or circumventing difficulties. The third family, attentional deployment, encompasses strategies that regulate focus and attention. This may involve deliberately concentrating on specific aspects of the situation or redirecting attention toward other information. The fourth family, cognitive change, includes strategies that alter affective experience through cognitive reinterpretation. This may involve downplaying the importance of a situation or identifying positive aspects within a negative experience. Finally, the fifth family, response modulation, involves strategies that regulate the expression of emotions, such as openly sharing emotions with others or suppressing emotional responses. As these examples suggest, this conceptualization assumes that emotion regulation strategies generally fall into two broad orientations: engagement-focused and disengagement-focused strategies (Olderbak et al., 2023). As in Study 1, we kept the examination of the mediating role of emotion regulation strategies exploratory without specific hypotheses.

Materials and Methods

The study was approved by the local ethics committee. All participants provided informed consent and received £ 2.25 (approx. $2.90) as compensation.

Sample

The sample comprised $N = 560$ native English-speaking participants from the United States (279 women, 261 men, 20 non-binary), ranging in age from 18 to 78 years ($M_{age} = 37.5$, $SD_{age} = 12.7$). Participants were recruited as in Study 1, but individuals who participated in Study 1 were ineligible to take part in Study 2. Based on the associations observed in Study 1, $N = 560$ participants were required to detect the indirect effect via PSSQ with 83% power. A sample size of $N = 560$ allowed observation of the indirect effect over support when crying with 99% power (Schoemann et al., 2017). Additional descriptive information is provided in the supplemental material.

Procedure

We first collected information on emotional crying. Next, participants completed the PID-5, the PMERQ (Olderbak et al., 2023), and the PSSQ. The study included three attention check items. Participants were excluded if they answered any of the items incorrectly ($n = 12$).

Measurements

Crying variables and the PSSQ were assessed as in Study 1. The PID-5 was measured as in Study 1, but this time all 100 items were administered (negative affectivity: $\omega = .90$; detachment: $\omega = .89$; antagonism: $\omega = .92$; disinhibition: $\omega = .90$; psychoticism: $\omega = .90$; see the supplemental material for reliability estimates for the additional facets). The PMERQ (Olderbak et al., 2023) was used to assess emotion regulation strategies (engagement strategies: $\omega = .93$; disengagement strategies: $\omega = .93$; reliability estimates for the individual strategies are provided in the supplemental material).

Data Analytic Strategy

Analyses were conducted as in Study 1 (and as preregistered). As preregistered, values exceeding 50 for crying frequency were trimmed to 50 (three cases with values of 60, 80, and 80 were affected).

Results

Descriptive Statistics

Descriptive statistics and bivariate correlation coefficients among the involved variables are depicted in Table 2. Descriptive statistics were comparable to those in Study 1.

Table 2

Descriptive Statistics and Bivariate Correlation Coefficients for Study 2

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Crying latency		**-.45**	**-.28**	**-.32**	.00	**-.14**	.03	.00	.08	.00	-.02	**-.32**	**-.09**	-.02	**-.21**	**-.18**
2. Crying frequency			**.20**	**.24**	.00	**.08**	-.08	-.07	**-.12**	-.04	-.06	**.24**	**.13**	.00	**.14**	**.16**
3. Crying proneness pos				**.23**	**.14**	**.22**	**.14**	-.07	**.10**	.03	.04	**.15**	-.02	**.10**	**.13**	**.17**
4. Crying proneness neg					-.08	**.18**	**.15**	**.13**	.01	**.09**	**.12**	**.33**	-.04	.04	**.10**	**.15**
5. Affect improvement						**.14**	**.18**	.03	**.17**	**.12**	**.19**	**-.10**	**-.13**	**.15**	-.02	**.03**
6. Strategic crying							**.30**	**.14**	**.10**	**.19**	**.25**	**.27**	**.13**	**.65**	**.31**	**.43**
7. Support when crying								.07	**.45**	**.09**	**.25**	-.01	**-.29**	**.18**	-.07	.01
8. Shame when crying									-.01	**.25**	.05	**.21**	**.15**	**.16**	**.22**	**.16**
9. PSSQ										**.10**	**.42**	**-.15**	**-.47**	.06	**-.19**	**-.14**
10. ER disengagement											**.43**	**.23**	**.11**	**.17**	**.20**	**.25**
11. ER engagement												.03	**-.24**	**.20**	-.05	**.11**
12. Negative affectivity													**.41**	**.30**	**.58**	**.58**
13. Detachment														**.25**	**.50**	**.44**
14. Antagonism															**.45**	**.54**
15. Disinhibition																**.60**
16. Psychoticism																
M	3.93	4.39	3.85	5.05	5.63	1.89	3.86	3.32	5.05	4.60	4.56	3.76	3.18	2.38	2.87	2.93
SD	2.23	6.70	1.59	1.49	1.81	1.33	1.80	1.80	1.48	1.03	1.03	1.35	1.32	1.25	1.22	1.30

