How are Positive and Negative Peer Relations Related to Positive and Negative Affect in Adolescents Over Time in New Zealand?

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The question of whether peer relationships yield positive or negative affect in adolescents is easy to answer: they foster *both* happiness and unhappiness. As Goswami (2012) and others (Altermatt and Ivers 2011; Berry et al. 2000; La Greca and Harrison 2005) have proposed, children and adolescents engage in a wide variety of social relationships with peers, and some of these promote positive interactions that result in positive affect, and some of these involve negative interactions that result in negative affect. The present report details findings obtained from a longitudinal study of peer connectedness in adolescents designed to answer the key questions of whether positive peer connectedness fosters positive affect over time and whether negative peer influence fosters negative affect over time.

The Positive Influences of Peers

Hundreds of studies have documented the common sense notion that children and adolescents derive happiness and positive affect from close friendships (e.g., Argyle 2001; Demir et al. 2011; Majors 2012). For a review of the 'friendships lead to greater happiness' hypothesis, see the chapter by Demir et al. (2013). The experienced happiness derives from multiple aspects of these interpersonal interchanges: doing enjoyable activities together, the emotional and physical support, mutual confirmation of identity, and satisfaction of social connectedness needs. In the present report we will focus on perceptions of social connectedness. It was defined in the

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present study as perceived closeness with friends, number of friendships, and perceived trust and support from friends. Although several short-term longitudinal studies have been conducted on this topic (e.g., Fabes et al. 2012), few studies have examined the relationship of happiness and social connectedness over one year's time period, which we will do in the present case.

Few researchers have turned this equation on its head and asked whether happy individuals end up reporting greater connectedness to peers. The 'happiness leads to success' hypothesis of Lyubomirsky et al. (2005) is germane to this question. These authors showed that chronically happy people reported success in a variety of different contexts, including in the domain of friendships. In the area of friendships, Adams (1988) found evidence that number and quality of friendships among older women were predictive of increases in psychological well-being over time. However, few researchers have examined this proposition, and evidence for this hypothesis is lacking, particularly for adolescents. Phrased in a straightforward way, we can ask whether over time happy people are more likely to develop more successful friendships than unhappy people.

The Negative Influences of Peers

The literature is rife with examples of how peers (and in some cases, friends) exert a deleterious influence on children and adolescents. The topics of bullying, social exclusion, relational conflict, and negative peer pressure are several examples of the 'dark side' of peer relationships (Jose et al. 2012a; Killen et al. 2009; Lösel and Bender 2011; Scholte et al. 2007). In the present case, we will focus on negative peer influences, which are defined as peer pressure that coerces behaviour toward antisocial or maladaptive outcomes. For example, teenagers may report that their friends or peers pressure them to take up smoking, commit petty crime (graffiti), or engage in precocious sexual acts. Existing literature (Chen and Killeya-Jones 2006; Huefner & Ringle 2012; Mrug et al. 2012) has shown that individuals who experience negative peer pressure also report higher levels of negative health and social outcomes, although most of this work has focused on criminal or antisocial behavioural outcomes. In the present case, we ask the question whether negative peer influences lead to an increase in negative affect (e.g., depressive thought) over time, an understudied topic (although see Scott & Dearing 2012).

The obverse face of the 'happiness leads to success' theory could be called the 'sadness leads to social failure' theory. Theory and research in developmental psychopathology (e.g., Cicchetti and Cohen 2006) would consider sadness or depressive thought to be a vulnerability factor for social ineptitude. We have not found any evidence to support the specific proposed pathway from negative peer influences to negative affect, and we are similarly not aware of any studies that have shown that sad or depressed individuals experience greater negative peer influence over time, although both pathways seem sensible given the literature on these topics.

Depressed adolescents would likely be less socially skilled, and, as a result, more susceptible to peers who would try to manipulate their behaviour. Depressed teens may be more willing to bend to the will of their peers in order to win acceptance in their social group, and/or their depressive state may make them more willing to engage in risky activities.

Predictions

The current study was designed to answer several questions with regard to how positive and negative affect are related to positive peer connectedness and negative peer influences.

Hypothesis 1 It was expected that adolescents reporting higher peer connectedness at Time 1 (T1) would evidence an increase in positive affect at T2 one year later.

