

The Relationship between Peer Victimization and Children's Humor Styles: It's No Laughing Matter!

Claire L. Fox¹, Simon C. Hunter², & Siân E. Jones³

¹School of Psychology, Keele University, UK; ²School of Psychological Sciences and Health,
University of Strathclyde, Glasgow, UK; ³Department of Psychology, Oxford Brookes
University, Oxford, UK

Corresponding author: Dr Claire Fox, School of Psychology, Keele University, Staffs. ST5
5BG. Tel: +44 (0)1782 733330, Fax: +44 (0) 1782 733387. Email: c.fox@keele.ac.uk.

Acknowledgements: We are grateful to Sirandou Saily Khan, Hayley Gilman, Lucy James
and Katie Wright-Bevans who provided invaluable assistance with data collection and
inputting, and to the children who took part in this research, and to the school, teachers, and
parents who allowed them to do so. This research was supported by a grant from the
Economic and Social Research Council (REF: RES-062-23-2647).

Abstract

This study assessed the concurrent and prospective (fall to spring) associations between peer victimization and four humor styles, two of which are adaptive (affiliative and self-enhancing) and two maladaptive (aggressive and self-defeating). Participants were 1,234 adolescents (52% female) aged 11-13 years, drawn from six secondary schools in England. Self- and peer-reports of peer victimization were collected, as were self-reports of humor styles. In cross-sectional analyses, peer victimization was associated with all four humor styles, most strongly with self-defeating and affiliative humor. Across the school year, peer victimization was associated with an increase in self-defeating humor and a decrease in affiliative humor (and vice-versa). These results have implications for models of humor development and how we understand the continuity of peer victimization.

The Relationship between Peer Victimization and Children's Humor Styles: It's No Laughing Matter!

Peer victimization is a commonly occurring adolescent stressor which negatively impacts upon young people's mental health (Dempsey, Haden, Goldman, Sivinski, & Wiens, 2011; Hawker & Boulton, 2000; Reijntjes, Kamphuis, Prinzie, & Telch, 2010; Schwartz, Gorman, Nakamoto, & Toblin, 2005), physical health (Biebl, DiLalla, Davis, Lynch, & Shinn, 2011; Gini & Pozzoli, 2009), and educational outcomes (Nakamoto & Schwartz, 2010). Closely tied to such outcomes is the social and interpersonal development of the young person, with evidence indicating that victimization by peers is associated with low popularity (Ahn, Garandeanu, & Rodkin, 2010; Hanish & Guerra, 2002), and social acceptance (Kochel, Ladd, & Rudolph, 2012; Woodhouse, Dykas, & Cassidy, 2012), as well as lower levels of prosocial behavior (Leadbeater, Boone, Sangster, & Mathieson, 2006; Woodhouse et al., 2012) and social skills (Champion, Vernberg, & Shipman, 2003; Fox & Boulton, 2006b). One key social and interpersonal skill, the use of humor, is therefore also implicated in conflictual peer dynamics. This longitudinal study investigated the extent to which humor prospectively predicts victimization, and whether peer victimization plays a role in the development of humor in early adolescence.

Peer victimization refers to the experience of repetitious aggression at the hands of one's peers (Hunter, Boyle, & Warden, 2007). More than a third of students (36%) report being subjected to at least one aggressive incident during the preceding two weeks, with a further 31% reporting repeated experiences of aggression i.e. peer victimization (Hunter et al., 2007). Peer victimization may be verbal (e.g. name-calling, threatening), physical (e.g. hitting, kicking, spitting, property damage/theft), and/or indirect/relational (e.g. malicious gossip, exclusion).

