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## PERFECTIONISM AND SOCIAL COMPARISON

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2 Perfectionism as a vulnerability following appearance-focussed social comparison:

3 A multi-wave study with female adolescents

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## PERFECTIONISM AND SOCIAL COMPARISON

1 **Abstract**

2 This study tests whether perfectionism is a vulnerability factor for distress among  
3 female adolescents in the context of appearance-focused social comparison and use of  
4 social media. We hypothesized that perfectionism predicts greater depressive symptoms  
5 and lower body appreciation following appearance-focused upward social comparisons.  
6 One-hundred and thirty-five female adolescents ( $M_{age} = 14.70$  years,  $SD = 0.46$ )  
7 completed measures of rigid and self-critical perfectionism once, and depressive  
8 symptoms, body appreciation, and appearance-focused upward social comparison once  
9 a week for four weeks. Self-critical perfectionism positively predicted depressive  
10 symptoms and negatively predicted body appreciation. Self-critical perfectionism also  
11 interacted with appearance-focused upward social comparisons to predict greater  
12 depressive symptoms and lower body appreciation. No effects emerged for rigid  
13 perfectionism. Findings suggest self-critical perfectionism may be an important  
14 vulnerability factor for female adolescents following appearance-focused social  
15 comparison when using social media.

16 *Keywords:* perfectionism, mental health, social comparison, adolescence.

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## PERFECTIONISM AND SOCIAL COMPARISON

**1 Introduction**

2 Over 95% of 13-to-15-year-olds have a social media account (Organization for  
3 Economic Cooperation and Development, 2015). Half of these adolescents report some  
4 usage every day, with 13% of girls – twice that of boys – reporting more than 3 hours of  
5 daily usage (Office for National Statistics, 2015). There is considerable debate  
6 regarding social media’s influence on the mental health of young people. Some research  
7 indicates that social media contributes to mental ill-health (e.g., Twenge et al., 2018),  
8 whereas other research finds no association (e.g., Heffer et al., 2019). One reason why  
9 findings are mixed may be that social media may contribute to mental health issues, but  
10 only in the presence of underlying vulnerabilities. This study tests the possibility that  
11 perfectionism is one such vulnerability.

*12 1.1 Perfectionism*

13 Perfectionism is a personality trait encompassing excessively high personal  
14 standards and harsh self-criticism (Frost et al., 1990). Researchers have begun to  
15 examine a dimension of perfectionism termed rigid perfectionism. Rigid perfectionism  
16 entails a strict insistence that one’s performance should be flawless and includes self-  
17 oriented perfectionism (excessive personal standards and punitive self-evaluation) and  
18 achievement contingent self-worth (Smith et al., 2016a). While rigid perfectionism  
19 energizes behavioral engagement toward achievement outcomes, it is also a  
20 vulnerability to psychological difficulties when achievement standards go unmet. For  
21 instance, studies show that components of rigid perfectionism positively predict anxiety,  
22 negative affect, and self-conscious emotions (e.g., guilt) following achievement stress  
23 (e.g., Curran & Hill, 2018).

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1           Another perfectionism dimension that is receiving increased attention is self-  
2 critical perfectionism. Self-critical perfectionism includes socially prescribed  
3 perfectionism (i.e., the perception that others are excessively demanding), concern over  
4 mistakes, doubts about actions, and self-criticism (Smith et al., 2016a). Self-critical  
5 perfectionism is highly debilitating because excessive expectations from others make  
6 negative self-evaluations common. Components of self-critical perfectionism exhibit  
7 vulnerability to psychological difficulties more broadly and in response to interpersonal  
8 stress, in particular (Hewitt & Flett, 1993). For instance, components of self-critical  
9 perfectionism positively predict disordered eating, depression and anxiety following  
10 interpersonal stress (Magson et al., 2019).

