

Can Romantic Relationship Quality Mediate the Relation Between Psychopathy and Subjective Well-Being?

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Abstract The relations between psychopathy, romantic relationships, and well-being were investigated in 431 undergraduates. For both males and females, various components of romantic relationship quality were positively correlated with subjective well-being (SWB) and negatively correlated with ill-being. However, only for females was overall romantic relationship quality positively correlated with life satisfaction, happiness and positive affect, and negatively correlated with negative affect and depression. High levels of psychopathy were found in 23.1 % of males and 7.4 % of females. Psychopathy accounted for significant variance in overall relationship quality (7.0 %), commitment (14.1 %), satisfaction (9.3 %), romance (10.7 %) and trust (6.4 %) in romantic relationships for males and in overall relationship quality (3.2 %), commitment (5.3 %), and trust (5.9 %) for females. Romantic relationship quality was able to mediate the relations between psychopathy and SWB and this mediation was moderated by gender.

Keywords Psychopathy · Happiness · Depression · Life satisfaction · Well-being · Romantic relationships

1 Introduction

Psychopathy is a personality construct characterized by both affective and interpersonal characteristics and antisocial behaviours including callousness, shallow affect, lack of empathy, pathological lying, manipulation of others, self-interest, superficial charm, and impulsive behaviour (Levenson et al. 1995; Neumann et al. 2007). The underlying factor structure of psychopathy is under debate. The gold standard for measuring psychopathy,

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the Psychopathy Checklist-Revised (PCL-R), is based on a two-factor structure of the disorder (Hare et al. 1990). Factor 1 (also referred to as primary psychopathy) encompasses the affective-interpersonal characteristics and Factor 2 (also referred to as secondary psychopathy) includes the socially deviant behaviours of psychopathy (Hare et al. 1990; Levenson et al. 1995). A four-facet model of psychopathy has also been suggested which divides Factor 1 into two sub-facets (Facet 1 includes the interpersonal items and Facet 2 includes the affective items of the PCL-R) and Factor 2 into two sub-facets (Facet 3 is composed of the behavior lifestyle items and Facet 4, the antisocial items of the PCL-R) (Hare and Neumann 2005). The PCL-R has typically been used with institutionalized populations and may not be appropriate for use in a university setting. Other self-report instruments have been developed (such as the Levenson Self-Report Psychopathy Scale), which analyze an individual's level of psychopathy based on the two-factor PCL-R structure and are appropriate for use in a non-institutionalized setting (Levenson et al. 1995).

Psychopathy is associated with low levels of subjective well-being (SWB) including happiness, positive affect, and life satisfaction, and with high levels of ill-being including depression and negative affect (Love and Holder 2014). However, the factors that contribute to the poor well-being associated with psychopathy have not been fully identified. In general, good interpersonal relationships support high levels of SWB (Demir 2010; Demir and Weitekamp 2007; Lyubomirsky et al. 2005; Pinquart and Sörensen 2000). A meta-analysis by Pinquart and Sörensen (2000) found that not only were interpersonal relationships important to SWB, but the quality of those relationships was more important than the quantity, and friendships were more closely tied to SWB than relationships with family members. Additional research has demonstrated that friendship quality (rather than quantity) is particularly important for SWB (Demir and Weitekamp 2007).

While friendship quality has been shown to be associated with higher levels of SWB, romantic relationships may be particularly important for SWB (Demir 2010). Demir (2010) found that when adults were engaged in a committed romantic relationship, their friendships had less (or no) influence on their happiness. Dush and Amato (2005) observed that as individuals progress into more committed relationships (i.e., from casual dating to dating one person exclusively to cohabitating to marriage) SWB increases. In addition, satisfaction with the romantic relationship was associated with higher levels of SWB, regardless of relationship status. The different characteristics of romantic relationships may be particularly important for SWB. Research has indicated that commitment in romantic relationships can account for unique variance in the well-being of couples (Drigotas et al. 1999) and trust in romantic relationships is also important in terms of overall relationship satisfaction (Uysal et al. 2012).

Love and Holder (2014) postulated that the mechanism through which psychopathy influences SWB is through interpersonal relationships. Psychopathy may contribute to a decrease in interpersonal relationship quality which may in turn contribute to low levels of SWB and high levels of ill-being. There are several reasons why individuals high in psychopathy may experience poor romantic relationships. The impulsive and thrill-seeking nature of these individuals may make it difficult for them to commit to a long-term romantic relationship (Jonason et al. 2012). These individuals also lack empathy and remorse, traits which normally help foster good quality romantic relationships (Cramer and Jowett 2010). Individuals high on the Dark Triad traits (psychopathy, narcissism, and Machiavellianism) tend to employ a short-term mating strategy by lowering their standards for romantic partners and also to seek out partners (both short and long-term) who contribute to a volatile environment, possibly to satisfy their need for stimulation (Jonason

et al. 2011). In addition, individuals high in psychopathy are particularly likely to devalue trait kindness in romantic partners (Jonason et al. 2011) and psychopathy is negatively correlated with desire for a long-term relationship (Jonason et al. 2012).

Previous research provides support for the proposed negative association between psychopathy and romantic relationship quality. Emotional processing disorders, which share characteristics with psychopathy, are negatively associated with romantic relationship quality and well-being (Timoney and Holder 2013). For example alexithymia (an emotional processing disorder characterized by difficulty with communicating and recognizing emotional states) is negatively correlated with SWB and positively correlated with depression and negative affect (Holder et al. 2014). Furthermore, alexithymia was correlated with poor romantic relationship quality which partially mediated the relation between alexithymia and SWB (Holder et al. 2014). In addition, romantic relationships involving women with Borderline Personality Disorder were characterized by lower levels of relationship satisfaction and higher levels of both attachment insecurity and psychological violence (Bouchard et al. 2009). Lastly, while very little research to date has examined the relations between psychopathy and romantic relationship quality, two studies have assessed the relations between psychopathy and components of romantic relationship quality. The first study evaluated the relations between psychopathy and intimacy, passion, and commitment in a romantic relationship (Ali and Chamorro-Premuzic 2010) and found that primary psychopathy was negatively correlated with commitment in a romantic relationship and secondary psychopathy was negatively correlated with intimacy and commitment in a romantic relationship. The second study reported that psychopathy was negatively correlated with couple satisfaction for men but not women (Savard et al. 2011).

Adult attachment theory may offer a cogent theoretical framework to explain the mechanism through which psychopathy influences romantic relationship quality and how romantic relationship quality in turn influences SWB. Hazen and Shaver (1987) expanded prior work on attachment theory by extending research with infants to adult romantic relationships. They described three types of adult attachment styles: secure attachment, avoidant attachment, and anxious-ambivalent attachment (Hazen and Shaver 1987). More recently, adult attachment in interpersonal relationships has been conceptualized using two dimensions: anxiety and avoidance. In this conceptualization, secure attachment occurs when both the anxiety and avoidance dimensions are low, anxious attachment occurs when the anxiety dimension is high but the avoidance dimension is low, and avoidant attachment occurs when the avoidance dimension is high and the anxiety dimension is low (Mikulincer et al. 2003). Attachment style has been used to explain variations in SWB (Mikulincer et al. 2003). A secure attachment style has been positively associated with SWB (Yang et al. 2008) but this style is atypical of individuals high in psychopathy (Diehl et al. 1998; Frodi et al. 2001). In contrast, both avoidant (Li and Fung 2014) and anxious (Schiffirin 2014) attachment styles have been negatively associated with SWB and both are positively associated with psychopathy (Mack et al. 2011).

Attachment theory can also explain the hypothesized negative association between psychopathy and romantic relationships. Secure attachment style is associated with good quality romantic relationships (Banse 2004; Simpson 1990) and greater commitment, trust and satisfaction than either anxious or avoidant attachment styles for both men and women (Simpson 1990). The advantages enjoyed by securely attached individuals persist over time (Keelan et al. 1994). However, psychopathy is typically associated with an avoidant or anxious attachment style (Mack et al. 2011) rather than a secure attachment style (Diehl et al. 1998; Frodi et al. 2001).

Attachment style can also help explain how interpersonal relationships influence SWB. Good interpersonal relationships are key contributors to SWB in the general population (Lyubomirsky et al. 2005). Given that a secure attachment style is associated with greater commitment, trust and satisfaction in romantic relationships than either anxious or avoidant attachment styles (Simpson 1990), it is not surprising that a secure attachment style has been positively associated with SWB (Yang et al. 2008) and avoidant (Li and Fung 2014) and anxious (Schiffrrin 2014) attachment styles have been negatively associated with SWB.

