

A worthy self is a caring self: Examining the developmental relations among self-esteem and
self-compassion in adolescents

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Abstract

Objective: Self-compassion has been framed as a healthy alternative to self-esteem, as it is non-evaluative. However rather than being alternatives, it may be that the two constructs develop in a mutually-reinforcing way. The present study tested this possibility among adolescents.

Method: A large adolescent sample (N = 2,809; 49.8% female) reported levels of trait self-esteem and self-compassion annually for four years. Auto-regressive cross-lagged structural equation models were used to estimate the reciprocal longitudinal relations between the two constructs.

Results: Self-esteem consistently predicted changes in self-compassion across the four years of the study, but not vice versa.

Conclusion: Self-esteem appears to be an important antecedent of the development of self-compassion, perhaps because the capacity to extend compassion toward the self depends on one's appraisals of worthiness. These findings add important insights to our theoretical understanding of the development of self-compassion.

Key words: self-esteem, self-compassion, adolescent development, structural equation modelling, longitudinal.

“The worst loneliness is to not be comfortable with yourself.”

Mark Twain

Research on self-esteem over the past five decades highlights the benefits as well as the risks of self-evaluative behaviour (Baumeister, Campbell, Krueger, & Vohs, 2003). For example, self-esteem has been found to be an important antecedent of the development of social networks (Marshall, Parker, Ciarrochi, & Heaven, 2013), but seeking to boost self-esteem non-contingently may lead to narcissism and antisocial behaviour (Baumeister, Heatherton, & Tice, 1993; Baumeister et al., 2000; Crocker & Park, 2004). More recently, self-compassion has been proposed as an alternative to self-esteem pursuit, as it emphasizes self-acceptance rather than self-evaluation and thereby avoids some of the risks of attachment to positive self-concept (Neff & Vonk, 2009).

However rather than being alternatives, it may be that self-esteem and self-compassion are mutually reinforcing in their development. For example, it may be that self-compassion helps people not link failures and mistakes to their self-worth, and therefore is an antecedent to the development of self-esteem (the ‘antecedent’ model). Or perhaps one needs to evaluate oneself as worthy (i.e., have relatively high self-esteem) in order to extend compassion toward the self (the ‘consequence’ model). It is also possible that self-esteem and self-compassion influence each other over time (the ‘reciprocal model’). To our knowledge there are no published longitudinal studies that either explicitly propose or systematically test these alternate models of the development of self-esteem and self-compassion. This omission seems surprising given the research interest in the link between self-esteem and self-compassion in the last several years (e.g., Barry, Loflin, & Doucette, 2015; Leary, Tate, Adams, Allen, & Hancock, 2007; Muris,

Meesters, Pierik, & de Kock, 2016; Neff & Vonk, 2009; Neff & McGehee, 2010). The present study aims to fill this gap in the literature by utilizing a large, 4-wave study of adolescent development to test the three models of the link between self-esteem and self-compassion.

The costs and benefits of self-esteem pursuit

Self-esteem has been defined as positive or negative self-directed evaluations (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). Self-esteem describes an individual's assessment of their global self-worth, and as such differs from self-concept, which tends to be more domain-specific (Marsh & Craven, 2006). Global self-esteem has been shown to be an important predictor of social and emotional well-being. For example, self-esteem has been found to predict greater happiness (Cheng & Furnham, 2004), positive affect (Orth, Robins, & Widaman, 2012), and social support (Marshall et al., 2013) and less depression and anxiety (Sowislo & Orth, 2013). Conversely, having low global self-esteem as an adolescent has been linked with anti-social behaviour and delinquency (Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005), as well as poor physical health and anti-social behaviour in adulthood (Trzesniewski et al., 2006).

Despite the value of having a high and relatively stable global self-esteem, a number of scholars have highlighted the potential draw-backs and vulnerabilities associated with self-esteem pursuit (Baumeister, Smart, & Boden, 1996; Baumeister et al., 2003; Crocker & Park, 2004; Neff & Vonk, 2009; Ryan & Brown, 2003). A key concern is that because self-esteem is self-evaluative, it brings with it a contingent sense of self that is inherently vulnerable to threat (Baumeister et al., 2003; Neff & Vonk, 2009). Assessments of oneself as being a worthy and deserving individual can easily be undermined by contrary feedback from others, at times precipitating defensive or narcissistic responses in an effort to reinforce the self (Baumeister et

al., 1993; Baumeister et al., 2003; Crocker & Park, 2004). Among young people, this translates to the tendency to pass-up valuable learning opportunities following failure in the service of self-esteem maintenance, and the tendency to unrealistically inflate and even defend positive qualities in an effort to restore lost self-esteem (Baumeister et al., 2003; Nussbaum & Dweck, 2008).

Self-compassion as an alternative to self-esteem pursuit

Self-compassion has been defined as comprising three core behaviours: mindfully noticing one's suffering; practising self-kindness in the presence of suffering; and recognising that suffering is common to all humanity (Neff, 2003). Self-compassion has been shown to be more weakly correlated with traits such as narcissism, anger and public self-consciousness than self-esteem (Neff & Vonk, 2009). Moreover, self-compassion has been shown to predict unique variance in outcomes such as anger, public self-consciousness and rumination, beyond the effects of self-esteem (Neff & Vonk, 2009). As such, self-compassion has been framed as an alternative to self-esteem pursuit (Neff, 2003).