11 *1.2 Perfectionism, depressive symptoms, and body appreciation*

12           One prominent mental health problem associated with perfectionism is  
13 depressive symptoms. Depressive symptoms capture feelings of sad, unhappy, and  
14 dejected affect (O'Hara et al., 2014). Theorists have long emphasized the contribution  
15 of perfectionism to depression (e.g., Blatt, 1995). Relevant to the current study, Sturman  
16 et al. (2009) found that self-oriented perfectionism combined with contingent self-worth  
17 (viz. rigid perfectionism), confers vulnerability to depression following failure or life  
18 stress. Likewise, Dunkley and Blankstein (2000) found that harsh self-scrutiny and  
19 concerns about others' criticism (viz. self-critical perfectionism) are significant sources  
20 of depression. More recent examination of the relationships, too, has provided direct  
21 support for a positive association between both rigid and self-critical perfectionism and  
22 depressive symptoms (Smith et al., 2016b).

23           Beyond depressive symptoms, rigid and self-critical perfectionism are also  
24 likely to be sources of diminished body appreciation. Body appreciation captures an

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1 acceptance of, and favorable attitudes towards, one's body (Avalos et al., 2005).  
2 Components of perfectionism possess a preoccupation with how one is performing  
3 (rigid) and appearing (self-critical) relative to others (Hewitt et al.,1995). As such,  
4 discrepancies between idealized and actual appearances are common, likely rendering  
5 those higher in perfectionism susceptible to decreased body appreciation. Nevertheless,  
6 very few studies have tested the relationship between perfectionism and body  
7 appreciation with initial evidence indicative of a negative relationship (e.g., Scully et  
8 al., 2021).

### 9 *1.3 Perfectionism and upward social comparison*

10 Our study examines whether perfectionism confers vulnerability to depressive  
11 symptoms and body appreciation in the context of social comparison and use of social  
12 media. Social media is replete with achievement and interpersonal stressors that may  
13 trigger perfectionistic problems. A salient source of achievement and interpersonal  
14 stress in this context is appearance-focused upward social comparison. Appearance-  
15 focused upward social comparisons are those in which individuals compare themselves  
16 with someone whom they perceive to be more attractive (Festinger, 1954). Social media  
17 platforms abound with opportunities for appearance comparisons, and research indicates  
18 that adolescents frequently report higher levels of appearance-focused upward social  
19 comparison when using them (Meier & Gray, 2014).

20 Recent evidence suggests that concerns about bodily imperfection may interact  
21 with appearance-focussed upward social comparison in social media to predict greater  
22 appearance dissatisfaction (McComb & Mills, 2021). We would anticipate similar  
23 effects for self-critical perfectionism and, possibly, rigid perfectionism, with  
24 appearance-focused upward social comparisons serving as a source of distress for both

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1 dimensions of perfectionism. This is because upward social comparisons convey  
2 information that could be interpreted as a sign of either intrapersonal (rigid  
3 perfectionism) or interpersonal (self-critical perfectionism) inferiority, or both. In  
4 support of this idea, research on perfectionism and social comparison suggests that  
5 people higher in components of rigid and self-critical perfectionism are overly sensitive  
6 to feelings of inferiority (e.g., Wyatt & Gilbert, 1988). Moreover, the degree of  
7 deviation from appearance-focused ideals is related to the degree of distress experienced  
8 by those higher in perfectionism (e.g., Hewitt et al., 1995).

9         We focused on female adolescents due to evidence suggesting females have a  
10 greater tendency to make appearance-focussed upward social comparisons (e.g., Franzoi  
11 et al., 2012). In addition, female adolescents report higher body dissatisfaction and  
12 depressive symptoms in comparison to male adolescents (e.g., Bucchianeri et al., 2013;  
13 Wartberg et al., 2018). In these regards, the phenomena we are describing may be  
14 especially relevant and evident among this group. Related work examining social  
15 media, unrealistic body ideals, and body image concerns among young women also  
16 provides a compelling backdrop for focusing on female adolescents (e.g., Perloff,  
17 2014). Similarly, so does work examining the negative consequences of holding  
18 perfectionistic beliefs in relation to appearance (e.g., McComb & Mills, 2021).

#### 19 *1.4 The Present Study*

20         Our first aim was to examine the main effects of rigid and self-critical  
21 perfectionism on body appreciation and depressive symptoms (i.e., between-person  
22 relationships). We expected rigid perfectionism and self-critical perfectionism would be  
23 negatively related to body appreciation and positively related to depressive symptoms.  
24 Our second aim was to test whether rigid and self-critical perfectionism interacted with

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1 appearance-focused upward social comparison to predict body appreciation and  
2 depressive symptoms. We expected individuals with higher between-person levels of  
3 perfectionism would report higher within-person deviations from their overall mean of  
4 depressive symptoms and body appreciation on occasions when they report higher  
5 levels of appearance-focused upward social comparison.

