THE JOURNAL OF
CHILD PSYCHOLOGY AND PSYCHIATRY

Journal of Child Psychology and Psychiatry 49:12 (2008), pp 1279–1286 doi:10.1111/j.1469-7610.2008.01950.x

Learned social hopelessness: the role of explanatory style in predicting social support during adolescence

Joseph Ciarrochi and Patrick C.L. Heaven
School of Psychology, University of Wollongong, Australia

Background: Almost no research has examined the impact of explanatory style on social adjustment. We hypothesised that adolescents with a pessimistic style would be less likely to develop and maintain social support networks. **Methods:** Seven hundred and nineteen students (351 males and 366 females; 2 unknown; M_{AGE} = 12.28, *SD* = .49) completed an anonymous survey in Grades 7 through 10. Explanatory style was assessed in Grades 7 and 9, sadness was assessed in Grades 7 through 10, and quantity and quality of social support was assessed in Grades 8, 9, and 10. **Results:** Structural equation modelling was used to conduct cross-lagged panel analyses of the four waves of data. Pessimistic explanatory style predicted lower levels of social support, and lower social support from the family predicted higher levels of pessimistic explanatory style. Additional analyses suggested that the effects could not be explained by sadness or by assuming that pessimistic adolescents where less liked by their peers. **Conclusions:** Pessimistic adolescents feel unable to influence their social worlds in positive ways and consequently may not take actions to develop and maintain social support networks. **Keywords:** Explanatory style, social support, pessimism, peer likeability, peer rejection, adolescence, depression, social factors, relationships, development, sadness.

People differ in their explanatory style, that is, in how they explain past events. Those with a pessimistic explanatory style believe that negative events are due to internal, stable, and global causes and positive events are due to external, unstable, and specific causes. Such a pessimistic style may give rise to a sense of hopelessness which, in turn, is associated with a number of symptoms of 'hopelessness depression' (Abramson, Alloy, & Metalsky, 1995; Lakdawalla, Hankin, & Mermelstein, 2007). Although most research has focused on the associations between explanatory style and factors such as depression and academic outcomes, the link between explanatory style and social support has received minimal research attention. We report a four-wave longitudinal study among high school students in which we examined the links between explanatory style and social support. Our core premise is that teenagers with a pessimistic explanatory style will fail to actively maintain and develop positive social support networks. They will experience diminishing social support, relative to those with an optimistic style and the same baseline level of social support.

The importance of explanatory style and social support

Many individual studies support the link between pessimistic style and poor emotional adjustment (Lakdawalla et al., 2007). For instance, Feiring, Taska, and Lewis (2002) found that children's ability to recover from sexual abuse over a 1-year period was substantially improved in those children with a more optimistic explanatory style. Toner and Heaven (2005) found that children who made negative attributions for peer-related events were more likely to report higher levels of loneliness and depression 2 years later compared to those who made more optimistic attributions. Panak and Garber (1992) found that a pessimistic explanatory style interacted with peer rejection and predicted increases in depression among children. Finally, Stevens and Prinstein (2005) found peer contagion effects, in that friend's depressive tendencies at Time 1 predicted adolescent explanatory style at Time 2. Thus, Joiner and Wagner (1995, p. 792) concluded that there can now be little doubt about the impact of explanatory style on adjustment (particularly depression) and it would take 'a thousand or more null studies … to bring this finding into doubt'.

What is less clear is the extent to which explanatory style is associated with an individual's social integration or level of social support. Moreover, how are these variables related over time, especially in the lives of teenagers as they juggle relationships with parents and peers? Supportive, warm, and trusting interpersonal relationships are important for psychological well-being; they are a 'basic human need' and are viewed as 'an essential element in human flourishing' (Ryan & Deci, 2001, pp. 154, 155) and a buffer against life's difficulties (Pierce, Sarason, & Sarason, 1996).

The existence of a supportive social network serves a number of important functions. According to Stroebe and Stroebe (1996), these include emotional support (e.g., trust), affirmation and social

Conflict of interest statement: No conflicts declared.

Published by Blackwell Publishing, 9600 Garsington Road, Oxford OX4 2DQ, UK and 350 Main Street, Malden, MA 02148, USA

comparison (forms of validation), advice or suggestions (informational support), and instrumental support (e.g., material aid). Whereas social integration has known benefits, low relatedness or poor social integration is detrimental to one's adjustment and emotional well-being. Thus, it is not surprising that loneliness has been found to be related to lower positive affect and life satisfaction (Lee & Ishii-Kuntz, 1987).

