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Research paper

The role of self-compassion in the relationship between attachment, depression, and quality of life

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ABSTRACT

Background: Self-compassion may be shaped by early attachment experiences, and has been linked to mental health and well-being. This study examined the role of two distinct features of self-compassion, self-warmth and self-coldness, in the relationship between attachment insecurity and depression as well as quality of life in a general population sample in Germany.

Methods: Participants (N = 2,253; 53.4% female, M_{age} 50 years) completed the Self-Compassion Scale (SCS), Adult Attachment Scale (AAS), Beck Depression Inventory-Fast Screen (BDI-FS), and European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30). Mediation analysis was used to examine whether insecure attachment predicted increased symptoms of depression and decreased quality of life through decreased self-warmth and increased self-coldness.

Results: Attachment-related anxiety and avoidance had a significant direct effect on depressive symptoms and significant indirect effect via self-warmth and self-coldness. The indirect effect via self-warmth appears to be of negligible magnitude. Attachment-related anxiety and avoidance had a significant direct effect on quality of life, and significant indirect effect via self-coldness. The indirect effect via self-warmth was not statistically significant, speaking against self-warmth as a relevant mediator.

Limitations: Causal conclusions cannot be drawn based on cross-sectional research design. All measures were based on participant self-report.

Conclusions: This study contributes to a more differentiated understanding of how attachment insecurity and self-compassion may contribute to affective disorders. Findings suggest that self-coldness may be particularly relevant in affective disorders and when addressing relational struggles, with both theoretical and clinical implications for psychotherapy and future research.

1. Introduction

There are a several definitions and conceptualizations of compassion (Gilbert et al., 2017; Gilbert et al., 2004; Neff, 2016; Strauss et al., 2016) which identify the cognitive, affective, and behavioural dimensions of recognizing and responding to suffering. Neff's Self-Compassion Scale (Neff, 2003b) operationalizes self-compassion as exercising kindness and non-judgment towards oneself when faced with failure or suffering. While widely used in research, this definition continues to generate debate (Muris et al., 2019; Muris and Petrocchi, 2016). Self-compassion is linked to psychological well-being (Zessin et al., 2015), and lower levels of stress and psychopathology (Körner et al., 2015; Krieger et al., 2013; MacBeth and Gumley, 2012; Pinto-Gouveia et al., 2014; Shapira and Mongrain, 2010; Van Dam et al., 2011). Research investigating the origins of self-compassion suggests that the ability to be self-compassionate may be shaped by early attachment experiences (Gillath et al., 2005; Neff and McGehee, 2010; Shaver et al., 2017). Insecure attachment styles have been associated with psychopathology and lower quality of life in adulthood (Mikulincer and Shaver, 2012; Raque-Bogdan et al., 2011; Wei et al., 2011), but are a challenging

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target for therapeutic change as attachment styles are thought to be relatively stable by late adolescence (Mackintosh et al., 2018; Raque-Bogdan et al., 2011). Understanding the possible mediating factors through which attachment influences psychopathology and quality of life can help to guide mental health professionals in facilitating change. This study examines whether two distinct features of self-compassion (self-warmth and lack of self-coldness) are mechanisms through which attachment is associated with mental health and quality of life in adulthood.

1.1. Attachment, psychopathology, and quality of life

Attachment theory (Bowlby, 1969, 1973) is based on the understanding that human beings are motivated to seek proximity to significant others (*attachment figures*) during times of need or when distressed as part of an innate psychobiological system (*attachment behavioural system*; Mikulincer and Shaver, 2012). Furthermore, early life experiences with attachment figures shape key internal working models of self and others. When attachment figures are sensitive and responsive, individuals form positive mental representations of their worthiness of care, and the ability of others to provide care in times of need (Mikulincer and Shaver, 2012; Shaver et al., 2017). When attachment figures are not reliably supportive, proximity seeking fails to provide comfort, security is not obtained, and negative working models are formed (Shaver et al., 2017).

An individual's *attachment style* is informed by these early interactions with caregivers, and is formulated based on a pattern of relational expectations, emotions, and behaviours (Bowlby, 1969, 1973; Mikulincer and Shaver, 2012; Shaver et al., 2017). Attachment style can be conceptualized and measured in terms of two independent dimensions: attachment-related *anxiety* and attachment-related *avoidance* (Ainsworth, 1978; Brennan et al., 1998). High levels of attachment anxiety are associated with feelings of unworthiness, relational distress, and excessive worry about the availability and responsiveness of others (Raque-Bogdan et al., 2011). High levels of attachment avoidance are associated with discomfort with intimacy, suppressing emotional responses, and striving to maintain self-reliance and behavioural independence (Mikulincer and Shaver, 2012; Raque-Bogdan et al., 2011). Individuals who report low attachment anxiety and avoidance are thought to be securely attached, and report higher levels of adaptive emotion regulation, positive self and other perceptions, and greater levels of psychological well-being (Raque-Bogdan et al., 2011).