### 6 **1. Method**

#### 7 *2.1 Participants and procedure*

8 One-hundred and thirty-five female adolescents ( $M = 14.70$  years,  $SD = 0.46$ )  
9 were recruited from a high school in the United Kingdom. Ethical approval was  
10 obtained. Parental consent and informed consent were gained for participation.  
11 Participants completed a paper-and-pen questionnaire at four timepoints (once a week  
12 for four weeks; Time 1  $N = 135$ , Time 2  $N = 135$ , Time 3  $N = 112$ , Time 4  $N = 65$ ) in a  
13 classroom.

#### 14 *2.2 Instruments*

15 *Multidimensional perfectionism.* At the first time point only, rigid perfectionism  
16 and self-critical perfectionism were measured using the Big Three Perfectionism Scale  
17 (BTPS; Smith et al., 2016a). Rigid perfectionism comprises self-oriented perfectionism  
18 (5-items; e.g., “I have a strong need to be perfect”) and contingent self-worth (5-items;  
19 e.g., “My value as a person depends on being perfect”). Self-critical perfectionism  
20 comprises concern over mistakes (5-items; e.g., “When I make a mistake, I feel like a  
21 failure”), doubts about actions (5-items, e.g., “I have doubts about most of my actions”),  
22 self-criticism (4-items; e.g., “I judge myself harshly when I don’t do something  
23 perfectly”), and socially prescribed perfectionism (4-items; e.g., “People expect too  
24 much from me”). Participants responded on a 5-point scale from 1 ‘*strongly disagree*’



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1 to 5 ‘*strongly agree*’. The BTPS has good psychometric support, including in research  
2 with adolescents (e.g., Curran et al., 2017).

3       *Appearance-focused upward social comparison.* Weekly measures of social  
4 comparison were taken. Participants reported whether they had compared themselves  
5 with someone else recently (“Have you compared yourself with someone else in the last  
6 month?”). Participants indicated whether the comparison was made on social media,  
7 television, magazine, advertisement, or other (i.e., “What context did you compare  
8 yourself in?”). More than 80% of responses to this item were in the sphere of social  
9 media. Participants who made a comparison responded to a further item asking whether  
10 they compared (1) much better, (2) better, (3) the same, (4) worse, or (5) much worse  
11 (“How do you think you looked compared to the other person?”).

12       *Depressive symptoms.* Weekly measures of depressive symptoms were taken.  
13 Participants rated the extent to which they had felt *sad, unhappy, and dejected* in the last  
14 week on a scale from 1 (*not at all*) to 5 (*extremely*). These items were taken from a  
15 similar study measuring stress reactivity, which were highly reliable (O’Hara, et al.,  
16 2014).

17       *Body appreciation.* Weekly body appreciation was measured using the four  
18 highest loading items of the Body Appreciation Scale-2 (BAS-2; Tylka & Wood-  
19 Barcalow, 2015). The BAS-2 captures the degree to which individuals felt gratitude,  
20 respect, and appreciation for their bodies (e.g., “I felt love for my body”). Items were  
21 assessed using a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The  
22 BAS-2 has good psychometric support in female adolescents (Halliwell et al., 2015).

23       2.3. *Data analysis*

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1           Our weekly design provides a hierarchical structure in which repeated measures  
2 of upward social comparison, depressive symptoms, and body appreciation (Level-1)  
3 were nested within participants (Level-2). We used multilevel modeling in SPSS  
4 (version 23) to provide estimates of within- and between-person main effects, in  
5 addition to variance components. Data were modeled using an unstructured variance  
6 components matrix and estimated using restricted maximum likelihood, which is  
7 advantageous since parameters are estimated using the optimal factor of the maximum  
8 likelihood function for cases with incomplete and complete data (Snijders & Bosker,  
9 2012). Accordingly, all cases (including those with missing data) were retained for  
10 analyses.

11           Multilevel models were built in a stepwise manner. First, an intercept-only  
12 model was tested to obtain intraclass correlations (Model 1). Next, the time-varying  
13 upward social comparison variable was person mean-standardized, and the time-  
14 invariant rigid and self-critical perfectionism variables were grand-mean standardized  
15 and added as predictors. The intercepts and slopes of upward social comparison were  
16 permitted to vary randomly (Model 2).