For some time now researchers have been endeavouring to isolate risk factors relating to peer victimization. Several studies have found that victims tend to display ‘non-assertive’ behavior or an ‘anxious vulnerability’, are prone to cry easily, and tend to ‘hover’ rather than try to enter the peer group (e.g. Olweus, 1978; Perry, Willard, & Perry, 1990; Schwartz, Dodge, & Coie, 1993; Troy & Sroufe, 1987). Longitudinal studies indicate that these factors can lead to increases in peer victimization over time (e.g. Fox & Boulton, 2006b; Hodge & Perry, 1999). It has been proposed that children’s use of humor may also place them at risk of victimization. (Klein & Kuiper, 2008). Children lacking skills in the use of humor may be more likely to be targeted, and, once targeted, they may be lacking the humor skills needed to deal with it effectively.

However, the true nature of the relationship between peer victimization and any risk factor, including humor use, may be one characterised by reciprocity. There is growing recognition that peer victimization and psychosocial maladjustment are reciprocally related over time. Kochel et al. (2012) refer to this as a ‘transactional model’, in contrast to both the ‘interpersonal risk model’ wherein peer victimization is an antecedent to adjustment problems and to the ‘symptoms-driven model’ wherein maladjustment is a precursor to peer victimization; this could be because some children exhibit a certain vulnerability which then ‘invites’ victimization. Research supports this contention: peer victimization leads to an increase in the use of submissive/non-assertive behavior *and* these behaviors put children at further risk for peer victimization (e.g., see Fox & Boulton, 2006b). These sorts of relationships are not just confined to social maladjustment; reciprocal relationships between peer victimization and psychological maladjustment have also been identified. For example, Egan and Perry (1998) found that children with a low self-regard were more likely to be targeted for peer victimization and that victimization led to a lower self-regard over time. Sweeting et al. (2006) and Snyder et al. (2003) both provided similar evidence in support of a

bi-directional relationship between peer victimization and depressive symptoms. Together these studies suggest that when victimized, children can get caught up in a ‘vicious cycle’ with one problem exacerbating the other.

As children develop, they appreciate more sophisticated forms of humor (McGhee, 1974). It is not until middle childhood that the ability to *use* humor in social situations is displayed, and by 11–12 years children can use humor as a very effective means of social interaction and communication (see Bergen 1998; McGhee 1979). Bariaud (1989) stated that from the ages of 7 to 10 years children become competent in the use of conversational riddles and jokes. They also begin to develop their own jokes to sometimes convey hostile and sexual content in the guise of “only joking”. Nasty teasing has been observed in some children from a very early age (Sinnott & Ross, 1976) and, according to Bergen (1998), adolescents become masters of this. Humor plays an increasingly important role during adolescence, for example in the formation and maintenance of friendships and romantic relationships. It is at this time that adolescents will experiment with new roles and activities and this may include how they use humor (Kuiper, Kirsh & Leite, 2010).

Among children and adults, there are *four* main types of humor style, and these reflect the use of humor in everyday life (Fox, Dean, Lyford, 2013; Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). *Self-enhancing humor* is the ability to maintain a humorous perspective in the face of stress and adversity; it is closely aligned to coping humor (e.g. ‘My humorous outlook on life keeps me from getting too upset or depressed about things’). *Aggressive humor* also enhances the self, at least in the short-term, but is done at the expense of others (e.g. ‘If someone makes a mistake I often tease them about it’). *Affiliative humor* enhances one’s relationships with others and reduces interpersonal tensions (e.g. ‘I enjoy making people laugh’). Finally, *self-defeating humor*, largely untapped by previous humor scales, also enhances one’s relationships with others, but at the expense of the self (e.g. ‘I often try to

make people like or accept me more by saying something funny about my own weaknesses, blunders and faults'). Although, individuals who use this style of humor might be seen as fairly 'witty' and 'amusing' ('class clowns'), it is thought to reflect an underlying emotional neediness and low self-esteem (Martin et al., 2003). A distinction also needs to be made between self-defeating humor and 'self-deprecating humor'. The latter is used by individuals who gently poke fun at their own faults and do not take themselves too seriously (Martin et al., 2003). They may then be perceived by others as more likeable and less threatening. Self-defeating humor, in contrast, involves a more excessively disparaging type of humor.