Hypothesis 2 In reverse, it was predicted that adolescents reporting higher positive affect at T1 would evidence an increase in peer connectedness at T2.

Hypothesis 3 On the negative side, adolescents reporting higher negative peer influences at T1 were expected to manifest an increase in negative affect at T2.

Hypothesis 4 Adolescents reporting higher negative affect at T1 were predicted to exhibit an increase in negative peer influences at T2.

All possible longitudinal relationships were examined in this research, and thus we explored several other possible relationships, namely that peer connectedness would predict decreases in both negative affect and negative peer influences over time, and that negative peer influences would predict decreases in both positive affect and peer connectedness as well.

Method

Participants

Self-report data were collected at the first time of measurement from child and adolescent students (recruited from 78 schools), ranging in age between 10 and 15 years. At this first measurement occasion, students were on average 12.21 years old ($SD = 1.75$). The obtained sample approximated a nationally representative sample of adolescents in New Zealand in several respects. The gender ratio was 52 % females/48 % males, and children and adolescents were obtained from a wide range of different types of schools that possessed the full range of socio-economic scores (SES) in New Zealand: our average school SES score was 5.2, very near the national average of 5.0.

Our sample varied from national representativeness in two respects. First, our obtained percentages of participants from urban/suburban/rural schools were 61%/33%/6%, which varied to some degree from the national averages of 71%/15%/14% (Statistics New Zealand 2001). And second, the project sought to oversample Maori individuals so that this minority culture could be examined in the future, and we were successful in doing so (but in the process we undersampled European New Zealand (ENZ) youth). Percentages in the first year were: 52% ENZ (about 75% by census); 30% Maori (about 20% by census); 12% Pacific Islanders; and 6% Other.

Questionnaires were administered once a year over two consecutive years at the same time during each school year. Due to attrition over this period of time, the number of students declined from an initial sample of 2,174 at Time 1 to 1,774 at Time 2 (16.8% attrition rate). The retained sample was compared with the group of adolescents who did not participate in all three measurement occasions. The two groups did not significantly differ on the measured variables.

Procedure

One hundred and two schools were approached in the North Island of New Zealand in order to recruit the sample and we received approval from 78, a 76.5% agreement rate. Once the school agreed to the procedure, we sent information sheets and consent forms home with the adolescents. Subsequently, we ran data collection sessions with 30 laptop computers in the schools to obtain the data from adolescents who both returned consent forms signed by a parent and also assented to the procedure. Ethical approval was obtained from a university ethics committee, and all schools and principals agreed to the procedures before data were collected. The computer-administered questionnaire contained questions structured and presented through SurveyPro, so the presentation of questions was similar to that used with internet surveys. Respondents indicated their answers by pointing and clicking, which made the process faster, easier, and more engaging than marking answers with a pencil on paper. At the first time of measurement, some of the younger participants needed one hour to completely respond to the questionnaire, but the amount of time required to complete the measures decreased appreciably on the second time of measurement. Research assistants and teachers were always available to assist in answering queries about particular words or procedure and ensuring confidentiality.

Measures

Peer connectedness Seven items examining relationships with peers at school, happiness with number of close friends, and support from friends were used to assess peer connectedness. All items were generated for this study. The two school peer relationship questions asked how well students got on with their classmates

and other students in the school. Item response options ranged from one ("not at all well") to five ("really well"). The two questions relating to happiness with number of close friends used a 5-point scale ranging from one ("very unhappy") to five ("very happy"). The three peer support questions (e.g., "I can trust my friends with personal problems") used a 5-point Likert scale. Use of this construct has been previously reported in Jose et al. (2012b). The alpha coefficient for both of the two waves was 0.79. Note that this construct included both quantity and quality judgments in regard to peer networks. Previous work (Demir et al. 2013; Nangle et al. 2003) has distinguished between quality and quantity of peer relationships as predictors of psychological outcomes, but in the present case, we chose to combine them.

Negative peer influences Three questions written for the present study were used to assess the degree to which individuals misbehaved to comply with peer pressure. The three stems were "Gone against the wishes of adults (e.g., parents, teachers) to make your friends happy," "Done badly at something (e.g., schoolwork, sport) just to please your friends," and "Done something that could get you in trouble because your friends wanted you to do it", and responses were made on a 5-point Likert scale from "*never/almost never*" (1) to "*always/almost always*" (5). The Cronbach's alphas for the two times of measurement were 0.79 and 0.83.