Note. PSSQ = Perceived Social Support Questionnaire; ER: Emotion Regulation.
bold: $p < .05$.

Associations Between PID-5 and Crying Variables

Study 2 revealed comparable associations between emotional crying and the PID-5 traits. All hypotheses were supported. We highlight the strongest predicted associations in the following: Negative affectivity was negatively associated with crying latency (large effect) and positively associated with crying frequency (medium effect). Negative affectivity was positively associated with crying proneness (due to both positive [small effect] and negative [large effect] reasons). Detachment was negatively associated with affect improvement (small effect), while antagonism was positively related with affect improvement (small effect). Antagonism was also positively associated with strategic crying (very large effect). Additional analyses in which we regressed these crying variables on the PID-5 traits are reported in the supplemental material (Tables S10, S11, S12, S13, S14, and S15).

All associations between the crying variables and the facets not considered in the five broad traits are depicted in Table S19. Risk taking, attention seeking, and callousness were positively associated with strategic crying (very large effects). Depressivity was negatively related to affect improvement and positively related to crying frequency (small to medium effects; no quadratic effect was observed, see Table S20). Restricted affectivity was negatively related to crying frequency (medium effect).

Associations Between PID-5, Emotion Regulation, and Social Support

All PID-5 traits were positively associated with emotion regulation disengagement (small to medium effects). Detachment was negatively associated with engagement (medium effect), and antagonism was positively associated with engagement (medium effect). Negative affectivity was positively associated with the strategies of avoiding unpleasant situations (situation selection disengagement) and cognitive distraction (attentional deployment disengagement). Detachment was negatively associated with considering benefits (cognitive reappraisal engagement) and seeking support through emotion sharing (response modulation engagement). Antagonism was positively associated with confronting unpleasant situations (situation selection engagement) and focusing elsewhere (attentional deployment engagement). Both disinhibition and psychoticism were positively associated with expressive suppression (response modulation disengagement) and cognitive distraction (mostly medium effects; see Table S21 for all associations).

Again, detachment showed the strongest negative association with perceived social support (very large effect). Among the crying variables, affect improvement and strategic crying were positively related to emotion regulation (dis)engagement (small to large effects), which is why we report on the mediation models for affect improvement and strategic crying. Affect improvement was positively associated with the strategies of resolving conflicts, focusing elsewhere, and considering benefits. Strategic crying was positively associated with confronting unpleasant situations, focusing elsewhere, and receiving support through emotion sharing (medium effects; see Table S22 for all associations).