Early attachment experiences have important implications for mental health and quality of life across the lifespan. The enduring consequences of an individual's attachment style on emotional, behavioural, and relational patterns (Shaver et al., 2017) have the potential to reduce an individual's resilience to stressful life events (Mikulincer and Shaver, 2012) and impact the quality of their interpersonal relationships (Collins, 1996; Collins and Read, 1990; Shaver et al., 2000; Torquati and Vazsonyi, 1999) and their well-being (Mikulincer and Shaver, 2016). Furthermore, attachment-related anxiety and avoidance have been shown to be related to psychopathology (Mikulincer and Shaver, 2012, 2016), including depression (Cantazaro and Wei, 2010) and anxiety (Bosmans et al., 2010), which are related to one's overall quality of life (Gao et al., 2019).

1.2. Attachment and self-compassion

There is a growing body of research linking self-compassion to early attachment experiences. Gilbert conceptualizes compassion as "a sensitivity to suffering in self and others with a commitment to try and alleviate and prevent it" (Gilbert et al., 2017, p. 1), which positions an individual's ability to experience their own difficult emotions—*sensitivity to suffering in self*—as a foundation to self-compassion. Related to the ability to experience difficult emotions is the ability to tolerate and regulate emotions (Gilbert, 2014). Emotion regulation is facilitated by early experiences of care and warmth from an external source (attachment figure), which contribute to a sense of safeness in which individuals develop a soothing-affective system (Gilbert, 2014; Gilbert and Procter, 2006). With the understanding that the self-soothing system is developed during early life (Gilbert and Procter, 2006; Gillath et al., 2005), negative attachment experiences may lead to an underdeveloped soothing system, an overdeveloped threat system, and a reduced ability to be compassionate.

In addition to the development of a self-soothing system, Neff and McGehee (2010) suggest that self-compassion may represent an internalization of the parent-child relationship. This is consistent with Bowlby's (1969, 1973) theory that individuals often treat themselves and others as they were treated by attachment figures, and thus Neff and McGehee theorize that growing up with caregivers who were reliably attuned and supportive contributes to developing the ability to relate to oneself compassionately. In support of this claim, it was found that attachment security predicted higher levels of self-compassion among adults, and that self-compassion partially mediated the relationships between perceived maternal support, family functioning, and attachment security as predictors of well-being (Neff and McGehee, 2010).

Furthermore, Pepping et al. (2015) were able to experimentally enhance attachment security, which led to an increase in state self-compassion. More recently, Mackintosh et al. (2018) found that low self-compassion and high levels of interpersonal problems were predicted by attachment-related avoidance in patients with clinical levels of depression and anxiety, and self-compassion mediated the relationship between attachment-related avoidance and emotional distress and anxiety. Finally, in a study of college students and community adults, Wei et al. (2011) found that self-compassion mediated the relationship between attachment-anxiety and subjective well-being.

1.3. Flow of compassion

While Neff's (2003a) conception of self-compassion focuses on positive and negative feelings and attitudes towards the self, other conceptions of self-compassion view self-compassion as part of an interconnected flow including directing compassion *towards* others and receiving compassion *from* others (Gilbert, 2014; Gilbert et al., 2017). These models acknowledge the significance of early attachment relationships in developing the ability to not only be compassionate but also to receive compassion. Thus, difficulties in compassionate self-responding may be linked to an inability to reach out and/or receive the help that one needs (Hermanto et al., 2016). A recent meta-analysis found that fears of self-compassion and fears of receiving compassion from others were significantly associated with depression, anxiety, and distress (Kirby et al., 2019). This suggests that self-compassion involves a complex set of affective, cognitive, motivational, and behavioural processes that are interconnected with how individuals relate to others.

1.4. Dimensions of self-compassion

Self-compassion is commonly measured as the sum of all items of the Self-Compassion Scale (SCS; Neff, 2003b) after reverse-scoring the items that assess self-judgment, isolation, and over-identification. The large effect sizes reported in the literature for the relationship between self-compassion and psychopathology are based on the sum across all SCS items (MacBeth and Gumley, 2012). The same is true for the medium overall effect size ($r = 0.47$) in a meta-analysis of the relationship between self-compassion and well-being across 79 samples (Zessin et al., 2015).

However, there is a strong controversy regarding the reliance on the SCS total score as an indicator of self-compassion. Factor analytical studies across languages and cultures have found evidence for two factors: one encompassing all items of the three positive SCS subscales (i.e., self-kindness, common humanity, mindfulness)—referred to as

"self-warmth"; the other one encompassing all items of the three negative SCS subscales (i.e., self-judgment, isolation, over-identification)—referred to as *"self-coldness"* (Brenner et al., 2017; Coroiu et al., 2018; Gilbert et al., 2006; López et al., 2015; Montero-Marin et al., 2018; Muris and Petrocchi, 2016; Muris et al., 2018; Pfattheicher et al., 2017). Evidence for two factors suggests that the SCS may measure two distinct processes: *compassionate* self-responding (self-warmth) and *uncompassionate* self-responding (self-coldness). Irons et al. (2006) demonstrate that self-reassurance contributes to depressive symptoms independently of self-criticism/self-attacking, supporting the argument for two distinct processes at play in understanding the impact of self-relating on mental health. This argument is further supported by a neuroimaging study in which Longe et al. (2010) found evidence for differing neural correlates for self-reassurance and self-criticism, lending physiological support to the statistical argument for the use of two factors.