17           To examine the interaction between perfectionism and upward social  
18 comparison a third model was tested (Model 3). Model 3 included cross-level  
19 interaction terms between upward social comparison at Level-1 and perfectionism at  
20 Level-2. Significant interaction terms indicate that individuals with higher levels of  
21 perfectionism report greater within-person deviations in depressive symptoms and body  
22 appreciation on occasions when they report higher levels of upward social comparison  
23 (i.e., two-way conditional mean slopes). To probe interactions, conditional means of the

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1 slopes for appearance-focussed upward social comparison were calculated and plotted  
2 using procedures outlined by Preacher et al. (2006).

## 3 **2. Results**

### 4 *3.1 Descriptive results*

5 The percentage of missing data was low (< 20%) and missing at random: Little's  
6 MCAR test  $\chi^2 = 4152.73$ ,  $DF = 5001$ ,  $sig = 1.00$ . Missing values were quantified at the  
7 item-level. Descriptive statistics and mean-level inter-correlations are in Table 1. All  
8 scales exhibited acceptable internal consistency (Cronbach's  $\alpha > .70$ ; Tabachnick &  
9 Fidell, 2007). Although the mean-level inter-correlations varied in magnitude and  
10 significance, they were in expected directions. Intraclass correlations were calculated  
11 based on intercept-only models to determine whether the Level 1 outcome showed  
12 substantial within-person weekly variation (Model 1). Approximately half of the  
13 variance in each outcome at the within-person level is indicative of significant week-to-  
14 week variation: depressive symptoms = 0.50; body appreciation = 0.45.

15 Visual inspection of model diagnostics indicated that multilevel modelling  
16 assumptions were met. Model fit for body appreciation increased marginally from  
17 Model 1 to Model 3. For depressive symptoms, the fit improved from Model 1 to Model  
18 2 but decreased marginally from Model 2 to Model 3 (see Table 2).

### 19 *3.2. Main effects*

20 Appearance-focussed upward social comparison was related to higher depressive  
21 symptoms ( $\mu_\beta = .24$ ,  $p < .05$ ) and lower body appreciation ( $\mu_\beta = -.20$ ,  $p < .01$ ) at the  
22 within-person level. Self-critical perfectionism positively predicted depressive  
23 symptoms ( $\gamma_1 = .60$ ,  $p < .01$ ) and negatively predicted body appreciation ( $\gamma_1 = -.35$ ,  $p <$   
24  $.01$ ) at the between-person level. The interpretation of these coefficients is that higher

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- 1 self-critical perfectionism is related to higher depressive symptoms and lower body
- 2 appreciation aggregated across all measurement occasions. Rigid perfectionism was
- 3 unrelated to depressive symptoms and body appreciation (see Table 2).

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**Table 1***Descriptive statistics, scale reliabilities, and correlations.*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>Time 1</b>														
1. Rigid perfectionism	—													
2. Self-critical perfectionism	.58**	—												
3. Upward social comparison	-.01	.13	—											
4. Depressive symptoms	.26**	.58**	.21*	—										
5. Body appreciation					—									
<b>Time 2</b>														
6. Upward social comparison	-.28**	-.54**	-.34**	-.51**	—									
7. Depressive symptoms	-.02	.13	.19	.16	-.18	—								
8. Body appreciation	.20*	.37**	-.05	.36**	-.26**	.32**	—							
<b>Time 3</b>														
9. Upward social comparison	-.17*	-.26**	-.11	-.24**	.54**	-.43**	-.25**	—						
10. Depressive symptoms	.17	.01	.27*	.25*	-.18	.17	.15	.05	—					
11. Body appreciation	.35**	.49**	.32**	.55**	-.46**	.13	.51**	-.21*	.31**	—				
<b>Time 4</b>														
12. Upward social comparison	-.29**	-.30**	-.35**	-.42**	.73**	-.17	-.33**	.52**	-.28*	-.47**	—			
13. Depressive symptoms	.14	.13	.40*	.22	-.44**	.26	.14	-.11	.67**	.16	-.34*	—		
14. Body appreciation	.41**	.60**	.05	.53**	-.39**	.19	.51**	-.17	.11	.70**	-.48**	.22	—	
Mean	-.40**	-.41**	-.45**	-.46**	.75**	-.04	-.13	.45**	-.18	-.51**	.83**	-.35*	-.39**	—
Standard deviation	2.71	3.05	4.17	2.77	2.69	4.00	2.60	2.82	3.79	2.75	2.77	3.86	2.80	2.76
Cronbach's alpha ( $\alpha$ )	.80	.84	.76	1.37	1.04	.91	1.21	.86	1.13	1.44	.93	1.08	1.30	.97
	.91	.94	—	.88	.95	—	.86	.91	—	.93	.94	—	.89	.84