Positive affect Three items assessing positive affect or happiness were taken from the CES-D (Radloff 1977), namely "I was happy", "I enjoyed life", and "I felt hopeful about the future". Psychometric work by Schoevers et al. (2000) supports the separate use of the positive and negative items from the CES-D to capture PA and NA. Respondents rated themselves on each characteristic using a 4-point frequency scale: "How many days out of the last week have you felt _____?" (1) "less than 1 day"; (2) "1–2 days"; (3) "3–4 days"; or (4) "5–7 days". Cronbach's alphas for T1 and T2 respectively were 0.70 and 0.71.

Negative affect Four items were taken from the CES-D (Radloff 1977) to capture the construct of depressive symptoms or negative affect. The four stems, using the same response format as for the positive affect items described above, were "I got upset by things that don't usually upset me", "I felt lonely", "I felt sad", and "I could not stop feeling bad, even when others friends to cheer me up. Internal reliabilities were 0.76 and 0.80 for the two times of measurement.

Results

Descriptive Statistics

Table 1 details the means, standard deviations, and correlations among all four constructs across the two times of measurement. Since all variables were placed on a 1–5 metric, it is apparent that most adolescents reported relatively high positive

Table 1 Descriptive statistics: Means, standard deviations, and correlations

	Pos Aff T1	Peer Conn T1	Neg Aff T1	Neg Peer Infl T1	Pos Aff T2	Peer Conn T2	Neg Aff T2	Neg Peer Infl T2
Pos Aff T1		0.24**	−0.35**	−0.13**	0.31**	0.19**	−0.19**	−0.10**
Peer Conn T1			−0.09**	−0.09**	0.18**	0.52**	−0.06*	−0.09**
Neg Aff T1				0.20**	−0.17**	−0.07**	0.32*	0.16**
Neg Peer Infl T1					−0.10**	−0.06*	0.13**	0.51**
Pos Aff T2						0.26**	−0.42**	−0.13**
Peer Conn T2							−0.10**	−0.11**
Neg Aff T2								0.14**
Mean	3.13	4.20	1.62	1.97	3.05	4.21	1.63	1.91
Standard deviation	0.78	0.53	0.70	0.90	0.81	0.53	0.73	0.90

*Peer Conn* Peer Connectedness, *Neg Peer Infl* Negative Peer Influences, *Pos Aff* Positive Affect, *Neg Aff* Negative Affect

$*p<0.05; **p<0.01$

affect and peer connectedness, and relatively low negative affect and negative peer influences. Directions of correlations were all in the expected directions.

Tests of hypotheses

A series of longitudinal observed variable path models were constructed and examined in Amos 20 (Arbuckle 2011). First, a two variable path model involving peer connectedness and positive affect was constructed to test hypothesis 1 (peer connectedness would predict an increase in positive affect) and hypothesis 2 (positive affect would predict an increase in peer connectedness). Second, a two variable path model involving negative peer influences and negative affect was constructed to test hypothesis 3 (negative peer influences would predict an increase in negative affect) and hypothesis 4 (negative affect would predict an increase in negative peer influences). And last, all four variables were included in a single path model to examine how the positive and negative variables affected each other over time. Since all path models involved stability relationships over time (e.g., positive affect at T1 predicting positive affect at T2, and so forth), the obtained cross-lag relationships indicated *change* in a variable over time.

Fig. 1 Longitudinal relationships between peer connectedness and positive affect over one year's time. *Note*. Numbers are standardized regression coefficients. ***p <0.001; *p <0.05
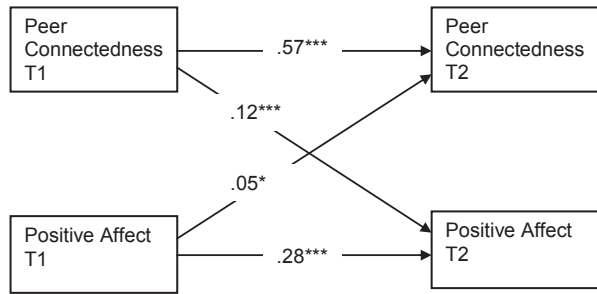
Two variable path model involving positive affect and peer connectedness Figure 1 depicts the results of this just identified path model. The cross-lag paths provide findings that support both hypotheses 1 and 2. In particular, for hypothesis 1, the beta of .12, $p=0.0002$, between peer connectedness at T1 and positive affect at T2 suggests that individuals who reported higher peer connectedness at T1 reported an increase in positive affect 1 year later. And for hypothesis 2, the beta, $\beta=0.05$, $p=0.037$, suggests that individuals who reported higher positive affect at T1 reported an increase in peer connectedness one year later. An equality constraint test, $\chi^2(1)=15.5$, $p=0.0003$, indicated that the first relationship was significantly stronger than the second relationship.