Mediators in the Association Between Detachment and Affect Improvement

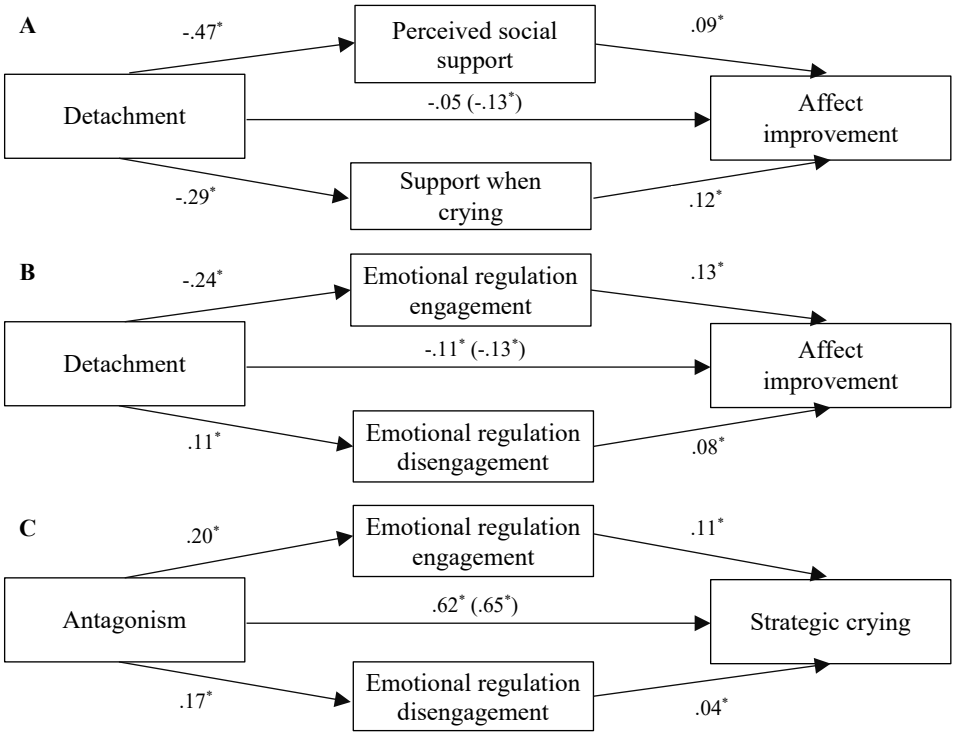
We replicated the mediation via support when crying, and the b-path of perceived social support on affect improvement pointed in the expected direction, but was not significant (p = .065; see Figure 3, part A). Additional analyses of the most recent crying episode further highlighted the role of social support (Tables S16, S17, and S18). Furthermore, we found that emotion regulation engagement also served as a partial mediator in this relation (part B).

Exploring the Mediating Role of Emotion Regulation in the Relation Between Antagonism and Strategic Crying

Emotion regulation engagement partially explained the relation between antagonism and strategic crying (see Figure 3, part C).

Figure 3

Mediation Analyses for Study 2



Note. Values refer to standardized regression coefficients and total effects are shown in parentheses, $^{*}p < .05$, indirect effects for Affect improvement: Perceived social support: *ab* = -.04, *BootSE* = 0.02, 95% CI [-0.00; 0.003], Support when crying: *ab* = -.04, *BootSE* = 0.02, 95% CI [-0.07; -0.007], Engagement: *ab* = -.04, *BootSE* = 0.02, 95% CI [-0.08; -0.01], Disengagement: *ab* = .01, *BootSE* = 0.01, 95% CI [-0.001; 0.032], indirect effects for Strategic crying: Engagement: *ab* = .02, *BootSE* = 0.01, 95% CI [0.01; 0.04], Disengagement: *ab* = .01, *BootSE* = 0.01, 95% CI [-0.004; 0.02].

Discussion

Study 2 replicated all predicted associations, confirming that the findings from Study 1 were not random but reflected reliable relations. In particular, we replicated the finding that the negative link between detachment and affect improvement was attributable to lower levels of perceived social support (when crying). Furthermore, we found sound associations between crying and personality facets not represented in the PID-5 traits. Attention seeking, which could also be rephrased as "histrionic", was positively associated with strategic crying and provides additional insight into who strategically uses emotional crying to achieve personal goals. Depressivity was positively associated with crying frequency, and we found no evidence of a quadratic link. Although some sources suggest that the relationship between depression and crying frequency follows an inverted U-shape – meaning low crying frequency at both low and high levels of depressivity and high crying frequency at moderate levels – our findings align more closely with the assumption of a linear positive association (Vingerhoets et al., 2007). However, it is likely that our sampling strategy did not capture individuals at the upper end of the symptom spectrum, such as those experiencing a severe major depressive episode.

We did not expect the following associations to be observed: antagonism was positively associated with affect improvement, which might reflect the successful application of strategic crying. Psychoticism was positively associated with both positive and negative crying proneness, consistent with its positive association with crying frequency.

The inclusion of the PMERQ provided valuable insights into the role of emotion regulation and represents a significant advancement compared to previously available inventories for assessing emotion regulation strategies. Unlike earlier approaches, the inventory allows assessment of strategies at all stages of the emotion sequence. No, or only small, bivariate associations were found with crying latency, crying frequency, and crying proneness, which is consistent with the pattern observed for the ERQ dimensions in Study 1 (see General Discussion). However, there were meaningful associations with affect improvement and strategic crying. Mediation models revealed that engagement-focused emotion regulation strategies partially explained the relation between detachment and affect improvement, as well as between antagonism and strategic crying. To highlight a specific strategy, high detachment scores appeared to be associated with difficulties in recognizing positive aspects in challenging situations (consider benefits), which partially accounted for the reduced improvement in affect. Notably, engagement strategies showed a strong positive association with perceived social support, suggesting that functional emotion regulation does not occur in isolation within an individual but rather within a supportive social context. We outline this perspective further below.

