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Adolescent Self-Compassion Moderates the Relationship Between Perceived Stress and Internalizing Symptoms

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Abstract

Introduction—Self-compassion, a trait that involves responding to one’s difficulties with care and concern, may offer unique stress coping benefits during the challenges of adolescence.

Methods—This cross-sectional study used survey data from a large adolescent sample within two U.S. school settings ($N=1,057$; 65% female; 68% white; mean age 14.7 years) to examine whether self-compassion buffers the impact of perceived stress on internalizing symptoms, and secondarily, if these relationships differ by gender.

Results—Regression analysis revealed self-compassion is inversely related to internalizing symptoms. Moreover, the relationship between stress and depression and anxiety symptoms differed by level of self-compassion. This moderation effect was similar between genders for depressive symptoms, but slightly greater in males compared to females for anxiety.

Conclusions—These results add to our understanding of self-compassion as an adaptive emotion regulation strategy with potential benefits for youth experiencing stress. Further research is needed to confirm if moderation effects for anxiety differ by gender.

Keywords

self-compassion; coping; youth; stress; internalizing symptoms; buffer

Introduction

Adolescents navigate emotionally challenging circumstances daily as they undergo the rapid physical, cognitive, physiologic and social transitions that characterize the path to adulthood. A recent study from the American Psychological Association reveals many adolescents report high and unhealthy stress levels, with substantial difficulties managing the demands

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Dr. Bluth declares that she is the co-creator of *Making Friends with Yourself: A Mindful Self-Compassion Program for Teens and Young Adults*. Other authors have no conflicts of interest to declare.

of school, home and work (Anderson et al., 2014). In addition to acute daily stressors, over half of all adolescents age 12–17 also report stressful and chronic adverse conditions such as family dysfunction, abuse or economic hardship (Soleimanpour, Geierstanger, & Brindis, 2017).

A large body of evidence points to stress as a significant risk factor for the development of adolescent depressive and anxious symptomatology (Byrne, Davenport, & Mazanov, 2007; Ge, Lorenz, Conger, Elder, & Simons, 1994; Grant, Compas, Thurm, McMahon, & Gipson, 2004; McLaughlin & Hatzenbuehler, 2009), which are increasingly prevalent problems. Nearly one third of adolescents age 13–18 report an anxiety disorder (Merikangas et al., 2010). Meanwhile, depressive disorders in this age range are on the rise (Mojtabai, Olfson, & Han, 2016), with high level depressive symptoms and suicide rates rising by over 30% between 2010–2015, and with female suicide rates more than doubling compared to late 1990's levels (Twenge, Joiner, Rogers, & Martin, 2018). Moreover, an estimated one in four adolescents report severe impairment or distress from a mental health disorder across their lifetime (Merikangas et al., 2010). Given that half of those who experience mental health disorders as an adult have onset of symptoms by age 14 (Kessler et al., 2005), identifying protective factors that weaken the pathway from stress to mental health symptomatology in the adolescent years may have long-lasting benefits on adult mental health.

One promising protective factor is self-compassion, which entails treating oneself with warmth and care during stressful circumstances. According to Neff (2003), self-compassion is both a trait and a psychological process comprised of three core features: self-kindness, common humanity and mindfulness. *Self-kindness* refers to supportive and soothing responses to moments of suffering; *common humanity* refers to the recognition that all humans are bound by the experience of suffering; and *mindfulness* refers to the ability to maintain a balanced, non-judgmental, and open awareness during negative experiences. Taken together, the self-compassionate person experiences less self-criticism and isolation, and tends to be less overwhelmed or emotionally “swept away” when faced with hardship. These tendencies may be beneficial for overcoming difficulties with greater ease (Neff, 2016).

Evidence from systematic reviews shows self-compassion is positively correlated with multiple measures of psychological health (Zessin, Dickhäuser, & Garbade, 2015) and negatively correlated with psychopathology, with large effect size in both adults (MacBeth & Gumley, 2012) and adolescents (Marsh, Chan, & Macbeth, 2017). Self-compassion is linked to personal strengths such as global self-esteem, optimism, wisdom, and curiosity (Neff, Rude, & Kirkpatrick, 2007). With regards to coping with stressful circumstances, self-compassion protects against anxiety in response to a lab-induced stressor (Neff, Kirkpatrick, & Rude, 2007), is associated with more constructive and less self-critical responses to everyday negative life events (Leary, Tate, Adams, Allen, & Hancock, 2007), promotes healthy responses following a personal mistake (Breines & Chen, 2012), and is linked to decreased negative response to academic failure (Neff, Hsieh, & Dejitterat, 2005).