Two variable path model involving negative affect and negative peer influences Support was found in this model (see Fig. 2) for both hypotheses 3 and 4. In particular, the relationship between negative peer influences at T1 and negative affect at T2, $\beta=0.07$, $p=0.016$, provided support for hypothesis 3, and the beta for the reverse relationship, $\beta=0.07$, $p=0.011$, provided support for hypothesis 4. The equality constraint analysis, not surprisingly, indicated about equal strength of these two cross-lag relationships.

Four variable path model involving all variables Although the two previous path models provided support for the initial hypotheses, they provided focused and narrow examinations of these dyads of variables. Models that involve more variables approximate the complexity of real life, so these focused analyses may not provide

Fig. 2 Longitudinal relationships between negative peer influences and negative affect over one year's time. *Note*. Numbers are standardized regression coefficients. ***p <0.001; **p < 0.01
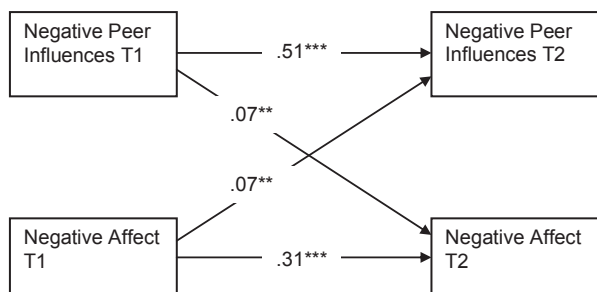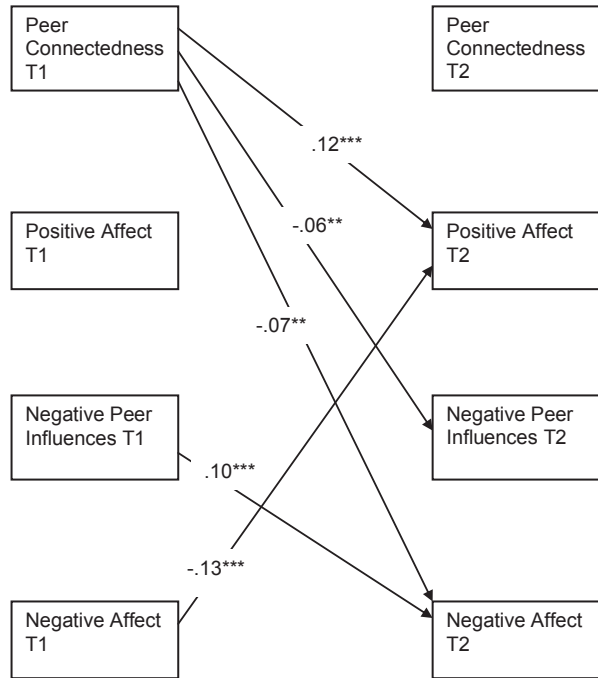
Fig. 3 Longitudinal rela-
tionships among all four
variables over one year's
time. *Note*. The four stability
coefficients are not reported
in this model to enhance
readability; all were statisti-
cally significant, βs= 0.27
to 0.58, *p*s <0.001. Numbers
are standardized regression
coefficients. ***p* < 0.001;
***p* < 0.01

a veridical picture of how these variables behave within the context of simultaneous
positive and negative influences. To this end, a path model with all four variables
was constructed to determine whether the previously obtained relationships would
hold in the case of multiple variables.