The ability to distinguish between different components of humor has brought with it a clearer picture of the relationships between humor and adjustment. This is evidenced by the stronger correlations between humor and psycho-social adjustment which are reported when using the adult Humor Styles Questionnaire (HSQ) as compared to previous research using unidimensional measures (Martin et al., 2003). Among adults, affiliative and self-enhancing humor are negatively correlated with anxiety, depression, and suicidal ideation, and positively correlated with self-esteem and life satisfaction. In contrast, self-defeating humor is associated with high levels of anxiety, depression, and suicidal ideation, and lower self-esteem and lower life satisfaction (Dyck & Holtzman, 2013; Kuiper, Grimshaw, Leite, & Kirsh, 2004; Martin et al., 2003; Tucker et al., 2013). Aggressive and self-defeating humor styles are both associated with hostility and aggression (Martin et al., 2003). In addition, aggressive humor is not associated with psychological adjustment but is strongly negatively correlated with social adjustment measures (Yip & Martin, 2006). The four humor styles are also associated with a range of personality measures with the benign styles of humor linked to extraversion and openness and, conversely, the negative styles of humor positively correlated with neuroticism and psychopathy, and negatively correlated with agreeableness and conscientiousness (Galloway, 2010; Martin et al., 2003; Vernon, Martin, Schermer, &

Mackie, 2008; Veselka, Schermer, Martin, & Vernon, 2010). Ziegler-Hill, Besser, and Jet (2013) proposed that the different styles of humor send very different signals to the social environment and provided evidence that adult targets displaying the more benign styles of humor are perceived more positively by others (see also Kuiper & Leite, 2010). Similarly, Kuiper et al. (2010) found that both adolescents and adults are less willing to continue an interaction with someone displaying maladaptive humor; in addition, these forms of humor led to less positive and more negative feelings in recipients.

It has been proposed that children may use the different humor styles to achieve their desired goals. In addition, the style of humor the child uses may then impact on their social relationships because different humor styles may be more positively received by the peer group. Thus, humor may be one means through which social status can be achieved and maintained (Klein & Kuiper, 2006). Several studies have reported a link between humor and children's social competence (Gest, Graham-Bermann, & Hartup, 2001; Masten, 1986; Pellegrini, Masten, Garnezy, & Ferrarese, 1987; Sherman, 1988; Ziv, 1984). For example, using peer ratings of sense of humor and 'liking', Sherman (1988) found that children with a 'good sense of humor' were liked more by their peers. Similarly, Masten (1986) identified associations between children's social status and their 'humor abilities' (i.e. humor production, comprehension and mirth). In children, self-defeating humor has been found to be negatively correlated, and affiliative humor positively correlated, with self-perceived social competence. Further longitudinal research is clearly needed to disentangle the causal pathways between social competence and humor (Fox et al., 2013).

Klein and Kuiper (2006) proposed a specific bi-directional relationship between self-defeating humor and peer victimization. They assert that self-defeating humor reflects an underlying neediness and low self-esteem, which places young people at risk for future victimization. As previously noted, low self-regard has been identified as a risk factor for

peer victimization (Egan & Perry, 1998). Furthermore, Smith, Shu, and Madsen (2001) propose that young people may fall into a cycle where low self-esteem leads to more victimization and more victimization leads to lower self-esteem.

Extending this, Klein and Kuiper (2006) theorised that children who are victimized by the peer group have much less opportunity to interact with their peers and so are at a disadvantage with respect to the development of humor competence. They may therefore gravitate towards using self-defeating humor in an attempt to improve their peer relationships and group status. Victims may internalise aggressors' negative comments, resulting in the development of a self-defeating humor style (Klein & Kuiper, 2006). Such a possibility is supported by Rose and Abramson's (1992) proposition that teasing and name calling directly supply negative self-relevant cognitions to the victim (e.g. "You're a loser", "You're stupid") which are then internalized.