While Neff maintains that a single factor is statistically valid (Neff et al., 2019), Muris et al. (2019, 2018) argue that combining the positive and negative elements is statistically debatable, and not clinically useful. A recent meta-analysis (Muris and Petrocchi, 2016) demonstrated that the negative SCS subscales are stronger predictors of psychopathology than the positive SCS subscales, which the authors argue is due to significant conceptual overlap between the negative subscales and symptoms of psychopathology. Muris et al. (2019) demonstrate that the negative subscales of the SCS are fused so closely with known symptoms of psychopathology (e.g., *self-judgment* with self-criticism, *isolation* with social withdrawal, *over-identification* with rumination), that they inflate the relationship between self-compassion and psychopathology, and thus impede research investigating the protective value of truly compassionate self-responding.

Not taking the different sub-dimensions of self-compassion into consideration is clearly a gap in the existing attachment research. Mackintosh et al. (2018) state that future studies of the relationship between attachment, self-compassion, and psychopathology must account for the different sub-aspects of self-compassion. The size of the dataset for the current study ensures sufficient statistical power to analyze the effects of different sub-dimensions of self-compassion, offering insight into which elements of compassionate self-relating may have the greatest impact on psychological distress and quality of life. Better understanding the mechanisms through which attachment influences psychopathology and quality of life has both theoretical and clinical value, as these mediating factors may be amenable to therapeutic change and thus buffer the effects of insecure attachment during adulthood.

1.5. This study

This study builds on the growing body of research investigating the relationship between attachment, self-compassion, and psychopathology and quality of life. The purpose of this study is to examine whether two distinct features of self-compassion (self-warmth and lack of self-coldness) are mechanisms through which attachment influences depressive symptoms and quality of life in adulthood. Our hypotheses were as follows: (a) Indicators of insecure attachment (i.e., attachment-related anxiety and avoidance) will each predict increased symptoms of depression through decreased self-warmth and increased self-coldness (Fig. 1); (b) Indicators of insecure attachment (i.e., attachment-related anxiety and avoidance) will each predict decreased quality of life through decreased self-warmth and increased self-coldness (Fig. 2); (c) The hypothesized paths in our models will remain significant when controlling for age, gender, socioeconomic status, and relationship status. See Figs. 1 and 2 for a depiction of the mediation models.

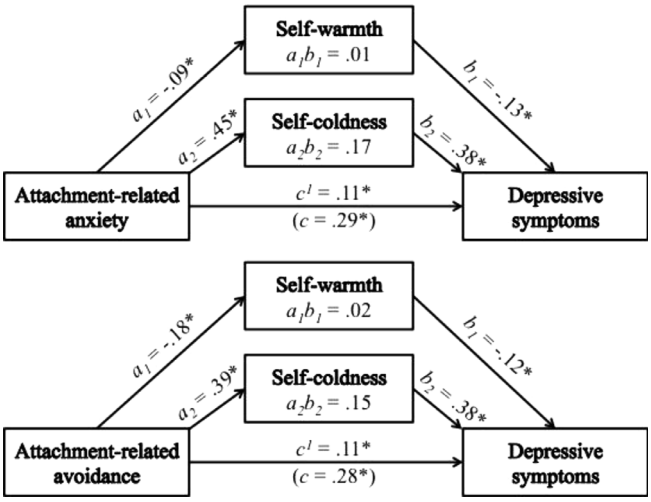

Fig. 1. Parallel mediation using standardized regression coefficients to examine the interaction of two sub-dimensions of self-compassion (self-warmth and self-coldness) in the relationship between a) attachment-related anxiety and b) attachment-related avoidance and depressive symptoms. Notes: Total effect (c) = Direct effect (c^1) + Indirect effect via self-warmth (a_1b_1) + Indirect effect via self-coldness (a_2b_2). All models were adjusted for demographic covariates. *$p < .001$.

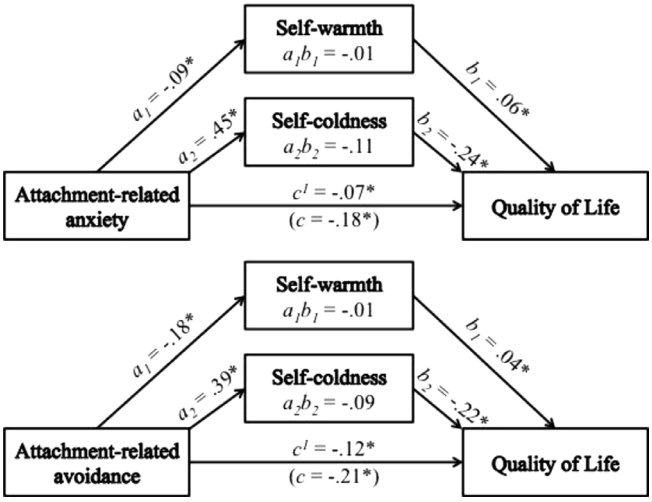

Fig. 2. Parallel mediation using standardized regression coefficients to examine the relevance of two sub-dimensions of self-compassion (self-warmth and self-coldness) for the relationship between a) attachment-related anxiety and b) attachment-related avoidance and quality of life. Notes: Total effect (c) = Direct effect (c^1) + Indirect effect via self-warmth (a_1b_1) + Indirect effect via self-coldness (a_2b_2). All models were adjusted for demographic covariates. *$p < .001$.