Furthermore, there is evidence from prospective studies suggesting self-compassion may mitigate the initiation and maintenance of internalizing symptomatology in a variety of

populations. A longitudinal study by Raes (2010) demonstrated that higher baseline self-compassion in a non-clinical undergraduate sample predicted greater reductions and smaller increases in depressive symptoms over a 5 month period. Likewise, a longitudinal study of high school students involved in a traumatic event demonstrated that students with higher self-compassion were protected against later development of both anxiety and depressive symptoms (Zeller, Yuval, Nitzan-Assayag, & Bernstein, 2015). In a study using ecological momentary assessment over 2 weeks, self-compassion was found to be associated with less daily perceived stress, fewer endorsements of negative affect or mood, and greater endorsements of positive affect (Krieger, Hermann, Zimmermann, & Holtforth, 2015). Finally, in a sample of depressed outpatients followed for 12 months post-therapy, lack of self-compassion predicted subsequent depressive symptoms, suggesting low self-compassion increases vulnerability to mood disorders (Krieger, Berger, & grosse Holtforth, 2016).

Despite accumulating evidence for self-compassion's mental health benefits, literature on self-compassion in the adolescent period is less prevalent. Cross-sectional data demonstrates self-compassion is inversely related to perceived stress (Bluth, Campo, Futch, & Gaylord, 2017), anxiety and depressive symptoms in adolescents (Bluth et al., 2017; Muris, Meesters, Pierik, & de Kock, 2016; Neff & McGehee, 2010), as well as positively related to resilience (Bluth, Mullarkey, & Lathren, 2018). Evidence from interventional studies suggest mindfulness and self-compassion-based interventions decrease perceived stress and internalizing symptoms in adolescents (Bluth & Eisenlohr-Moul, 2017; Bluth, Gaylord, Campo, Mullarkey, & Hobbs, 2016; Bluth, Roberson, & Gaylord, 2015; Edwards, Adams, Waldo, Hadfield, & Biegel, 2014). Moreover, self-compassion was found to be the main predictor of improvements in perceived stress, rumination and depressive symptoms in adolescents three months post meditation retreat intervention (Galla, 2016), and predicted less physiologic reactivity in adolescents exposed to lab-induced stressors (Bluth, Roberson, Gaylord, et al., 2015).

In this study, we add to the growing body of evidence of the benefits of self-compassion in adolescence by examining whether self-compassion moderates the relationship between perceived stress and depressive symptomatology and/or anxiety in a large sample. Given that self-compassion appears to be associated with adaptive stress coping responses, we hypothesize those adolescents reporting higher self-compassion will display a significantly weakened perceived stress-internalizing symptom relationship. Secondly, we aim to explore if these effects differ by gender. Although there is evidence that female adolescents report lower levels of self-compassion (Bluth et al., 2017), higher levels of internalizing symptoms (Hankin et al., 1998; Nolen-Hoeksema & Girgus, 1994), and greater stress exposure and reactivity (Hankin, Mermelstein, & Roesch, 2007) compared to males, it is unclear whether the impact of self-compassion will differ by gender; therefore, we refrain from stating a specific hypothesis for this secondary aim.

Methods

Participants

A total of 1,307 students from two different southeast U.S. school settings participated in this study. This included a public middle and high school (grades 7–12), which we will refer to as middle school A and high school A, and a private all-girls' school (grades 7–12), which we will refer to as school B.

In order to ensure the students were paying attention, three validity check questions were included within the survey. These questions had correct answers (for example, "I go to school in the southeast U.S."), and as such, could be failed. If students failed two out of three of these items, they were removed from all analyses. 244 students from school A and 6 students from school B failed the validity check and were removed from the analyses.