In support of this, Bergen (1998) noted that humor flourishes in safe and comfortable contexts. Furthermore, there is a considerable amount of evidence to support the view that interactions with peers provide children with important opportunities to acquire social skills and hence a broader social competence (see Schneider, 2000). This view is strongly stated in Harris' (1998) group socialization theory, even to the extent that the peer group is put forward as the major context in which socially skilled and hence normative behavior is developed. Extrapolating from the theory, we propose that it is not unreasonable to argue that being victimized by the peer group denies children opportunities to develop social skills / competence, including the capacity to use humor effectively. In the present study, it was therefore predicted that there would be a bi-directional relationship between self-defeating humor and peer victimization, with peer victimization predicting an increase in the use of self-defeating humor *and* this type of humor leading to an increase in peer victimization.

Klein and Kuiper (2006) further proposed a bi-directional relationship between peer victimization and the two positive styles of humor with some children using affiliative humor to maintain their social status. Children who use these forms of humor may be perceived more positively and so will be in a better position to form successful alliances with people, thus *protecting* them from the experience of peer victimization. In addition, as previously noted, the experience of being bullied could deprive children of opportunities to practise humor with their peers and so they may be *less* likely to use the more positive styles of humor. However, Klein and Kuiper's (2006) predictions remain untested.

The Present Study

A clearer model depicting the development of young people's humor styles and peer victimization across time has much to contribute to our understanding of adolescents' social worlds. Thus, the main aim of this research was to investigate the relationship between humor styles and peer victimization using a longitudinal, cross-lagged methodology. Specifically, we predicted that: (a) the experience of peer victimization would be associated with a *decrease* in the use of the more adaptive humor styles over time (i.e. affiliative and self-enhancing); (b) affiliative and self-enhancing humor would be associated with *decreases* in peer victimization over time, (c) peer victimization would be associated with an *increase* in the use of self-defeating humor over time, and (d) self-defeating humor would be associated with an increase in the level of peer victimization over time.

A recent meta-analysis by Reijntjes et al. (2011) found some evidence that peer victimization predicts an increase in externalising problems, with the reverse also true. Given the strong link between aggressive humor and social maladjustment (Yip & Martin, 2006) and research indicating that children who are victimized make use of aggression to defend themselves (Camodeca & Goossens, 2005; Champion et al., 2003), we predicted that: (e) peer victimization would be associated with an *increase* in the use of aggressive humor over time,

and (f) aggressive humor would be associated with an *increase* in the level of peer victimization over time.

Gender differences were also examined. As noted by Hanish and Guerra (2000), when examining individual risk factors, there is good reason to expect sex to emerge as a significant moderator. Some studies suggest that internalising problems are a greater risk factor for boys than for girls, possibly because withdrawn behavior is more gender inappropriate for boys than girls (Perry, Hodges, & Egan, 2001). Furthermore, research with both children and adults suggests that male and females use humor in different ways. For example, males are more like to use aggressive humor compared to females (Fox et al., 2013; Führ, 2002; Martin et al., 2003; Saraglou & Scariot, 2002). Thus, we investigated whether children are more ‘at risk’ if they use humor in a way that is gender atypical.

Method

Participants

We recruited 1,234 pupils aged 11-13 years (school years 7 and 8; 680 children aged 11-12 years, and 554 children aged 12-13 years), from six state secondary schools in the Midlands, UK. This age-group was selected because it reflects the age at which children in secondary school are most at risk of being victimized (Eslea & Rees, 2001; Whitney & Smith, 1993; Williams and Guerra, 2007). In terms of gender, 599 participants were male and 620 female (with missing data for 15 participants). The mean age of the sample at Time 1 was 11.68 years ($SD = 0.64$). The ethnic composition of each school ($M = 93\%$ white) was a reflection of the region in which the research was located; the sampling strategy took into account both rural/urban and SES profile to achieve a range of schools representative of the area from which they were recruited. Parents or carers of all children in the relevant year group at each school were invited to allow their child to participate, using the opt-out method of consent. Students who did not participate in the first session of data collection at Time 1

were not permitted to take part in the second session of data collection at Time 1. Across the time points of the study, the participation rate ranged from 70% to 85% of eligible young people registered in the schools.