The present study examined the relationships between psychopathy and romantic relationship quality and how romantic relationship quality in turn influences SWB. The study of relations between psychopathy, well-being and interpersonal relationships is important for several reasons. Individuals high in psychopathy are disproportionately represented in correctional institutions, respond poorly to available treatments, and show high rates of recidivism (Hare 1999). However, these individuals may be more responsive to treatment than previously believed (Polaschek and Daly 2013) and SWB may be critical in the social relationships of psychopaths. Though individuals high in psychopathy typically show a lack of concern for others which can undermine their interpersonal relationships, individuals high in psychopathy can display this concern when properly motivated (Arbuckle and Cunnigham 2012), suggesting that they could potentially experience improved social relations. Individuals high in psychopathy are drawn to friendships which contribute to their volatile lifestyles (Jonason and Schmitt 2012). Teaching these individuals to choose healthier relationships with emotionally-stable individuals may reduce their antisocial behaviors. However, very little research has examined the well-being of individuals high in psychopathy, what factors contribute to these low levels of SWB, and how these low levels of well-being can be addressed (Love and Holder 2014). The present study was designed to address this gap by first confirming that SWB (happiness, life satisfaction, and positive affect) is positively correlated with romantic relationship variables, and ill-being (negative affect and depression) is negatively correlated with romantic relationship variables. Additionally, this study addressed three additional hypotheses: (1) Psychopathy will account for significant variance in components of romantic relationships; (2) Romantic relationship quality will mediate the relation between psychopathy and SWB and; (3) Gender will moderate the mediation of the relation between psychopathy and SWB by romantic relationship quality. To determine the influence of romantic relationship quality on the relation between psychopathy and SWB, moderated mediation analyses were conducted. Moderated mediation assesses whether the strength of the mediation of the relation between two variables by a third variable depends on the level of another, moderator variable (Preacher et al. 2007). Moderated mediation was used to assess whether the mediation of the relation between psychopathy and SWB by romantic relationship quality is moderated by gender (Fig. 1). The observed relation

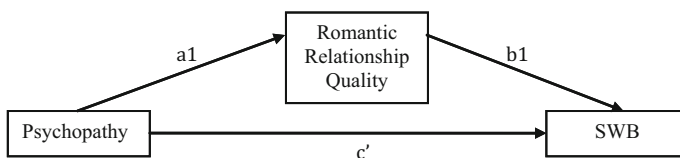


Fig. 1 Mediation model demonstrating the mediating effect of romantic relationship quality on the relation between psychopathy and SWB

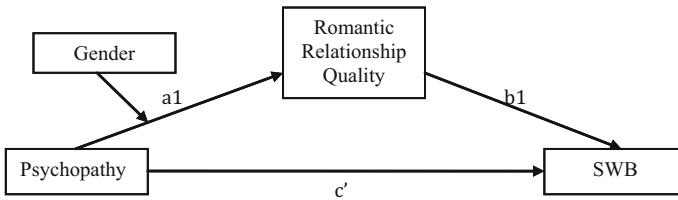


Fig. 2 Proposed moderated mediation model examining the moderating effect of gender on the a_1 path of the mediation of psychopathy and SWB by romantic relationship quality

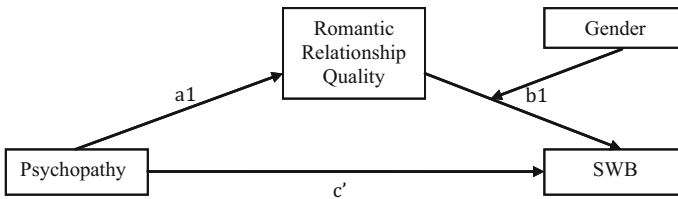


Fig. 3 Proposed moderated mediation model examining the moderating effect of gender on the b_1 path of the mediation of psychopathy and SWB by romantic relationship quality

between psychopathy and SWB is hypothesized to be mediated by romantic relationship quality because high levels of psychopathy may contribute to a decrease in interpersonal relationship quality and these lower quality interpersonal relationships may in turn contribute to low levels of SWB and high levels of ill-being.

This proposed mediation model (Fig. 1) has a theoretical grounding in attachment theory. It is also hypothesized that this mediation model will be moderated by gender. Gender may moderate the path from psychopathy to romantic relationship quality (Fig. 2) because males may report higher levels of psychopathy than females (Miller et al. 2011), the symptoms of psychopathy may be displayed differently by men and women (Kreis and Cooke 2011), and gender differences have been observed in correlations between psychopathy and romantic relationship characteristics (Savard et al. 2011). Research has also demonstrated that the relations between romantic relationship characteristics and SWB differ by gender (Proulx et al. 2007; Whitton and Kuryluk 2012). However, gender may also moderate the path from romantic relationship quality to SWB (Fig. 3). Although research has demonstrated that males and females typically report similar levels of happiness and life satisfaction, females sometimes report higher levels of negative affect including depression (Romans et al. 2007), and depression is associated with low quality romantic relationships (Vujeva and Furman 2011) and low levels of satisfaction with romantic relationships, particularly for females (Whitton and Kuryluk 2012). Lastly, the connection between SWB and romantic relationship quality is typically more robust for females than for males (Proulx et al. 2007).

This influence of gender on SWB, psychopathy, and romantic relationships is also theoretically grounded in attachment theory. Del Giudice (2011) found that males were typically higher in avoidance attachment and lower in anxiety attachment than females.

Longitudinal research has demonstrated that males with an avoidant attachment style rate their relationships more negatively than those with other attachment styles, and females with an anxious attachment style report the lowest relationship ratings (Kirkpatrick and Davis 1994). In addition, individuals with an avoidant attachment style rated their relationships as less interdependent and committed, and individuals with an anxious attachment style rated their relationships as less trusting (Simpson 1990). Lastly, the association between SWB and romantic relationship quality is typically stronger for females than for males (Proulx et al. 2007). When assessing the moderation by gender it is important to note that gender may moderate either the a_1 path (Fig. 2) or the b_1 path (Fig. 3) of the proposed mediation. As previously described, there is theoretical support for both models. To determine the moderating effect of gender on the mediation of the relation between psychopathy and SWB by romantic relationship quality, both moderated mediation models were tested.

Lastly, research on attachment theory also provides theoretical support for an alternate mediation model whereby high levels of psychopathy may contribute to lower levels of SWB and these lower levels of SWB may in turn contribute to poor romantic relationship quality. Some research has indicated that good quality interpersonal relationships precede high levels of SWB (Dush and Amato 2005). However, additional research has indicated that higher levels of SWB precede a range of optimal outcomes, including better quality interpersonal relationships (Lyubomirsky et al. 2005). Since the research is not conclusive, an alternate hypothesis whereby the relation between psychopathy and romantic relationship quality by SWB is moderated by gender was also tested using moderated mediation analysis. Additional models in which psychopathy is conceptualized as the outcome variable are unlikely given the early onset of the disorder (Frick et al. 1994; Salekin and Frick 2005), and the stability of symptoms from adolescence into adulthood (Lynam et al. 2007).

2 Methods

2.1 Participants

Undergraduates were recruited online through a departmental subject pool which included all introductory psychology students. At this institution most students take introductory psychology resulting in a diverse and representative university sample. Initially, 470 students participated, however 35 were excluded because they withdrew before completing all questionnaires and 4 were excluded because they were identified as being either univariate or multivariate outliers. The final sample consisted of 431 students (31 % males, 69 % females), aged 17–47 years ($M = 20.0$, $SD = 3.2$).

3 Materials

Participants completed a battery of online questionnaires. Four questionnaires assessed SWB: (1) Oxford Happiness Inventory (OHI), (2) Satisfaction With Life Scale (SWLS), (3) Subjective Happiness Scale (SHS), and (4) the positive subscale of the Positive and Negative Affect Schedule (PANAS [+]). Two questionnaires assessed subjective ill-being: (1) the negative subscale of the PANAS (PANAS [-]), and (2) the Center for

Epidemiological Studies—Depression Scale (CES-D). One scale assessed psychopathy: the Levenson Self-Report Psychopathy Scale (LSRP). Seven items from the Perceived Relationship Quality Component Scale (PRQC) measured commitment, satisfaction, trust, romance, love, sexual activity, and intimacy in a romantic relationship identified by the participants as important. These PRQC items were summed to create a composite measure of the quality of the participant's romantic relationship (PRQC-Comp) (Fletcher et al. 2000). Scales were administered in the following order: LSRP, SWLS, SHS, OHI, PANAS, CES-D, and PRQC. Six scales of well-being and ill-being were administered because each examined a different component. Means, standard deviations, and reliabilities for all scales are reported in Table 1. All instruments included in the analyses had adequate reliability (Chronbach's alpha $>.70$) (Santos 1999).