2. Methods

2.1. Participants and procedures

The data included in this study were taken from a general population survey conducted in Germany in 2012. For this survey, a sample representative of the German general population (age 14 and above) in terms of age and gender was recruited by a specialized survey service in Germany (USUMA, Berlin). Prior to data collection, ethics approval was obtained from the University of Leipzig's Research Ethics Board (REB; Protocol # 092-12-05032012). Informed consent was obtained verbally and documented by members of the research team. Trained interviewers collected socio-demographic information during face-to-face interviews conducted in the homes of consenting participants

($N = 2510$), and self-report questionnaires were completed anonymously. Inclusion criteria for the current analysis were being at least 18 years of age, and having complete responses for the study measures and demographic covariates.

2.2. Measures

2.2.1. Self-Compassion scale (SCS)

The SCS is a 26-item self-report measure assessing self-compassion via six proposed subscales (Neff, 2003b). Three of the subscales are phrased in a positive direction (self-kindness, common humanity, and mindfulness), and three are phrased in a negative direction (self-judgment, isolation, and over-identification). Items are scored on a 5-point Likert scale ranging from 1 (very rarely) to 5 (very often), with higher scores indicating higher levels of the construct measured. Empirical evidence supports the use of a total score (Neff et al., 2018, 2017), as well as a two-factor model which uses the mean of the positively phrased subscales (SCS-pos, or "self-warmth") and the mean of the negatively phrased subscales (SCS-neg, or "self-coldness) (Coroiu et al., 2018; López et al., 2015; Muris and Petrocchi, 2016). The current study used the German version of the SCS (Hupfeld and Ruffieux, 2011). To investigate the different dimensions of self-compassion, the current study used two mean scores, i.e., "self-warmth" (Cronbach's $\alpha = 0.89$) and "self-coldness" (Cronbach's $\alpha = 0.87$).

2.2.2. Adult attachment scale (AAS)

The German version of this 18-item self-report questionnaire (Collins and Read, 1990; Schmidt et al., 2004) was used to assess attachment-related anxiety, i.e., the degree to which an individual feels anxious about abandonment, as well as attachment-related avoidance, i.e., an individual's discomfort with intimacy and closeness and beliefs that another person cannot be depended upon when needed (Collins, 2008). Items are scored on a 5-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (very characteristic of me). Internal consistency in the current sample ranged from 0.84 (Avoidance) to 0.85 (Anxiety).

2.2.3. Beck depression inventory – fast screen (BDI-FS)

The BDI-FS is a seven-item self-report instrument which measures the severity of depressive symptoms based on the non-somatic criteria for major depression in the DSM (Beck et al., 2000), previously published as the Beck Depression Inventory for Primary Care (BDI-PC) (Beck et al., 1997). Each item includes four statements describing depressive characteristics (e.g., dysphoria, anedhonia, suicidal ideation, cognitive-related symptoms). Statements are numbered from 0 to 3, increasing in intensity. Scores range from 0–21, with higher scores indicating more severe depressive symptoms. This study used the German translation of the BDI-FS (Kliem and Brähler, 2013), which has been shown to be a reliable and valid measure of depression in the German general population (Kliem et al., 2014), with an internal consistency score of 0.84. Cronbach's α for our sample was 0.84.

2.2.4. European organization for research and treatment of cancer quality of life questionnaire (EORTC QLQ-C30)

The EORTC QLQ-C30 is a 30 item self-report measure that was developed by the European Cancer Commission to measure health-related quality of life in cancer patients and general population samples (Hinz et al., 2014). The Global Quality of Life subscale has shown good internal consistency in studies with general population samples, including Cronbach's α scores of 0.86 (Hinz et al., 2014) and 0.89 (Hinz et al., 2012). For the purposes of this study, the two-item Global Quality of Life (EORTC-QoL) subscale was used to measure self-reported health-related quality of life, with responses ranging from 1 (very poor) to 7 (excellent). All scores are linearly transformed to a 0–100 scale. Cronbach's α in our sample was 0.86.

2.3. Analyses

Data analysis was conducted using SPSS software (version 24.0; IBM Corp., 2016). Means, standard deviations (SD), ranges, and internal consistency reliability estimates were calculated for all continuous variables. Skewness, kurtosis, and multicollinearity of independent variables were in acceptable ranges. The relationships between all study variables were examined using correlational analysis (see Table 2). Given the large sample size, only p-values of less than 0.01 were reported to avoid Type I error. Mediation analyses were used to evaluate the hypothesized indirect effects (via self-warmth or self-coldness) of attachment-related avoidance and attachment-related anxiety on depressive symptoms and quality of life (see Figs. 1 and 2). Hayes' (Preacher and Hayes, 2008b) PROCESS macro (v3.3) for SPSS was used to conduct mediation analyses (model 4) using 10,000 bootstrapping resamples to generate 95% bias-corrected confidence intervals for the indirect effect (Preacher and Hayes, 2008a). Similar to Baron and Kenny's (1986) approach to mediation, PROCESS tests the effect of the independent variable (path *a*) on each of the potential mediators, the effect of each mediator on the dependent variable (path *b*), the total effect of the independent variable on the dependent variable (path *c*), and the direct effect of the independent variable on the dependent variable with the mediators in the model (path *c'*). Bootstrapping is a nonparametric method used to estimate the indirect effects (*ab*) of the independent variable on the dependent variable through the proposed mediators. The indirect effect is considered significantly different from zero when zero is not included within the 95% confidence interval (Preacher and Hayes, 2008a).