After removal of participants failing the validity check, the final sample included 1,057 youth. The sample was 65.3% female, 68.3% white, 16.5% black, 5.4% Asian/Pacific Islander/Native American, 3.5% Hispanic and 5.9% "other race", with a mean age of 14.7 years. The majority of participants' parents had attained some college or an undergraduate degree as their highest educational level (47.6% mothers, 40.2% fathers); however a sizeable number of parents (23.4% mothers, 31.8% fathers) had completed high school or less.

Procedure

After university IRB and school administration granted approval, parents received a letter inviting their child's participation in a one-time online study exploring adolescent well-being and its association with various factors. Parents returned signed opt-out forms if they did not want their child to participate. At middle and high school A, parents of 56 students chose not to have their students participate; at school B, all parents agreed to have their children participate. Students assented to the study via an embedded form at the beginning of the online survey; students indicated their assent by proceeding to the survey questions.

All students at middle and high school A took the online survey during their first-period class. Students at middle school A took the survey on one day, while high school A students took it over several days during one week due to limited computer access. In total, 1,030 students took the survey. At school B, 277 students took the survey at different times during the course of one day.

Measures

A number of measures were included in the online survey; however, for this research question, we include data from the following measures:

Self-compassion—The Self-Compassion Scale, short form (Raes, Pommier, Neff, & Van Gucht, 2011) is comprised of 12 items. Responses to each item use a 5-point Likert scale ranging from 1 (Almost Never) to 5 (Almost Always). A sample item is: "When I'm feeling down, I tend to obsess and fixate on everything that is wrong." A total self-compassion score is computed by reverse scoring negatively worded items and then summing all 12 items. The potential range in values is from 12–60; higher score indicates greater self-compassion.

Cronbach's alphas are reported at $> .75$ (Marshall et al., 2015; Raes et al., 2011). Correlation with the full scale is excellent; $r = .97$ (Raes et al., 2011). Cronbach's alpha coefficient for this sample was 0.76.

Perceived Stress—The Perceived Stress Scale (Cohen & Williamson, 1988) is a 10-item scale that measures the degree to which a person appraises their life as stressful over the past month. Responses are indicated using a 5-point Likert scale ranging from 0 (Never) to 4 (Very Often). A sample item is: “In the last month, how often have you been able to control irritations in your life?” A total score is calculated by reverse-scoring positively-worded items and then summing all items. Total scores range from 0 to 40, with higher scores indicating greater perceived stress. Both convergent validity and discriminant validity have been established (Lee, 2012). Cronbach's alpha coefficient for this sample was 0.82.

Depressive Symptoms—The Short Mood and Feelings Questionnaire (Angold et al., 1995) is a 13-item self-report scale that assesses childhood and adolescent depressive symptoms over the past two weeks. Responses are indicated with a 3-point Likert scale ranging from 0 (Not true) to 2 (True). A sample item is: “I felt lonely.” Total scores range from 0 to 26, with higher scores indicating greater depressive symptoms. Criterion validity and construct validity have been established (Sharp, Goodyer, & Croudace, 2006), and reliability is reported as 0.85 (Angold et al., 1995). Cronbach's alpha coefficient for this sample was 0.92.

Anxiety—The Spielberger State –Trait Anxiety Inventory 6-item short form assesses general anxiety (Marteau & Bekker, 1992). Responses are indicated using a 4-point Likert scale ranging from 1 (Not at all) to 4 (Very much) and are based on how the participant is feeling “right now”. A sample item includes: “I feel tense.” Reported reliability for the short-form is $\alpha = 0.82$ (Marteau & Bekker, 1992). Cronbach's alpha coefficient for this sample was 0.80.

Analysis Plan—All analyses were conducted using R version 3.4.4. We began by describing the variables and examining bivariate correlations. The variables of interest were fairly normally distributed with skewness ranging from -0.21 to 0.94 and kurtosis ranging from -0.58 to 0.12 .

Our main analysis used multiple regression to examine the two-way interaction effect of self-compassion and perceived stress on depressive symptoms and anxiety. In line with the previous research, there was a significant difference by gender in the level of depressive symptoms, $t(1030) = -6.29, p < .001$, and anxiety, $t(1028) = -7.66, p < .001$; males showed lower levels of depressive symptoms ($M = 5.63, SD = 5.61$) and anxiety ($M = 38.85, SD = 12.51$) compared to females ($M = 8.27, SD = 6.69$ for depressive symptoms; $M = 45.6, SD = 13.68$ for anxiety). Therefore, gender was controlled for in the main analysis.