OHI The OHI assesses well-being (Argyle et al. 1989) using 29 items rated on a 6-point Likert scale (e.g., "I am intensely interested in other people"). This scale has good reliability as well as good construct and concurrent validity (Francis et al. 1998). Though Kashdan (2004) correctly criticized the OHI as a measure of happiness because it also measures self-esteem, sense of purpose and humor, social interest, kindness, and aesthetic appreciation, the OHI is useful as a general measure of well-being.

Table 1 Means and standard deviations of variables included in analyses

Questionnaire	<i>M</i>	<i>SD</i>	Reliability (Chronbach's α)
Oxford Happiness Inventory (OHI)	4.32	.66	.92
*Subjective Happiness Scale (SHS)	1.69	.34	.87
Positive and Negative Affect Schedule (PANAS [+])	34.67	6.51	.87
Satisfaction with Life Scale (SWLS)	24.59	6.02	.85
Positive and Negative Affect Schedule (PANAS [-])	19.85	6.28	.85
Centre for Epidemiological Studies—Depression Scale (CES-D)	15.64	9.23	.89
Levenson Self-Report Psychopathy Scales (LSRP)	50.64	9.37	.83
LSRP Primary Psychopathy Subscale	29.73	7.08	.84
LSRP Secondary Psychopathy Subscale	20.92	3.80	.58
*Perceived Relationship Quality Components Composite Score (PRQC-Comp)	3.24	1.24	.77
* <i>I am committed to my current partner</i> (Commitment)	.71	.33	–
* <i>I am satisfied in my current relationship</i> (Satisfaction)	.33	.27	–
* <i>I am romantic in my current relationship</i> (Romance)	1.69	.45	–
* <i>I am in love with my current partner</i> (Love)	.33	.30	–
* <i>I cannot trust my current partner</i> (Trust)	.66	.34	–
* <i>I am sexually active with my current partner</i> (Sexual Activity)	.60	.37	–
* <i>My partner and I are intimate with one another</i> (Intimacy)	.62	.34	–

N = 431

For all variables, higher numbers indicate higher levels of that particular trait (e.g., higher scores on the OHI indicate higher levels of happiness)

* Variables were transformed prior to analysis

SWLS The SWLS assesses life satisfaction (Diener et al. 1985) using 5 items rated on a 7-point Likert scale (e.g., “the conditions of my life are excellent”). This scale has high internal consistency and high temporal reliability (Diener et al. 1985).

SHS The SHS assesses global subjective happiness (Lyubomirsky and Lepper 1999) using 4 items on a 7-point scale (e.g., “In general, I consider myself:” [1 (*not a very happy person*) to 7 (*a very happy person*)]). This scale has good reliability as well as good convergent and discriminant validity (Lyubomirsky and Lepper 1999). Using Item Response Theory analyses, O’Connor et al. (2014) showed that Item #4 was problematic for university students and recommended it be dropped. Therefore, only the first three items from the SHS were included in the present study.

PANAS The PANAS measures transient (state) positive and negative affect (Crawford and Henry 2004; Watson et al. 1988) using 20 single-word items rated on a 5-point scale from 1 (*very slightly or not at all*) to 5 (*extremely*). The scale has two subscales (10 items each): negative affect (unpleasant emotional arousal) PANAS [–] and positive affect (pleasant emotional arousal) PANAS [+] (Joiner et al. 1997). This measure has good reliability and excellent convergent and divergent validity (McLennan et al. 1993; Terracciano et al. 2003).

CES-D The CES-D assesses depression using 20 items and a 4-point scale (e.g., “I did not feel like eating; my appetite was poor” 0 [*rarely or none of the time (less than 1 day)*] to 3 [*most or all of the time (5–7 days)*]). Scores above 15 indicate the presence of depressive symptoms. The CES-D has been used to accurately assess depressive symptoms in the elderly as well as adolescents and young adults in both clinical and community samples (Beekman et al. 1997; Radloff 1977, 1991) and has good sensitivity, reliability, and internal consistency (Cuijpers et al. 2008; Martens et al. 2006; Skorikov and Vandervoort 2009).

LSRP The LSRP was used to measure psychopathy rather than the PCL-R because all participants in this study were university undergraduates. The LSPR consists of two subscales designed to measure psychopathy based on a two-factor model of the disorder (primary and secondary psychopathy) (Brinkley et al. 2001). It consists of 26 items (some of which are reverse scored) rated on a 4 point scale (e.g., “I enjoy manipulating other people’s feelings” 1 [*disagree strongly*] to 4 [*agree strongly*]). The primary psychopathy subscale consists of 16 items measuring an inclination to lie, lack of remorse, callousness and manipulateness. The secondary subscale consists of 10 items measuring impulsivity, frustration tolerance, quick temperedness, and lack of long-term goals. This scale is acceptable for use with a university sample, as it has been shown to be an accurate, valid, and reliable measure of psychopathy in non-institutionalized populations (Levenson et al. 1995).

PRQC The Perceived Relationship Quality Components (PRQC) measures the self-reported quality of a romantic relationship (Fletcher et al. 2000). Originally, the PRQC included 18 items assessing six components of romantic relationships but the three items in each subscale are highly correlated and using only the best item of each category is adequate (Fletcher et al. 2000). An additional item (romance) was subsequently added (Fletcher et al. 2000). These seven items assessed commitment, satisfaction, trust, romance, love, sexual activity, and intimacy in a romantic relationship. The wording of the original items was modified (e.g., “How committed are you to your relationship?” was

changed to “I am committed to my current partner”) so that the items were clearer and consistent with the other scales used. Reliability for this measure was assessed and found to be good, despite the variation in wording (see Table 1). The seven items were combined to form a composite score of relationship satisfaction (PRQC-comp) and each item was also examined individually. Participants were asked to think of their current relationship when answering these questions or to think of a relationship that was of particular significance to them if they were not currently engaged in a romantic relationship.

3.1 Procedure

All questionnaires were completed online. While the questionnaires administered in this study were originally developed and validated using a pencil-and-paper format, research has demonstrated that online administration of self-report measures yields equivalent results (Luce et al. 2005; Vallejo et al. 2007). For example, online and paper-and-pencil administrations were practically equivalent for the Satisfaction with Life Scale, Subjective Happiness Scale, and Positive and Negative Affect Schedule (Howell et al. 2010).

3.2 Data Analyses

Four participants were excluded from the analyses because they were identified as being either univariate (determined by calculating z-scores) or multivariate (determined using mahalanobis distance, $p < .001$) outliers. The distribution of all well-being, and psychopathy variables were normal and were not transformed with the exception of the SHS. The PRQC-comp and all PRQC items were substantially more normal after transformation and so analyses were completed with these transformed variables.

A one-way MANOVA was conducted to assess sex differences on the six measures of well-being and ill-being, one measure of psychopathy, and romantic relationship quality variables. Sixteen simple linear regression analyses (eight for each gender) were conducted to determine the variance the LSRP could account for in the romantic relationship variables. Moderated mediation analyses were conducted using the PROCESS procedure outlined by Hayes (2013) to determine if romantic relationship quality mediated the relation between psychopathy and SWB and if this mediation was moderated by gender.

4 Results

4.1 Descriptive and Correlational Analysis

Prevalence rates for psychopathy were in line with previous research (Levenson et al. 1995), with 23.1 % of males and 7.4 % of females endorsing eight or more primary psychopathy items on the LSRP. The four well-being measures were highly correlated ($.46 < r_s < .75$, $ps < .001$), but not multicollinear ($r < .90$) (Tabachnick and Fidell 2007). The two measures of ill-being (CES-D and PANAS [-]) were significantly correlated ($r = .64$, $p < .001$), but not multicollinear, and were significantly negatively correlated with the well-being measures ($-.33 < r_s < -.65$, $ps < .001$). All romantic relationship variables were positively correlated with one another but not multicollinear ($.17 < r_s < .78$, $p < .01$). The LSRP was positively correlated with both the primary ($r = .93$, $p < .001$) and secondary ($r = .73$, $p < .001$) psychopathy subscales. Due to the

multicollinearity between the LSRP and the primary psychopathy subscale and the low reliability found for the secondary psychopathy subscale (see Table 1), all analyses focus exclusively on the LSRP total score as a measure of psychopathy. Psychopathy was negatively correlated with the four measures of well-being ($-.32 < r < -.43$, $ps < .01$) and positively correlated with the two measures of ill-being ($.41 < r < .43$, $ps < .01$).

