Perfectionism, Friendship Intimacy and Depressive Affect in Transitioning University Students:

A Longitudinal Study Using Mixed Methods

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Abstract

Theory suggests people high in socially prescribed perfectionism become depressed when they encounter ego-involving interpersonal problems. Prior studies testing this theory produced mixed results. The present study improves upon past designs by incorporating ego-involving life events from participants' autobiographical narratives. Specifically, it was hypothesized that friendship intimacy, as coded from narratives, would moderate the relationship between socially prescribed perfectionism and depressive affect. Young adults transitioning into university for the first time ($N = 127$; 75.5% women; 81.1% Caucasian) participated in a two-wave, 130-day longitudinal study with quantitative and qualitative components. Entering university is a developmentally important and highly stressful transition for emerging adults. Results showed that socially prescribed perfectionism (but not self-oriented perfectionism) interacted with low friendship intimacy in autobiographical narratives to predict rank-order increases in depressive affect over time. These results advance understanding of the relationship between perfectionism and depressive affect by demonstrating the conditions under which the relationship occurs. The present study improves upon prior research by using a novel, mixed methods approach to operationalize interpersonal problems and by studying a transitional period (i.e., the transition to university) where change in depressive symptoms is expected.

Keywords: perfectionism, stress, interpersonal, friendship, depression, mixed methods, life narrative

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Perfectionism is associated with relationship problems, an inability to handle stress, and depressive affect (Chang & Rand, 2000; Hewitt, Flett, Sherry, & Caelian, 2006; Mackinnon et al., 2012). Most researchers agree perfectionism is multidimensional, with the distinction between self-imposed and socially-based dimensions of perfectionism featuring prominently in many models (Dunkley, Blankstein, Hallsall, Williams, & Winkworth, 2000; Hewitt, Flett, Besser, Sherry, & McGee, 2003; Stoeber & Otto, 2006). This distinction is central to Hewitt and Flett's (1991) model of perfectionism, which distinguishes between self-oriented and interpersonal forms of perfectionism. Specifically, Hewitt and Flett (1991) describe three dimensions of perfectionism. Socially prescribed perfectionism (SPP) is a belief or perception that other people set unrealistic standards, exert pressure to be perfect, and harshly evaluate all performance. Self-oriented perfectionism (SOP) involves rigidly setting unrealistically high standards for oneself and stringently evaluating one's own behavior. Other-oriented perfectionism involves setting unrealistically high standards of perfection for others and stringently evaluating others' performance. Research supports the reliability and validity of these dimensions (Hewitt & Flett, 2004). In the present study, we focus on SOP and SPP because evidence suggests other-oriented perfectionism is generally unrelated to depressive affect (Hewitt & Flett, 1991). Specifically, we test a moderator model of perfectionism and depressive affect which posits the relationship between perfectionism and depressive affect is intensified by interpersonal problems that have become incorporated into a person's autobiographical narrative.

Perfectionism and Depressive Affect

Depressive affect refers to the negative emotional states associated with depression, such as sadness, distress, and irritability, and can be distinguished from somatic features of depression such as sleep disturbances or changes in appetite (Shafer, 2006). SOP is an inconsistent predictor of depressive affect in longitudinal research, with some research supporting SOP as a risk factor for increased depressive affect (Hewitt, Flett, & Ediger, 1996; Joiner & Schmidt, 1995) while other research fails to support these findings (Graham et al., 2010; Chang & Rand, 2000). In general, more research supports SPP as a longitudinal predictor of depressive affect (Cox, Clara, & Enns, 2009; Hewitt et al., 1996; Joiner & Schmidt, 1995); however, other research fails to support this relationship (Cox & Enns, 2003; Enns & Cox, 2005). This inconsistent pattern suggests the perfectionism-depressive affect relationship may be moderated by a third variable.

Ego-involving Stressors as a Moderator

Hewitt and Flett (1993) suggested that stress moderates the relationship between perfectionism and depressive affect. That is, perfectionism predicts increased depressive affect only in the presence of a salient stressor. However, Hewitt and Flett (1993) also argued that stressors will only interact with perfectionism to predict increased depressive affect if the stressor is ego-involving. In other words, the stressor must occur in an area closely tied to a perfectionist's sense of identity and self-worth in order to trigger depressive affect. People high in SOP are often preoccupied with achieving unrealistically high standards, and are hypersensitive to perceived failures in achievement domains; thus, setbacks in achievement-related domains are theorized to be most salient and distressing for people high in SOP (Hewitt & Flett, 2002). In contrast, people high in SPP are thought to be preoccupied with gaining approval and hypersensitive to perceived criticisms from others; thus, disruptions within interpersonal relationships are likely to be more ego-involving and distressing for them (Hewitt

& Flett, 2002). Hewitt and Flett's (1993; 2002) idea that ego-involving stressors will interact with corresponding perfectionism domains to predict increased depressive affect is often referred to as a "specific vulnerability model." Though we acknowledge the important literature suggesting that achievement stressors moderate the SOP-depressive affect relationship (e.g., Hewitt et al., 2002), the present study and the remainder of our literature review focuses exclusively on interpersonal stressors as a potential moderator.