Participant recruitment and data collection were conducted during school hours. Participants assented to take part in the study during class time. Classes varied in size from 10-31 with a modal class size of 24 pupils. Participants who were not taking part were given an alternative activity to complete by the researcher or class teacher.

Measures

Students completed an answer booklet at each session in which they were asked to record their name, age, school class, gender and ethnicity, prior to completion of the measures pertinent to that session.

Humor styles. Participants completed the self-report child Humor Styles Questionnaire (child HSQ; Fox et al., 2013), which is an adapted version of the adult HSQ (Martin et al., 2003). Using a 4-point response scale (1 = *strongly disagree* to 4 = *strongly agree*), participants rated their agreement with the 24 statements. There are six items per sub-scale with four sub-scales in total: Self-Defeating (e.g. ‘I often put myself down when I am making jokes or trying to be funny’), Aggressive (e.g. ‘When I tell jokes I’m not worried if it will upset other people’), Affiliative (e.g. ‘I don’t have to try very hard to make people laugh – I seem to be a naturally funny person’) and Self-Enhancing (e.g. ‘I find that laughing and joking are good ways to cope with problems’). When used with 11-16 year olds, Fox et al. (2013) found acceptable levels of internal reliability for all four sub-scales (all $\alpha > .70$), and confirmatory factor analysis identified a very clear four-factor structure. The child HSQ also has acceptable levels of test re-test reliability (r_s range from .65 to .75 across one week). For the present study, reliability coefficients were all above .70, apart from aggressive humor at

Time 1 ($\alpha_{\text{aggressive}} = .66$; $\alpha_{\text{self-defeating}} = .73$; $\alpha_{\text{self-enhancing}} = .75$, $\alpha_{\text{affiliative}} = .85$). Mean scores were calculated for each sub-scale.

Peer victimization. Neither self-reports nor peer nominations are inherently superior, and it is often recommended that they are used in combination (see Bouman et al., 2012). Peer reports, it has been argued, provide the ‘insider perspective’; multiple informants are used which can reduce subjectivity and error (Perry et al., 1988). In contrast, self-reports provide a unique, individual perspective on the situation, yet they are based on the subjective self-views of one participant (Juvonen, Nishina, & Graham, 2001). When examining the correlates of peer victimization, peer reports can reduce concerns surrounding shared method variance. Self-reports and peer nominations should be viewed as two distinct measures representing different perspectives on peer victimization. In support of this, the two measures are only moderately correlated and they have been found to be differentially related to different child characteristics (Bouman et al., 2012). Relying on just one method runs the risk of ignoring specific characteristics that are associated with peer victimization.

Self-report peer victimization was assessed using an adapted version of the Direct and Indirect Aggression Scale (Owens, Daly, & Shute, 2005, adapted from Björkqvist, Lagerspetz, & Kaukianen, 1992b). This 18-item measure assesses experiences of victimization, including verbal, physical and indirect/relational forms of aggression. Participants indicated how often each of the described forms of victimization had happened to them in the current school term (1 = *never*, 5 = *several times per week*). A mean score was calculated for this scale. For peer nominations of victimization, children were asked to nominate up to three classmates who were ‘called nasty names by other children’, ‘kicked, hit and pushed around by other children’, ‘left out of the group by other children’, and who have ‘nasty rumours spread about them by other children’ (Björkqvist, Lagerspetz, & Kaukiainen, 1992a; Crick & Grotpeter, 1995; Fox & Boulton, 2006ab). For each child, for each item,

percentage scores were calculated based on the total number of nominations divided by the total number of children in the class who nominated minus one. One-factor solutions for both the self-report and peer nomination data (see Results) were optimal, and therefore two general composite scores were generated, one for self-reported victimization ($\alpha = .93$ at both T1 and T2) and one for peer nominations of victimization ($\alpha = .86$ at T1 and $.88$ at T2).