One-way ANOVA was conducted to examine possible differences by ethnicity. There were no significant differences by ethnicity in depression, anxiety, or perceived stress. However, there was a significant difference in self-compassion by ethnicity, $F(6, 1045) = 2.807, p = .01$. Tukey post hoc test showed that the difference was significant only between Black/

African American ($M = 3.19$, $SD = 0.55$) and White/non Hispanic ($M = 3$, $SD = 0.66$). However, the effect of ethnicity was not our main interest, and self-compassion \times ethnicity interaction effect on both depression and anxiety was non-significant. Thus, ethnicity was not included in the model.

A three-way interaction (self-compassion \times perceived stress \times school type) and the two-way interactions with school type (self-compassion \times school type, perceived stress \times school type) were not significant, and thus, the two samples were combined in the analysis. School type was still controlled for in the analysis. Finally, a three-way interaction effect with gender was also examined to see whether the possible buffering effect of self-compassion differs by gender.

Results Self-compassion as a moderator of the relationship between perceived stress and depressive symptoms

In order to explore if the current study's data are in line with previous adolescent self-compassion research, bivariate correlations were calculated as a preliminary step (Table 1). The results showed that self-compassion was significantly inversely related to perceived stress, depressive symptoms, and anxiety. Adolescents with high self-compassion showed lower levels of perceived stress, depressive and anxiety symptoms compared to adolescents with low self-compassion.

A multiple regression analysis was conducted to examine the main effect of self-compassion on depressive symptoms controlling for school and gender effect (Model 1). As described in Table 2, self-compassion was a significant predictor of depressive symptoms controlling for gender and school type. Perceived stress was also a significant predictor of depressive symptoms controlling for gender and school type.

A separate regression model with the two-way (self-compassion \times perceived stress) and the three-way (self-compassion \times perceived stress \times gender) interactions on depressive symptoms was examined, controlling for school type (Model 2). The two-way interaction between self-compassion and perceived stress, controlling for gender and school type, was significant. Adolescents with high self-compassion had a weaker link between perceived stress and depressive symptoms compared to those with low self-compassion (Figure 1).

However, the three-way interaction between self-compassion, perceived stress, and gender was not significant, showing that the moderating effect of self-compassion did not differ by gender. The results remained unchanged after controlling for age, parents' education level, and grade. The two-way interactions with school (self-compassion \times school and perceived stress \times school) and the three-way interaction (self-compassion \times perceived stress \times school) were not significant ($p > .05$) and thus dropped from the model.

Self-compassion as a moderator of the relationship between perceived stress and anxiety

A multiple regression analysis was conducted with self-compassion and perceived stress as predictors and anxiety as an outcome, controlling for school and gender effect (Model 3). As described in Table 3, self-compassion negatively predicted anxiety, while perceived stress positively predicted anxiety.

A separate regression analysis with a two-way interaction (self-compassion \times perceived stress), and a three-way interaction (self-compassion \times perceived stress \times gender), controlling for school effect, was conducted with anxiety as the dependent variable (Model 4). The moderating effect of self-compassion on the relationship between perceived stress and anxiety was significant, suggesting a possible buffering effect of self-compassion. As shown in Figure 2, high perceived stress was linked to a relatively low level of anxiety among adolescents with high self-compassion, compared to adolescents with low self-compassion.

The three-way interaction between self-compassion, perceived stress and gender was also significant. The moderation effect of self-compassion on the relationship between perceived stress and anxiety was slightly stronger in males compared to females (Figure 3). The results remained unchanged after controlling for age, parents' education, and grade.

Again, the two-way interactions with school type (self-compassion \times school and perceived stress \times school) and the three-way interaction (self-compassion \times perceived stress \times school) was not significant ($p > .05$) and thus dropped from the model.

Discussion

Consistent with our primary hypothesis and extant literature, findings from this study suggest self-compassion is a beneficial adolescent trait that may dampen the relationships between perceived stress and both depressive symptoms and anxiety. This result is in agreement with previous studies showing negative correlation between adolescent self-compassion and perceived stress, depressive symptoms and anxiety (Bluth, Campo, Futch, & Gaylord, 2015; Neff & McGehee, 2010).