Empirical support for interpersonal problems as a moderator of the SPP-depressive affect relationship is mixed. A few studies support this relationship, finding that negative interpersonal life events (Joiner & Schmnidt, 1995; Hewitt & Flett, 1993), perceived stress (Chang & Rand, 2000), or loneliness (Chang, Sanna, Chang, & Bodem, 2008) are significant moderators of the SPP-depressive affect relationship. Studies examining personality constructs related to SPP such as dependency (Shahar, Joiner, Zuroff, & Blatt, 2004) and concern over mistakes (Cheng, 2001) also suggest that interpersonal problems moderate the relationship between personality and depressive affect. However, the moderating influence of interpersonal stress on the SPP-depressive affect relationship often fails to replicate (Enns & Cox, 2005; Enns, Cox, & Clara, 2005; Flett, Hewitt, Garshowitz,& Martin, 1997; Hewitt et al., 1996; Hewitt et al., 2002; Sherry, Hewitt, Flett, & Harvey, 2003). Moreover, there has been almost as much evidence that interpersonal problems moderate the SOP-depressive affect relationship (Chang et al., 2008; Hewitt & Flett, 1993; Joiner & Schmidt, 1995; Hewitt et al., 2002), contrary to the specific vulnerability model's prediction that SPP (but not SOP) will interact with ego-involving interpersonal stress to predict increased depressive affect. However, this finding too has tended to be inconsistent, and has failed to replicate or produces equivocal results over numerous studies (Chang & Rand, 2000; Enns & Cox, 2005; Enns et al., 2005; Hewitt et al., 1996; Flett et al.,

1997; Sherry et al., 2003). In sum, prior research on interpersonal problems as a moderator of the perfectionism-depressive affect relationship has failed to converge on a clear, consistent, and replicable set of findings in support of the specific vulnerability model.

The Timing of Measurement

Most research on perfectionism and depressive affect is cross-sectional (e.g., Sherry et al., 2003). By failing to account for prior levels of outcome variables, it is not possible to examine changes over time (Little, Preacher, Selig, & Card, 2007). Prior longitudinal tests of the relationship between perfectionism and depressive affect have tended to use time lags of convenience (e.g., 1-month lag in Chang & Rand, 2000; 3-week lag in Joiner & Schmidt, 1995), rather than developmentally appropriate time lags where changes in depressive affect are expected. This makes the findings of prior longitudinal research somewhat difficult to interpret, and may introduce unnecessary error into the analyses (Cole & Maxwell, 2003). It is possible that prior research has been inconsistent because the timeframes studied were inconsistent. It may be that interpersonal stressors moderate the SPP-depressive affect relationship only when (a) longitudinal change in depressive affect is expected and (b) during transitional times in the lifespan where interpersonal stressors are particularly salient. To address these concerns, the present study used a 2-wave, 130-day longitudinal study of young adults transitioning to university for the first time.

The transition from high school to university is stressful for young adults, and is associated with mental and physical health problems, decreased well-being, increased life stress, homesickness, and social problems (Gall, Evans, & Bellrose, 2000; Hicks & Heastie, 2008). Of these problems, disturbances in the social domain are among the most challenging, as developing close intimate relationships is a core developmental task for young adults (Erikson, 1950). Pre-

university friendships typically decline in satisfaction, commitment, rewards and personal investment over the first year at university (Oswald & Clark, 2003). Though disengaging from pre-university friends may facilitate integration into the university social sphere, it remains an acute stressor for many young adults (Terenzini et al., 1994). Many first-year university students experience "friendsickness" (i.e., preoccupation with and concern for the loss of pre-university friendships), which predicts increased loneliness, poor self-esteem, and a discrepancy between expectations and experiences at university (Ishler, 2004; Paul & Brier, 2001). In sum, the transition to university for emerging adults (i.e., people between 18-25 years old) is a useful transitional period for researchers interested in (a) ego-involving interpersonal stressors in the form of declining pre-university friendships and (b) longitudinal changes in depressive affect across the first semester. Moreover, it represents a significant advance over past longitudinal research on perfectionism, interpersonal stress, and depressive affect which did not look at a developmentally critical time period (e.g., Chang & Rand, 2000; Hewitt et al., 1996; Joiner & Schmidt, 1995).

Taking a Narrative Approach to Interpersonal Stress

It is also possible prior approaches to measuring interpersonal stressors have contributed to the inconsistent findings when testing the specific vulnerability model. Key to the specific vulnerability model is the idea that stressors must be ego-involving – that is, they must represent a significant challenge to a person's sense of identity, self-worth, and/or ability to make meaning out of those experiences (Hewitt & Flett, 1993; 2002). Prior research using closed-ended questionnaires – which includes, to our knowledge, all past tests of the specific vulnerability model – could not capture the meaning and importance of events to the individual. This stands in contrast to the complexity of responses to stressors identified in qualitative research (Terenzini et

al., 1994). The process by which people make meaning out of interpersonal stressors is idiosyncratic, and may be better understood using a more open-ended measurement approach. Thus, we believe that targeting people's social identity, and the way they make sense of their social world through autobiographical narrative, may help clarify this inconsistent literature.

Autobiographical narratives have a strong tradition in both the social/personality (e.g., McAdams & Pals, 2006) and clinical (e.g., Parry & Doan, 1994) fields of psychology. In the social psychological tradition, autobiographical narratives are typically viewed as a part of identity (Smith & Sparkes, 2008), and considerable attention is paid to the structure or patterned form of the stories people tell. For example, McAdams (2006) found that healthy, well-adjusted, generative adults tend to tell stories using themes of redemption, such that suffering is transformed into an opportunity for personal growth. In contrast, the stories told by North Americans with high levels of depressive symptoms tend to show strong themes of contamination, where positive events become "ruined," such that the initial positivity is virtually erased (Adler, Kissel, & McAdams, 2006; McAdams, 2006; McAdams, Reynolds, Lewis, Patten, & Bowman, 2001). In the clinical tradition, emphasis is placed on identifying depressogenic narratives and helping clients to re-author those stories in a more positive way (Parry & Doan, 1994). Therapeutic approaches relying on these ideas (e.g., narrative therapy) appear to be effective in alleviating depressive symptoms in clinical trials (Vromans & Schweitzer, 2010). Thus, our intent in the present study is to try and identify interpersonal stories which moderate the longitudinal relationship between SPP and depressive affect (i.e., does SPP predict depressive affect more strongly in the presence of certain types of interpersonal narratives?). This goal is still broadly in line with testing the specific vulnerability model (Hewitt & Flett, 1993) by focusing on ego-involving interpersonal stress, but extends this work by incorporating

recent advances in narrative psychology. Specifically, we propose the use of a "relationship defining narrative," which places the focus on social relational aspects of the self-concept within the context of friendships, drawing on past work (Mackinnon, Nosko, Pratt, & Norris, 2011; McLean & Thorne, 2003).