Despite considerable research interest in self-compassion over the past decade and the very large literature on self-esteem, there has been no developmental research to our knowledge examining the link between self-esteem and self-compassion. Several cross-sectional studies have found self-compassion and self-esteem to be moderately-to-highly correlated, including among young people, perhaps as both constructs involve extending positive emotions toward oneself (Barry et al., 2015; Leary et al., 2007; Muris et al., 2016; Neff & Vonk, 2009). Indeed, these findings suggest that the development of self-esteem and self-compassion may be more closely linked than has been previously thought.

Mechanism of Influence

Rather than being opposed to each other, it may be that self-compassion and self-esteem influence each other across the developmental process. The ‘self-compassion-as-antecedent’ model suggests that self-compassionate people forgive themselves for mistakes and failures, and such forgiveness is expected to lead to more positive evaluations of self-worth (Neff & Vonk, 2009; Reilly, Rochlen, & Awad, 2014). The ‘self-compassion-as-consequence’ model suggests that believing you are a person of worth (i.e., self-esteem) is a precursor to feeling worthy of self-compassion and to the development of self-compassion. Finally, the ‘reciprocal influence’ model suggests that both self-esteem and self-compassion are self-reinforcing, with an increase in one leading to an increase in the other creating a positive spiral of development.

Over the past decade, several studies have examined the relations among self-esteem and self-compassion cross-sectionally. Studies of adults have found correlations between global self-esteem and self-compassion from .50 to .70 (e.g., Neff & Vonk, 2009; Reilly et al., 2014), while among adolescent samples, the constructs have been found to be correlated in the .40 to .50 range (e.g., Barry et al., 2015; Muris et al., 2016). In addition, the two constructs have been shown to be correlated with a range of outcomes in relatively similar ways. For example, Neff and Vonk (2009) found that global self-esteem and self-compassion were both correlated with a number of self- and affect-related outcomes (social comparison orientation, public self-consciousness, self-rumination, narcissism, need for cognitive closure and anger) in the same direction and to a similar degree. More recent studies have found consistently similar-sized correlations between these two constructs and other traits, including shame (Reilly et al., 2014); aggression and depression (Barry et al., 2015); and anxiety, depression and self-efficacy (Muris et al., 2016).

Together, this evidence suggests that self-esteem and self-compassion predict similar kinds of outcomes in similar ways. However, to our knowledge the relations between these two constructs have not been tested in a longitudinal manner, making it impossible to identify the temporal ordering between the two. In the following sections, we explore the theoretical rationale for these underexplored developmental paths.

The antecedent, consequence and reciprocal influence models

Concerning self-compassion as an antecedent to the development of self-esteem, we expect that self-compassion will lead to more positive (and fewer negative) self-evaluations. Self-compassion involves cultivating kind, self-directed thoughts and emotions in the face of one's own suffering (Neff, Kirkpatrick, & Rude, 2007). Among adolescents, greater self-compassion has been associated with less depression and anxiety (Neff & McGehee, 2010), both of which are associated with negative self-directed evaluations (Sowislo & Orth, 2013). In addition, self-compassion has been found to be negatively associated with other negative self-evaluations such as self-rumination and social comparison orientation (Neff & Vonk, 2009), and shame (Reilly et al., 2014). Self-compassionate adolescents are more forgiving of their faults and failures and are less harsh on themselves in response to set-backs and stress (Neff, Hsieh, & Dejitterat, 2005). Our first prediction was therefore that self-compassion will facilitate the development of self-esteem among adolescents.

Alternatively, self-compassion might be a consequence of self-esteem. There is evidence that at times people feel insecure or fearful about extending compassion to themselves (Gilbert, McEwan, Matos, & Rivis, 2011; Kelly, Vimalakanthan, & Carter, 2014; Pauley & McPherson, 2010). That is, people sometimes feel as if they do not deserve self-compassion, and that extending self-compassion to themselves will result in their "flaws" being exposed (Gilbert et al.,

2011). Consistent with this notion, research on other-oriented compassion has highlighted the role of appraisals of the other person being worthy of compassion as a key element of the act of extending compassion to another (Atkins & Parker, 2012), and this same process may apply to acts of compassion toward oneself. Research therefore suggests that believing oneself to be worthwhile and acceptable are important antecedents of the capacity to extend compassion to oneself (Gilbert et al., 2011). This, in-turn, suggests that individuals who experience low self-esteem are less likely to extend compassion to themselves, which leads to our second prediction that among adolescents, self-esteem will precede increases in self-compassion over time.

Finally, it may be that self-esteem and self-compassion are mutually-reinforcing in their development. Self-esteem has been shown to be a cause as well as consequence of mental health outcomes such as depression and anxiety symptoms (Sowislo & Orth, 2013), and it may be that a similar process of mutual reinforcement applies to the relations between self-esteem and self-compassion. This explanation is consistent with theories of emotional development such as the broaden-and-build hypothesis of positive emotions, in which positive emotions are said to mutually reinforce one another in an upward spiral (Fredrickson, 2001). This leads to our third and final hypothesis, that self-esteem and self-compassion each reciprocally influence the others' development.