Multiple or parallel mediation was used to allow for both self-warmth and self-coldness to be included simultaneously as potential mediators in each model. Parallel mediation enables the researcher to control for additional mediators when testing for specific indirect effects. Using a multiple mediator model also allows for the comparison of the relative magnitudes of specific indirect effects, thus, in our case, offering additional insight into the theoretical claim that self-warmth and self-coldness are differentially related to depressive symptoms and quality of life.

We tested four meditational models with depressive symptoms and quality of life as dependent variables, attachment-related anxiety and attachment-related avoidance as independent variables, and self-warmth and self-coldness as simultaneous mediators (see Figs. 1 and 2). Age, gender, relationship status, and socioeconomic status were included in all models as covariates. Covariates were chosen based on previous research showing these sociodemographic variables to be potentially related to depressive symptoms and quality of life, and were tested for significant correlations with the study variables. Relationship status was used as a dichotomous indicator, with "married" or "cohabitating" as one group versus non-married categories (including "divorced," "widowed," and "single") in the other group. Socioeconomic status was measured using monthly household income before tax (i.e., the median value of each of the 13 assessed income ranges) divided by the number of individuals residing in the household.

3. Results

3.1. Sample characteristics

Participants were 2253 individuals from the German dwelling population. The average age was 50.32 years ($SD = 17.27$), ranging from 18 to 91 years of age. Gender was approximately equally distributed, with 53.4% females and 46.6% males. The majority of participants were married or cohabitating with a partner (59.6%). The average monthly per capita household income before tax was €1201.78 ($SD = 589.90$), with an average of two people residing permanently in the household ($SD = 1.03$, range = 1–8 people). The majority of participants completed secondary school (77.2%), and 7.7% of

Table 1
Sample characteristics (N = 2253).

	M (SD), Range	*N* (%)
Age	50.32 (17.27), 18–91	
Gender		
Female		1203 (53.4)
Male		1050 (46.6)
Relationship status		
Married or cohabiting		1343 (59.6)
Single		910 (40.4)
Education level		
Secondary school		1740 (77.2)
Four or more years of university		174 (7.7)
Household per capita income (monthly, Euro after tax)	1201.78 (589.90), 62.50–5750	
Number of household residents	2.08 (1.03), 1–8	
AAS-anxiety	2.00 (0.79), 1–5	
AAS-avoidance	2.34 (0.65), 1–4.67	
BDI-FS	1.15 (2.06), 0–16	
EORTC-QoL	75.20 (19.45), 0–100	
SCS-pos	3.00 (0.69), 1–4.92	
SCS-neg	2.28 (0.65), 1–4.69	

Note. 1) AAS-anxiety, Adult Attachment Scale anxiety index; 2) AAS-avoidance, Adult Attachment Scale, avoidance index; 3) BDI-FS, Beck Depression Inventory Fast Screen; 4) EORTC-QoL, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire quality of life subscale; 5) SCS-pos, composite of the positive subscales (self-kindness, mindfulness, common humanity) of the Self-Compassion Scale; 6) SCS-neg, composite of the negative subscales (self-judgment, over-identification, isolation) of the Self-Compassion Scale.

participants completed four years or more of university education. Overall, participants reported few symptoms of depression with a mean BDI-FS score of 1.15 (SD = 2.06, range = 0–16) and high quality of life with a mean EORTC-QoL score of 75.20 (SD = 19.45, range 0–100). The mean attachment-related avoidance score was 2.34 (SD = 2.06, range 1–4.67) and the mean attachment-related anxiety score was 2.00 (SD = 0.79, range 1–5). On average, participants showed higher levels of self-warmth (M = 3.00, SD = 0.69) than self-coldness (M = 2.28, SD = 0.65) (see Table 1 for descriptive statistics).

3.2. Correlations among predictor, mediator, and dependent variables

Intercorrelations for all study variables are presented in Table 2. All variables were significantly correlated in the predicted direction, with the exception of self-warmth (SCS-pos) and quality of life (EORT-ql) (r = 0.02, p = .33). Attachment-related anxiety and attachment-related avoidance were both positively associated with depressive symptoms, and negatively associated with quality of life. The statistical significance of the weak correlation between self-warmth and depressive symptoms may be an artefact of the large sample size (r = −0.06, p < .01). Following Cohen's recommendation regarding the interpretation of correlation coefficients in the social sciences (Weinberg et al., 2004), self-coldness and depressive symptoms correlated moderately strongly (r = 0.41, p < .01) and there was a moderate correlation between self-coldness and quality of life (r = −0.27, p < .01).