The Present Study

Our study uses a mixed-methods design which measures both quantitative and qualitative information, but places more emphasis on the quantitative data (i.e., a concurrent nested or QUAN + qual design; Hanson, Creswell, Clark, Petska, & Creswell, 2005). Specifically, we measured perfectionism and depressive affect using closed-ended questionnaires, and features of interpersonal narrative identity using open-ended autobiographical narratives. This kind of design typically requires that the qualitative data (i.e., autobiographical narratives on friendship) be transformed into quantitative codes for statistical analysis. To transform the qualitative data into quantitative codes, we used the 4-point ordinal coding scheme for friendship intimacy developed by Mackinnon et al. (2011). This coding scheme was developed using thematic analysis (Braun & Clarke, 2006). Mackinnon et al. (2011) found that this coding scheme had good inter-rater reliability, was best represented as an ordinal (i.e., ranked) variable, and was able to predict generative concern over numerous other covariates (e.g., relationship status, optimism), demonstrating its predictive validity. Our mixed-methods design is in line with calls for mixed methods approaches in personality research (McAdams & Pals, 2006), and overcomes biases of mono-method research. Mono-method quantitative research can suffer from statistical biases (e.g., method variance; Brannick, Chan, Conway, Lance, & Spector, 2010) and the narrow focus of closed-ended questions may limit development of new theory (Barker, Pistrang, & Elliot, 2002).

Using Mackinnon et al.'s (2011) coding scheme as a guide, stories are classified as being low in intimacy when the story follows a pattern where friendships become weaker over time (i.e., friendship conflict stories) or where the narrator conspicuously omits all emotional, intimate content (i.e., task-oriented stories). In contrast, stories higher in intimacy might include the forward progress of new friendships (i.e., relationship building) or strengthening a friendship bond with a friend through a difficult time (i.e., true friendship). We predicted that SPP (but not SOP) is most problematic when combined with a relational narrative identity that de-emphasizes intimacy. This is consistent with the idea that problems in close, interpersonal relationships are particularly ego-involving for people high in SPP but comparatively less ego involving for people high in SOP (Hewitt & Flett, 1993; 2002). It is also consistent with past research suggesting that loneliness and perceived social support moderate the SPP-depressive symptoms relationship (e.g., Chang et al., 2008; Dunkley et al., 2000). However, our study stands alone by studying relational identity using a mixed methods design.

Thus, we hypothesized that SPP (but not SOP) will interact with friendship intimacy from narratives to predict increased depressive affect. That is, the longitudinal relationship between SPP and depressive affect will be stronger when participants also tell stories about their friends that are low in intimacy. Though we predicted that SOP would not interact with friendship intimacy from narratives to predict depressive affect based on prior theory (Hewitt & Flett, 1993; 2002), it is important to rule out this potential relationship empirically, especially since some prior research has found that SOP interacts with interpersonal stressors to predict increased depressive affect (e.g., Chang et al., 2008; Joiner & Schmidt, 1995). Thus, we include both SOP and SPP simultaneously in our empirical tests of this hypothesis, even though we predict significant relationships only for SPP.

Method

Participants

Participants included 127 first-year undergraduates attending university for the first time. Participants' mean age was 18.31 years ($SD = 0.80$); 36.8% of participants were in a romantic relationship at Wave 1; and 45.2% were in a romantic relationship at Wave 2. Most participants were women (77.5%), Caucasian (81.1%), born in Canada (85.8%), reported their university major as "undecided" (63.8%), and graduated from high school four months before starting university (84.9%). Demographics are consistent with other samples of undergraduates recruited at Canadian universities (e.g., Graham et al., 2010).

Procedure

Participants were screened to be first-year students between ages 18-25 attending university for the first time in September 2010. At both waves, participants completed an interview measure of friendship intimacy followed by pen-and-paper questionnaires. The first interview asked participants to narrate an experience from summer vacation (May 1, 2010 to August 31, 2010) and the second interview asked participants to narrate an experience from first semester at university (September 1, 2010 to December 31, 2010). Though our interviews ask participants to narrate past events, what is important is the participants' *current interpretation* of these past events. Though we considered asking participants to report on current stressors – as in prior questionnaire studies (e.g., Joiner & Schmnidt, 1995) – we believe that this approach was a limitation of prior research. It takes a considerable amount of time for important life events to be incorporated into a person's life narrative. In short, we posit that people cannot adequately assess the impact and meaning of many life events until they spend time reflecting upon those events. From this perspective, many life event checklists used in prior research (e.g., Sherry et al., 2003)

are assessing a mixture of ego-involving and more neutral stressors. Thus, it makes sense to ask participants to narrate a relatively large window of past events in order to assess personally meaningful life events involving a close friend. In doing so, we hoped to assess major interpersonal life events that are meaningful and ego-involving for participants, providing a better test of Hewitt and Flett's (1993; 2002) theory. Questionnaires were identical at both waves. Participants were debriefed after Wave 2. Participants were scheduled to complete Wave 1 within the first 50 days of fall term and Wave 2 at the beginning of winter term (130 days later). Participants completed Wave 2, on average, 133.18 ($SD = 8.08$) days after Wave 1. To promote protocol compliance, we used a combination of phone reminders, email reminders and incentives (3 bonus points and $25 for psychology students; $55 for non-psychology students). All participants (100.0%) completed Wave 1 and 115 participants (90.6%) completed Wave 2.

Materials

Friendship intimacy. At both waves, participants completed a semi-structured interview administered by one of six trained research assistants[1]. Participants did not necessarily have the same interviewer at both waves, and were assigned to interviewers based on mutually convenient schedules. During this interview, participants were asked to verbally describe a "friendship-defining moment" with a same-sex friend (i.e., a story that illustrates the nature of their relationship with that friend). At Wave 1, participants were asked to tell a story that occurred during summer vacation; at Wave 2, they were asked to tell a story that occurred during their

[1]We examined whether responses on measures used in this study (friendship intimacy, perfectionism, depressed affect) differed across research assistants using one-way ANOVAs. These analyses suggested that responses did not systematically vary across research assistants. These analyses are available upon request.

first semester at university. Participants were encouraged to describe the first scene that came to mind, and were told the story could be positive or negative. Interviewers asked participants to provide details on what happened, where it happened, who was involved, what they did, what they were thinking and feeling, what impact this experience may have had upon them, and what this experience says about who they were or are as a person. When needed, interviewers prompted participants to recall additional details (see Mackinnon et al., 2011). Interviews were audio-recorded, then transcribed by a trained research assistant. A sub-section of the transcripts ($N = 60$) were double-checked and contained few transcription errors.