In addition to the hypothesised links between self-esteem and self-compassion, we also expected that a number of demographic variables would be associated with both self-esteem and self-compassion, and may therefore be confounds in testing the above hypotheses. We identified three such demographic variables, namely, gender, age and parents' marital status. Regarding gender, there is consistent evidence that males have higher trait self-esteem than females, with the largest differences occurring in late adolescence (Kling, Hyde, Showers, & Buswell, 1999),

and that males are more self-compassionate than females (Neff & Vonk, 2009; Neff, 2003).

Further, there is evidence that individuals' self-esteem increases during adolescence (Twenge & Campbell, 2001), and we expect a similar pattern for self-compassion as individuals tend to become more resilient and tolerant of set-backs with age (Goyen & Anshel, 1998). Lastly, there is meta-analytic evidence that self-esteem is lower among children of separated or divorced parents (Amato & Keith, 1991), and that self-compassion is lower among adolescents who believe their families are not functioning well (Neff & McGehee, 2010).

Methods

Participants and procedure

This study was a part of the Australian Character Study, a multi-year program of research among high-school students in Australia that collected a range of information relating to adolescent behaviours, relationships, beliefs, aspirations and self-evaluations. Participants in the current study attended 17 Catholic high schools in two Australian states. Catholic Schools in Australia account for 20.52% of secondary schools (Australian Bureau of Statistics, 2012). The schools participating in this study were concentrated in the cities of Wollongong (New South Wales) and Cairns (Queensland), but also included schools within regional and rural areas, thereby ensuring the socioeconomic and cultural diversity of participants. The Australian Government's socioeconomic index for schools sets the Australian average at 1,000 (<http://bit.ly/1mJK7KC>). The schools in the present study had a socioeconomic ranking almost identical to the Australian average (1,025; SD = 43), meaning this sample was broadly reflective of the socioeconomic status of schools across Australia.

Participants completed measures for this study in the third term of a four-term year in each of the four years of the study, from Year 9 to Year 12. The total sample consisted of 2,809 participants (1395 or 49.7% male, 1399 or 49.8% female, 15 unknown). Of the total sample, 1,683 participants in Year 9 completed the measures for the present study; 1,745 participants did so in Year 10; 1,530 did so in Year 11; and 1,525 did so in Year 12. A total of 647 subjects completed the measures for this study across all four years of the study. Participants' mean age was 14.7 years ($SD = .45$) in Year 9. In Year 9, 73% of participants' parents were married, 10% were separated, 13% were divorced and 4% of the sample did not specify. This ratio was consistent across the four waves of the study: in Year 12, 72% of participants' parents were married, 8% were separated, 14% were divorced and 6% of the sample did not specify. Ethics approval was granted by the University and informed consent was obtained from study participants.

Measures

Self-esteem

Global trait self-esteem was measured using the 10-item Rosenberg Self-Esteem scale (RSE; Rosenberg, 1979). Participants were asked to indicate their agreement with statements such as, "Generally I feel satisfied with myself" and "I think that I am a failure", using a binary response scale ("yes" or "no"). The binary response scale used as this version of the RSE measure has been validated in previous research and has been found to have as-good-as or stronger internal consistency than the four-point version of the measure (Heaven, Ciarrochi, & Hurrell, 2010; Marshall, et al., 2013). Cronbach's alphas for this scale across the four study years were Year 9, $\alpha = .86$; Year 10, $\alpha = .88$; Year 11, $\alpha = .88$; and Year 12, $\alpha = .86$.

Self-compassion

Self-compassion was measured using the 12-item short form of the Self-Compassion Scale (Raes, Pommier, Neff, & Van Gucht, 2011) utilising a 5-point Likert style (1 = “almost never” to 5 = “almost always”). The scale includes positive and negative items. A sample positive item is “I try to be understanding and patient towards those aspects of my personality I don’t like”, while a sample negative item is “When I fail at something that’s important to me, I tend to feel alone in my failure”. Cronbach’s alphas for this scale across the four study years were Year 9, $\alpha = .78$; Year 10, $\alpha = .81$; Year 11, $\alpha = .84$; and Year 12, $\alpha = .81$.

Demographic covariates

The three demographic covariates examined in the present study were participant gender, participant age and parents’ marital status. Gender was coded as either ‘male’, ‘female’, or ‘not specified’; age was age in years at the time of data-collection; and parental marital status was a categorical variable specified as ‘married’, ‘separated’, ‘divorced’ and ‘other’.

Statistical Analyses

Autoregressive cross-lagged model

We employed autoregressive cross-lagged (ACL) models to examine the relations between self-esteem and self-compassion across the four years of this study. An ACL approach enables one to identify the likely temporal ordering of changes in phenomena across time (Ciarrochi et al., 2016). In the present study, this approach enabled us to test whether (a) self-esteem precedes the development of self-compassion (i.e., an antecedent model); (b) self-compassion precedes the development of self-esteem (i.e., a consequence model); or (c) the development of both constructs is mutually reinforcing (i.e., a reciprocal influence model).