Additionally, we sought to examine if there were gender differences in the buffering effect of self-compassion on internalizing symptoms. Given that male and female adolescents follow different developmental trajectories, report different types and amounts of stressors (Liu & Kaplan, 1999), and have varying emotional responses to stressors (Hankin et al., 2007), it is feasible that trait self-compassion operates differentially in males and females. The current analyses show no significant gender differences in self-compassion's buffering effects on depressive symptoms, and a slightly stronger buffering effect on anxiety for males compared to females. This difference was small, however, and given school B did not have any males, we are cautious in drawing any specific conclusions. These results should motivate future examination of how gender may influence these relationships.

Furthermore, our findings deepen our understanding of self-compassion as rooted in adaptive coping (Allen & Leary, 2010) and emotional regulation (Finlay-Jones, 2017). Both coping and emotion regulation constructs include effortful processes to manage, guide or regulate responses to stimuli, with coping considered a special circumstance of purposeful emotional regulation under stress (Compas et al., 2014). Given that it is impossible to eliminate all sources of adolescent stress, this study provides evidence for self-compassion as a beneficial coping strategy that may alter patterns of responding to these stressors, such that their negative impact on mental health is mitigated. Furthermore, these findings suggest

adolescents experiencing high stress may particularly benefit from self-compassion skills, given the effect of self-compassion on depressive symptoms in particular was more pronounced at higher perceived stress levels (see Figure 1). This finding provides support for continued interventional research on adolescents undergoing high stress and who are at risk for depression.

Notably, this study examined the perceived stress-mental health relationship in a non-clinical school sample whose specific stressors and life circumstances were unmeasured, but likely included a mixture of high and low levels of chronic life adversity. Other studies have demonstrated the association of self-compassion with improved outcomes for those experiencing high stress, including adolescents within the child welfare system (Tanaka, Wekerle, Schmuck, Paglia-Boak, & MAP Research Team, 2011), transition age youth seeking treatment for substance abuse (Vettese, Dyer, Li, & Wekerle, 2011), and adolescents demonstrating poor school performance (Játiva & Cerezo, 2014). These studies, together with the current study, suggest self-compassion may be an important source of coping in multiple contexts, potentially protecting against negative outcomes in a general adolescent school population as well as in those experiencing extreme and/or chronic adversity.

There are several limitations to this study. Importantly, the cross-sectional design precludes a true understanding of the directionality of the relationships examined, particularly considering an individual under high stress or with internalizing symptoms may self-report low self-compassion. Stutts et al. (2018) conducted a multi-wave prospective study that provides evidence that self-compassionate tendencies at baseline predict decreased stress and internalizing symptomatology at later time points in a young adult sample. A similar design with an adolescent population is needed to explicate directionality of effects.

Furthermore, it is unknown whether the results from this sample are generalizable to all adolescents or adolescents with mental health diagnoses. Notably, schools A and school B differed in mean anxiety symptoms; unmeasured school and/or family variables may account for these differences. In addition, given there were male students in School A only, we must interpret the results by gender with caution.

Finally, it is noted that although the reported interaction effects are significant, they are small in magnitude, particularly regarding anxiety. Thus, there are likely other important and unmeasured factors contributing to the variance of internalizing symptoms in adolescents.

This study highlights the potential usefulness of self-compassion in managing adolescents' responses to stress. Next steps include longitudinal analysis in adolescent samples, as well as exploring the specific mechanisms underlying the benefits of self-compassion on adolescent mental health. Literature from adult populations suggests that self-compassion may be advantageous in decoupling the stress-mental health relationship via use of adaptive emotion regulation strategies (Inwood & Ferrari, 2018). Examples of adaptive emotion regulation strategies include reframing negative situations as an opportunity for growth (Neff et al., 2005), decreased negative cognitive style when faced with negative life events (Zhou, Chen, Liu, Lu, & Su, 2013), decreased shame-proneness (Johnson & O'Brien, 2013), increased tolerance of negative emotion (Diedrich, Burger, Kirchner, & Berking, 2017), decreased

ruminative thinking (Neff & Vonk, 2009; Odou & Brinker, 2014), and improved ability to respond and recover after a negative mood induction (Beshai, Prentice, & Huang, 2017). Prospective studies that include measurements of these potential mediators across adolescence will provide valuable insight into both why and for whom self-compassion is most beneficial. This information will aid in the development of therapeutic interventions that are targeted and maximally effective in reducing the burden of stress on adolescent mental health.