A fully saturated model was initially tested, and following Kline (1998), non-
significant paths were deleted until only significant paths remained. In this fashion,
a good fitting model was obtained that included five significant cross-lag paths (see
Fig. 3). Importantly, two of the previously identified four cross-lag paths proved to
be significant in this more stringent model: (1) from peer connectedness to posi-
tive affect, β=0.12, *p*=0.0002, and (2) from negative peer influences to negative
affect, β=0.10, *p*=0.0009. The two other previously identified paths, which were
relatively weak in Figs. 1 and 2 (i.e., 0.05 and 0.07), were *not* retained in the present
model, presumably because of shared variance with other variables.

In addition, two other significant cross-lag paths were identified that we would
deem are theoretically sensible: (1) peer connectedness predicted a decrease in
negative peer influences, β=−0.06, *p*=0.015, and (2) peer connectedness predicted
a decrease in negative affect, β=−0.07, *p*=0.011. One last finding concerned the
relationship between positive and negative affect: negative affect at T1 predicted a
decrease in positive affect at T2, β=−0.13, *p*=0.0001. It is interesting to note that
the reverse path was not identified as statistically significant.

No prediction was made concerning whether gender might moderate any of
these obtained relationships because the literature rarely notes robust gender differ-

ences, but exploratory gender moderation analyses were performed in order to shed light on this possibility. An equality constraint between the two gender groups was imposed one at a time on the nine relationships identified in Fig. 3 to determine if model fit significantly worsened in any case. All chi-square analyses yielded non-significance, so we can conclude that the obtained relationships were manifested similarly for boys and girls.

Exploratory Longitudinal Moderation Analyses

In addition to these planned analyses, a set of moderation analyses were performed to identify more subtle relationships among these variables over time. Two-way interaction terms were created among all four T1 variables, and were entered simultaneously in a hierarchical regression after all of the T1 variables. Three significant two-way interactions were identified, one each for the dependent variables of T2 peer connectedness, T2 negative peer influences, and T2 negative affect.

Figure 4 depicts the finding that negative peer influences significantly moderated the stability of peer connectedness over time. The steepest slope was obtained for individuals reporting low negative peer influences, and this pattern (termed a "blunter" by Jose 2013) indicates that the greatest stability of peer connectedness occurred for individuals who did not find themselves in situations where they felt coerced to misbehave by their peers.

The next figure (Fig. 5) shows that the interaction of positive and negative affect differentially predicted changes in negative peer influences over time. In particular, those individuals who reported high positive affect in conjunction with low negative affect reported the lowest level of negative peer influences at T2. Although a main effect path from positive affect at T1 to negative peer influences at T2 was not obtained, we did identify this more complicated moderation result. In essence,

Fig. 4 Stability of peer connectedness moderated by negative peer influences at T1. *Note. Peer Conn* Peer Connectedness; *Neg Peer* Negative Peer Influences
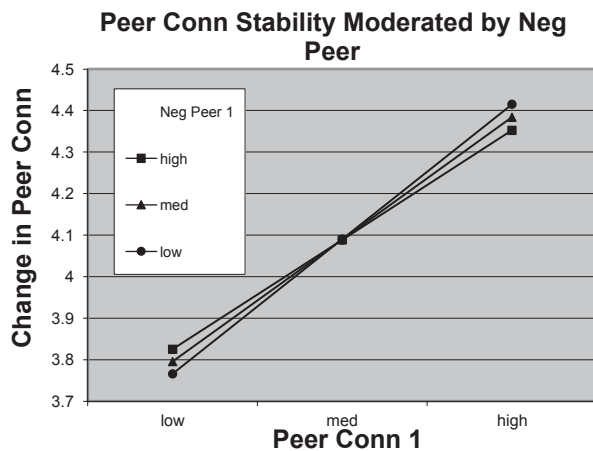
Fig. 5 The relationship
between negative affect at
T1 and residualized negative
peer influences moderated
by positive affect at T1.
Note. *Pos Aff* Positive Affect;
Neg Aff Negative Affect;
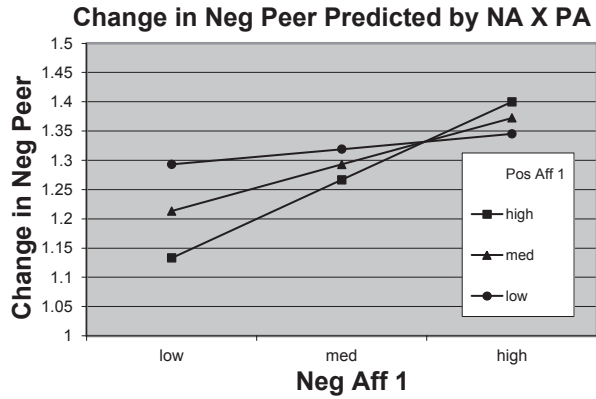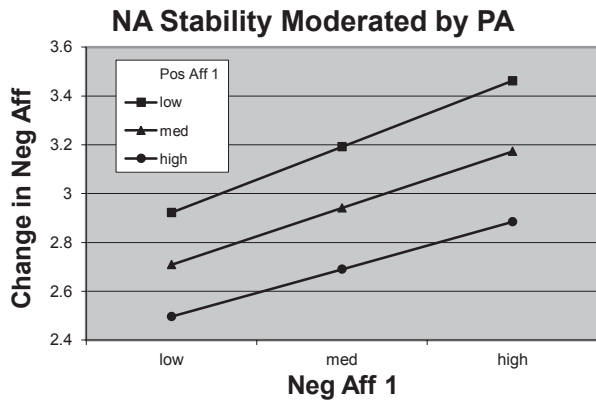*Neg Peer* Negative Peer
Influences