To test these alternative possibilities across the four years of the study, we ran a series of structural equation models (SEMs) in the R program (R Core Team, 2017) using the *lavaan* package (Rosseel, 2012). All analyses were conducted using latent variables for self-esteem and self-compassion, following similar approaches elsewhere (e.g., Ciarrochi, Parker, Kashdan, Heaven, & Barkus, 2015; Marshall, et al., 2013). A key advantage of a latent SEM approach is that it enables one to control for measurement error (Weston & Gore, 2006).

The data for this study had a nested structure with the 2,809 students nested within 17 schools. As our predictions related to individual-level effects, we needed to control for clustering effects. To do this, we used a ‘no pooling’ approach, in which each of the 17 schools was included in all models as a set of dummy variables (Gelman & Hill, 2009). This approach is more conservative than a classic multi-level modelling (‘partial pooling’) approach, as it does not force random effects to be normally distributed, and thereby allows for greater heterogeneity in school-level effects (Gelman & Hill, 2009).

The measures of both self-compassion and self-esteem included several negatively worded items. To address well-documented problems of response bias resulting from the use of negatively-worded items in self-report measures, we estimated the covariance between negative-items for each construct in all SEMs, in addition to the main factors estimated for each construct at each time-point (Di Stefano & Motl, 2006).

Missing data

Given that this was a longitudinal study with high-school students who received no financial incentive to participate, participant attrition was a potential problem. Participant attrition can result in data that are not missing completely at random, leading to biased parameter

estimates when methods such as pair- or list-wise deletion of missing data are used (Enders, 2010). To examine the influence of participant attrition, we compared individuals who participated in all four years of the study (completers) with those who participated in three or fewer years (non-completers), testing whether there were differences between these groups on the two primary study variables. We found no significant differences between completers and non-completers for either self-esteem or self-compassion, across all four years of data, suggesting that there were no systematic effects associated with participant attrition (all Cohen's d 's were $< .20$). Nonetheless, given the potential biases associated with using traditional approaches to handling missing data (e.g., list-wise or pair-wise deletion), we used the full-information-maximum-likelihood (FIML) approach to missing data (Baraldi & Enders, 2010).

Modern approaches to missing data such as FIML are preferable to traditional approaches as they use all the available information for parameter estimation (Enders, 2010).

Fit statistics

Models were considered to fit the data well if parameter estimates were consistent with the theory proposed, the solution was well defined, and the fit indices were acceptable (McDonald & Marsh, 1990). In addition to the chi-squared statistic, we used three other fit indices: the Tucker–Lewis index (TLI); comparative fit index (CFI); and the root mean square error of approximation (RMSEA). Generally accepted minimum thresholds for the former two indices are .90, while .08 is generally considered an acceptable maximum threshold for RMSEA (Chen, 2007; Cheung & Rensvold, 2002). These three fit indices have the advantage of being relatively insensitive to sample size, making them appropriate for the present study with a relatively large sample (Cheung & Rensvold, 2002; Hu & Bentler, 1999).

Modelling approach

In structural equation modelling, two kinds of models are specified: a confirmatory factor analytic (CFA) model, to test how well the underlying measurement model fits the data and to test the degree to which the proposed model is invariant (for example across time or groups); and a series of structural models to test the substantive hypothesized relations among constructs (Bollen, 1989). In testing the proposed measurement model in the present study, we ran tests of measurement invariance across time, as longitudinal relations among constructs was the focus of the research. Structural models may also include tests of structural invariance, where paths between parameters are specified to be equal across time or group. This enables one to test for developmental equilibrium in a hypothesised relationship across time (Bollen, 1989; Little, 2013).

In the present study, we tested a total of five latent models: two measurement (CFA) models and three structural models (SEM). As a first step, a configural measurement model was estimated, in which all model parameters were allowed to vary across time (CFA 1). If the hypothesis of configural invariance is not rejected, stronger forms of measurement invariance may be used (Bollen, 1989). Following the configural model, we estimated a second model (CFA 2) in which we tested for measurement invariance across time. To achieve this, the loadings of each factor onto its respective items were constrained to be equal across time. Support for this model indicates that the construct being measured has the same meaning at each time point and is an assumption of covariance-based models such as the ACL models estimated here (Ciarrochi et al., 2016). In this situation, constraining factor-loadings to be equal across time points is the only precondition for establishing time invariance (Millsap, 2011).

Following tests of measurement invariance, a series of three structural models were estimated to test whether the relationships between variables across the four waves of data were

stable across time – that is, whether they were characterised by a developmental equilibrium.

Under this approach, evidence of invariance comes from comparing a well-fitting baseline model with a series of alternate nested models (Bollen, 1989). To make such comparisons, we used the criteria by Cheung and Rensvold (2002) who suggest that invariance exists between nested models if CFI is $>.90$ (we used the same criteria for the TLI), and the criteria described by Chen (2007), who suggests invariance between nested models exists if $RMSEA \leq .15$.

The first of the structural models was a ‘fully-forward’ model in which estimates for all paths (both autoregressive and cross-lagged) were estimated, including all lags greater than one across multiple time-points (SEM 1). Next, all lags greater than one were removed (SEM 2). Finally, we constrained estimates across single-year lags to be equal, thereby testing for developmental equilibrium (SEM 3). Diagrammatic illustrations of SEM 2 and SEM 3, across three rather than four years (for the sake of simplicity), are shown in Figure 1.