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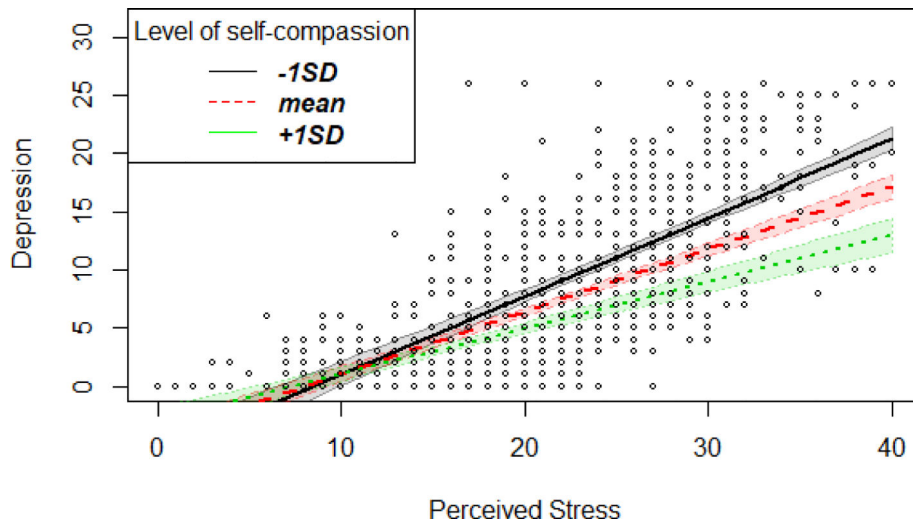


Figure 1. The moderation effect of self-compassion on the relationship between perceived stress and depression.

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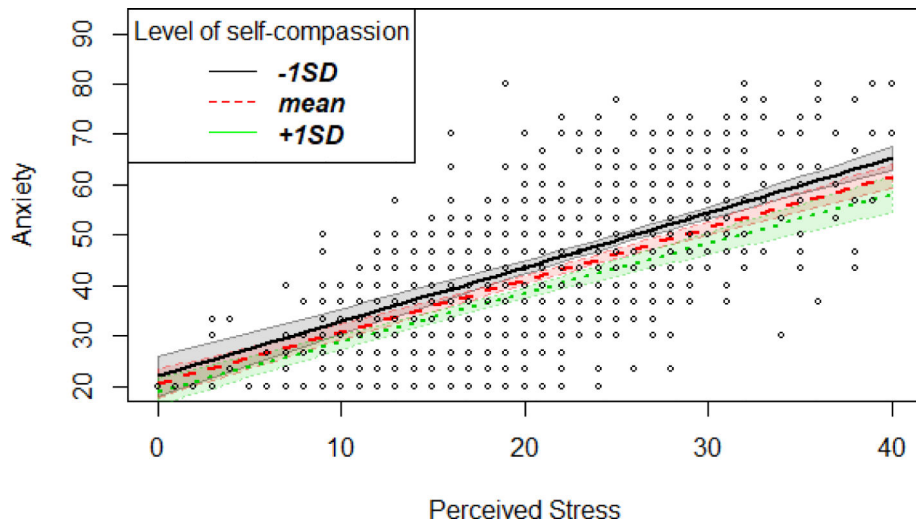


Figure 2. The moderation effect of self-compassion on the relationship between perceived stress and anxiety.