There is some evidence to suggest a link between explanatory style and the quality of one's social connectedness. For example, Toner and Munro (1996) found that children who were rejected by their peers were significantly more likely to attribute such rejection to stable personal causes. This finding is in line with that of Anderson and Arnoult (1985) who reported that a pessimistic explanatory style was predictive of participants' increased levels of loneliness and shyness.

Rationale and aims

We theorised that there are at least three possible reasons why a pessimistic explanatory style might predict reductions in social support. First, pessimistic adolescents may be less likeable, and may thereby 'repel' support away from them. We assessed this possibility by measuring peer ratings of likeability, and examining whether this variable could account for any observed links between explanatory style and social support. We focused on one aspect of likeability, which is based on the extent peers nominate a particular student as likeable, friendly, reasonable, and helpful.

Second, pessimistic adolescents tend to be more sad (Lakdawalla et al., 2007), and it may be that sadness leads them to engage in fewer behaviours designed to maintain or build social support. Therefore, we examined whether levels of sadness could entirely explain the link between explanatory style and social support. Third, explanatory style may have a direct effect on social connectedness. Specifically, adolescents with a pessimistic style may be less likely to actively maintain or develop social support networks, believing that they are unable to bring about positive social events or avoid negative social events. They may therefore develop a kind of learned *social* hopelessness.

Method

Participants

During the course of the 4 years of the study, 882 students (445 males; 437 females; 2 unreported) consented to participate in at least one wave of data collection. The students attended five high schools in a Catholic Diocese of New South Wales, Australia.

Incomplete data in any given year ranged from 14.9% (amount of social support assessed in Grade 8) to 18.4% (Grade 7 explanatory style). There were a number of reasons for incomplete data (e.g., some students missed school due to absences, others moved out of the school district, still others had conflicting events).

There are a number of ways to deal with missing data, but casewise deletion and expectation/maximisation procedures appear to yield the least biased estimates (Howell, 2008). We used both of these procedures to form a single data set. We first deleted all cases that were missing a measure of explanatory style at Grade 7 and cases for which we could not match explanatory style with future levels of social support. This resulted in a sample of 719 (351 males; 366 females; 2 unknown). We then utilised EM imputation to replace any remaining missing values.

We explored the possibility of differences between those who completed all measurement periods and those who had missing data. Our main hypotheses concerned the relationships between explanatory style and social support. We found no differences between full and partial completers in the magnitude of those relationships. We also looked for mean differences between full and partial completers on the key measures of explanatory style (e), social support quality (qual), and social support quantity (quan). The means for full (F) and partial (P) completers were, respectively: M_{Fe7} = .43, M_{Pe7} = 40; M_{Fe9} = .37, M_{Pe9} = .35; M_{Fqaun8} = 5.62, M_{Pqaun8} = 5.46; M_{Fquan9} = 6.02, M_{Pquan9} = 5.85; $M_{Fquan10}$ = 6.54, $M_{Pquan10}$ = 6.24; M_{Fqual8} = 5.41, M_{Pqual8} = 5.35; M_{Fqual9} = 5.34, M_{Pqual9} = 5.33; $M_{Fqaul10}$ = 5.40, $M_{Pqaul10}$ = 5.36. There was a general trend for full completers to have more positive explanatory style and better social support than partial completers.

Materials

Explanatory style (Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998). We used the children's attributional style questionnaire (CASQ) in Grades 7 and 9 to measure explanatory style. Tested on a sample of young adolescents, the CASQ was shown to possess good criterion-related validity and satisfactory internal consistency, as well as test–retest reliability (Thompson et al., 1998). After reverse-scoring the negative items, we summed all items to form a positive explanatory style scale with alpha coefficients of .63 (Grade 7) and .69 (Grade 9).

Social support questionnaire (SSQ; Sarason, Levine, Basham, & Sarason, 1983). A short four-item version of the SSQ was used to assess social support quantity and quality (or satisfaction). A sample quality item is 'Whose lives do you feel you are an important part of?' For each item, respondents listed the persons perceived to be available for support and then rated how satisfied they are with these supports using a 6-point scale [very dissatisfied (1) to very satisfied (6)]. This measure has been shown to have good internal reliability ($\alpha > .85$) and test–retest reliability ($R > .41$ at one year follow-up; Ciarrochi, Scott, Deane, & Heaven, 2003). The measure also had good internal reliability in the present sample (all alphas > .80) and possesses good criterion-related validity (see Friedman et al., 2006).