*Note.* \*\* $p \leq .01$ , \* $p \leq .05$ . two-tailed.

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1           Although there was significant between-person variance in the intercepts for  
2 depressive symptoms ( $\tau_{00} = .81, p < .001$ ) and body appreciation ( $\tau_{00} = .53, p < .001$ ),  
3 only body appreciation had significant between-person slope variability (depressive  
4 symptoms  $\tau_{11} = .20, p = .08$ ; body appreciation  $\tau_{11} = .13, p = .01$ ). Therefore, the slope  
5 for depressive symptoms was not permitted to vary in later tests of interaction terms  
6 (i.e., Model 3).

### 7 *3.3. The interaction of perfectionism and upward social comparison*

8           To test our focal hypotheses, we examined cross-level interactions of these  
9 variables.

### 10 *3.4. Depressive symptoms.*

11           Self-critical perfectionism ( $\gamma_5 = .23, p = .04$ ), but not rigid perfectionism ( $\gamma_4 =$   
12  $.05, p = .67$ ), interacted with upward social comparison to predict depressive symptoms.  
13 The positive sign of the interaction term indicates that participants higher in self-critical  
14 perfectionism (relative to the sample mean) report elevated depressive symptoms  
15 (relative to their mean) on measurement occasions when they report more elevated  
16 upward social comparison (relative to their mean).

17           Table 3 shows the conditional mean of the upward social comparison slopes for  
18 depressive symptoms across high (1 *SD* above mean), mean, and low (1 *SD* below  
19 mean) self-critical perfectionism. The conditional mean of the upward social  
20 comparison slopes for depressive symptoms was significant at high ( $\mu_\beta + \gamma_5\chi_1 = .33, p <$   
21  $.01$ ) levels of self-critical perfectionism, but non-significant at the mean ( $\mu_\beta + \gamma_5\chi_1 = .11,$   
22  $p = .25$ ) or at low ( $\mu_\beta + \gamma_5\chi_1 = -.12, p = .48$ ) levels of self-critical perfectionism. The  
23 conditional mean of the upward social comparison slopes for depressive symptoms was

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1 significant ( $p < .05$ ) at values above .28 standard deviations of the self-critical  
2 perfectionism mean (Figure 1).

3 *3.5. Body appreciation.*

4 Self-critical perfectionism ( $\gamma_5 = -.20, p = .03$ ), but not rigid perfectionism ( $\gamma_4 =$   
5  $.12, p = .12$ ), interacted with upward social comparison to predict body appreciation.

6 The negative sign of the significant interaction term for self-critical perfectionism  
7 indicates that participants higher in self-critical perfectionism (relative to the sample  
8 mean) report more diminished body appreciation (relative to their mean) on  
9 measurement occasions when they report lower upward social comparison (relative to  
10 their mean).

11 Table 3 shows the conditional mean of the upward social comparison slopes for  
12 body appreciation across high, mean, and low self-critical perfectionism. The  
13 conditional mean of the upward social comparison slopes for body appreciation was  
14 significant at high ( $\mu_\beta + \gamma_5\chi_1 = -.37, p = .01$ ) and mean ( $\mu_\beta + \gamma_5\chi_1, p = .03$ ) levels of self-  
15 critical perfectionism but non-significant at low ( $\mu_\beta + \gamma_5\chi_1 = .15, p = .88$ ) levels of self-  
16 critical perfectionism. The conditional mean of the upward social comparison slopes for  
17 body appreciation was significant ( $p < .05$ ) at values above  $-.10$  standard deviations of  
18 the self-critical perfectionism mean (Figure 1).