4.2 MANOVA

A one-way MANOVA was completed to assess gender differences for the six well-being and ill-being measures, the LSRP, and the relationship variables. These analyses were conducted because although research has demonstrated that males and females typically report similar levels of happiness and life satisfaction, females sometimes report higher levels of negative affect (Romans et al. 2007) and males may report higher levels of psychopathy (Miller et al. 2011) and to test for gender differences in the quality of romantic relationships. The combined DVs were significantly affected by gender, Wilks' $\lambda = .89$, $F(15,415) = 3.56$, $p < .001$. No gender differences were observed for the measures of well-being or ill-being. Gender differences were observed for the LSRP, the PRQC-Comp, and for four of the individual relationship variables: commitment, satisfaction, love, and intimacy.

4.3 Correlations Between SWB and the Quality of Romantic Relationships

The components of romantic relationships were associated with SWB for males (commitment and trust) and females (all components were associated with SWB except for sexual activity) but overall quality of romantic relationship was only associated with females' SWB at the adjusted alpha level. Males and females were analyzed separately because gender differences were observed for some of the relationship variables. To account for multiple comparisons, a Bonferroni Adjustment was calculated ($.05/48 = .001$) and the p value was set at .001 (Tabachnick and Fidell 2007). Correlations between SWB and romantic relationship variables are summarized for males and females in Tables 2 and 3 respectively.

Table 2 Pearson r correlations between SWB variables and romantic relationship variables for males

	OHI	SHS	PANAS [+]	SWLS	PANAS [-]	CES-D
Commitment	.215	.247	.169	.146	-.272	-.234
Satisfaction	.327*	.353*	.246	.328*	-.345*	-.394*
Romance	.219	.216	.250	.067	-.211	-.170
Love	.201	.211	.067	.121	-.187	-.152
Trust	.281	.306*	.195	.162	-.332*	-.382*
Sexual Activity	.103	.036	.035	.059	-.182	-.115
Intimacy	.166	.175	.092	.181	-.222	-.236
PRQC-Comp	.266	.275	.166	.201	-.294	-.296

$N = 134$

* $p < .001$

Table 3 Pearson *r* correlations between SWB variables and romantic relationship variables for females

	OHI	SHS	PANAS [+]	SWLS	PANAS [-]	CES-D
Commitment	.298*	.299*	.255*	.253*	-.217*	-.196
Satisfaction	.356*	.317*	.249*	.403*	-.265*	-.329*
Romance	.270*	.252*	.288*	.169	-.157	-.124
Love	.231*	.206*	.134	.187	-.101	-.155
Trust	.263*	.224*	.121	.223*	-.301*	-.256*
Sexual Activity	.136	.119	.105	.096	-.010	-.099
Intimacy	.218*	.200	.199	.162	-.102	-.144
PRQC-Comp	.337*	.308*	.238*	.275*	-.217*	-.196

N = 297

* *p* < .001

4.4 Regressions

Sixteen simple linear regressions (8 for males and 8 for females) were calculated to determine how much variance the LSRP could account for in each of the romantic relationship measures. Because of the multiple analyses, a Bonferroni Adjustment was calculated (.05/8 = .006) and the *p* value was set at .006 (Tabachnick and Fidell 2007). The results of the simple regressions are summarized in Tables 4 and 5 for males and females respectively. Psychopathy was able to account for variance in more relationship variables for males than for females. For males, psychopathy accounted for significant variance in all romantic relationship variables with the exception of love, sexual activity, and intimacy. For females, psychopathy only accounted for variance in overall romantic relationship quality, commitment, and trust.

4.5 Moderated Mediation Analyses

Moderated mediation analyses were conducted to determine if the relation between psychopathy (LSRP) and SWB was mediated by romantic relationship quality and if this mediation was affected by gender. Twelve separate moderated mediation analyses were conducted using the PROCESS procedure outlined by Hayes (2013) with the LSRP as the

Table 4 Simple linear regression results with the LSRP regressed on romantic relationship variables for males

Criterion variable	<i>B</i>	<i>R</i> ²	95 % confidence limits for <i>R</i> ²	
			Lower limit	Upper limit
Commitment	-.38*	.141	.03	.25
Satisfaction	-.32*	.093	.00	.19
Romance	-.34*	.107	.01	.20
Love	-.24	.049	-.02	.12
Trust	-.27*	.064	-.02	.14
Sexual Activity	-.02	.000	-.02	.04
Intimacy	-.14	.012	-.02	.05
PRQC-Comp	-.28*	.070	-.01	.15

N = 134

* *p* < .006

Table 5 Simple linear regression results with the LSRP regressed on romantic relationship variables for females

Criterion variable	B	R ²	95 % confidence limits for R ²	
			Lower limit	Upper limit
Commitment	-.24*	.053	.00	.10
Satisfaction	-.15	.020	-.01	.05
Romance	-.12	.012	-.01	.04
Love	-.16	.022	-.01	.06
Trust	-.25*	.059	.01	.11
Sexual activity	-.06	.000	-.01	.01
Intimacy	-.13	.014	-.01	.04
PRQC-Comp	-.19*	.032	-.00	.07

* $p < .006$
 N = 297

independent variable, romantic relationship quality (PRQC-comp) as the mediator variable, gender as the moderator variable, and each of the six well-being and ill-being variables acting as the dependent variable in turn. Six moderated mediation analyses tested whether gender moderated the a1 path and six moderated mediation analyses tested whether gender moderated the b1 path of the mediation. Outcomes from the analyses (confidence intervals calculated using 5000 bootstrapped samples) are summarized in Tables 6 and 7. The results from the moderated mediation analysis indicated a moderating effect of gender on the a1 pathway of the mediation of romantic relationship quality on the relation between psychopathy and SWB for both males and females. The moderated mediation analysis did not strongly support the moderating effect of gender on the b1 pathway of this same model. Between 18.5 and 42.5 % of the total effect of psychopathy on SWB is due to the indirect effects of romantic relationship quality and gender on the a1 pathway of the model whereas only 0.8–19.7 % of the total effect of psychopathy on SWB

Table 6 Moderated mediation analysis for gender moderating romantic relationship quality’s mediation of the relation between psychopathy and SWB (moderation of the a1 path)

Outcome variable	Indirect effect of psychopathy on SWB				Ratio of indirect to total effect (ab/c)
	Level of moderator	Point estimate	95 % confidence limits		
			Lower limit	Upper limit	
SWLS	Female	.022*	.008	.044	.259
	Male	.033*	.012	.064	
SHS	Female	.005*	.002	.009	.425
	Male	.007*	.003	.014	
OHI	Female	.003*	.001	.006	.298
	Male	.005*	.002	.008	
PANAS [+]	Female	.019*	.006	.040	.244
	Male	.029*	.008	.062	
PANAS [-]	Female	-.021*	-.042	-.008	.185
	Male	-.031*	-.061	-.010	
CES-D	Female	-.037*	-.069	-.015	.257
	Male	-.055*	-.069	-.021	

* Significant point estimates are those whose confidence limits do not include zero

Table 7 Moderated mediation analysis for gender moderating romantic relationship quality's mediation of the relation between psychopathy and SWB (moderation of the b1 path)

Outcome variable	Indirect Effect of Psychopathy on SWB				Ratio of indirect to total effect (ab/c)
	Level of moderator	Point estimate	95 % confidence limits		
			Lower limit	Upper limit	
SWLS	Female	.031*	.014	.056	.035
	Male	.018	-.004	.047	
SHS	Female	.007*	.003	.011	.101
	Male	.005*	.001	.011	
OHI	Female	.004*	.002	.007	.085
	Male	.003	.000	.007	
PANAS [+]	Female	.029*	.011	.055	.008
	Male	.014	-.011	.044	
PANAS [-]	Female	-.024*	-.046	-.008	.158
	Male	-.030*	-.060	-.008	
CES-D	Female	-.043*	-.075	-.020	.197
	Male	-.052*	-.104	-.015	

* Significant point estimates are those whose confidence limits do not include zero

is due to the indirect effects of romantic relationship quality and gender on the b1 pathway of this model.