Change in Neg Peer Predicted by NA X PA

Fig. 6 The stability of
negative affect moderated by
positive affect at T1. *Note*.
Pos Aff Positive Affect; *Neg
Aff* Negative Affect

NA Stability Moderated by PA

individuals who experienced positive affect at T1 were protected ("buffered") from
the tendency for negative affect at T1 to lead to an increase in negative peer influ-
ences at T2.

And last, Fig. 6 depicts the two-way interaction of positive and negative affect
predicting changes in negative affect over time. Positive affect, as in Fig. 5, seemed
to function as a buffer against the stability of negative affect over time. Although
positive affect did not exhibit a main effect protective factor against negative af-
fect (i.e., no significant cross-lag relationships), we did find this moderation result
which suggests that individuals who experienced higher positive affect at T1 were
protected to some degree against subsequent negative affect.

Discussion

The chief questions of the present study were: (1) would peer connectedness predict an increase in positive affect over time? and (2) would negative peer influences predict an increase in negative affect over time? The answers to both questions were found to be in the affirmative. The reverse relationships were also explored, and despite initial support for the expectations that happy individuals would manifest an increase in peer connectedness and that unhappy individuals would show an increase in negative peer influences, neither hypothesis was supported in the final path model. The related expectations that peer connectedness might reduce negative affect and negative peer influences, and that negative peer influences might reduce positive affect and peer connectedness were partially supported: the former predictions were supported but the latter ones were not. And last, exploratory longitudinal moderation analyses yielded several intriguing findings suggesting that positive affect might function as a protective factor.

Peer connectedness, as defined in the present study, captured several dimensions of positive peer relations: how well the individual got on with peers, satisfaction with the number of close friends, and degree of social support from friends and peers. Other researchers have noted that adolescents who report high levels of peer connectedness also report higher positive outcomes (e.g., Adams 1988; Demir et al. 2013; McGraw et al. 2008; McGrath and Noble 2007), and this relationship makes eminent sense. What is notable in the present case is that adolescents' reports of peer connectedness at T1 predicted a significant increase in positive affect at T2 1 year later in a residualized path model. In other words, peer connectedness status at T1 predicted *an increase in happiness* 1 year later, after removing the variance due to the stability of happiness. The size of the effect was relatively modest ($\beta = 0.12$, $p < 0.002$), as is usually the case in cross-lag relationships, but it is consistent in size with estimates cited by Lucas et al. (2008). Still, this result speaks to the power of peer connectedness to exert a noticeable positive influence on adolescents' lives.

Similarly, but in the opposite direction, adolescents' reports of negative peer influences at T1 significantly predicted an increase in negative affect 1 year later. The negative impact of coercive peer influences has been previously documented (e.g., Huefner and Ringle 2012; Mrug et al. 2012), but we are unaware of any longitudinal research that shows its impact on negative affect over 1 year's time. In essence, the present result suggests that adolescents who experience high levels of negative peer influences at one point in time become sadder and more depressed one year later. Similar to the finding for peer connectedness and happiness, this finding makes intuitive sense, but future work will be needed to determine the nature of the mediational pathways between these two types of peer influences and the outcomes of valenced affect.