3.3. Attachment and depression

The first two meditational models predicted depressive symptoms (see Fig. 1). One model analyzed attachment-related anxiety as the independent variable, depressive symptoms as the dependent variable, and self-warmth and self-coldness as potential mediators. Attachment-related anxiety had a significant direct effect on depressive symptoms (std. β = 0.11, 95% CI [.18, 0.39]) and a significant indirect effect both via self-warmth (std. β = 0.01, 95% CI [.01, 0.02]) and self-coldness (std. β = 0.17, 95% CI [.15, 0.20]) (see Table 3). When self-warmth and self-coldness were included in the mediation model, the total effect of attachment-related anxiety on depressive symptoms was reduced from β = 0.29 to β = 0.11 and remained significant (p < .001).

The second model analyzed a different independent variable: attachment-related avoidance. Attachment-related avoidance had a significant direct effect on depressive symptoms (std. β = 0.11, 95% CI [.21, 0.47]), and a significant indirect effect via self-warmth (std. β = 0.02, 95% CI [.01, 0.03]) and self-coldness (std. β = 0.15, 95% CI [.13, 0.17]). These results are consistent with our hypotheses. The total effect decreased from β = 0.28 to β = 0.11 and remained significant (p < .001) when self-warmth and self-coldness were included in the model. That none of the 95% confidence intervals for the indirect

Table 2
Zero-order correlations for all primary variables, covariates, and subscales of the Self-Compassion Scale.

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. AAS-anxiety	—															
2. AAS-avoidance	.62*	—														
3. BDI-FS	.30*	.31*	—													
4. EORTC-QoL	−0.18*	−0.27*	−0.50*	—												
5. SCS-pos	−0.09*	−0.18*	−0.06*	.02	—											
6. SCS-neg	.47*	.40*	.41*	−0.27*	.22*	—										
7. Age	−0.05*	.07*	.21*	−0.40*	−0.00	−0.04	—									
8. Gender	.04	−0.03	.03	−0.04	.07*	.08*	.02	—								
9. SES	−0.06*	−0.04	−0.13*	.11*	.04	−0.12*	.08*	−0.08*	—							
10. Relationship Status	.05	.08*	.09*	−0.09*	.02	.09*	−0.08*	.09*	.22*	—						
11. SC Self-Kindness	−0.11*	−0.20*	−0.07*	.03	.88*	.15*	−0.01	.11*	.04	.03	—					
12. SC Mindfulness	−0.10*	−0.16*	−0.06*	.04	.86*	.20*	.01	.00	.06*	.00	.63*	—				
13. SC Common Humanity	−0.03	−0.10*	−0.02	−0.02	.85*	.24*	.00	.07*	.01	.01*	.61*	.63*	—			
14. SC Self-Judgment	.37*	.33*	.32*	−0.18*	.23*	.87*	−0.03	.02	−0.05	.05	.12*	.27*	.22*	—		
15. SC Over-identification	.41*	.32*	.37*	−0.22*	.22*	.89*	−0.06*	.12*	−0.10*	.11*	.17*	.17*	.23*	.65*	—	
16. SC Isolation	.43*	.37*	.40*	−0.31*	.13*	.86*	−0.03	.07*	−0.17*	.08*	.10*	.08*	.17*	.57*	.68*	—

Note. (1) AAS-anxiety, Adult Attachment Scale anxiety index; (2) AAS-avoidance, Adult Attachment Scale, avoidance index; (3) BDI-FS, Beck Depression Inventory Fast Screen; (4) EORTC-QoL, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire, global quality of life subscale; (5) SCS-pos, composite of the positive subscales (self-kindness, mindfulness, common humanity) of the Self-Compassion Scale; (6) SCS-neg, composite of the negative subscales (self-judgment, over-identification, isolation) of the Self-Compassion Scale; (7) Age (years); (8) Gender (1 = male, 2 = female); (9) SES, socioeconomic status, monthly household income before tax divided by number of individuals permanently residing in the household; (10) Relationship status: 1 = "married" or "cohabitating" versus 2 = other non-married/cohabiting categories (including "divorced," "widowed," and "single"); (11–16) Individual subscales of the Self-Compassion Scale.

* p < .01.

Table 3
Mediation of the effect of attachment-related anxiety and avoidance on depressive symptoms and quality of life through self-warmth and self-coldness.