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**Table 2***Fixed effects, variance components, and fit indices for multilevel models.*

Parameter	Depressive symptoms			Body appreciation		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<i>Fixed effects</i>						
Intercept ( $\mu_a$ )	2.72**	2.90**	2.83**	2.65**	2.66**	2.69**
Upward social comparison ( $\mu_\beta$ )	—	.24*	.11	—	-.20**	.16*
Rigid perfectionism ( $\gamma_1$ )	—	.01	.01	—	—	-.01
Self-critical perfectionism ( $\gamma_2$ )	—	.60**	.60**	—	—	-.35**
Upward social comparison* Rigid perfectionism ( $\gamma_4$ )	—	—	.05	—	—	.12
Upward social comparison* Self-critical perfectionism ( $\gamma_5$ )	—	—	.23*	—	—	-.20*
<i>Variance components</i>						
Residual variance ( $\sigma^2$ )	.88**	.76**	.85**	.39**	.29**	.29**
Intercept variance ( $\tau_{00}$ )	.88**	.48**	.44**	.48**	.53**	.43**
Upward social comparison slope variance	—	.20	—	—	.12*	.11**
<i>Fit indices</i>						
-2 Restricted Log Likelihood	1385.49	1006.26	1009.18	817.23	798.68	775.12
Akaike's Information Criterion	1389.49	1012.26	1013.18	821.23	804.68	781.12

*Note.* The upward social comparison slope term for depressive symptoms did not significantly vary across individuals and therefore was not a random component in Model 3. The significance of fixed effects in each model were based on the t-ratio with standard errors derived from 5,000 bootstrap iterations.