In addition, 12 alternate mediation models were conducted to determine if the relation between the LSRP and romantic relationship quality was mediated by SWB and if this mediation was moderated by gender. Six moderated mediation analyses tested whether gender moderated the a1 path and six moderated mediation analyses tested whether gender moderated the b1 path of the alternate moderated mediation models. Outcomes from the analyses are summarized in Tables 8 and 9. The results from the moderated mediation analysis indicated a moderating effect of gender on the b1 pathway of the mediation of SWB on the relation between psychopathy and romantic relationship quality. Between 15.5 and 46.5 % of the total effect of psychopathy on romantic relationship quality is due to the indirect effects of SWB and gender on the b1 pathway of the model whereas only 3.4–13.4 % of the total effect of psychopathy on romantic relationship quality is due to the indirect effects of SWB and gender on the a1 pathway of this model.

5 Discussion

The present study examined the relations between SWB, the quality and characteristics of romantic relationships, and psychopathy. Prevalence rates for psychopathy were consistent with previous research (23.1 % of males and 7.4 % of females endorsed eight or more primary psychopathy items). Though participants who endorsed eight or more primary psychopathy items would be considered high in psychopathy relative to the rest of the sample, they would not necessarily be classified as “psychopaths” according to a diagnostic instrument such as the PCL-R. These prevalence rates do not indicate that 23.1 % of males and 7.4 % of females are “psychopaths” according to a categorical model because

Table 8 Moderated mediation analysis for gender moderating SWB's mediation of the relation between psychopathy and romantic relationship quality (moderation of the a1 path)

Outcome variable	Indirect effect of psychopathy on romantic relationship quality				Ratio of indirect to total effect (ab/c)
	Level of moderator	Point estimate	95 % confidence limits		
			Lower limit	Upper limit	
SWLS	Female	.065*	.024	.126	.044
	Male	.044*	.009	.096	
SHS	Female	.373*	.150	.677	.092
	Male	.279*	.078	.594	
OHI	Female	.529*	.101	1.07	.034
	Male	.355*	.073	.823	
PANAS [+]	Female	.060*	.025	.111	.059
	Male	.041*	.002	.098	
PANAS [–]	Female	–.047*	–.096	–.016	.134
	Male	–.058*	–.119	–.018	
CES-D	Female	–.036*	–.076	–.011	.098
	Male	–.035*	–.073	–.011	

* Significant point estimates are those whose confidence limits do not include zero

the LSRP was not designed as a diagnostic tool but rather to indicate the degree of psychopathy of a given individual on a continuum (Levenson et al. 1995).

5.1 Overall Quality of Romantic Relationships and SWB

Overall romantic relationship quality was positively correlated with well-being (happiness, life satisfaction, and positive affect) and negatively correlated with negative affect for both males and females, but only the correlations for females were significant at the adjusted alpha level (all correlations were significant at $p < .05$ with the exception of positive affect for males). The positive correlations between romantic relationship quality, life satisfaction, happiness and positive affect for both genders replicates previous research findings which show that relationship satisfaction is correlated with SWB (Demirtas and Tezer 2012; Dyrdal et al. 2011; Dush and Amato 2005). The gender differences observed in this study (the stronger association between romantic relationship quality and SWB for females) are consistent with the previously reported finding that the association between SWB and romantic relationship quality is typically stronger for females than for males (Proulx et al. 2007). The negative correlation between negative affect and romantic relationship quality overall for both males and females is consistent with research findings that depression is associated with low quality romantic relationships (Vujeva and Furman 2011) and low levels of satisfaction with romantic relationships, particularly for females (Whitton and Kuryluk 2012). These results are also consistent with attachment theory. High quality romantic relationships and SWB are associated with a secure attachment style (Banse 2004; Li and Fung 2014; Schiffrin 2014; Simpson 1990; Yang et al. 2008) and the influence of attachment type on SWB differs by gender (Del Giudice 2011; Kirkpatrick and Davis 1994).

Table 9 Moderated mediation analysis for gender moderating SWB's mediation of the relation between psychopathy and romantic relationship quality (moderation of the b1 path)

Outcome Variable	Indirect effect of psychopathy on romantic relationship quality				Ratio of indirect to total effect (ab/c)
	Level of moderator	Point estimate	95 % confidence limits		
			Lower limit	Upper limit	
SWLS	Female	.039*	.001	.095	.325
	Male	.081*	.019	.159	
SHS	Female	.242*	.010	.538	.465
	Male	.454*	.115	.873	
OHI	Female	.253*	.208	.766	.252
	Male	.677*	.012	1.381	
PANAS [+]	Female	.035*	.003	.078	.311
	Male	.067*	.020	.134	
PANAS [-]	Female	-.036*	-.088	-.002	.155
	Male	-.057	-.128	.003	
CES-D	Female	-.026*	-.063	-.003	.199
	Male	-.044	-.092	.002	

* Significant point estimates are those whose confidence limits do not include zero

5.2 Overall Quality of Romantic Relationships and Psychopathy

Psychopathy was able to account for significant variance in overall relationship quality for both genders. These findings are consistent with attachment theory. As previously stated, psychopathy is not typically associated with a secure attachment style (Diehl et al. 1998; Frodi et al. 2001) and a secure attachment style is associated with good quality romantic relationships (Banse 2004; Simpson 1990). A secure attachment style has been associated with greater commitment, trust and satisfaction than either anxious or avoidant attachment styles for both men and women (Simpson 1990) and the advantages enjoyed by securely attached individuals persist over time (Keelan et al. 1994).

5.3 Romantic Relationship Characteristics and SWB

Satisfaction and trust in romantic relationships significantly predict ill-being (depression and negative affect) for both males and females. This is consistent with research that has shown that ill-being is associated with low quality romantic relationships and low levels of relationship satisfaction (Vujeva and Furman 2011). Satisfaction in romantic relationships was positively associated with life satisfaction for both men and women. These results replicate previous research findings which show that relationship satisfaction is correlated with SWB (Demirtas and Tezer 2012; Dyrdal et al. 2011; Dush and Amato 2005).

More romantic relationship components were significantly positively associated with well-being and negatively associated with ill-being for females than males. The fact that all individual components of romantic relationships were positively correlated with happiness for females at the adjusted alpha level (with the exception of sexual activity), but for males only satisfaction in a romantic relationship was correlated with happiness, is consistent with the previously reported finding that the association between SWB and romantic

relationship quality is typically stronger for females than for males (Proulx et al. 2007). These findings are also consistent with attachment theory. Both quality romantic relationships and SWB are associated with a secure attachment style (Banse 2004; Li and Fung 2014; Schiffrin 2014; Simpson 1990; Yang et al. 2008).

5.4 Romantic Relationship Characteristics and Psychopathy

More romantic relationship characteristics were significantly associated with psychopathy for males than for females. For males, psychopathy was able to account for significant variance in all of the romantic relationship variables with the exception of love, sexual activity, and intimacy. For females, psychopathy could only account for significant variance in the commitment and trust romantic relationship characteristics. The negative association between psychopathy and romantic relationship characteristics is consistent with previous research which has demonstrated that deficits in emotional processing are often associated with poor quality relationships (Bouchard et al. 2009; Holder et al. 2014). For both males and females, trust, commitment, and overall relationship quality were negatively associated with psychopathy. These findings are consistent with attachment theory, particularly how psychopathy is negatively associated with a secure attachment style (Diehl et al. 1998) and romantic relationship quality is positively associated with a secure attachment style (Banse 2004; Simpson 1990).

For males (but not females), psychopathy scores predicted variance in romance and relationship satisfaction. In early adulthood, males' antisocial behaviours are less influenced by their female romantic partner, and vice versa (Monahan et al. 2014). Monahan et al. (2014) found that at approximately 15 years of age, males' antisocial behavior is influenced by their female romantic partner's antisocial behavior, but by early adulthood males' antisocial behaviour is no longer influenced by their female romantic partner. For females, this pattern is reversed. Because the youngest participants in our study were 17 years of age (mean age = 20 years) males' antisocial behaviours would likely be less influenced by their romantic partner than female's antisocial behaviour. Perhaps because their antisocial behaviours are less influenced by their romantic partner, males' antisocial behaviours are more heavily influenced by their own subjective perception of their romantic relationship than female's antisocial behaviour. This would help explain why in this case psychopathy is significantly related to relationship satisfaction and romance for males, but not for females. In addition, the gender differences observed may be due to gender differences in either how psychopathy symptoms manifest (Kreis and Cooke 2011) or the association between psychopathy and romantic relationship characteristics (Savard et al. 2011). Alternatively, the gender differences observed may be due to differences in how romantic relationship characteristics influence SWB (Proulx et al. 2007; Whitton and Kuryluk 2012), or gender differences in the association between attachment style and romantic relationship quality (Del Giudice 2011; Kirkpatrick and Davis 1994; Simpson 1990). We did not measure attachment style, and thus additional research is required to further explore these gender differences, particularly with reference to attachment style and the individual components of romantic relationships.