	Depressive Symptoms				Quality of Life			
	Std. β	*t*	*p*	95% C.I.	Std. β	*t*	*p*	95% C.I.
Attachment-related anxiety								
Total (*c*)	.29	15.30	< 0.001	(0.67, 0.86)	−0.18	−9.90	< 0.001	(−5.40, −3.62)
Direct (c^1)	.11	5.30	< 0.001	(0.18, 0.39)	−0.07	−3.26	.001	(−2.67, −0.67)
Indirect self-warmth (a_1b_1)	.01			(0.01, 0.02)	−0.01			(−0.01, −0.00)
Indirect self-coldness (a_2b_2)	.17			(0.15, 0.20)	−0.11			(−0.13, −0.09)
Attachment-related avoidance								
Total (*c*)	.28	14.41	< 0.001	(0.77, 1.01)	−0.21	−11.63	< 0.001	(−7.54, −5.36)
Direct (c^1)	.11	5.23	< 0.001	(0.21, 0.47)	−0.12	−5.88	< 0.001	(−4.84, −2.42)
Indirect self-warmth (a_1b_1)	.02			(0.01, 0.03)	−0.01			(−0.01, −0.00)
Indirect self-coldness (a_2b_2)	.15			(0.13, 0.17)	−0.09			(−0.11, −0.07)

Note. Total (*c*) = Direct (c^1) + Indirect self-warmth (a_1b_1) + Indirect self-coldness (a_2b_2) 95% Confidence interval with 10,000 bootstrap samples.

effects included zero in either model, speaks for the statistical significance of the mediating effects of self-warmth and self-coldness on the relationship between attachment-related anxiety and avoidance and depressive symptoms.

3.4. Attachment and quality of life

The third analyses examined attachment-related anxiety as the independent variable, quality of life as the dependent variable, and self-warmth and self-coldness as potential mediators (see Fig. 2). Attachment-related anxiety had a significant direct effect on quality of life (std. β = −0.07, 95% CI [−0.2.67, −0.67]) and a significant indirect effect via self-coldness (std. β = −0.11, 95% CI [−0.13, −0.09]) (see Table 3). Higher levels of attachment-related anxiety predicted lower reported quality of life directly, and also indirectly via higher levels of self-coldness. The indirect effect via self-warmth (β = −0.01, 95% CI [−0.01, −0.00]) was extremely small and the confidence interval came close to zero, speaking against self-warmth as a relevant mediator. When self-warmth and self-coldness were included in the model, the total effect of attachment-related anxiety on quality of life decreased from β = −0.18 to β = −0.07 and remained significant ($p < .001$).

The final model examined attachment-related avoidance as a predictor of quality of life and self-warmth and self-coldness as potential mediators of this relationship (see Fig. 2). Attachment-related avoidance had a significant direct effect on quality of life (std. β = −0.12, 95% CI [−4.84, −2.42]), and a significant indirect effect via self-coldness (std. β = −0.09, 95% CI [−0.11, −0.07]). Higher levels of attachment-related avoidance predicted lower quality of life directly, as well as indirectly via higher levels of self-coldness. These results are consistent with our hypotheses. The 95% Confidence Intervals for the indirect effect of attachment-related avoidance via self-warmth (β = −0.01, 95% CI [−0.01, −0.00]) came close to zero, suggesting that the indirect effect via self-warmth is not significantly different than zero and that self-warmth does not mediate the relationship between attachment insecurity and quality of life. The inclusion of self-warmth and self-coldness in the mediation model decreased the total effect of attachment-related avoidance on quality of life from β = −0.21 to β = −0.12 ($p < .001$).

4. Discussion

This study contributes to developing a more differentiated understanding of how attachment insecurity may contribute to depressive symptoms and quality of life. Specifically, this study investigated whether two sub-dimensions of self-compassion, i.e., self-warmth and self-coldness, mediate the relationship between attachment insecurity and psychopathology, and attachment insecurity and quality of life in a general population sample (for Confirmatory Factor Analysis of the SCS in this sample, see Coroiu et al., 2018). Most previous research to date has used a Self-Compassion Scale total score when examining the relationship between attachment, self-compassion, psychopathology, and quality of life, but did not consider the possibly differing contributions of the sub-dimensions of this construct (Muris and Petrocchi, 2016). When using the total score across all items of the Self-Compassion Scale, self-compassion partially mediated the relationship between attachment and mental health (Mackintosh et al., 2018; Raque-Bogdan et al., 2011). With mixed evidence regarding the factor structure of the self-compassion scale and the differing relationship of its positive and negative sub-constructs with psychopathology, examining the potentially differing relationship of self-warmth and self-coldness to attachment, psychopathology, and quality of life is key in advancing theoretical and clinical understanding of the elements of self-compassion that may be most pertinent when addressing relational issues in psychotherapy.

Our results support our hypothesis that self-warmth and self-coldness differ in their effects as mechanisms through which attachment insecurity (operationalized as attachment-related anxiety and avoidance) relates to depressive symptoms. Higher levels of attachment-related anxiety and attachment-related avoidance predicted higher levels of depressive symptoms directly, and also indirectly via lower levels of self-warmth and higher levels of self-coldness (see Table 3 and Fig. 1). While both indirect effects were significantly different from zero, the indirect effect via self-warmth appears to be of negligible magnitude. Our findings regarding the indirect effect via self-coldness are consistent with literature indicating that the negative components of self-compassion (as operationalized by the Self-Compassion Scale) are more strongly related to psychopathology than the positive components (Körner et al., 2015; Muris et al., 2019; Muris and Petrocchi, 2016).