Peer ratings of likeability. We assessed peer ratings of likeability in Grades 9 and 10. Students were asked to list up to three males and three females from their English class whom they liked the most. Three other items were taken from the peer-rating measure developed by Pulkkinen (Pulkkinen, Kaprio, & Rose, 1999). Students were asked to list those who 'are often kind and friendly to others', 'try to act reasonably even in difficult situations', and 'are ready to lend a helping hand when they see someone in need of that'. We factor analysed this scale within grade and rating category (e.g., males rating females in Grade 9) and found the items consistently loaded on only one factor, which we called 'likeability'. Sociometric ratings of likeability such as these have been shown to relate to theoretically relevant criteria, such as attractiveness and athleticism (Becker & Luthar, 2007). The scale was highly internally consistent in Grades 9 and 10 (both alphas = .88).

Sadness. We assessed sadness using the PANAS-X (Watson & Clark, 1994). Students were asked the extent they felt the following emotions over the past month: sad, blue, downhearted, alone, and lonely. Research has found support for the validity of the PANAS amongst adolescents (Huebner & Dew, 1995). The measure was also found to correlate .66 with an adolescent measure of depression (Leeson, Heaven, Ciarrochi, 2008).

Procedure

The Wollongong Catholic Education Office (CEO) and the University Human Research Ethics Committee approve the questionnaire annually. The CEO and principals prefer passive consent to obtain parental permission and this is also renewed each year. Those students for whom passive consent was obtained (the vast majority) were invited to participate in a study on 'Youth Issues'. Participating students provide written consent with each survey. In any one school, not more than 2–3% of eligible students refused to participate. At all times, administration of the questionnaires took place during regular classes under the supervision of the authors and teachers. Students completed the questionnaires without any discussion.

Statistical approach

The main analysis tested three structural equation models. First, we compared a full path model to a reduced mediational model. The full model contains two paths that are not contained in the mediational model: a path from explanatory style in Grade 7 to Grade 10 social support, and a path from Grade 8 social support to Grade 10 social support. The full model also contains a correlation between disturbances at Grade 9. If the reduced mediational model resulted in a significant decrement in fit, then we would reject it and retain the full path model. Finally, we tested a model which included measurement error correlations between contiguous time periods. This pattern of correlated measurement errors is a relatively common feature of longitudinal data (Kline, 1998), and so we expected this model to fit the data better than the other models.

Amos 7.0 was used to analyse the raw data (Arbuckle, 2006), and estimation was made using the maximum likelihood method. As suggested by Kline (1998), several goodness of fit measures were used to assess the models. We considered a model to provide reasonable fit if the χ^2/df was approximately 3 or less (Carmines & McIver, 1981), NFI was above .90 (Bentler & Bonett, 1980), and the RMSEA was below .08 (Browne & Cudeck, 1993).

We conducted several types of analyses to ensure our findings were robust across analyses. First, we conducted typical parametric analyses. Second, to deal with multivariate normality issues, we tested all models using nonparametric bootstrap analyses (Mooney & Duval, 1993). Third, to deal with the possibility that our social support indicators were measured on an ordinal scale, we examined whether effects held when our estimates were based exclusively on continuous variables (generated by summing across the indicators). Results had to be significant in all three analyses to be described as significant here.

Results

Preliminary analyses

A general linear repeated measure ANOVA was used to examine the effect of time (Grade 8–Grade 10) and gender on social support quantity and quality. There was evidence of an increase in social support quantity for both boys ($M_8 = 4.76$, $SE = .12$; $M_9 = 5.13$, $SE = .11$; $M_{10} = 5.81$, $SE = .11$) and girls ($M_8 = 6.00$, $SE = .11$; $M_9 = 6.47$, $SE = .11$; $M_{10} = 6.91$, $SE = .11$), F (2, 1430) = 75.85, $MSE = 2.27$, $p < .001$. There was also a main effect of gender, F (1, 715) = 8419, $MSE = 8.73$, $p < .001$, with girls generally having more social support than boys. There was no interaction between gender and time, $p > .1$. Concerning social support quality, there was no evidence of an increase over time, or an interaction between time and gender, all ps > .1. There was a main effect for gender, indicating that girls ($M = 5.42$, $SE = .028$) had higher quality social support than boys ($M = 5.28$, $SE = .029$).

The correlations for the main variables are presented in Table 1. Test–retest correlations indicate that explanatory style and social support exhibited modest stability. Approximately 20–36% of the variance of these variables was explained by past measures of the same variable. Importantly, amongst both boys and girls, explanatory style related to future levels of social support and social support related to future levels of explanatory style. Explanatory style explained approximately 1.5% to 9% if the variance in future social support. Grade 8 social support explained approximately 2–4% of the variance in Grade 9 explanatory style. There were no obvious differences between the patterns of correlations for boys and girls.