[INSERT FIGURE 1 ABOUT HERE]

Results

Preliminary analyses

Latent means and standard deviations for both self-compassion and self-esteem are shown in Table 1. As can be seen, these were relatively consistent across time.

[INSERT TABLE 1 ABOUT HERE]

As shown in Table 2, bivariate correlations among study variables across time-points were in the 0.5-0.7 range for self-esteem and 0.3 – 0.6 range for self-compassion. Intra-variable

correlations were strongest at proximal time-points and weakest at distal time-points, for both variables.

[INSERT TABLE 2 ABOUT HERE]

We next tested the links between our two main variables of interest and the three demographic variables discussed above: participant gender, participant age, and parents' marital status. Neither age nor parents' marital status significantly predicted either self-compassion or self-esteem at any of the four time-points. However, gender consistently predicted both self-esteem and self-compassion, with females reporting lower self-esteem and self-compassion than males in each of the four years of the study. For self-esteem, standardized estimates of the difference between females and males ranged between .49 and .58, while for self-compassion, standardized estimates ranged between .31 and .43, with all $ps < .0001$.

Primary analyses

We next report the results from the ACL models. As discussed above, we tested a series of increasingly restrictive models. In all models, we controlled for gender (but not participant age or parental marital status), given the evidence reported above for gender differences for both self-esteem and self-compassion across time. Table 2 indicates that the fit indices for CFA 1 (the configural measurement model) and CFA 2 (the measurement model with factor loadings constrained to be equal across time) were acceptable, with the latter indicating measurement invariance for this model of the data. The fit indices for SEMs 1-3 are also displayed in Table 3, and the changes in these indices (i.e., SEM 1 through to SEM 3) are within the thresholds outlined in the previous section.

[INSERT TABLE 3 ABOUT HERE]

As shown in Figure 2, self-esteem consistently predicted greater self-compassion across the four years of the study, while the reciprocal relationship of self-compassion predicting changes in self-esteem across time was not found. This finding provides support for the self-compassion-as-consequence model.

[INSERT FIGURE 2 ABOUT HERE]

We next ran SEM 3, the developmental equilibrium model, in which single-year estimates were constrained to be equal. Estimates for this model are displayed in Figure 3.¹ We tested whether the cross-lagged estimates were significantly different from one another and found support for this ($z = 8.37, p < .001$). The correlation between disturbances at time 2 ($\beta = .39$) suggests a medium-sized relationship between changes in self-esteem and self-compassion across time.

[INSERT FIGURE 3 ABOUT HERE]

To explore the extent to which specific components of self-compassion relate longitudinally to self-esteem, we conducted supplementary analyses. Based on Neff's (2003) conceptualisation of self-compassion as comprising three positive (mindfulness, self-kindness and common humanity), and three negative (over-identification, self-judgement and isolation) components, each of these six self-compassion components was separately modelled to explore their longitudinal relations with self-esteem. The results of these supplementary analyses are consistent with our main findings, with self-esteem consistently predicting self-compassion domains across the four waves of the study, but inconsistently – with very small effect sizes – from self-compassion to self-esteem (see these results in *Supplemental Material*). It should be

¹ For completeness, we ran these same analyses, but without gender as a covariate, and obtained identical parameter estimates.

flagged, however, that the Self-Compassion Scale – Short Form (Raes et al., 2011) used in the present study has been shown to perform best as a single-factor rather than a multi-dimensional instrument, and this is consistent with the approach we have taken in conducting the primary analyses above.

Discussion

This is the first study we are aware of to examine the longitudinal relations among self-esteem and self-compassion. We found support for the ‘self-compassion-as-consequence’ model, across four years of data among a large adolescent sample. Our developmental equilibrium model (SEM 3) suggests a stable process across time, with self-esteem consistently explaining year-on-year changes in self-compassion. Notably, a reciprocal effect of self-compassion predicting changes in self-esteem was not found.

These findings are consistent with our expectation that positive self-evaluations give rise to expressions of self-compassion when an individual is faced with difficulty. The self-compassion literature suggests that when individuals are vulnerable and possess negative self-evaluations, they are less likely to be self-compassionate, as efforts to engage in self-compassion are perceived as threatening and undeserved (Gilbert et al., 2011; Kelly et al., 2014; Pauley & McPherson, 2010). Our findings are consistent with these explanations, showing that evaluations of worthiness of the self are important antecedents of the capacity to extend compassion to oneself.

Research on the antecedents of other-oriented compassion may also help to explain our findings. While responding in compassionate ways to others, appraisals of deservingness have been identified as a core element – along with noticing another’s suffering, feeling empathy for

them and acting compassionately (Atkins & Parker, 2012). Further, there is evidence that when a person appraises another as being responsible for their own suffering, they are less likely to extend compassion to them (Rudolph, Roesch, Greitemeyer, & Weiner, 2004). Similarly, when a person appraises another to be cold, uncooperative or nasty, they are less likely to extend compassion to them (Batson et al., 2007; Fiske, Cuddy, Glick, & Xu, 2002). Such processes may occur in relation to the self as well: when individuals appraise themselves as responsible for their own suffering, or more broadly in a negative way (e.g., as being unworthy), they may be less likely to develop compassion toward themselves. Conversely, having positive self-oriented evaluations of deservingness and worth appears to be an important antecedent of the development of the capacity to extend compassion toward oneself when faced with difficulty.