Procedure

Prior to data collection, the study was approved by the relevant University Ethics Committee. Data collection took place in the Fall (Time 1) and Summer (Time 2) terms of the school year, in school classrooms with a class teacher present. Pilot work with $N = 215$, 11-13 year-olds from one local secondary school helped to identify the optimum number of questionnaires to be administered in each session and the adequacy of instructions and ethical procedures.

Each data collection session took approximately half an hour. Session 1 at each time point comprised the self-report child HSQ, whilst Session 2 comprised the peer nomination measures, and self-reports of peer victimization. A range of other variables were measured but are not the central focus of this paper. Sessions began with the researchers introducing themselves and explaining the measures that would be collected that day, and explaining the confidential nature of the questionnaires. Pupils were asked to complete the questionnaire booklets in silence; they were asked to keep their answers private and not look at what other children were doing. Where necessary, Teaching Assistants were provided with a copy of the questionnaire to assist those with reading difficulties.

Following data collection, students were thanked and debriefed about the measures' purposes. They were encouraged to refrain from discussing their answers with other young people. After the final session of data collection, participants were fully debriefed as to the aims and purpose of the study. All participants were provided with details of a confidential

child help-line and directed toward other sources of support (e.g. parents/carers and teachers). Schools were compensated for participating.

Results

Descriptive Statistics and Group Differences

Descriptive statistics for the total sample and for males and females separately are shown in Table 1. A series of *t*-tests found that boys received more peer nominations for peer victimization and self-reported more aggressive humor. Comparisons were made between those children who took part at Time 1 and Time 2 ($n = 1019$) with the smaller group of children who took part at Time 1 but not at Time 2 ($n = 215$) in terms of their Time 1 scores. Those *t*-tests identified differences between the two groups with the children who had dropped out of the study self-reporting more self-defeating and aggressive humor at Time 1 and receiving more peer nominations of peer victimization (see Table 2). As a result, multiple imputation using a Full Information Maximum Likelihood method within AMOS was utilised to counteract any resulting bias. This enabled us to retain 1,234 children in the analyses.

Table 1 about here

Table 2 about here

Correlations

Self-reports and peer nominations of victimization were moderately correlated at T1 and T2 (see Table 3 for all intercorrelations). The measures of peer victimization were also highly stable with stability coefficients of .52 for self-reports ($p < .001$) and .73 for peer

nominations ($p < .001$). Stability coefficients for the four humor styles were as follows: $r_{\text{self-defeating}} = .55, p < .001$; $r_{\text{aggressive}} = .50, p < .001$; $r_{\text{affiliative}} = .62, p < .001$; $r_{\text{self-enhancing}} = .51, p < .001$).

Self-reports and peer nominations of victimization were both positively correlated with self-defeating humor and negatively correlated with affiliative humor at T1 and T2. Peer nominations of peer victimization were also weakly negatively correlated with self-enhancing humor. Aggressive humor was positively correlated with self-defeating humor and affiliative humor. Affiliative humor and self-defeating humor were negatively correlated and affiliative humor and self-enhancing humor were positively correlated.

Table 3 about here

Structural Equation Modelling

Measurement models. AMOS 20.1 was used to estimate full cross-lagged models evaluating the proposed relationships between peer victimization and humor styles. Data from only those participants who took part at Time 1 ($n = 1,234$) were included in the analyses, and a Full Information Maximum Likelihood was used in the analyses to deal with missing data. Because χ^2 values are inflated by large sample sizes, we used additional criteria to assess model fit, including the CMIN/DF, CFI and RMSEA. A good fitting model is indicated by CMIN/DF values under 3-4; CFI above .90, reflecting adequate fit (Bentler 1992), and above .95 to indicate good fit; and RMSEA scores of .06 or less (Hu & Bentler, 1999). First, separate measurement models were assessed for: 1) self-reports of peer victimization, 2) peer nominations of peer victimization, and 3) self-reports of humor styles. In all models, T1 latent variables predicted T2 latent variables. Since humor was multidimensional, all the T1 latent humor style variables were allowed to covary, as were the

T2 latent variable disturbances. Corresponding T1 and T2 error variances for the observed variables were also permitted to covary.