Furthermore, our results speak for self-coldness but not self-warmth as a mechanism through which attachment insecurity relates to quality of life. This suggests that engaging in self-coldness—operationalized as self-judgment, feelings of isolation, and over-identifying with negative emotions—has a detrimental effect on one's quality of life. However, engaging in self-warmth—operationalized as self-kindness, mindful awareness, and feeling connected to others through shared human experience—may not be an essential mechanism through which one's attachment style affects quality of life in general. The demonstrated relationship between attachment insecurity, self-coldness, and quality of life is consistent with the theoretical prediction that individuals with attachment difficulties are more likely to have adopted an attitude of "self-coldness", e.g., being judgmental of themselves, feeling isolated, and becoming swept up by negative emotions. In our general population sample, the pathway through which attachment difficulties are associated with psychopathology and quality of life is via self-coldness, and not via self-warmth.

Whereas previous studies have consistently demonstrated a relationship between high levels of attachment-related anxiety and low levels of self-compassion (assessed as SCS total score), there have been mixed results regarding the relationship between attachment-related avoidance and self-compassion (Raque-Bogdan et al., 2011; Raque-

Bogdan et al., 2016; Wei et al., 2011). It has been hypothesized that this difference may be accounted for by internal working models, or mental representations of self-worth: individuals high in attachment-related anxiety have negative internal working models, whereas individuals high in attachment-related avoidance may have positive internal working models and are thus more likely to report higher levels of self-compassion. The present study found that both styles of insecure attachment had significant direct effects on depressive symptoms and quality of life, and significant indirect effects via self-coldness. These findings are consistent with Mackintosh et al. (2018), who propose that even with positive internal working models or positive self-image, individuals who are high in attachment-related avoidance may still struggle to self-soothe and relate to themselves compassionately due to a lack of comfort received from early attachment figures. Thus, our findings support the theoretical understanding of self-compassion within an evolutionary framework (Gilbert, 2014), linking it to early attachment experiences and the development of a soothing system.

Our results support the hypothesis that addressing self-compassion in the present may be a useful strategy for mitigating the effects of attachment-related difficulties and problematic interpersonal relationship patterns. The implications of these findings suggest that targeting self-compassion in psychotherapy may be useful in mitigating the effects of insecure attachment on mental health and quality of life (Navarro-Gil et al., 2018). Given the differing effects of self-warmth and self-coldness found in our study, we conclude that it is of particular relevance to target feelings, thoughts, and behaviours that are consistent with patterns of self-coldness. This recommendation is consistent with literature demonstrating the relationship between self-criticism—particularly hostile self-criticism—and depression (Gilbert et al., 2006, 2004; Halamová et al., 2018; Irons et al., 2006). Different types of self-criticism and self-attacking have been shown to be differentially related to depression (Halamová et al., 2018), and while these constructs are not identical to self-coldness/self-warmth, this evidence provides further support for the importance of analyzing self-coldness as an independent process. Numerous therapies have identified self-criticism as a target for psychotherapeutic interventions. Fostering an individual's capacity for overcoming harsh self-judgment, isolation from others, and over-identification with negative emotions may also facilitate greater self-kindness, the experience of shared humanity, and mindful awareness of one's emotional experiences.

5. Limitations and future directions

It is important to note several limitations to this study. While the selected measures have been shown to be valid for use with the given study population, the exclusive reliance on self-report measures is never ideal. Regarding the EORTC-QLQ-C30, there is debate whether to use a single higher order factor model summary across all thirty items (Giesinger et al., 2016), or whether to use the Global Quality of Life subscale score when measuring quality of life (Hinz et al., 2012, 2014). The use of the total score necessarily entails including a number of items focused on physical symptoms related to cancer treatment, and thus the Global Quality of Life subscale may be more relevant for healthy samples. However, use of a two-item measure significantly limits variance, and the authors recommend a more comprehensive measure of quality of life in future studies. Furthermore, the subjective nature of self-report measures raises questions as to whether these models would be replicated in studies with observer-rated self-compassion, attachment styles, and depressivity. Lastly, several small but significant correlations were observed, which may be an artefact of the large sample size. Attempts were made to control for demographic variables that may impact self-reported depressive symptoms and quality of life, including age, gender, socioeconomic status, and relationship status.

Despite these limitations, the present study provides meaningful insight into the different sub-dimensions of self-compassion, and how understanding these sub-dimensions may impact the conceptualization of the relationship between attachment, psychopathology, and quality of life. Future research is needed to better understand this relationship, including studies that consider alternative conceptualizations and measures of self-compassion (e.g., Gilbert et al., 2017), as well as studies exploring additional pathways through which attachment may impact the outcome variables. Observational studies would be useful in providing alternate measures of attachment and self-compassion, particularly measures that are observed rather than self-reported. While our results suggest that targeting self-coldness may be useful in mitigating the effects of attachment insecurity on depressive symptoms and quality of life, further clinical research is needed. Intervention studies and outcome monitoring are necessary to investigate whether targeting self-coldness in psychotherapy does in fact enhance treatment outcomes for individuals with attachment-related struggles, and how this may relate to self-compassion. The relationship between self-warmth and self-coldness remains unclear, and further research is needed to better conceptualize self-compassion in order to more effectively measure this construct and understand its clinical salience.

Declaration of Competing Interest

None.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jad.2019.08.066.

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