5.5 Moderated Mediation Analyses

The results from the moderated mediation analysis testing the moderating effect of gender on the $a1$ pathway of the mediation of romantic relationship quality on the relation between psychopathy and SWB was supported for both males and females. The indirect effects were

significant for all six SWB variables for both genders. In addition, the ratio of indirect to total effects indicates that between 18.5 and 42.5 % of the total effect of psychopathy on SWB is due to the indirect effects of romantic relationship quality and gender (Hayes et al. 2010). This model was compared to the moderated mediation assessing the moderating effect of gender on the b1 pathway. The indirect effects of this model were significant for females, but for males the moderated mediations for life satisfaction, happiness (OHI) and positive affect were not significant. In addition, the ratio of indirect to total effects indicates that between 0.8 and 19.7 % of the total effect of psychopathy on SWB is due to the indirect effects of romantic relationship quality and gender on the b1 pathway of the mediation. These results indicate that romantic relationship quality is mediating the relation between psychopathy and SWB, and the results support the moderated mediation model with gender moderating the a1 pathway (the relation between psychopathy and romantic relationship quality) rather than of the b1 pathway (the relation between romantic relationship quality and SWB).

We also tested alternate moderated mediation models that assessed the moderating effect of gender on both the a1 and b1 pathways of a mediation model assessing the influence of SWB on the relation between psychopathy and romantic relationship quality. For the moderated mediation analysis assessing the moderating effect of gender on the a1 pathway, all moderated mediations for all six SWB variables were significant for both males and females. The ratio of indirect to total effects indicate that between 3.4 and 13.4 % of the total effect of psychopathy on romantic relationship quality is due the indirect effects of SWB and gender. The indirect effects of the moderated mediation model assessing the moderating effect of gender on the b1 pathway was significant for all six SWB variables for males and was significant for all positive SWB variables for females. The ratio of indirect to total effects indicate that between 15.5 and 46.5 % of the total effect of psychopathy on romantic relationship quality is due the indirect effects of SWB and gender. For these alternate models, the data indicate that SWB is mediating the relation between psychopathy and romantic relationship quality, and the results support the moderated mediation model with gender moderating the b1 pathway (SWB and romantic relationship quality) rather than the a1 pathway (the relation between psychopathy and SWB).

Both the first moderated mediation model (Table 6) and the last moderated mediation model (Table 9) are consistent with research on attachment theory. Individuals high in psychopathy are more likely to display an anxious or avoidant attachment style rather than a secure one (Diehl et al. 1998; Mack et al. 2011) and both SWB (Li and Fung 2014; Mikulincer et al. 2003; Schiffrin 2014; Yang et al. 2008) and romantic relationship quality are influenced by attachment style (Banse 2004; Simpson 1990). Psychopathy may exert a negative influence on SWB through poor interpersonal relationships, or psychopathy may exert a negative influence on romantic relationships through lower levels of subjective well-being. Past research is inconclusive as to whether high levels of SWB lead to better quality interpersonal relationships (Lyubomirsky et al. 2005), or if good quality interpersonal relationships leads to higher levels of SWB (Dush and Amato 2005). Further research is necessary to determine which causal direction is valid.

6 Limitations of the Current Research

The present study is limited in five ways. First, we relied on self-report measures which assume that an individual can accurately assess and communicate their symptoms of psychopathy, their well-being and ill-being, and the characteristics of their romantic

relationships. While self-report data can be problematic, past research has extensively made use of self-report measures to assess SWB (Diener et al. 1985; Lyubomirsky and Lepper 1999) and both the LSRP (Levenson et al. 1995) and the PRQC (Fletcher et al. 2000) were created by using self-report data.

Second, psychopathy was only analyzed overall and no analyses were conducted at the factor level. The sub-factors of psychopathy could be differentially related to romantic relationship quality. Analyses were not conducted at the factor level because though these data were collected, the reliability was not sufficient, and total LSRP scores were multi-collinear with scores on the primary psychopathy subscale. While future research should explore the relations between the sub-factors of psychopathy, SWB, and the different characteristics of romantic relationships, the present study provides valuable insight into how the relation between psychopathy as an overall construct and SWB are influenced by romantic relationship characteristics.

Third, only one member of each romantic relationship dyad was included. It would be beneficial to include an analysis of both members of the relationship. Assessments incorporating input from both partners are more accurate than relationship assessments from one partner only (Attridge et al. 1995). The present paper would have benefitted by including both partners to help determine whether psychopathy in one's partner can explain variance in one's own SWB and quality of the romantic relationship. Despite this issue, the purpose of this study was to determine perceived relationship quality (not necessarily actual relationship quality) and so only measuring one individual in the relationship still provides valuable information.

Fourth, mediation analyses with cross-sectional data can lead to biased results which can either over- or under-estimate the true longitudinal effects (Maxwell et al. 2011). However, Hayes (2013) claims that if the reader's attention is drawn to the applicable cautions and caveats, then it is acceptable to use mediation on cross-sectional, correlational data. To attempt to rule out alternate explanations to our mediation theory we completed an analysis of alternative moderated mediation models as recommended by Hayes (2013). We hypothesized that romantic relationship quality mediates the relation between psychopathy and SWB, but it is also possible that SWB could mediate the relation between psychopathy and romantic relationship quality. We tested these alternate moderated mediation models and found statistically significant mediation. Therefore, due to the caution required when relying on cross-sectional data (Maxwell et al. 2011) and the statistically significant alternate moderated mediation models, we cannot make assertions with regards to causality. While the data clearly indicate that psychopathy, SWB, and romantic relationship quality are closely linked, we cannot be certain whether psychopathy asserts its influence on SWB through the decreased quality of interpersonal relationships or if the lower levels of romantic relationship quality experienced by individuals high in psychopathy is mediated by SWB. Despite this limitation, the correlations between psychopathy, quality of romantic relationships, and SWB are consistent with attachment theory, and the moderated mediation model proposed in this study is also consistent with this theory. Future research should include longitudinal and experimental research designs to explore the causal relations between psychopathy, romantic relationship quality and SWB. There has been very little research on the relations between psychopathy and SWB, and even less research which attempts to examine how romantic relationships fit into this relation. This correlational study is therefore an important first step to guide further exploration into the causal relationships between these variables.

Finally, this study only included undergraduates. Generalizability would be improved if the study were expanded to include participants from the general public and from clinical populations. Despite these concerns, undergraduate students are often used in psychology

research (Schneider and Schimmack 2009; Sin and Lyubomirski 2009) and both the LSRP and PRQC were developed and validated using university students (Fletcher et al. 2000; Levenson et al. 1995). In addition, this study represents one of the first attempts to determine whether the quality of romantic relationships can mediate the observed relation between psychopathy and SWB and the current research provides insights missing from the larger body of knowledge on psychopathy, particularly with reference to SWB and romantic relationships.

7 Future Research and Implications

The present study provides a first step towards a better understanding of the relations between psychopathy, romantic relationships, and SWB and ill-being. Additional research is needed to better understand the causal relations between psychopathy, SWB, and romantic relationship quality, how the various components of romantic relationships interact with the sub-factors of psychopathy as well as to explore the gender differences observed in this study. As previously mentioned, individuals with alexithymia (Holder et al. 2014) and borderline personality disorder (Bouchard et al. 2009), experience poor quality romantic relationships when compared with controls. In addition, both alexithymia (Holder et al. 2014) and psychopathy (Love and Holder 2014) have been associated with low levels of well-being and high levels of ill-being. Other personality disorders may be characterized by low levels of SWB and poor quality romantic relationships.

Future studies could develop interventions designed to impact the SWB and/or interpersonal relationships of individuals high in psychopathy. Individuals may be more receptive to interventions than previously believed (Polaschek and Daly 2013) and SWB may be a key component in the association between interpersonal relationships and psychopathy. While individuals high in psychopathy demonstrate a lack of concern for others, which can be detrimental to their social relationships, individuals high in psychopathy can display this concern when properly motivated (Arbuckle and Cunningham 2012). This suggests that they could be taught to behave in ways to improve their social relationships. Jonason and Schmitt (2012) proposed that individuals high in psychopathy select friends who contribute to their volatile lifestyles. Teaching these individuals to choose healthier, positive, interpersonal relationships with emotionally-stable individuals may reduce their antisocial behaviors. Good social relationships, including romantic relations, are associated with high SWB (Berry and Willingham 1997; Diener and Seligman 2002; Lyubomirsky et al. 2005). Taking part in healthy social relationships may increase the empathy felt by individuals high in psychopathy, and by extension, decrease their psychopathic traits by acting on the attachment styles of these individuals. Good interpersonal relationships may provide an important protective factor and could potentially be used as an intervention to decrease psychopathic traits (Barry et al. 2008). Increasing SWB in individuals high in psychopathy may improve their interpersonal relationships, which could in turn increase their levels of SWB, resulting in a positive feedback loop leading to a potential decrease in psychopathic symptoms.