Table 1 Correlations between pessimistic explanatory (Explane.) style and social support quality and quantity between Grades 7 and 10

	1	2	3	4	5	6	7	8
1. Explane. Style 7	1.00	.43	−.12	−.25	−.26	−.30	−.14	−.26
2. Explane. Style 9	.38	1.00	−.16	−.24	−.30	−.34	−.25	−.25
3. S. Quantity 8	−.22	−.20	1.00	.39	.39	.20	.50	.22
4. S. Quality 8	−.19	−.15	.36	1.00	.28	.46	.15	.29
5. S. Quantity 9	−.16	−.29	.52	.28	1.00	.32	.53	.31
6. S. Quality 9	−.17	−.20	.30	.39	.39	1.00	.20	.53
7. S. Quantity 10	−.18	−.29	.45	.24	.53	.33	1.00	.38
8. S. Quality 10	−.14	−.29	.25	.36	.34	.53	.57	1.00

Note: All *p*s < .05. Intercorrelations for male participants are presented above the diagonal, and intercorrelations for female participants are presented below the diagonal.

Structural equation modelling

We investigated the extent to which social support and explanatory style explained future levels of each variable, when controlling for past levels of the variable. We represented measurement error in social support by using each of the four items as an indicator of a latent variable. We represented measurement error in explanatory style by utilising three item parcels, the number needed to avoid certain statistical problems (Hau & Marsh, 2004). Items were placed into parcels in order to reduce the parameters estimated and thereby ensure sufficient power in the modelling and especially in estimating correlated errors.

The full path model provided an adequate fit to the data for both social support quality and quantity (Table 2). The social support quality analysis indicated that there was no significant drop in fit between Model 1 and Model 2, suggesting that the additional paths in the full model did not improve the fit. However, there was a significant drop in fit for the social support quantity analysis, suggesting that the full model is preferred to the reduced mediational model in this instance. The additional paths included one from Grade 7 attributional style to Grade 10 social support (β =.02, p > .05) and another from Grade 8 social support to Grade 10 social support (β = .32, p < .001). Finally, assuming correlated measurement error resulted in a significant improvement to the fit of both Models (Model 3, Table 2).

The key path components of the final models are presented in Figure 1. As can be seen by the arrows that connect previous measurement periods to future measures of the same variable, all key variables showed moderate levels of stability with about 16–25% of the variance explained by previous measures of the same variable. Concerning the cross-lagged effects, pessimistic explanatory style in Grade 7 predicted lower levels of social support quantity and quality in Grade 9, even when controlling for Grade 8 social support. Similarly, Grade 9 pessimistic explanatory style predicted Grade 10 social support quality and quantity, even when controlling for prior levels of social support and explanatory style. Finally, lower social support predicted future levels of pessimistic explanatory style, even after controlling for past levels of explanatory style.

Examining differences in receiving support from family and friends

Given the predictive relationship between explanatory style and future social support quantity, we decided to examine the quantity variable in more detail by breaking it down into quantity of support

Table 2 Model fit indices for structural equation models with explanatory style (Grades 7 and 9) and social support quality and quantity (Grades 8 through 10)

Model	χ^2	DF	χ^2_{diff}	χ^2 /DF	NFI	NNFI	RMSEA
			Social support quality				
1. Full path model	311.9	125	——	2.5	.94	.96	.046
2. Mediational model	314.0	127	2.1	2.47	.94	.96	.045
3. Mediational model with correlated error involving repeated measures	273.3	116	38.6*	2.36	.95	.96	.043
			Social support quantity				
1. Measurement model/Full model	373.5	125	—	2.99	.95	.96	.053
2. Mediational model	429.9	127	56.4*	3.39	.94	.95	.058
3. Full model with correlated error involving repeated measures[a]	283.9	114	89.6*	2.5	.96	.97	.046

*p < .001.

Note: NFI: Bentler-Bonett Normed Fit Index; NNFI: Bentler-Bonett Non-Normed Fit Index (Tucker Lewis); RMSEA: Root Mean Square Error of Approximation.

[a]Full model and measurement model are statistically equivalent (Cole & Maxwell, 2003). Full model includes paths that are not construed as part of the mediational model.

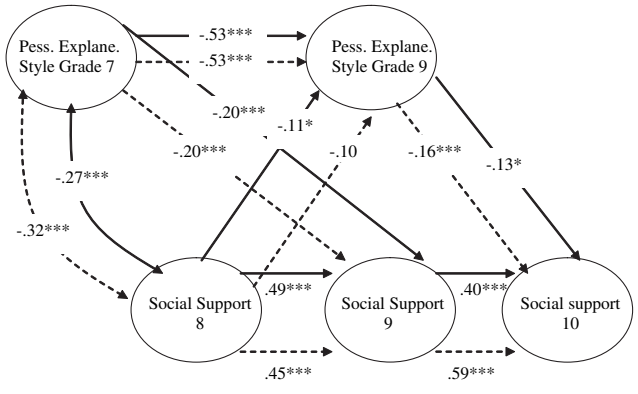

Figure 1 Final Structural Equation Model with pessimist explanatory (Pess. Explane) style predicting quantity (—) and quality (- - -) of social support, as measured between Grades 7 to 10. *p < .05, **p <.01, ***p < .001. *Note*: Only the latent variables relevant to the path model are represented. Effects needed to be significant in parametric and nonparametric analysis to be considered significant here. The model also included correlated errors between repeated measures, and correlated disturbances between Grade 9 measures