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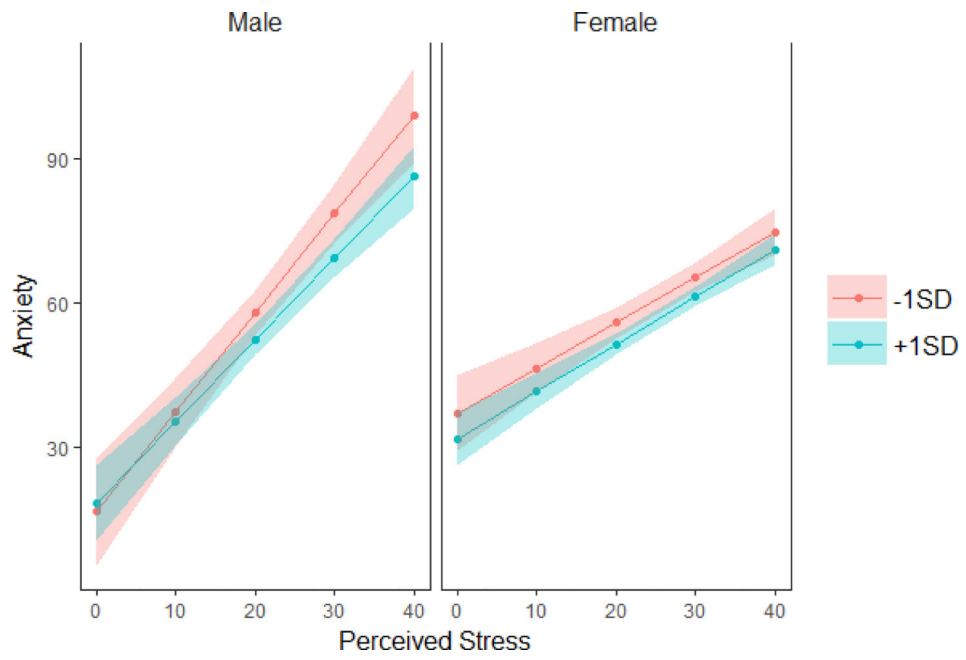


Figure 3. The three-way effect of self-compassion \times perceived stress \times gender on anxiety

Table 1.

Means, standard deviations and bivariate correlations

	M (SD)	1	2	3	4
1. Self-compassion	3.05 (0.64)	1.00			
2. Perceived stress	21 (6.87)	–0.67***	1.00		
3. Depression	7.5 (6.56)	–0.62***	0.72***	1.00	
4. Anxiety	43.42 (13.68)	–0.55***	0.65***	0.64***	1.00

*
 $p < .05$.**
 $p < .01$.***
 $p < .001$

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Table 2.The interaction effect of self-compassion \times perceived stress on depression

	Model 1 ($R^2 = 0.57$)				Model 2 ($R^2 = 0.60$)			
	β	SE	t	p	β	SE	t	p
Self-compassion	-2.65	0.28	-9.43	< .001	3.03	1.13	2.67	0.01
Perceived stress	0.52	0.03	19.82	< .001	1.30	0.16	7.92	< .001
Gender (0 = male, 1 = female)	0.31	0.32	0.98	0.33	2.44	4.80	0.51	0.61
School (0 = school A, 1 = school B)	-0.88	0.33	-2.65	0.01	-0.95	0.32	-2.93	0.003
Self-compassion \times perceived stress					-0.28	0.05	-5.36	< .001
Self-compassion \times gender					-1.39	1.38	-1.01	0.31
Perceived stress \times gender					-0.17	0.19	-0.87	0.38
Self-compassion \times perceived stress \times gender					0.09	0.06	1.55	0.12

Table 3.The interaction effect of self-compassion \times perceived stress on anxiety

	Model 3 ($R^2 = 0.47$)				Model 4 ($R^2 = 0.47$)			
	β	SE	t	p	β	SE	t	p
Self-compassion	-3.89	0.66	-5.87	< .001	1.56	2.77	0.56	0.57
Perceived stress	1.02	0.06	16.34	< .001	1.88	0.40	4.71	< .001
Gender (0 = male, 1 = female)	0.42	0.75	0.56	0.57	16.93	11.69	1.45	0.15
School (0 = school A, 1 = school B)	3.78	0.78	4.82	< .001	3.80	0.78	4.85	< .001
Self-compassion \times perceived stress					-0.30	0.13	-2.42	0.02
Self-compassion \times gender					-5.88	3.37	-1.75	0.08
Perceived stress \times gender					-0.92	0.47	-1.96	0.05
Self-compassion \times perceived stress \times gender					0.34	0.15	2.30	0.02