\*\*  $p \leq .01$ , \*  $p \leq .05$



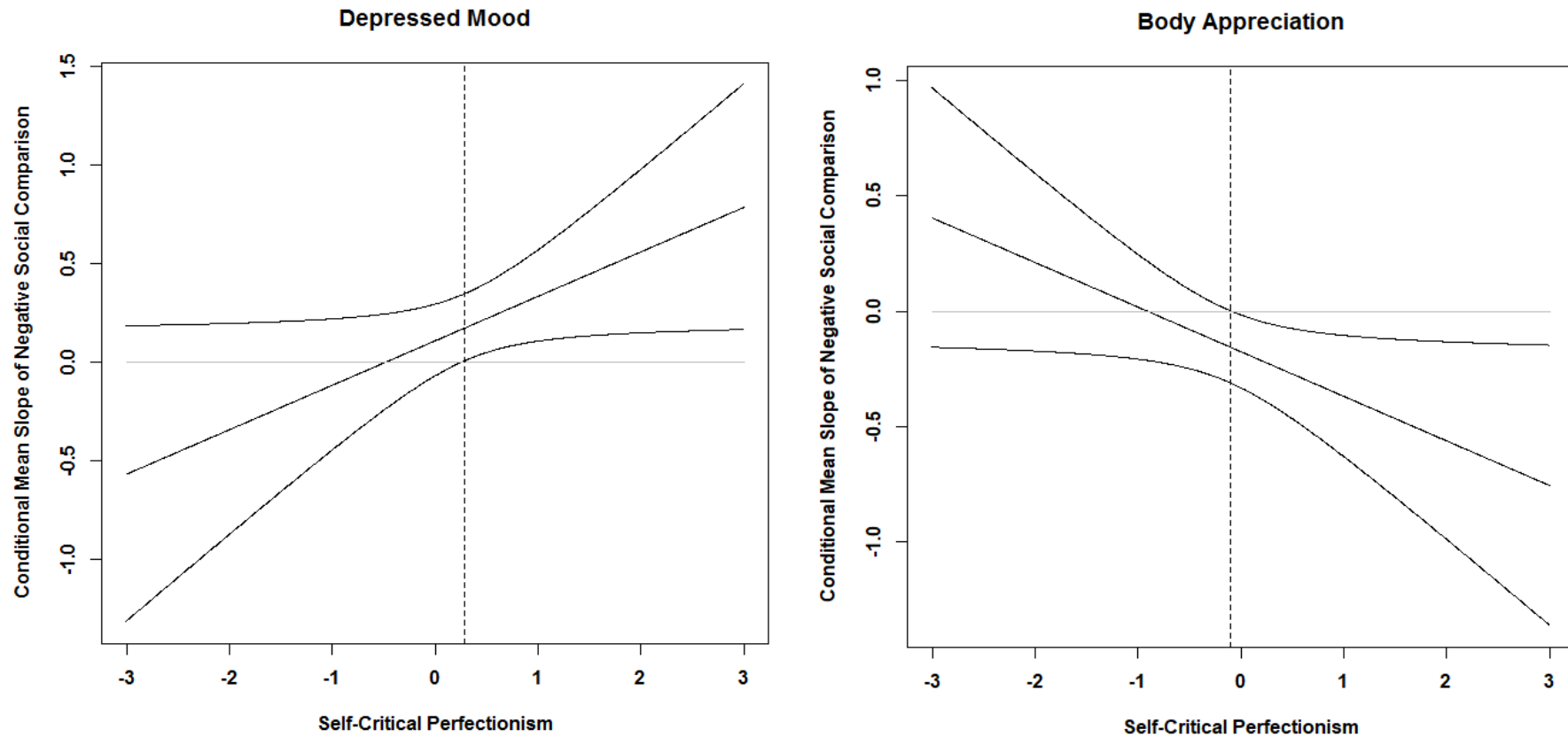
## PERFECTIONISM AND SOCIAL COMPARISON

**Table 3.***Conditional mean of the upward social comparison slopes at values of self-critical perfectionism.*

Values of perfectionism	Depressive symptoms			Body appreciation		
	$\mu_\beta + \gamma_5\chi_1$	<i>SE</i>	<i>Z</i>	$\mu_\beta + \gamma_5\chi_1$	<i>SE</i>	<i>Z</i>
High self-critical perfectionism	.33**	.12	2.82	-.37**	.13	-2.76
Mean self-critical perfectionism	.11	.09	1.15	-.18*	.08	-2.18
Low self-critical perfectionism	-.12	.17	-.70	.02	.12	.15

*Note.* Conditional mean trajectory slope values are calculated by  $\mu_\beta + \gamma_5\chi_1$ , where  $\mu_\beta$  is the slope of depressive symptoms or body appreciation on upward social comparison,  $\gamma_5$  is the two-way interaction term for upward social comparison with self-critical perfectionism, and  $\chi_1$  is the conditional value of self-critical perfectionism. Conditional values are one standard deviation above the mean of self-critical perfectionism (high), the mean of self-critical perfectionism (mean), and one standard deviation below the mean of self-critical perfectionism (low) were selected.

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**Figure 1.** The conditional mean of the appearance-focused upward social comparison slopes for depressive symptoms and body appreciation across the range of self-critical perfectionism. Lines either side of the conditional mean represent non-simultaneous 95% confidence bands. The vertical dashed line demarcates the point at which the confidence bands cross zero (i.e., the region of significance).

### 1 3. Discussion

2 Our first aim was to test the main effects of perfectionism on depressive  
3 symptoms and body appreciation among female adolescents. Our second aim was to test  
4 whether these effects were moderated by appearance-focused upward social  
5 comparison. As hypothesized, self-critical perfectionism positively predicted depressive  
6 symptoms and negatively predicted body appreciation. Likewise, these main effects  
7 were moderated by appearance-focused upward social comparison such that those  
8 higher in self-critical perfectionism reported elevated depressive symptoms and  
9 diminished body appreciation on occasions when they reported upward social  
10 comparisons. We observed no effects for rigid perfectionism.

#### 11 *4.1. Perfectionism, depressive symptoms, and body appreciation*

12 Self-critical perfectionism predicted higher depressive symptoms and lower  
13 body appreciation. According to Blatt (1995), perfectionism and self-criticism share  
14 core characteristics of unworthiness, self-conscious affect, and a fear of disapproval,  
15 which together yield vulnerability to depression and perceptions of interpersonal  
16 inferiority. Our findings substantiate these ideas by showing self-critical perfectionism  
17 is positively correlated with depression and body dissatisfaction (e.g., Nichols et al.,  
18 2018; Smith et al., 2016b). Among female adolescents, these findings are salient given  
19 the high rates of depressive symptoms and body dissatisfaction reported (e.g., Bornioli  
20 et al., 2021). Our results suggest self-critical perfectionism may be an especially  
21 important predisposing factor in this regard.