General Discussion

We examined the association between maladaptive personality traits and emotional crying in two studies involving individuals from the United States with a mental health diagnosis. Crying frequency was significantly higher in both samples compared to those not preselected for mental health diagnoses. The difference in crying frequency between Study 1 and the sample from Barthelmäs and Keller (2021) was $d = .45$. This finding supports the idea that emotional crying can serve as a signal of distress and need for support (e.g., Zickfeld & Wróbel, 2024). Consistent with this, crying frequency was negatively associated with life satisfaction (SWLS) in Study 1, and higher scores on most PID-5 traits (except antagonism) were also negatively related to SWLS. Of particular note is detachment, which showed the strongest negative association with SWLS. Furthermore, detachment was negatively linked to perceived social support, which, in both studies, mediated the negative association between detachment and affect improvement after crying. Our data thus provide new evidence from a different perspective regarding who benefits from crying and under what circumstances. Both studies indicate that crying is particularly cathartic when individuals perceive social support, either during the act of crying or more generally in life. This aligns with previous research showing that crying is most likely to be experienced as cathartic when a close person is present and offers support (e.g., Bylsma et al., 2011). When comparing PID-5 traits, negative affectivity showed the strongest positive association with crying frequency and crying proneness, consistent with comparable findings for neuroticism or emotionality (Barthelmäs & Keller, 2021; Vingerhoets et al., 2000).

Our exploratory analyses of the role of emotion regulation strategies in the psychopathology-crying relation revealed intriguing associations for affect improvement and strategic crying. Lower levels of reappraisal (Study 1), use of suppression (Study 1), and lower levels of engagement-focused emotion regulation strategies (Study 2) partially mediated the negative relation between detachment and affect improvement. This provides additional evidence that expressive suppression may be better understood as a dysfunctional strategy, whereas reappraisal and engagement-focused strategies appear to be more beneficial (e.g., Gross & John, 2003). In line with this, Olderbak and colleagues (2023) showed that most engagement-focused emotion regulation strategies were positively associated with well-being and perceived social support and negatively associated with ill-being and loneliness.

Highlighting the Social Dimension of Beneficial Emotion Regulation

The present findings support the view that beneficial emotion regulation occurs not in isolation but within social contexts. Specifically, perceived social support was positively associated with beneficial regulation strategies (reappraisal in Study 1 and

engagement in Study 2). Except for antagonism, perceived social support was negatively associated with all PID-5 traits. In Study 1, life satisfaction and perceived social support were strongly linked. Mediation analyses further suggested that perceived social support (and emotion regulation strategies partially) explained the negative association between detachment and affect improvement. While past research has largely focused on how individuals regulate their own emotions, recent work highlights the social dimension of emotion regulation (DiGiovanni & Ochsner, 2024; Niven, 2024; Reeck et al., 2016). Attachment theory (Mikulincer & Shaver, 2024) emphasizes that close relationships foster regulation through both momentary co-regulation and long-term development of regulatory skills. Securely attached individuals, for example, tend to use more adaptive strategies like reappraisal and support seeking (Mikulincer & Shaver, 2024). Developmentally, emotion regulation begins as a social process: children rely on caregivers for co-regulation, modeling, and guidance to build self-regulation (Cooke et al., 2019; Girme et al., 2021; Zimmer-Gembeck et al., 2022). In adulthood, interpersonal strategies such as sharing emotions or seeking comfort can strengthen social bonds and buffer stress (Williams et al., 2018). Overall, these findings suggest that emotion regulation – particularly in the context of crying – cannot be fully understood without accounting for its social aspects.