Each friendship-defining scene was coded for friendship intimacy using Mackinnon et al's (2011) 4-point ordinal coding scheme, which ranges from 0 to 3. From least to most intimate, the possible codes are: (0) *friendship conflict*, where the friendship becomes weaker or dissolves entirely; (1) *task orientation*, where there is a focus on shared activities or events rather than the relationship itself; (2) *relationship building*, where the focus is on the forward progress of a friendship; and (3) *true friendship,* which involves supporting or being supported by a friend through a difficult time. Examples of friendship conflict stories from the narratives include verbal arguments, being abandoned at a party by friends, losing contact with friends, or simply a vague sense of "drifting apart." In all cases, friendship conflict stories end with the friendship in a less intimate state than when the story began. Examples of task orientation include shared activities such as shopping, frosh week activities, attending a party, or playing sports. Task oriented stories are generally positive in valence, but do not provide the listener with much (if any) information on the relationship itself, instead focusing predominantly on the shared activity. Examples of relationship building stories include meeting new friends, having a good conversation, becoming closer after resolving an argument, or any other story where a

relationship becomes stronger or more intimate as a result. Relationship building stories do focus on the relationship itself, and always follow a trajectory where the friendship becomes closer or more intimate by the end of the story (but also do not meet criteria for "true friendship" stories, described next). Examples of true friendship stories include supporting or being supported by friends through physical illness, emotional distress, or financial difficulties. The emphasis of true friendship stories is on the quality of the existing friendship, and the purpose of the story is typically to show that "true" friends stick together and support each other during difficult or challenging situations.

To calculate inter-rater reliability, the first author and a trained research assistant coded 50 randomly selected friendship scenes for friendship intimacy. The intraclass correlation (absolute agreement) was .86, signifying high levels of reliability. Following the establishment of inter-rater reliability, the remaining friendship-defining stories were coded by the trained research assistant. This assistant was blind to hypotheses and questionnaire results and consulted regularly with the first author.

To our knowledge, this measure of intimacy was used in only one prior study. Mackinnon et al. (2011) found that friendship intimacy (as coded in the present study) predicted increased generative concern (i.e., concern for the next generation) in 27-year-olds, over and above relationship status, optimism, happiness, depression, and gender. Moreover, these authors supported the inter-rater reliability of the friendship intimacy coding scheme (intraclass correlation = .81), as well as its concurrent validity (e.g., strong correlation with an alternative measure of intimacy coded from narratives, $r = .66$). These analyses also suggested that these themes are best represented as an ordinal variable, rather than a categorical one. Mackinnon et al. (2011) also demonstrated that friendship intimacy could predict Eriksonian generativity over and

above romantic intimacy coded from narratives, supporting the predictive validity of the construct.

To further support the convergent and divergent validity of friendship intimacy, we ran correlations between friendship intimacy and the Multidimensional Scale of Perceived Social Support (MSPSS) at Wave 1 (Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS has three 4-item subscales: Friends subscale ("I could count on my friends when things went wrong;" α = .91, 95% CI [.89, .94]), family subscale ("My family really tried to help me;" α = .90, 95% CI [.87, .92]), and significant other subscale ("There was a special person around when I was in need;" α = .88, 95% CI [.85, .91]). Friendship intimacy was positively correlated with the friends subscale (r =.20, p = .03), but uncorrelated with the family subscale (r = .01, p = .89) or significant other subscale (r = -.01, p = .88), supporting convergent and divergent validity. The MSPSS was not analyzed further. Additional analyses on the MSPSS (e.g., descriptive statistics, bivariate correlations) are available upon request.

Perfectionism. Socially prescribed perfectionism ("The better I do, the better I am expected to do") and self-oriented perfectionism ("I demand nothing less than perfection of myself") were each measured using 5-item short forms of Hewitt and Flett's (1991) Multidimensional Perfectionism Scale (HFMPS; Hewitt, Habke, Lee-Baggley, Sherry, & Flett, 2008). Participants responded to items using a long-term timeframe (i.e., "during the past several years") and a 7-point scale from 1 (*strongly disagree*) to 7 (*strongly agree*).Total scores on socially prescribed perfectionism could possibly range from 7 to 35. Research suggests short-form versions of these subscales can be used without compromising the reliability and validity of the HFMPS (Graham et al., 2010; McGrath et al., 2012; Sherry, Hewitt, Sherry, Flett, & Graham, 2010). For instance, Hewitt et al. (2008) reported both short forms correlated strongly with the

original 15-item HFMPS scales (rs > .90), and found acceptable alpha reliabilities for the short-form versions of socially prescribed perfectionism (α = .80) and self-oriented perfectionism (α = .88).

Depressive affect. Depressive affect was measured by standardizing and summing items from two subscales: The 4-item short-form depressive affect subscale of the Profile of Mood States (POMS-D; Bolger, Zuckerman, & Kessler, 2000; McNair, Lorr, & Droppleman, 1992), and the 7-item depressive affect subscale of the Center for Epidemiological Studies-Depression Scale (CESD-DA; Radloff, 1977; Shafer, 2006). Participants responded to the POMS-D using a 5-point scale from 0 (*rarely or none of the time*) to 4 (*most or all of the time*). Participants responded to the CESD-DA using a 5-point scale from 0 (*not at all)* to 4 (*extremely*). Total scores on the CESD-DA could range from 0 to 24, and total scores on the POMS-D could possibly range from 0 to 16. A sample item for the POMS-D is "hopeless" and a sample item for the CESD-DA is "I felt depressed." Participants responded to items using a short-term timeframe (i.e., "during the past seven days").