from family and quantity from friends. We utilised an identical SEM model to that used in Figure 1, except that the social support quantity variable was replaced with friends quantity or family quantity variables. Results indicated that amount of family support at Grade 8 predicted pessimistic explanatory style at Grade 9 (β = –.15, p < .01), when controlling for explanatory style at Grade 7. In contrast, the amount of friendship support in Grade 8 did not significantly predict future explanatory style (β= –.07, p >.1). Pessimistic explanatory style in Grade 7 predicted future quantity of support from friends (β = –.10, p < .05) and family (β = –.12, p < .01) in Grade 9. Grade 9 pessimistic explanatory style predicted family support in Grade 10 (β = –.23, p < .01), but did not predict friendship support (β = –.04, p > .1).

Likeability analyses

We examined the possibility that sociometric likeability could explain the link between explanatory style and social support. There were modest correlations between pessimistic explanatory style and likeability (r_{a9L9} = –.13; r_{a9L10} = –.10, ps < .05). There were also small correlations between likeability and social support quality (r_{S9L9} = .12; r_{S9L10} = .11, ps < .05) and quantity (r_{S9L9} = .10; r_{S9L10} = .12, ps <.05). However, when covarying for early levels of social support, likeability did not predict future support in either the social support quality or quantity analyses (all ps > .1). In contrast, pessimistic explanatory style in Grade 9 was a significant predictor of social support quantity (β = –.13, p < .05) and quality (β = –.14, p < .05) in Grade 10, even when controlling for Grade 9 and Grade 10 likeability.

Explanatory style and sadness

We next investigated the link between sadness, explanatory style, and social support. There were modest correlations between these variables, with correlations between pessimistic explanatory style and sadness ranging from r = .19 (Grade 7 sadness with Grade 9 explanatory style) to r = .42 (both variables measured in Grade 9). Similarly, the link between sadness and social support was quite modest, ranging from –.07 (Grade 8 social support quantity with Grade 10 sadness) to –.34 (Grade 10 sadness with Grade 10 social support quality). In general, social support quality was a better predictor than quantity of future sadness, with correlations ranging from r = –.13 (Grade 8 quality predicting Grade 10 satisfaction) to r = –.22 (Grade 9 quality predicting Grade 10 sadness).

We utilised structural equation modelling to examine whether Grade 7 and Grade 9 explanatory style predicted future sadness, when controlling for earlier levels of sadness, and whether sadness predicted future levels of explanatory style, when controlling for earlier levels of explanatory style (Figure 2). As before, all latent variables had three indicators, and the best fitting model included measurement error correlations between contiguous time periods, and correlated disturbances between Grade 9 variables (χ^2 = 329.48, χ^2/df = 2.92, NFI = .96, RMSEA = .05). As can be seen in Figure 2, pessimistic explanatory style predicted higher levels of Grade 9 sadness and Grade 9 explanatory style predicted higher levels of Grade 10 sadness. There was also evidence for reverse effects, with Grade 8 sadness predicting Grade 9 pessimistic explanatory style.

We next investigated how explanatory style, social support, and sadness interrelate across the four grades. This essentially involved adding the social support model (Figure 1) to the sadness model (Figure 2). Thus, for example, in one analysis, sadness

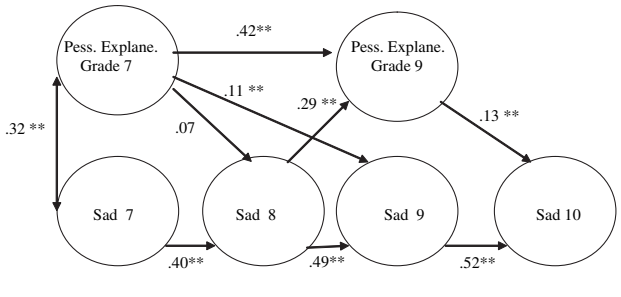

Figure 2 Structural equation model with pessimistic explanatory style (Pess. Explane.) and sadness measured between grades 7 and 10. *p < .05; **p< .01. *Note*: Only the latent variables relevant to the path model are represented. Effects needed to be significant in parametric and nonparametric analysis to be considered significant here. The model also included correlated errors between repeated measures, and correlated disturbances between Grade 9 measures

in Grade 9 was predicted by Grade 8 sadness, Grade 7 pessimistic explanatory style, and Grade 8 social support quality. The cross-lagged effects assess the extent that explanatory style, social support, and sadness predict variance in each other, over and above earlier measures of explanatory style, social support, and sadness. As can be seen in Table 3, pessimistic explanatory style tended to predict future sadness and lower social support. Sadness, in turn, predicted future social support quality and future pessimistic explanatory style. Social support did not predict future levels of sadness or explanatory style.