Thoughts on Why We Did not Observe Associations Between Certain Crying Variables and Emotion Regulation

We were somewhat surprised that neither the ERQ dimensions nor the PMERQ were substantially associated with crying frequency or crying latency. One might have expected, for example, that the positive association between negative affectivity and crying frequency would be mediated by the excessive use or lack of certain emotion regulation strategies. However, neither study supported this. Several possible explanations exist for the absence of such associations. One possibility is that the triggers for frequent crying are more strongly rooted in situational factors (e.g., personal hardships, conflicts with a partner) rather than in habitual emotion regulation patterns. Another possibility is that the ERQ and PMERQ capture the use of specific emotion regulation strategies, but not how successful individuals are at regulating their emotions overall. In Study 1, we found that the DERS – conceptualized as a measure of general difficulties in emotion regulation – was associated with the crying variables, which supports this interpretation. However, we consider it important to emphasize once more that the discriminant validity of the DERS relative to the PID-5 is questionable, given the very high correlations observed between these measures. Alternatively, the differing levels of abstraction across the constructs may help explain the lack of associations. This interpretation aligns with the Brunswik symmetry principle (e.g., Wittmann & Suess, 1999), which states that when two constructs are measured at different levels of abstraction, their empirical correlation will underestimate their true relationship (Nesselroade & McArdle,

1997). Crying frequency and crying latency refer to specific crying behaviors, whereas emotion regulation inventories capture broader, more general patterns in how individuals manage their emotions. Consistent with this explanation, we observed robust associations between strategic crying, affect improvement, and the emotion regulation measures, as these constructs operate at a comparable level of abstraction (i.e., all reflect relatively general behavioral tendencies). However, an inconsistency in this explanation arises from the fact that we did find associations between the relatively abstract PID-5 traits and crying frequency. Ultimately, we cannot provide a definitive answer as to why some associations between psychopathology and crying are mediated by emotion regulation strategies, while others are not.

Remarks on the Topic Strategic Crying

Although some ideas have been proposed regarding strategic crying, little empirical evidence supports this topic. Two aspects of our findings appear particularly informative. Among the crying-related variables, strategic crying had by far the lowest mean, suggesting that emotional crying is rarely used deliberately for strategic purposes. However, it is important to consider that such behavior may be viewed as socially undesirable and therefore underreported. Although antagonism had the lowest average trait level in both studies, it was strongly positively associated with strategic crying. Similar patterns emerged for related facets not represented in the PID-5 traits, such as risk taking, attention seeking, and callousness. Regression analyses from both studies further suggest that although bivariate associations were observed for nearly all PID-5 traits, antagonism appears to be the central trait related to this behavior.

Limitations

Both studies used a cross-sectional design. Although mediation analyses are presented, temporal ordering cannot be established, limiting the ability to draw causal conclusions. Any interpretation suggesting mechanisms or directional effects should therefore be made with caution. As suggested by Barthelmäs et al. (2024), future studies examining emotional crying might employ daily diary approaches that are less susceptible to recall bias. However, the present design also has advantages that experimental studies do not offer. Affect improvement in laboratory settings is typically tied to a specific scenario (e.g., Gračanin et al., 2015), whereas we were able to examine affect improvement at a more general level. Additionally, we examined a selective sample limited to individuals from the United States with self-reported mental health status. Consequently, further research is needed to determine the extent to which the findings can be generalized to other regions and populations.

Conclusion

We demonstrate that various aspects of psychopathology are linked to emotional crying. The higher a person scored on negative affectivity, the more frequently they cried and the greater their general tendency to cry. The higher individuals scored on detachment, the less likely they were to feel better after crying. The higher individuals scored on antagonism, the more likely they were to strategically use emotional crying to achieve their goals. Mediation analyses revealed that some of these associations could be partially explained by perceived social support and the use of specific emotion regulation strategies. Lower perceived social support mediated the relation between detachment and affect improvement. Lower levels of reappraisal and engagement-focused emotion regulation strategies, as well as an increased use of suppression, also partially accounted for this relation, suggesting that beneficial emotion regulation is embedded within a social context. Furthermore, the use of engagement-focused emotion regulation strategies partially mediated the link between antagonism and the strategic use of tears. In summary, our findings offer new insights into emotion regulation and expression in psychopathology.

Author Contribution Statement. Michael Barthelmäs: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Writing – Original draft, Writing – Review & Editing. **Dominik Stöckle:** Formal analysis, Writing – Review & Editing. **Maya Rosenblatt:** Investigation, Writing – Review & Editing. **Johannes Keller:** Resources, Writing – Review & Editing.

Ethics Statement. Approval was obtained from the local ethics committee at Ulm University (No. 359/20). The procedures used in these studies adhere to the tenets of the Declaration of Helsinki.

Data Availability Statement. All data, materials, and analytic methods and code reported in this article can be accessed via the Open Science Framework (https://osf.io/p7d3g). Supplemental material is also available on the journal's website (https://pt.ffri.hr/pt/issue/view/52).

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