For self-reported peer victimization the model fit was adequate. Model parameters were examined and in parallel we also considered whether there were any theoretical justifications for the modifications. We tested a second model where we allowed focussed sets of error terms to covary. These were error terms for specific items that we would expect to be highly correlated because of a close conceptual overlap (three verbal victimization variables: teased, insulted, called nasty names; two pairs of physical victimization items: pushed/tripped and hit/kicked; and two pairs of verbal/relational items: left out/ignored and sent nasty notes/nasty text messages). This provided a better fitting model (see Table 4 for the comparison of Models 1 and 2). The path from victimization T1 to victimization T2, representing the stability coefficient, was significant ($\beta = .60, p < .001$).

For peer nominations of peer victimization a one-factor model also provided the best fit. This utilized the four peer nomination observed variables as indicators for the latent peer victimization variable (see Model 3, Table 4). The path from victimization at T1 to victimization at T2 was significant ($\beta = .77, p < .001$).

For self-reports of humor styles, the predicted four factor model provided an adequate fit. The error terms for the three negatively worded aggressive humor questionnaire items were allowed to covary, and this provided a better fitting model (see Table 4 for a comparison of Models 4 and 5). Stability paths from T1 to T2 ranged from $\beta = .62$ to $.70$.

Cross-lagged structural equation models. Having established the adequacy of the measurement models, a cross-lagged model combining self-reports of peer victimization and self-reports of humor styles was evaluated. This model (see Table 5, Model 6) displayed an acceptable fit. Peer victimization (T1) predicted an increase in young people's use of self-defeating humor at T2 ($\beta = .19, p < .001$) and there was a reciprocal effect of self-defeating

humor at T1 on T2 peer victimization ($\beta = .13, p = .003$). Victimization also predicted a decrease in the use of affiliative humor over time ($\beta = -.08, p = .01$). See Figure 1 for a schematic depiction of the model with all significant paths.

Figure 1 about here

Next we assessed the same model but using peer nominations of peer victimization and self-reports of humor styles. This model (see Table 5, Model 7) also displayed an adequate fit. Peer victimization led to a decrease in the use of affiliative humor over time ($\beta = -.10, p = .001$) and vice-versa ($\beta = -.11, p = .003$). Victimization also led to a decrease in the use of aggressive humor ($\beta = -.10, p = .01$). See Figure 2 for all significant paths. Taken together the findings suggest that peer victimization affects children's use of humor and that children's humor styles can place them at risk or protect them from future peer victimization.

Figure 2 about here

Multiple groups analyses. We conducted analyses to assess whether model parameters were equivalent for males and females. To achieve this, we compared two models. The first model was an unconstrained model in which all stability and cross-lagged paths were allowed to vary across boys and girls. The second model constrained all stability and cross-lagged paths to be equal across boys and girls. If the relative fit of the constrained

model is significantly worse than the unconstrained model, using change in chi-square ($\Delta\chi^2$) as an indicator, then we can conclude that effects differ across groups.

For the model relating to self-reports of victimization, there was no significant decrement in fit for the constrained versus the basic model ($\Delta\chi^2 = 22.92, df = 25, p > .05$). This indicates that the stability and cross-lagged paths are equivalent for boys and girls.

For the model relating to peer nominations of peer victimization and self-reported humor, there was a significant difference between the constrained and unconstrained model, indicating that the two groups differed ($\Delta\chi^2 = 49.75, df = 25, p = .002$). In addition, from examination of the paths, these were slightly weaker for females and not significant (Males: T1 victimization to T2 aggressive humor, $\beta = -.10, p = .003$; T1 victimization to T2 affiliative humor, $\beta = -.11, p = .006$; T1 affiliative humor to T2 victimization, $\beta = -.11, p < .001$. Females: T1 victimization to T2 aggressive humor, $\beta = -.05, p > .05$; T1 victimization to T2 affiliative humor, $\beta = -.07, p > .05$; T1 affiliative humor to T2 victimization, $\beta = -.07, p > .05$).