One other explanation for our findings is that self-compassion may function as a coping mechanism that individuals with high self-esteem use to deal effectively with rejection and failures. Adolescents with high levels of self-esteem tend to engage in more adaptive and less avoidant coping responses following set-backs (Mullis & Chapman, 2000). Self-compassion involves engaging with and accepting one's own suffering rather than avoiding it, so in that sense can be viewed as an approach form of coping (Carver & Connor-Smith, 2010; Neff et al., 2005).

Further, our findings have potentially important implications for the understanding of how self-compassion is developed among adolescents, and perhaps more broadly. Theories of self-compassion emphasise the behaviour of noticing suffering, extending kindness toward oneself, and recognising suffering as common to humanity (Neff, 2003; Neff et al., 2005). Our research suggests that understanding the kinds of self-evaluations that young people make may be critical to helping develop self-compassion. In recent years, research examining the efficacy

of compassion-based interventions has been growing (see Galante, Galante, Bekkers, & Gallacher, 2014 for a review), including among young people (Bluth, Gaylord, Campo, Mullarkey, & Hobbs, 2016; Reddy et al., 2013). Our findings suggest that for enhancing the efficacy of such interventions, it may be important to understand and influence self-oriented evaluations, in particular by ensuring that young people feel worthy of respect and kindness.

Lastly, the lack of support for the ‘self-compassion-as-antecedent’ model is noteworthy. We anticipated that because self-compassion involves cultivating positive self-oriented emotions, and forgiving oneself for failures and mistakes, this would lead to positive self-oriented evaluations (i.e., enhanced self-esteem). However, self-compassion researchers have distinguished between self-compassion and self-esteem on the basis that the former does not involve cultivating positive self-evaluations, while the latter does (Neff, 2003; Neff & Vonk, 2009). Recent evidence has shown that rather than reinforcing one’s sense of self and identity, self-compassion is associated with efforts to transcend it (Lindsay & Creswell, 2014; Neff, & Beretvas, 2012; Neff & Pommier, 2013; Welp & Brown, 2016). Further support for this comes from studies showing that other-oriented compassion interventions lead to more prosocial behaviour and implicate regions in the brain associated with self-transcendence (McCall, Steinbeis, Ricard, & Singer, 2014; Weng et al., 2013). This evidence suggests that cultivating self-compassion does not lead to self-evaluations of worthiness or deservingness, perhaps because it leads to a more transcendent sense of self.

Limitations and Future Directions

This study has several limitations. First, although this study provides valuable information regarding the temporal ordering of the relations among self-compassion and self-esteem, and although we tested for links between the study variables and demographic

covariates, it was not possible to completely rule out the possibility that additional exogenous variables accounted for these results (Morgan & Winship, 2007). Experimental research is needed to test these relationships in a way that more robustly controls for potential confounds. For example, future self-compassion research could examine differential effects of compassion interventions where self-evaluations are explored and made explicit prior to self-compassion training, and self-compassion interventions where this does not occur. Another limitation is that we were not able to test mediators of the link between self-esteem and self-compassion in the self-compassion-as-consequence model. As discussed, we expect that appraisals of deservingness may be an important mediator of this link. Future research could explicitly test this possibility by measuring, for example, self-criticism and self-reassurance (Gilbert, Clarke, Hempel, Miles, & Irons, 2004) as potential mediating variables.

Future research could also examine other possible contextual variables that explain the relations among self-esteem and self-compassion over time. For example, social support has been developmentally linked with self-esteem (Marshall et al., 2013), and it may be that among individuals with relatively high social support, the role of self-esteem in developing self-compassion is less important than for more socially isolated adolescents. Demographic factors such as education-levels or socio-economic status may also moderate relations among self-esteem and self-compassion across the developmental spectrum. Lastly, it may be that different forms of self-esteem influence the development of self-compassion in differential ways. For example, having variable or contingent self-esteem, which have both been associated with defensive and maladaptive behaviour (Kernis, Lakey, & Heppner, 2008), may in-fact undermine the development of self-compassion, while relatively stable or non-contingent self-esteem enhances it. Future research could explore these and other potential moderators.

Additionally, the present study used a convenience sample of 17 Catholic schools across two Australian states. Although there is evidence that these schools were broadly representative of Australia's socioeconomic standing, included a mix of urban, regional and rural schools, and had an almost even gender balance, future research could test the links between self-esteem and self-compassion among nationally representative samples. Australia is an affluent society, and future research could explore the extent to which our findings can be replicated in lower socioeconomic samples where the effects of self-esteem on self-compassion may be different.

Lastly, the present study focused on adolescents (Years 9 – 12), and our conclusions are therefore constrained to this age group. Future research is needed to understand whether the longitudinal relations between self-esteem and self-compassion identified in the present paper extend into adulthood and if so, whether they strengthen, weaken or are maintained at a similar level. There is evidence that self-evaluations do indeed influence the capacity for self-compassion among adults, suggesting that the process identified in the present paper is likely to continue into adulthood (Gilbert et al., 2011; Kelly, Carter, Zuroff, & Borairi, 2012; Kelly et al., 2014). However, further research is needed to directly test the longitudinal relations between self-esteem and self-compassion across the entire human developmental spectrum.