Supplementary psychometric data collected in our lab (N = 94; 85.1% women; 74.5% Caucasian; all undergraduates) supports alpha reliability of the POMS-D (α = .81) and the CESD-DA (α = .85). Both the POMS-D (r = .53) and the CESD-DA (r = .81) correlated with the Depression subscale of the Symptom Checklist 90-R (Derogatis, 1994), supporting concurrent validity. We chose to combine these two measures together into a single composite variable for 3 reasons: (a) It reduces the number of tests, thus reducing Type I error; (b) an exploratory principal components analysis described below supported combining all 11 items into a single composite; and (c) both measures are theorized to tap the same underlying construct (i.e., depressive affect).

Results

Missing data. Approximately 6.0% of our data were missing with covariance coverage ranging from .87 to 1.00. To account for missing data, we used multiple imputation (20 imputations) in SPSS 20. This approach provides comparatively unbiased parameter estimates and improved statistical power when compared to listwise deletion and single imputation methods (Graham, 2009).

Principal components analysis. To support our decision to use a single depressive affect composite variable, we conducted a principal components analysis of all 11 items, and used the scree plot and parallel analysis with 1000 replications (O'Connor, 2000) to determine the number of components to retain. Component loadings ranged from .43 to .87 at Wave 1, and from .56 to .86 at Wave 2. At both Wave 1 and Wave 2, the scree plot suggested that a 1-component solution best fit the data. Parallel analysis also suggested a 1-component solution at both waves. At Wave 1, component 1 explained 54.7% of the variance, which was higher than the 95th percentile of random replications (14.9%). However, a second component explained only 9.9% of the variance, which was not higher than the 95th percentile of random replications (13.1%). At wave 2, component 1 explained 54.9% of the variance, which was higher than the 95th percentile of random replications (15.2%). However, a second component explained only 10.0% of the variance, which was not higher than the 95th percentile of random replications (13.3%). In sum, results support our choice to combine these two measures into a single composite.

Descriptives and bivariate correlations. Means and standard deviations appear in Table 1. Bivariate correlations, alpha reliabilities, and intraclass correlations are in Table 2. Means fell within one standard deviation of means from past studies of young adults (Graham et al., 2010; Mackinnon et al., 2011; Sherry & Hall, 2009). Alpha reliabilities for questionnaires ranged from

.86 to .91 and test-retest correlations ranged from .39 to .78, supporting reliability. There was

modest, but significant test-retest reliability for friendship intimacy (*Cramer's V* = .28, *p* = .002).

SPP had large, positive correlations with SOP (*r*s from .45 to .61) and small, negative

correlations with Wave 1 friendship intimacy (*r*s from -.22 to -.23). Depressive affect generally

had small to medium correlations with SPP (*r*s from .15 to .36), but was uncorrelated with Wave

1 friendship intimacy (*r*s from .01 to .04). SOP was inconsistently correlated with depressive

affect (*r*s from .07 to .25), and Wave 1 friendship intimacy (*r*s from -.16 to -.20) across waves.

Wave 2 friendship intimacy was uncorrelated with all other variables (*r*s from -.08 to .12). On

average, the stories at Wave 1 contained 436.06 words (*SD* = 266.28) and the stories at Wave 2

contained 377.62 words (*SD* = 181.49). None of the results changed substantively when word

count was entered in as a covariate. Thus, word count is not discussed further in the results.

Moderated multiple regression with Wave 1 friendship intimacy. Results of the

hierarchical moderated regression analyses are in Table 3. At step 1, only Wave 1 depressive

affect was entered as a predictor. By including this covariate, we accounted for baseline levels of

depressive affect and were able to examine rank-order changes in depressive affect from Wave 1

to Wave 2. As hypothesized, Wave 1 depressive affect was a strong predictor of Wave 2

depressive affect. At step 2, Wave 1 SPP, Wave 1 SOP, and Wave 1 friendship intimacy were

added to the model. Main effects for SPP, SOP, and friendship intimacy were nonsignificant. At

step 3, the interaction term (i.e., the multiplicative product) of SPP and friendship was added.

Both the interaction term and the ΔR^2 were statistically significant, suggesting moderation

occurred.[2] At step 4, the interaction term for SOP and friendship intimacy was entered. In this case, both the interaction term and ΔR^2 were nonsignificant, suggesting SOP was not a significant moderator. We ran a statistical test to compare relative magnitude of the interaction effects (i.e., is the B-value for the SPPxintimacy interaction effect larger than the SOPxintimacy interaction effect when predicting changes in depressive affect?).[3] This analysis revealed that the two interaction effects were significantly different from one another, $t(126) = -2.11, p = .04$. This analysis shows that the interaction using SPP has a larger effect size than the interaction using SOP. We also included a fourth step where we included all other possible interaction terms between Wave 1 depressive affect, SPP, SOP, and friendship intimacy. The ΔR^2 for step 4 was not statistically significant ($\Delta R^2 = .08, p = .57$). Due to this nonsignificant analysis, and as we saw no theoretical basis for including these interactions, these interaction terms were omitted to preserve model parsimony (Frazier, Tix, & Barron, 2004).

Probing the interaction. To probe the nature of the statistically significant interaction in Table 3, a graph was plotted with groups at high (+1 *SD* above the mean) and low (-1 *SD* below the mean) values for SPP and the highest (true friendship) and lowest (friendship conflict) values of friendship intimacy (see Figure 1). In Figure 1, SPP led to increases in depressive affect over time only when friendship intimacy was low. When participants had high levels of friendship

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[2]It is worth noting here that this interaction remains significant and in the same direction even when SOP is omitted from the model. So it does not appear that entering both SPP and SOP simultaneously is required to find this interaction.