References

- Ali, F., & Chamorro-Premuzic, T. (2010). The dark side of love and life satisfaction: Associations with intimate relationships, psychopathy and Machiavellianism. *Personality and Individual Differences*, 48, 228–233.

- Arbuckle, N. L., & Cunningham, W. A. (2012). Understanding everyday psychopathy: Shared group identity leads to increased concern for others among undergraduates higher in psychopathy. *Social Cognition, 30*(5), 564–583.
- Argyle, M., Martin, M., & Crossland, J. (1989). Happiness as a function of personality and social encounters. In J. P. Forgas & J. M. Innes (Eds.), *Recent advances in social psychology: An international perspective* (pp. 189–203). Amsterdam: North Holland, Elsevier Science.
- Attridge, M., Berscheid, E., & Simpson, J. A. (1995). Predicting relationship stability from both partners versus one. *Journal of Personality and Social Psychology, 69*(2), 254–268.
- Banse, R. (2004). Adult attachment and marital satisfaction: Evidence for dyadic configuration effects. *Journal of Social and Personal Relationships, 21*(2), 273–282.
- Barry, T. D., Barry, C. T., Deming, A. M., & Lochman, J. E. (2008). Stability of psychopathic characteristics in childhood: The influence of social relationships. *Criminal Justice and Behavior, 35*(2), 244–262.
- Beekman, A. T. F., Deeg, D. J. H., Van Limbeek, J., Braam, A. W., De Vries, M. Z., & Van Tilburg, W. (1997). Criterion validity of the Center for Epidemiological Studies Depression Scale (CES-D): Results from a community-based sample of older subjects in the Netherlands. *Psychological Medicine, 27*, 231–235.
- Berry, D. S., & Willingham, J. K. (1997). Affective traits, responses to conflict, and satisfaction in romantic relationships. *Journal of Research in Personality, 31*(4), 564–576. doi:10.1006/jrpe.1997.2198.
- Bouchard, S., Sabourin, S., Lussier, Y., & Villeneuve, E. (2009). Relationship quality and stability in couples when one partner suffers from borderline personality disorder. *Journal of Marital and Family Therapy, 35*(4), 446–455.
- Brinkley, C. A., Schmitt, W. A., Smith, S. S., & Newman, J. P. (2001). Construct validation of a self-report psychopathy scale: Does Levenson's Self-Report Psychopathy Scale measure the same constructs as Hare's Psychopathy Checklist-Revised? *Personality and Individual Differences, 31*, 1021–1038.
- Cramer, D., & Jowett, S. (2010). Perceived empathy, accurate empathy and relationship satisfaction in heterosexual couples. *Journal of Social and Personal Relationships, 27*, 327–349.
- Crawford, J. R., & Henry, J. D. (2004). The Positive and Negative Affect Schedule (PANAS): Construct validity, measurement properties and normative data in a large non-clinical sample. *British Journal of Clinical Psychology, 43*, 245–265.
- Cuijpers, C., Boluijt, P., & van Straten, A. (2008). Screening of depression in adolescents through the internet. *European Child and Adolescent Psychiatry, 17*, 32–38.
- Del Giudice, M. (2011). Sex differences in romantic attachment: A meta-analysis. *Personality and Social Psychology Bulletin, 37*(2), 193–214.
- Demir, M. (2010). Close relationships and happiness among emerging adults. *Journal of Happiness Studies, 11*, 293–313.
- Demir, M., & Weitekamp, L. A. (2007). I am so happy cause today I found my friend: Friendship and personality as predictors of happiness. *Journal of Happiness Studies, 8*, 8181–8211.
- Demirtas, S. C., & Tezer, E. (2012). Romantic relationship satisfaction, commitment to career choices, and subjective well-being. *Procedia – Social and Behavioural Sciences, 46*, 2542–2549.
- Diehl, M., Elrick, A. B., Bourbeau, L. S., & Labouvie-Vief, G. (1998). Adult attachment styles: Their relations to family context and personality. *Psychological Bulletin, 124*(2), 197–229.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*(1), 71–75.
- Diener, E., & Seligman, M. E. P. (2002). Very happy people. *Psychological Science, 13*(1), 81–84. doi:10.1111/1467-9280.00415.
- Drigotas, S. M., Rusbult, C. E., & Verette, J. (1999). Level of commitment, mutuality of commitment, and couple well-being. *Personal Relationships, 6*(3), 389–409.
- Dush, C. M. K., & Amato, P. R. (2005). Consequences of relationship status and quality for subjective well-being. *Journal of Social and Personal Relationships, 22*(5), 607–627.
- Dyrdal, G. M., Røysamb, E., Nes, R. B., & Vittersø, J. (2011). Can a happy relationship predict a happy life? A population-based study of maternal well-being during the life transition of pregnancy, infancy, and toddlerhood. *Journal of Happiness Studies, 12*, 947–962.
- Fletcher, G. J. O., Simpson, J. A., & Thomas, G. (2000). The measurement of perceived relationship quality components: A confirmatory factor analytic approach. *Personality and Social Psychology Bulletin, 26*, 340–354.
- Francis, L. J., Brown, L. B., Lester, D., & Philipchalk, R. (1998). Happiness as stable extraversion: A cross-cultural examination of the reliability and validity of the Oxford Happiness Inventory among students in the U.K., U.S.A., Australia, and Canada. *Personality and Individual Differences, 24*(2), 167–171.
- Frick, P. J., O'Brien, P. S., Wootton, J. M., & McBurnett, K. (1994). Psychopathy and conduct problems in children. *Journal of Abnormal Psychology, 103*(4), 700–707.

- Frodi, A., Dernevik, M., Sepa, A., Philipson, J., & Bragesjö, M. (2001). Current attachment representations of incarcerated offenders varying in degrees of psychopathy. *Attachment and Human Development*, 3(3), 269–283.
- Furnham, A., & Petrides, K. V. (2003). Trait emotional intelligence and happiness. *Social Behavior and Personality*, 31(8), 815–824.
- Hare, R. D. (1999). Psychopathy as a risk for violence. *Psychiatric Quarterly*, 70(3), 181–197.
- Hare, R. D., Harup, T. J., Hakstian, A. R., Forth, A. E., Hart, S. D., & Newman, J. P. (1990). The revised psychopathy checklist: Reliability and factor structure. *Psychological Assessment*, 2(3), 338–341.
- Hare, R. D., & Neumann, C. S. (2005). Structural models of psychopathy. *Current Psychiatry Reports*, 7, 57–64.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression based approach*. New York, NY: The Guilford Press.
- Hayes, A. F., Preacher, K. J., & Myers, T. A. (2010). Mediation and the estimation of indirect effects in political communication research. In E. P. Bucy & R. L. Holbert (Eds.), *Sourcebook for political communication research: Methods, measures, and analytical techniques*. New York: Routledge.
- Hazen, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, 52(3), 511–554.
- Holder, M. D., Love, A. B., & Timoney, L. (2014). The poor subjective well-being associated with alexithymia is mediated by romantic relationships. *Journal of Happiness Studies*, 66, 112–117. doi:10.1007/s10902-014-9500-0.
- Howell, R. T., Rodzon, K. S., Kurai, M., & Sanchez, A. H. (2010). A validation of well-being and happiness surveys for administration via the Internet. *Behavior Research Methods*, 42(3), 775–784.
- Joiner, T. E., Sandín, B., Chorot, P., Lostao, L., & Marquina, G. (1997). Development and factor analytic validation of the SPANAS among women in Spain: (More) cross-cultural convergence in the structure of mood. *Journal of Personality Assessment*, 68(3), 600–615.
- Jonason, P. K., Luevano, V. X., & Adams, H. M. (2012). How the Dark Triad traits predict relationship choices. *Personality and Individual Differences*, 53, 180–184.
- Jonason, P. K., & Schmitt, D. P. (2012). What have you done for me lately? Friendship-selection in the shadow of the Dark Triad traits. *Evolutionary Psychology*, 10(3), 400–421.
- Jonason, P. K., Valentine, K. A., Li, N. P., & Harbeson, C. L. (2011). Mate-selection and the Dark Triad: Facilitating a short-term mating strategy and creating a volatile environment. *Personality and Individual Differences*, 51, 759–763.
- Kashdan, T. B. (2004). The assessment of subjective well-being (issues raised by the Oxford Happiness Questionnaire). *Personality and Individual Differences*, 36, 1225–1232.
- Keelan, J. P. R., Dion, K. L., & Dion, K. K. (1994). Attachment style and heterosexual relationships among young adults: A short-term panel study. *Journal of Social and Personal Relationships*, 11, 201–214.
- Kirkpatrick, L. A., & Davis, K. E. (1994). Attachment style, gender, and relationship stability: A longitudinal analysis. *Journal of Personality and Social Psychology*, 66(3), 502–512.
- Kreis, M. K. F., & Cooke, D. J. (2011). Capturing the psychopathic female: A prototypicality analysis of the Comprehensive Assessment of Psychopathy (CAPP) across gender. *Behavioral Sciences & the Law*, 29(5), 634–648.
- Levenson, M. R., Kiehl, K. A., & Fitzpatrick, C. M. (1995). Assessing psychopathic attributes in a non-institutionalized population. *Journal of Personality and Social Psychology*, 68(1), 151–158.
- Li, T., & Fung, H. H. (2014). How avoidant attachment influences subjective well-being: An investigation about the age and gender differences. *Aging and Mental Health*, 18(1), 4–10.
- Love, A. B., & Holder, M. D. (2014). Psychopathy and subjective well-being. *Personality and Individual Differences*, 66, 112–117.
- Luce, K. H., Winzelberg, A. J., Das, S., Osborne, M. I., Bryson, S. W., & Taylor, C. B. (2005). Reliability of self-report: Paper versus online administration. *Computers in Human Behavior*, 23, 1384–1389.
- Lynam, D. R., Caspi, A., Moffitt, T. E., Loeber, R., & Stouthamer-Loeber, M. (2007). Longitudinal evidence that psychopathy scores in early adolescence predict adult psychopathy. *Journal of Abnormal Psychology*, 116(1), 155–165.
- Lyubomirsky, S., King, L., & Diener, E. (2005a). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin*, 131(6), 803–855.
- Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, 46, 137–155.
- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005b). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology*, 9(2), 111–131.
- Mack, T. D., Hackney, A. A., & Pyle, M. (2011). The relationship between psychopathic traits and attachment behavior in a non-clinical population. *Personality and Individual Differences*, 51, 584–588.