Discussion

This study was designed to assess the associations between explanatory style and indices of social support among high school students across four waves of data. Our analyses provided some evidence that social support and explanatory style exhibit bidirectional influence. That is, social support quantity and quality in Grade 8 had significant effects on explanatory style in Grade 9, when controlling for earlier levels of explanatory style. Additionally, explanatory style had significant effects on social support quality and quantity in Grades 9 and 10, again controlling for earlier measures of the variables.

Explanatory style predicting social support

Pessimistic explanatory style predicted lower quality of social support and lower quantity of support from both family and friends. This supports past research which suggests that adolescents disengage from their peers when they hold negative relational self-views (Caldwell, Rudolph, Troop-Gordon, & Kim, 2004). It is possible that negative relational views are developed and maintained in part by a pessimistic explanatory style. That is, if adolescents have a tendency to blame themselves for negative social events, and give others credit for positive social events, then they may over time come to form negative beliefs about their ability to form supportive relationships. Future research should examine this possibility.

Perhaps those with a pessimistic explanatory style have less social support because they are less likeable. Past research suggests that individuals with a pessimistic explanatory style tend to possess 'less likeable' qualities such as being shy and depressed (Gladstone & Kaslow, 1995). We provide evidence that those with a pessimistic explanatory style were indeed less liked by their peers, but found no evidence that likeability could explain the link between explanatory style and social support.

It is possible that some unmeasured dimension of peer acceptance may account for our results. We focused only on positive peer ratings due to ethics committee constraints. However, other research has shown that negative ratings allow one to establish the extent that students are rejected and neglected (Newcomb, Bukowski, & Pattee, 1993). Future research is needed to examine if these negative peer categories explain the link between explanatory style and social support.

It is also possible that the link between explanatory style and social support may be a direct one. People with a pessimistic explanatory style tend to explain social events negatively (Toner & Heaven, 2005), and may feel helpless with regards to their social world. We asked adolescents to explain social events such as 'Some kids you know say they don't like you'. Our data suggest that adolescents who explain positive events as due to 'dumb luck' and negative events as due to their own inadequacies may feel less capable of maintaining or developing social networks, thereby resulting in what we term *learned social hopelessness*.

It may also be that pessimistic adolescents are simply depressed thereby failing to develop or maintain social support. Consistent with past research, our study showed that pessimistic explanatory style predicted future levels of sadness which, in turn, were linked to social support. However, even after controlling for sadness, the relationship between explanatory style and future social support was significant. Similarly, even after controlling for social support, the link between explanatory style and sadness remained significant. This pattern of findings suggests that explanatory style has distinctive effects on sadness and social support.

Table 3 Social support (S. Sup.), sadness, and pessimistic explanatory style (Explane.) predicting future levels of each other, whilst controlling for earlier levels of the three variables

	Support quality	Support quantity
Sadness as predictor		
Sad 8 → S. Sup. 9	−.15***	−.01
Sad 9 → S. Sup. 10	−.13***	.02
Sad 8 → Explane. 9	−.27***	−.28***
Explane. Style as predictor		
Explane. 7 → Sad 8	.09^	.08^
Explane. 7 → Sad 9	.09*	.11*
Explane. 9 → Sad 10	.10^	.15***
Explane .7 → S. Sup 9	−.16**	−.20***
Explane. 9 → S. Sup. 10	−.01	−.10^
S. Support as predictor		
S. Sup. 8 → Explane. 9	−.06	−.08
S. Sup. 8 → Sad 9	−.05	.01
S. Sup. 9 → Sad 10	−.06	.07

^p < .05 (one tailed); *p < .05, **p < .01, ***p < .001.
Note: Effects needed to be significant in parametric and nonparametric analysis to be considered significant here.

Social support predicting explanatory style

We found that low quantity and quality of social support predicted pessimistic explanatory style

when controlling for past levels of pessimism. A closer examination of this effect suggested that it was poor family support in particular, rather than poor peer support, that predicted future pessimism.