[3]We used the following formula to compare the B-values for both interaction effects: $t = b2 - b1/SE(b2-b1)$, where $SE(b2-b1) = \text{sqrt}(c11 + c22 + 2*c12)$, and c = values in the covariance matrix of predictors.

intimacy, the association between SPP and depressive affect was no longer evident. This assertion can be tested statistically with simple slopes (Cohen, Cohen, West, & Aiken, 2003). That is, we tested if the link between SPP and depressive affect is statistically significant for all four possible values of friendship intimacy (i.e., friendship conflict, task-oriented, relationship building, and true friendship). The relationship between SPP and depressive affect was positive and statistically significant when participants told friendship conflict ($B = .71$, $t(122) = 2.30$, $p = .02$) stories, but was nonsignificant when participants told task-oriented ($B = .36$, $t(122) = 1.81$, $p = .073$), relationship building ($B = .01$, $t(122)$ 0.07, $p = .94$) or true friendship stories ($B = -.34$, $t(122) = -1.32$, $p = .19$). Simple slopes thus corroborate the pattern in Figure 1.

Moderated multiple regression with Wave 2 friendship intimacy. We also conducted a similar moderated multiple regression analysis replacing Wave 1 intimacy with Wave 2 friendship intimacy. Results of this hierarchical moderated regression analyses are in Table 4. Wave 2 friendship intimacy did not have a main effect, nor did it interact with SPP or SOP to predict changes in depressive affect. A fourth step including all other possible interactions was also non-significant ($\Delta R^2 = .09$, $p = .42$). The two interaction effects were not significantly different from one another, $t(126) = -1.00$, $p = .37$. As the interaction effects were non-significant, we did not explore them further using simple slopes. Thus, the moderating effect of friendship intimacy occurred only when the "friendship defining moment" stories focused on the summer vacation period preceding first semester at university.[4]

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[4]Prior research has suggested women may have higher levels of depressive symptoms (Flett et al., 1997) and may be less likely to tell task-oriented friendship intimacy stories when compared to men (Mackinnon et al., 2011), suggesting that gender may be an relevant covariate. Thus, we also re-analyzed data in Tables 3 and 4 by adding sex at step 1 as a covariate. Sex was

Discussion

Hewitt and Flett's (1993; 2002) specific vulnerability model received support. Socially prescribed perfectionism predicted changes in depressive affect only in the presence of low friendship intimacy in autobiographical narratives. In contrast, self-oriented perfectionism did not predict changes in depressive affect, nor was its impact on depressive affect moderated by friendship intimacy. However, the moderating influence of friendship intimacy was only found when participants narrated their experiences during summer vacation, as opposed to narrating experiences from their first semester at university. This may suggest the time periods specified by the narratives at each wave (e.g., summer vacation versus first semester at school) have some importance. For instance, it is possible that the summer period (Wave 1) was more indicative of the participant's habitual level of friendship intimacy than first semester at university (Wave 2). The Wave 1 interviews might also be more ego-involving because they focused exclusively on more well-developed, pre-university friendships; in contrast, many Wave 2 interviews focused on new friendships formed at university, and may not yet have had time to be strongly incorporated into the participants' narrative identity. By controlling for base rates of depressive affect, we tested rank-order changes over time, and provided more convincing evidence than cross-sectional studies (Sherry et al., 2003). Our mixed methods design helped control for method variance (Brannick et al., 2010), avoided biases in mono-source self-reports by having trained experts code narratives, and permitted a more nuanced understanding of the way

unrelated to depressive affect, and the results presented in Tables 3 and 4 did not change when including this additional covariate. We chose to omit sex from the final model because there are relatively few men in this study (22.5%). Combined with our relatively small sample size ($N = 127$), any analysis using sex in this dataset is likely to be underpowered.

students' pre-university friendships can decline and contribute to depressive affect in transitioning students' lives.

Implications for Perfectionism Research

Socially prescribed perfectionists believe others set unrealistically high standards, and feel they need to meet these standards in order to be worthy of others' approval (Hewitt & Flett, 1991). For socially prescribed perfectionists, relationship problems often arise from a perceived failure to live up to others' expectations (Mackinnon et al., 2012). The specific vulnerability model suggests that the socially prescribed perfectionism–depressive affect link depends upon how included or excluded people feel in relation to others (Hewitt et al., 2006). After controlling for overlap with socially prescribed perfectionism, self-oriented perfectionists are thought to set their own unrealistic standards primarily in work and achievement domains (e.g., "I must work to my full potential at all times") and criticize themselves for failing to reach these goals. Self-oriented perfectionists might experience depressive affect after achievement-related hassles, stressors or setbacks (Hewitt & Flett, 1993; Hewitt et al., 1996). However, self-oriented perfectionism should be largely unrelated to relationship problems in pre-university relationships–in fact, drifting away from pre-university friends might be beneficial for academic performance, in some circumstances (Terenzini et al. 1994). Our finding that socially prescribed perfectionism, but not self-oriented perfectionism, interacts with low friendship intimacy to predict heightened depressive affect is well-grounded in prior theory, even though prior tests of the specific vulnerability model provided mixed support (Chang & Rand, 2000; Hewitt & Flett, 1993; Flett et al., 1997).

Methodological differences may account for different findings compared to prior research, which often used self-report life event checklists to measure stress, and did not track

participants across important transition periods where change in depressive affect is expected (Chang & Rand, 2000; Joiner & Schmidt, 1995). In contrast, our research used a narrative measure of friendship intimacy and tracked students across the transition to university. Our use of mixed methods is noteworthy, as this approach is rare in perfectionism research (c.f., Rice, Bair, Castro, Cohen, & Hood, 2003). Autobiographical narratives are a rich source of data and can help researchers triangulate findings across methods and develop new theory (Barker et al., 2002).