Conclusion

In contrast to the initial validation studies of self-compassion, which focused on the discriminant validity of self-compassion with respect to self-esteem, our study brings self-esteem back into the spotlight as an important precursor to the development of self-compassion among young people. Across four years, we found consistent evidence for self-esteem as an antecedent of the development of self-compassion, but not vice versa. Our findings have an important

implication for the design of self-compassion interventions: to help adolescents become more self-compassionate, enhancing their sense of worthiness and deservingness may be as important as directly teaching them to be kind to themselves.

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Declaration of Conflicting Interests

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Table 1

Descriptive statistics for self-esteem and self-compassion at each time-point

	Self-compassion			Self-esteem		
	<i>n</i>	Mean	SD	<i>n</i>	Mean	SD
Year 9	1769	3.10	0.94	1888	0.70	0.33
Year 10	1772	3.03	0.90	1836	0.69	0.33
Year 11	1546	2.96	0.90	1576	0.66	0.34
Year 12	1506	3.05	0.89	1496	0.68	0.34

Note. SD = standard deviation. Means and standard deviations are latent.

Table 2

Bivariate correlations between study variables

	1.	2.	3.	4.	5.	6.	7.
1. Self-esteem (Year 9)	-						
2. Self-esteem (Year 10)	0.622***	-					
3. Self-esteem (Year 11)	0.608***	0.693***	-				
4. Self-esteem (Year 12)	0.525***	0.560***	0.674***	-			
5. Self-compassion (Year 9)	0.542***	0.371***	0.424***	0.358***	-		
6. Self-compassion (Year 10)	0.432***	0.616***	0.515***	0.453***	0.412***	-	
7. Self-compassion (Year 11)	0.447***	0.520***	0.633***	0.498***	0.496***	0.593***	-
8. Self-compassion (Year 12)	0.368***	0.387***	0.468***	0.595***	0.354***	0.472***	0.566***

Note. *** $p < .001$.

Table 3

Fit indices for progressively more restrictive models

Model	Description	χ^2	<i>df</i>	RMSEA	CFI	TLI
CFA 1	Configural CFA	11378.96	5684	.019	.920	.912
CFA 2	CFA with loading invariance	11564.91	5748	.019	.918	.911
SEM 1	SEM with all longitudinal paths estimated	11321.16	5620	.019	.920	.911
SEM 2	SEM with only single-year lags estimated	11456.75	5634	.019	.918	.910
SEM 3	SEM with developmental equilibrium	11480.25	5640	.019	.918	.909

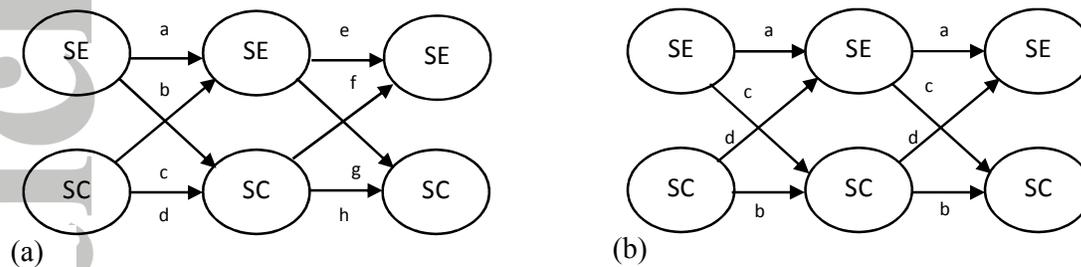


Figure 1. A conceptual diagram of structural model SEM 2 (Figure 1(a)) and SEM 3 (Figure 1(b)). SE = self-esteem; SC = self-compassion. SEM 2: Path coefficients are freely estimated for each path, indicated by arrows. SEM 3: Autoregressive and cross-lagged path coefficients are constrained to be equal across time intervals.