These findings are in line with previous research into the important role that a supportive family network plays in the overall adjustment of teenagers (e.g., Timko & Moos, 1996). Timko and Moos argued that the adaptation of family members and the actual family environment have mutual influences on each other. They reported that low family support as rated by mother was significantly predictive of the number of disorders their child had a few years later. Larson, Richards, Moneta, Holmbeck, and Duckett (1996) found teenagers to maintain close individual links with mother and father while simultaneously broadening their links to peers. Our findings are consistent with these general conclusions and demonstrate that an unsupportive family may lead to an increasingly pessimistic explanatory style.

Limitations and future directions

This study is the first to show the longitudinal relationships that exist between adolescents' explanatory style and their levels of social support. However, like all longitudinal research, the present data set cannot definitely answer whether explanatory style or social support cause each other. Intervention research is needed to examine whether improving explanatory style leads to subsequent improvements in social support.

There was evidence of selectivity in our sample, in that those who completed the full study tended to be more optimistic and have higher social support than partial completers. Despite these mean differences, we found no differences in the covariance between key variables. Our central conclusions were based on covariance, rather than means. Nevertheless, we cannot be sure that our results apply to adolescents who drop out of school or tend to skip class.

The measure of explanatory style used here had only modest reliability. Future research might improve the accuracy of prediction with a more reliable measure (e.g., Hankin & Abramson, 2002). In addition, it should be noted that we used only one method to assess explanatory style and social support. It is possible that common method variance influenced our results, although this problem was minimised by our analyses, which utilised explanatory style and social support as covariates in predicting upstream variables (Lindell & Whitney, 2001). Thus, whatever variance these variables had in common (e.g., method variance) would tend to be controlled. Nevertheless, it would be preferable to have multiple methods of measurement (e.g., peers, parents), to ensure that no aspect of social support or explanatory style is missed.

Most research to date on the effects of explanatory style has concentrated on depression, loneliness, and other measures of emotional adjustment. The present study extends this research by showing that explanatory style and social support may mutually influence each other over time. Unsupportive families predicted increases in pessimism. Increased pessimism, in turn, predicted decreases in social support. This 'downward spiral' may result in some adolescents developing learned social hopelessness, or the belief that they are powerless to create anything positive in their social worlds.

Correspondence to

Joseph Ciarrochi, School of Psychology, University of Wollongong, NSW, Australia, 2522; Email: Joseph_ciarrochi@uow.edu.au

References

Abramson, L.Y., Alloy, L.B., & Metalsky, G.I. (1995). Hopelessness depression. In G.M. Buchanan, & M.E.P. Seligman (Eds.), *Explanatory style* (pp. 113–134). Hillsdale, NJ: Lawrence Erlbaum Associates.

Anderson, C.A., & Arnoult, L.H. (1985). Attributional style and everyday problems in living: Depression, loneliness, and shyness. *Social Cognition*, *3*, 16–35.

Arbuckle, J. (2006). *Amos 7.0.0*. Spring House, PA: Amos Development Corporation.

Becker, B.E., & Luthar, S.S. (2007). Peer-perceived admiration and social preference: Contextual correlated of positive peer regard among suburban and urban adolescents. *Journal of Research on Adolescence*, *17*, 117–144.

Bentler, P.M., & Bonett, D.G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, *88*, 588–606.

Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K.A. Bollen & J.S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.

Caldwell, M., Rudolph, K.D., Troop-Gordon, W., & Kim, D.-Y. (2004). Reciprocal influences among relational self-views, social disengagement, and peer stress during early adolescence. *Child Development*, *75*, 1140–1154.

Carmines, E.G., & McIver, J.P. (1981). Analyzing models with unobserved variables. In G.W. Bohrnstedt & E.F. Borgatta (Eds.), *Social measurement: Current issues* (pp. 65–115). Beverly Hills, CA: Sage.

Ciarrochi, J., Scott, G., Deane, F.P., & Heaven, P.C. (2003). Relations between social and emotional competence and mental health: A construct validation study. *Personality and Individual Differences*, *35*, 1947–1963.

Feiring, C., Taska, L., & Lewis, M. (2002). Adjustment following sexual abuse discovery: The role of shame and attributional style. *Developmental Psychology*, *38*, 79–92.

Friedman, L.C., Kalidas, M., Elledge, R., Chang, J., Romero, C., Husain, I., et al. (2006). Optimism, social support and psychosocial functioning among women with breast cancer. *Psycho-Oncology*, *15*, 595–603.

Gladstone, T.R.G., & Kaslow, N.J. (1995). Depression and attributions in children and adolescents: A meta-analytic review. *Journal of Abnormal Child Psychology*, *23*, 597–606.