Implications for Transitioning University Students

The transition to university is a stressful experience (Gall et al., 2000). Among the most stressful aspects of this experience is the declining role of pre-university friendships (Ishler, 2004). We found socially prescribed perfectionism impedes this developmental transition, by precipitating more depressive affect after disengaging from pre-university friends. When perfectionistic students suffer from "friendsickness," interpersonal problems, or loneliness, they may experience more depressive affect as a result (Chang et al., 2008; Paul & Brier, 2001). University counselling centers are overburdened, increasingly due to students seeking help with the transition to university (Benton, Robertson, Tseng, Newton, & Benton, 2003). It may be useful to include a module on perfectionism in existing social support programs designed to help students transition to university (Pratt et al., 2000).This research identifies a subgroup of students prone to experience depressive affect (i.e., high socially prescribed perfectionism and low friendship intimacy), and as such, may help clinicians allocate resources to the students who most need support. In addition, these findings have relevance for narrative therapy (Vromans & Schweitzer, 2010). By helping perfectionistic students re-author negative, "friendship conflict" stories in a more positive way, clinicians may be able to alleviate depressive symptoms. Our

research thus joins a growing literature interested in identifying the types of prototypical autobiographical stories that serve to exacerbate, maintain, and evoke depressive symptoms (e.g., Adler et al., 2006).

Limitations and Future Directions

Our study used a relatively small, homogenous sample of first-year undergraduates. Though there is value in studying transitioning university students, the results should not be generalized outside this population. There were also few male participants in this study, which limited our ability to explore gender differences, and potentially limited the study's generalizability. Our mixed methods design differs from prior tests of diathesis-stress and specific vulnerability models, so our results may not be directly comparable to prior research. Nonetheless, we believe our use of mixed methods represents a significant methodological advance. We were unable to follow participants beyond 130 days. It is unknown if these results would generalize to different time lags, or if the interactive effects of perfectionism and low friendship intimacy persist in the long-term. An in-depth qualitative analysis was also beyond the scope of this paper. Finally, people high in perfectionism may respond to interviews using perfectionistic self-presentation strategies, or may have deficits in their self-knowledge. In this way, people who score high on perfectionism may provide less valid self-report data. This is a limitation of virtually all research on perfectionism, and may be an interesting avenue for future research.

Researchers could also follow students longitudinally across all four years of university, and could focus on other transition periods in non-student samples (e.g., retiring adults).Though our focus on pre-university friendships is developmentally appropriate (Paul & Brier, 2001) and consistent with other research which focuses exclusively on interpersonal problems as

moderators of the perfectionism–depressive affect relationship (Chang et al., 2008), future research would benefit from studying stress in achievement domains. Developing interview protocols and coding schemes to probe for achievement-related stress using autobiographical narratives would be informative. Future research might also compare the autobiographical narratives of highly perfectionistic people to non-perfectionists to develop a deeper understanding of perfectionism (Rice et al., 2003). Research on perfectionism has focused almost exclusively on self-report questionnaires; this mono-method approach is well-known to result in methodological biases (Barker et al., 2002). We believe that broadening the operationalization of perfectionism to include alternative methods (e.g., coding interviews for themes of perfectionism) would be a productive area of future research. However, this area of inquiry must begin by exploring whether themes of perfectionism reliably emerge in the life narratives of perfectionistic people. By exploring the unique narratives that define perfectionistic personality, we can develop a more comprehensive understanding of how perfectionistic people make sense and meaning from their world (McAdams & Pals, 2006).

Conclusions

A common adage in perfectionism research is that perfectionistic people are happy, so long as everything in their life is perfect. Of course, life is rarely perfect and virtually everyone experiences setbacks, hassles and stressors. While few people enjoy stress, most people bounce back from stressors. In contrast, perfectionistic people handle stress poorly, and experience a great deal of depressive affect as a result. Our research shows people high in socially prescribed perfectionism find it especially difficult to deal with interpersonal problems in their pre-university friendships during the transition to university. Our study provides compelling support for one key aspect of Hewitt and Flett's (1993) specific vulnerability model using a novel

method, and incrementally advances understanding of the relationship between perfectionism

and depressive affect.

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Table 1

Means and Standard Deviations

Variable	Wave 1		Wave 2	
	M	*SD*	*M*	*SD*
Socially Prescribed Perfectionism	19.42	7.13	17.82	7.24
Self-Oriented Perfectionism	23.76	5.50	21.37	6.37
Friendship Intimacy	1.56	1.06	1.79	.98
Depressive Affect (POMS)	4.89	3.87	4.71	3.96
Depressive Affect (CESD)	4.67	4.28	3.84	4.06

Note. POMS = Profile of Mood States (McNair, et al., 1992); CESD = Center for Epidemiological Studies-Depression Scale (Radloff, 1977). Note that a 4-item short form for the POMS and a 7-item short form for the CESD were used in this study (see Method section). Means and standard deviations for friendship intimacy are based on a single score coded from the narratives. Means and standard deviations for all other scales are based on sums calculated by summing all subscale items together.

Table 2

Bivariate Correlations, Alpha Reliabilities, and Intraclass Correlations

Variable	1	2	3	4	5	6	7	8	α / ICC	95% CI
										α / ICC
Wave 1										
1. Friendship Intimacy	--								.86	[.76, .92]
2. Socially Prescribed Perfectionism	-.22**	--							.86	[.82, .90]
3. Self-Oriented Perfectionism	-.16	.50***	--						.86	[.82, .89]
4. Depressive Affect	.01	.27**	.07	--					.91	[.89, .93]
Wave 2										
5. Friendship Intimacy	**.28***	-.08	.04	.02	--				.88	[.79, .93]
6. Socially Prescribed Perfectionism	-.23*	**.78***	.48***	.36***	-.02	--			.89	[.85, .92]
7. Self-Oriented Perfectionism	-.20*	.45***	**.61***	.21*	.05	.61***	--		.89	[.85, .92]
8. Depressive Affect	.04	.15	.12	**.39***	.12	.34***	.25***	--	.91	[.89, .94]

Note. For the relationship between Wave 1 Friendship Intimacy and Wave 2 Friendship Intimacy, Cramer's *V* was used instead of a correlation coefficient. This statistic is more appropriate when both variables are nominal or ordinal. Though roughly comparable to a correlation coefficient, readers should note that the interpretation of the effect size for this value may differ from other values in this table. Test-retest correlations are in bold. *$p < .05$, ** $p < .01$, ***$p < .001$.