It is noteworthy that the two focused two-variable path models (Figs. 1 and 2) provided initial support for the 'affect predicts quality of friendship' models. On the positive side, we found a weak relationship between positive affect and peer connectedness in Fig. 1 ($\beta = 0.05$) that supported the 'happiness leads to success'

hypothesis of Lyubomirsky et al. (2005). A similar result was obtained for the path from negative affect to negative peer influences. However, these weak relationships disappeared when we considered all four variables simultaneously in Fig. 3. In sum, these intuitively appealing linkages seem to be weak in strength, and may not be replicable when other contextual factors are taken into account. On the basis of the results presented in Fig. 3, we would argue that merely being happy does not lead to an increase in peer connectedness, nor does being unhappy lead to an increase in negative peer influences. We would argue that the pathways from general affective orientation (PA and NA) to specific behavioural outcomes are many and varied, and the empirical findings obtained here suggest that these orientations may be sufficient but not necessary in causing the particular friendship outcomes studied here. In other words, merely experiencing positive affect in a general sense may not inexorably predict and lead to better friendships because other inputs and contexts (e.g., social skills and opportunity) are necessary.

Nevertheless, the longitudinal moderation results provided support for the view that positive affect may function as a buffer against negative outcomes. Positive affect proved not to be a significant main effect predictor of any T2 variable in Fig. 3, and this finding suggests that positive affect may be a transitory mood outcome, not a trigger of temporally distant (i.e., 1 year later) emotional states. However, Figs. 5 and 6 showed that positive affect buffered against the outcomes of negative peer influences and negative affect over time. Positive affect is thought to be a protective factor against negative outcomes (e.g., Fredrickson's 'broaden-and-build' theory 2003), and the present results would seem to be congruent with this idea. The broaden-and-build theory suggests that frequent and intense experience of positive affect has the effect of 'broadening' one's emotional landscape and 'building' psychological resources, and in this fashion the individual constructs a more resilient stance against stressful events and counterproductive cognitive processes (e.g., rumination). A central tenet of positive psychology is that positive experiences can counteract the occurrence and longevity of negative affect and experiences (Seligman and Csikszentmihalyi 2000), and I would argue that the present findings are consistent with this view.

Limitations and future directions

Due to space limitations, only the moderator of gender was explored (and no differences were found), but it is possible that the obtained relationships might vary by age, cognitive biases, personality traits, and other variables. In addition, as noted above, future research should identify mediators between peer relationships and affect. In particular, why do individuals who report higher peer connectedness end up happier over time? Potential mediators that may be usefully investigated are beneficial social support, companionship (sharing with others), and identity validation.

In the present study, affect was operationally defined from CES-D items, not, as is usually the case, from the PANAS measure. Future work should verify that these

operationalizations are similar. Further, affect was broadly classified into the 'positive' and 'negative' subgroups, therefore subtle distinctions between subtypes of affect (e.g., pride, joy, love, hope) were not linked with the two types of peer relationships studied here. It is possible, for example, that teenagers who experience high negative peer influences feel high depressive affect, which in turn leads to lowered positive affect such as decreased hope and joy. Figure 3 shows that negative peer influences predicted higher negative affect, which in turn predicted lower positive affect, but without more specification of subtypes of affect, we cannot be certain of these possible mediational pathways.

It should be noted that judgments about peer relationships in this study were made about the sum or average of all peer relationships, not, for example, about a single best friendship as is sometimes done. Sometimes empirical results vary depending on whether one focuses on a young person's best friendship (Adams et al. 2011) as opposed to the broader and more general peer network, and this limitation should be noted in reading the present results.

Conclusions

Adolescents who experience peer connectedness seem to benefit by becoming happier. In contrast, adolescents who experience negative peer influences accrue the deleterious outcome of becoming more depressed. Efforts to improve psychological outcomes for adolescents should minimize coercive peer influences and maximize positive peer relatedness. In addition, some evidence was obtained here that positive affect buffers against negative peer influences and negative affect, and therefore, interventions designed to increase adolescents' levels of happiness (e.g., by increasing gratitude, Froh et al. 2010) might also serve to protect them from adverse psychological outcomes.

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