Hankin, B.L., & Abramson, L.Y. (2002). Measuring cognitive vulnerability to depression in adolescence: Reliability, validity, and gender differences. *Journal of Clinical Child and Adolescent Psychology*, *31*, 491–504.

Hau, K.T., & Marsh, H.W. (2004). The use of item parcels in structural equation modeling: Non-normal and small sample sizes. *British Journal of Mathematical Statistical Psychology*, *57*, 327–351.

Howell, D.C. (2008). The analysis of missing data. In W. Outhwaite & S. Turner (Eds.), *Handbook of social science methodology*. London: Sage.

Huebner, E., & Dew, T. (1995). Preliminary validation of the Positive and Negative Affect Schedule with adolescents. *Journal of Psychoeducational Assessment*, *13*, 286–293.

Joiner, T.E., & Wagner, K.D. (1995). Attributional style and depression in children and adolescents: A meta-analytic review. *Clinical Psychology Review*, *15*, 777–798.

Kline, R.B. (1998). *Principles and practice of structural equation modeling*. New York: The Guilford Press.

Lakdawalla, Z., Hankin, B.L., & Mermelstein, R. (2007). Cognitive theories of depression in children and adolescents: A conceptual and quantitative review. *Clinical Child and Family Psychology Review*, *10*, 1–24.

Larson, R.W., Richards, M.H., Moneta, G., Holmbeck, G., & Duckett, E. (1996). Changes in adolescents' daily interactions with their families from ages 10–18: Disengagement and transformation. *Developmental Psychology*, *32*, 744–754.

Lee, G.R., & Ishii-Kuntz, M. (1987). Social interaction, loneliness, and emotional well-being among the elderly. *Research on Aging*, *9*, 459–482.

Leeson, P., Heaven, P.C.L., & Ciarrochi, J. (2008). *Factor structure and clinical relevance of the Positive and Negative Affect Schedule*. Unpublished manuscript, School of Psychology, University of Wollongong.

Lindell, M.K., & Whitney, D.J. (2001). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology*, *86*, 114–121.

Mooney, C.Z., & Duval, R.D. (1993). *Bootstrapping: A nonparametric approach to statistical inference*. Newbury Park, CA: Sage.

Newcomb, A.F., Bukowski, W.M., & Pattee, L. (1993). Children's peer relations: A meta-analytic review of popular, rejected, neglected, controversial, and average sociometric status. *Psychological Bulletin*, *113*, 99–128.

Panak, W.F., & Garber, J. (1992). Aggression, rejection, and attributions in the prediction of depression in children. *Development and Psychopathology*, *4*, 145–165.

Pierce, G.R., Sarason, B.R., & Sarason, I.G. (1996). *Handbook of social support and the family*. New York: Plenum.

Pulkkinen, L., Kaprio, J., & Rose, R.J. (1999). Peers, teachers and parents as assessors of the behavioural and emotional problems of twins and their adjustment: The Multidimensional Peer Nomination Inventory. *Twin Research*, *2*, 274–285.

Ryan, R.M., & Deci, E.L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, *52*, 141–166.

Sarason, I., Levine, H., Basham, R., & Sarason, B. (1983). Assessing social support: The social support questionnaire. *Journal of Personality and Social Psychology*, *44*, 127–139.

Stevens, E.A., & Prinstein, M.J. (2005). Peer contagion of depressogenic attributional styles among adolescents: A longitudinal study. *Journal of Abnormal Child Psychology*, *33*, 25–37.

Stroebe, W., & Stroebe, M. (1996). The social psychology of social support. In E.T. Higgins & A.W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 597–620). New York: The Guilford Press.

Thompson, M., Kaslow, N.J., Weiss, B., & Nolen-Hoeksema, S. (1998). Children's attributional style questionnaire – revised: Psychometric examination. *Psychological Assessment*, *10*, 166–170.

Timko, C., & Moos, R.H. (1996). The mutual influence of family support and youth adaptation. In G.R. Pierce, B.R. Sarason, & I.G. Sarason (Eds.), *Handbook of social support and the family* (pp. 289–310). New York: Plenum.

Toner, M.A., & Heaven, P.C.L. (2005). Peer-social attributional predictors of socio-emotional adjustment in early adolescence: A two-year longitudinal study. *Personality and Individual Differences*, *38*, 579–590.

Toner, M.A., & Munro, D. (1996). Peer-social attributions and self-efficacy of peer-rejected adolescents. *Merrill-Palmer Quarterly*, *42*, 339–357.

Watson, D., & Clark, L.A. (1994). *The PANAS-X: Manual for the Positive and Negative Affect Schedule-Expanded Form*. Iowa City: The University of Iowa.

Manuscript accepted 16 April 2008