- Martens, M. P., Parker, J. C., Smarr, K. L., Hewett, J. E., Slaughter, J. R., & Walker, S. E. (2006). Assessment of depression in rheumatoid arthritis: A modified version of the Center for Epidemiological Studies Depression Scale. *Arthritis and Rheumatism*, *49*(4), 549–555.
- Maxwell, S. E., Cole, D. A., & Mitchell, M. A. (2011). Bias in cross-sectional analysis of longitudinal mediation: Partial and complete mediation under an autoregressive model. *Multivariate Behavioral Research*, *46*(5), 816–841.
- McLennan, J., Bates, G. W., Johnson, E., Lavery, A. R., & Horne, D. D. (1993). The death fantasy scale: A measure based on metaphors of one's personal death. *The Journal of Psychology*, *126*(7), 619–624.
- Mikulincer, M., Shaver, P. R., & Pereg, D. (2003). Attachment theory and affect regulation: The dynamics, development, and cognitive consequences of attachment-related strategies. *Motivation and Emotion*, *27*(2), 77–102.
- Miller, J. D., Watts, A., & Jones, S. E. (2011). Does psychopathy manifest divergent relationships with components of its nomological network depending on gender? *Personality and Individual Differences*, *50*(5), 564–569.
- Monahan, K. C., Dmitrieva, J., & Cauffman, E. (2014). Bad romance: Sex differences in the longitudinal association between romantic relationships and deviant behavior. *Journal of Research on Adolescence*, *24*(1), 12–26.
- Neumann, C. S., Hare, R. D., & Newman, J. P. (2007). The super-ordinate nature of the psychopathy checklist-revised. *Journal of Personality Disorders*, *21*(2), 102–117.
- O'Connor, B. P., Crawford, M. R., & Holder, M. D. (2014). An item response theory analysis of the Subjective Happiness Scale. *Social Indicators Research*, doi:10.1007/s11205-014-0773-9.
- Pinquart, M., & Sörensen, S. (2000). Influences of socioeconomic status, social network, and competence on subjective well-being in later life: A meta-analysis. *Psychology and Aging*, *15*, 187–224.
- Polaschek, D. L. L., & Daly, T. E. (2013). Treatment and psychopathy in forensic settings. *Aggression and Violent Behavior*, *18*(5), 592–603.
- Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, *42*(1), 185–227.
- Proulx, C. M., Helms, H. M., & Buehler, C. (2007). Marital quality and personal well-being: A meta-analysis. *Journal of Marriage and Family*, *69*, 576–593.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*(3), 385–401.
- Radloff, L. S. (1991). The use of the Center for Epidemiological Studies Depression Scale in adolescents and young adults. *Journal of Youth and Adolescence*, *20*(2), 149–166.
- Romans, S. E., Tyas, J., Cohen, M. M., & Silverstone, T. (2007). Gender differences in the symptoms of major depressive disorder. *Journal of Nervous and Mental Disease*, *195*(11), 905–911.
- Salekin, R. T., & Frick, P. J. (2005). Psychopathy in children and adolescents: The need for a developmental perspective. *Journal of Abnormal Child Psychology*, *33*(4), 403–409.
- Santos, J. R. A. (1999). Cronbach's alpha: A tool for assessing the reliability of scales. *Journal of Extension*, *37*(2). <http://www.joe.org/joe/1999april/tt3.html>
- Savard, C., Sabourin, S., & Lussier, Y. (2011). Correlates of psychopathic personality traits in community couples. *Personality and Mental Health*, *5*(3), 186–199.
- Schiffrin, H. H. (2014). Positive psychology and attachment: Positive affect as a mediator of developmental outcomes. *Journal of Child and Family Studies*, *23*, 1062–1072.
- Schneider, L., & Schimmack, U. (2009). Self-informant agreement in well-being ratings: A meta-analysis. *Social Indicators Research*, *94*, 363–376.
- Simpson, J. A. (1990). Influence of attachment styles on romantic relationships. *Journal of Personality and Social Psychology*, *59*(5), 971–980.
- Sin, N. L., & Lyubomirski, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology*, *65*, 467–487.
- Skorikov, V. B., & Vandervoort, D. J. (2009). Relationships between the underlying constructs of the Beck Depression Inventory and the Center for Epidemiological Studies Depression Scale. *Educational and Psychological Measurement*, *63*(2), 319–335.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Needham Heights: Allyn & Bacon.
- Terracciano, A., McCrae, R. R., & Costa, P. T. (2003). Factorial and construct validity of the Italian positive and negative affect schedule (PANAS). *European Journal of Psychological Assessment*, *19*(2), 131–141.

- Timoney, L., & Holder, M. D. (2013). *Emotional processing deficits and happiness: Assessing the measurement, correlates, and well-being of people with alexithymia* (pp. 1–90). Berlin: Springer Publishing.
- Uysal, A., Lin, H. L., & Bush, A. L. (2012). The reciprocal cycle of self-concealment and trust in romantic relationships. *European Journal of Social Psychology, 42*, 844–851.
- Vallejo, M. A., Jordàn, C. M., Diaz, M. I., Comeche, M. I., & Ortega, J. (2007). Psychological assessment via the internet: A reliability and validity study of online (vs. paper-and-pencil) version of the General Health Questionnaire-28 (GHQ-28) and the Symptoms Checklist-90-Revised (SCL-90-R). *Journal of Medical Internet Research, 9*(1), 1–10.
- Vujeva, H. M., & Furman, W. (2011). Depressive symptoms and romantic relationship qualities from adolescence through emerging adulthood: A longitudinal examination of influences. *Journal of Clinical Child & Adolescent Psychology, 40*(1), 123–135.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063–1070.
- Whitton, S. W., & Kuryluk, A. D. (2012). Relationship satisfaction and depressive symptoms in emerging adults: Cross-sectional associations and moderating effects of relationship characteristics. *Journal of Family Psychology, 26*(2), 226–235.
- Yang, A., Wang, D., Li, T., & Teng, F. (2008). The impact of adult attachment and parental rearing on subjective well-being in Chinese late adolescents. *Social Behavior and Personality, 36*(10), 1365–1378.