22 We found no evidence for the main effects of rigid perfectionism on depressive  
23 symptoms or body appreciation. Though unexpected, there are several possible  
24 explanations. First, though rigid perfectionism was negatively correlated with body

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1 appreciation and positively correlated with depressive symptoms, once self-critical  
2 perfectionism was entered in the model, we found no effect of rigid perfectionism.  
3 Thus, self-critical perfectionism may primarily account for shared variance between  
4 rigid perfectionism and these outcomes. Second, components of rigid perfectionism are  
5 sometimes unrelated to similar outcomes like body image disturbance or depressive  
6 symptoms (see Sherry et al., 2009; Smith et al., 2016b). Rigid perfectionism may  
7 instead contribute to body appreciation and/or depressive symptoms indirectly or via  
8 interaction with intrapersonal stressful life events (Hewitt & Flett, 1993). Because of the  
9 mixed findings, future research should examine why on some occasions, but not others,  
10 rigid perfectionism is related to negative body perceptions and depressive symptoms.

#### 11 *4.2. Moderating effects of upward social comparison*

12         The interactive effects of self-critical perfectionism and upward social  
13 comparison support research on the specific vulnerability of components of self-critical  
14 perfectionism to stressors in the interpersonal sphere (e.g., Curran & Hill, 2018), as well  
15 as the notion that appearance-related information is a relevant interpersonal stressor.  
16 These findings have especial significance to the contradictory findings of social media  
17 in young people. Twenge et al. (2018), for example, found that social media use  
18 predicted greater depressive symptoms among adolescents. Conversely, Heffer et al.  
19 (2019) observed that social media use did not predict such outcomes. Our research  
20 suggests that whether social media is harmful depends on who is using it. In particular,  
21 the degree of self-critical perfectionism exhibited appears to be one factor that  
22 differentiates those for whom social media is harmful or otherwise.

23         The lack of interactive effects with rigid perfectionism contrasts against research  
24 showing that components of rigid perfectionism are related to negative evaluations of

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1 social comparison (e.g., Wyatt & Gilbert, 1998). It is also at odds with work that has  
2 evidenced similar interaction effects when examining concerns over bodily imperfection  
3 (McComb & Mills, 2021). Here, it is possible that upward social comparison was not  
4 interpreted as relevant to personal achievement and therefore rigid perfectionism was  
5 unresponsive to an interpersonal stressor (see Hewitt & Flett, 1993). Alternatively,  
6 general rigid perfectionism may be less important than perfectionism expressed  
7 specifically regarding appearance in this context. It is still possible that social media use  
8 could exacerbate psychological distress for those with higher rigid perfectionism if it  
9 reminds users of inadequacies against personal goals such as how liked someone wants  
10 to be. However, based on our findings, rigid perfectionism does not appear to be a  
11 vulnerability factor in the same manner as self-critical perfectionism.

*12 Limitations and future directions*

13 Our study has limitations. First, data relies solely upon self-report measures,  
14 which may be subject to social desirability and common-method bias (Podsakoff et al.,  
15 2003). Future research should move beyond self-report data by employing multi-source  
16 designs. Second, our study measured data weekly over four weeks. Future research  
17 should implement shorter measurement lags, which may better capture within-person  
18 fluctuations. Third, we recruited female adolescents – a largely homogenous sample.  
19 Research examining gender and age differences are needed to establish generalizability  
20 of the findings. Fourth, our analyses explained small amounts of variance in depressive  
21 symptoms and body appreciation. Future research should examine other important  
22 factors (e.g., self-esteem) to improve predictive ability of models (e.g., Nichols et al.,  
23 2018). Lastly, the depression measure and rigid perfectionism from the BTPS has not

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1 previously been validated in adolescents. Future research should confirm the  
2 applicability of the items in this population.

3 *4.4. Conclusion*

4           This study examined the main effects of rigid and self-critical perfectionism on  
5 depressive symptoms and body appreciation, and whether these relationships were  
6 moderated by appearance-focussed upward social comparison. Findings indicate that  
7 self-critical perfectionism contribute to female adolescents' depressive symptoms and  
8 body appreciation and confer vulnerability when accompanied by upward social  
9 comparison.  
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