Table 3

Hierarchical Moderated Multiple Regression with Wave 1 Perfectionism Predicting Wave 2 Depressive Affect using Wave 1 Friendship Intimacy as a Moderator

	B	$SE\ B$	ΔR^2
Step 1			.15***
Wave 1 Depressive affect	.39***	.09	
Step 2			.01
Wave 1 Depressive affect	.38***	.10	
Wave 1 SPP	.003	.11	
Wave 1 SOP	.10	.10	
Wave 1 Friendship Intimacy	.06	.09	
Step 3			.04*
Wave 1 Depressive affect	.38***	.09	
Wave 1 SPP	.04	.11	
Wave 1 SOP	.09	.10	
Wave 1 Friendship Intimacy	.07	.10	
SPPxIntimacy Interaction	-.20*	.09	
Step 4			.00
Wave 1 Depressive affect	.39***	.10	
Wave 1 SPP	.05	.11	
Wave 1 SOP	.09	.10	
Wave 1 Friendship Intimacy	.07	.09	
SPPxIntimacy Interaction	-.20*	.10	
SOPxIntimacy Interaction	.01	.10	

Note. Variables were standardized before analysis. R^2 values were calculated by averaging across all 20 imputed datasets ($N = 127$). SPP = Socially Prescribed Perfectionism; SOP = Self-Oriented Perfectionism.

*p< .05, ** p< .01, ***p< .001

Table 4

Hierarchical Moderated Multiple Regression with SPP Predicting Wave 2 Depressive Affect using Wave 2 Friendship Intimacy as a Moderator

	B	SE B	ΔR^2
Step 1			.15***
Wave 1 Depressive affect	.39***	.09	
Step 2			.02
Wave 1 Depressive affect	.38***	.10	
Wave 1 SPP	.01	.10	
Wave 1 SOP	.09	.10	
Wave 2 Friendship Intimacy	.12	.10	
Step 3			.00
Wave 1 Depressive affect	.38***	.10	
Wave 1 SPP	.00	.10	
Wave 1 SOP	.10	.10	
Wave 2 Friendship Intimacy	.11	.10	
SPPxIntimacy Interaction	.07	.19	
Step 4			.01
Wave 1 Depressive affect	.39***	.10	
Wave 1 SPP	.002	.10	
Wave 1 SOP	.10	.10	
Wave 2 Friendship Intimacy	.09	.10	
SPPxIntimacy Interaction	.02	.10	
SOPxIntimacy Interaction	.12	.12	

Note. Variables were standardized before analysis. R^2 values were calculated by averaging across all 20 imputed datasets ($N = 127$). SPP = Socially Prescribed Perfectionism; SOP = Self-Oriented Perfectionism.
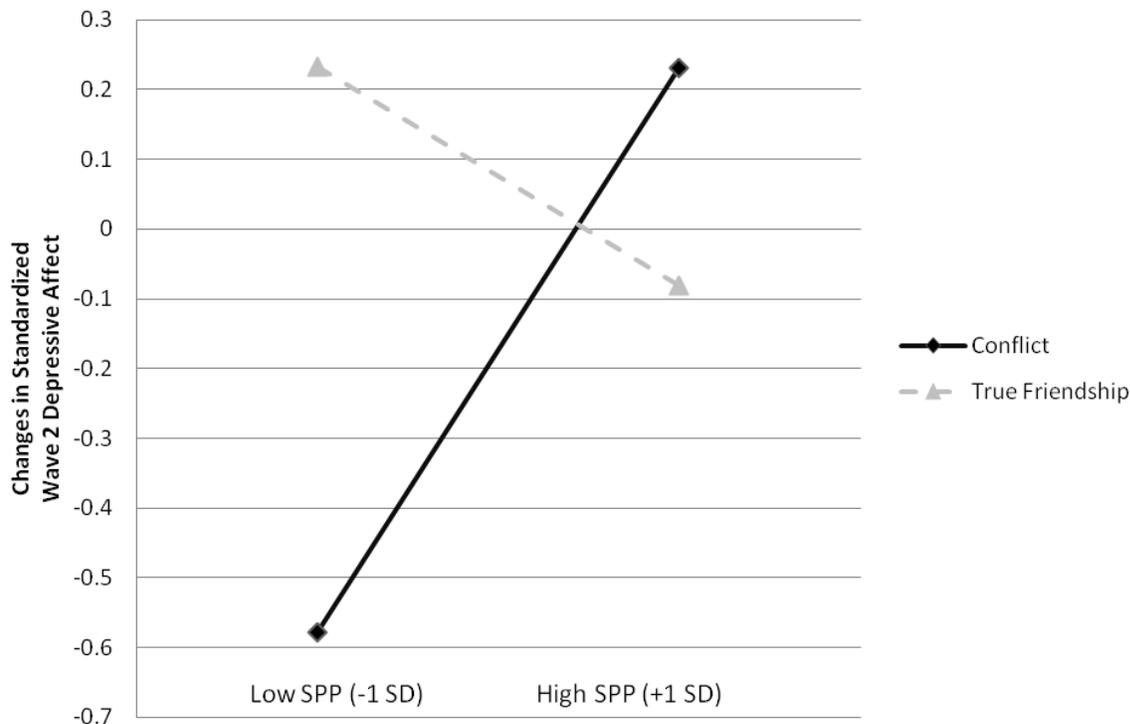
*p< .05, ** p< .01, ***p < .001

Figure 1. A plot of the interaction between socially prescribed perfectionism (SPP) and friendship intimacy when predicting change in depressive affect. The solid black line represents participants who told "friendship conflict" stories at Wave 1. The dotted grey line represents participants who told "true friendship" stories at Wave 1. The x-axis represents two values for socially prescribed perfectionism (±1 *SD* around the mean). Values for depressive affect on the y-axis are standardized to have a mean of zero and a standard deviation of one. Prior levels of depressive affect were controlled for, so values on the y-axis represent rank-order changes over time.