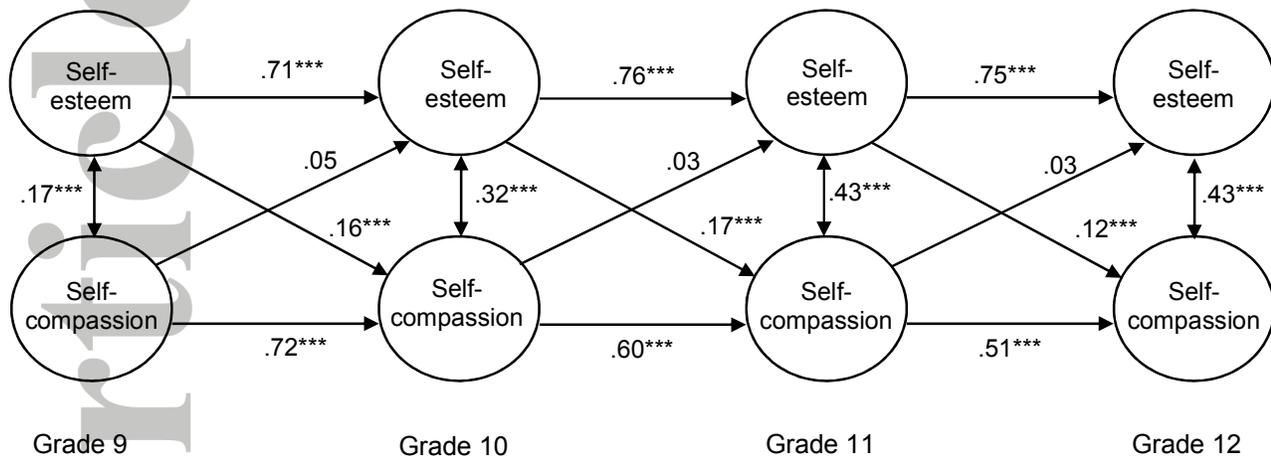


Figure 2. Path estimates from SEM 2 with only single-year lags estimated

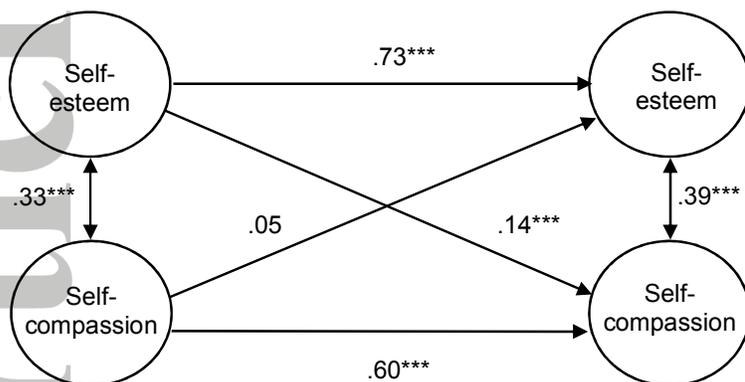


Figure 3. Path estimates from SEM 3, the developmental equilibrium model, with mean standardized path estimates shown

Supplemental Material

To explore the longitudinal relations among each of the six components of self-compassion and self-esteem, we conducted a series of CFA and SEM models, using the methods outlined in the main body of this paper. Each of the six self-compassion components was separately included in models with self-esteem. The fit for all models was acceptable (CFI and TLI indices were all greater than 0.90; RMSEA was less than 0.03 for all models). Results for the developmental equilibrium structural equation models (i.e., autoregressive and cross-lags constrained to be equal across each of the 3 lags in the study), for each of the six models, are displayed in Table SM1 below.

Table SM1. Developmental equilibrium structural equation models for the six components of self-compassion and self-esteem

	Mindfulness	Self-kindness	Common humanity	Over-identified	Self-judgement	Isolation
Self-esteem (T2)						
Self-esteem (T1)	0.72***	0.71***	0.73***	0.74***	0.74***	0.74***
Self-compassion facet (T1)	0.04***	0.05***	0.02	-0.02	-0.02	-0.02
Self-compassion facet (T2)						
Self-esteem (T1)	0.08***	0.12***	0.08***	-0.03***	-0.03***	-0.03***
Self-compassion facet (T1)	0.58***	0.56***	0.56***	0.09***	0.09***	0.08***

Note. T1 = Time 1; T2 = Time 2.

We also present the bivariate correlations among self-compassion components and self-esteem, for each of the four years of the study. Table SM2 displays within-year correlations among variables for Years 9 and Years 10 of the study; Table SM3 displays within-year correlations among variables for Years 11 and Years 12 of the study.

Table SM2. Bivariate correlations between self-compassion components and self-esteem in Years 9 and 10

	Over-identified	Self-judgement	Isolation	Mindfulness	Self-kindness	Common humanity	Self-esteem
Over-identified		0.61***	0.68***	-0.16***	-0.16***	-0.08**	0.43***
Self-judgement	0.58***		0.57***	-0.20***	-0.3***	-0.12***	0.46***
Isolation	0.63***	0.53***		-0.14***	-0.18***	-0.06**	0.49***
Mindfulness	-0.09***	-0.12***	-0.05*		0.66***	0.5***	0.35***
Self-kindness	-0.08***	-0.14***	-0.05*	0.61***		0.61***	0.42***
Common humanity	0.02	0.03	0.07**	0.48***	0.55***		0.27***
Self-esteem	-0.40***	-0.38***	-0.40***	0.32***	0.35***	0.21***	

Below the diagonal is Year 9 correlations; above the diagonal is Year 10 correlations. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table SM3. Bivariate correlations between self-compassion components and self-esteem in Years 11 and 12

	Over-identified	Self-judgement	Isolation	Mindfulness	Self-kindness	Common humanity	Self-esteem
Over-identified		0.77***	0.81***	-0.05*	-0.04	-0.06*	-0.02
Self-judgement	0.79***		0.82***	-0.03	-0.05	-0.05	-0.07**
Isolation	0.97***	0.8***		-0.07**	-0.04	-0.04	-0.06*
Mindfulness	-0.08***	0.02	-0.14***		0.6***	0.5***	0.36***
Self-kindness	-0.07**	-0.02	-0.10***	0.65***		0.61***	0.38***
Common humanity	-0.08**	0.00	-0.11***	0.53***	0.59***		0.29***
Self-esteem	0.00	-0.06*	0.00	0.40***	0.47***	0.33***	

Below the diagonal is Year 11 correlations; above the diagonal is Year 12 correlations. * $p < .05$, ** $p < .01$, *** $p < .001$.