Discussion

This is the first study to test Klein and Kuiper's (2006) predictions concerning the associations between young people's humor styles and peer victimization. Using a longitudinal design, reciprocal relationships supporting Klein and Kuiper's theoretical framework were supported. Specifically, we found evidence of a vicious cycle between peer victimization and the use of adaptive *and* maladaptive humor styles. Peer victimization was associated with an increase in the future use of self-defeating humor and a decrease in the use of affiliative humor. At the same time, greater use of self-defeating humor was associated with an increase in peer victimization, while greater use of affiliative humor appears to decrease victimization over time. These results have important implications for how we understand the development of both humor and peer victimization.

As noted previously, humor is thought to flourish in safe and comfortable contexts (Bergen, 1988). It is widely accepted that interactions with peers provide children with important opportunities to acquire social skills and hence a broader social competence (Harris, 1998; Schneider, 2000). Klein and Kuiper (2006) theorised that children and young people who are victimized may be deprived of normative socialisation opportunities. As a result, they are less likely to develop adaptive forms of humor and may gravitate towards using self-defeating humor in an attempt to improve their relationships with others. Our results offer some empirical support for this process. This effect may be partly because victims internalize aggressors' negative comments (Klein & Kuiper, 2006; Rose & Abramson, 1992) and future research should evaluate this possibility. Further studies could also usefully assess children's social skills to examine whether children's humor styles in their own right do indeed play a role or whether these skills are merely a marker for social skills/social competence more broadly.

Our findings are also in line with research which has examined the impact of adaptive and maladaptive humor on others (Kuiper & Leite, 2010; Kuiper et al, 2010; Ziegler-Hill et al. (2013). Kuiper et al. (2010), for example, argued that we form implicit theories of humor, such as personality characteristics that may characterise individuals high on a particular humor style. Those who use self-defeating humor may elicit a 'distancing response' by recipients because of the, "explicit, demeaning and ingratiating nature of self-defeating humor" (p. 240). Our study has demonstrated that self-defeating humor may do more than elicit a distancing response; it may put children at an increased risk of peer victimization. Children lacking skills in the use of humor may be more likely to be targeted, and, once targeted, they may be lacking the skills needed to deal with it effectively.

Against prediction, peer nominated peer victimization predicted a decrease in aggressive humor over time. Yet, the path was significant for boys only. This could reflect a

general trend in terms of peer victimization impacting negatively on all humour that is outwardly directed. Furthermore, the paths between peer nominated peer victimization and affiliative humor were significant for boys only. This could be because such overt humor is more highly valued within boys' peer groups than girls'. Findings from a qualitative study suggest that humor is an important resource and strategy utilised in both positive and negative ways by boys to gain and maintain masculine status and power (Huuki, Manninen, & Sunnari, 2010). These gender differences should be investigated further.

A strength of the current study was the use of both self-reports and peer nominations. Interestingly, self-defeating humor was reciprocally associated with self-reported peer victimization, while affiliative humor was reciprocally associated with peer nominations of peer victimization. As already indicated, it has been argued that self-reports and peer-reports contribute different information about a child, with self-reports reflecting more subjective self-perceptions and peer reports a child's social reputation (Juvonen et al., 2001). Typically, self-reports of peer victimization are more strongly correlated with measures of psychological adjustment and peer reports with those assessing children's social adjustment (Bouman et al., 2012). Self-defeating humor may be more strongly linked with internalizing problems, which have been implicated in the use of this humor style (Klein & Kuiper, 2006). In other words, how a child feels about themselves may be reflected in their use of humor. Whereas, affiliative humor may be more important in shaping the attitudes of their peers, making an important contribution to how a child is perceived within the peer group. These differential associations should be explored in future studies that also use a multi-methods approach.

Short-term longitudinal designs can make it difficult to detect changes if the processes under consideration unfold over extended periods of time. However, we were able to identify changes in peer victimization and children's humor styles over a nine month period, suggesting that this is a useful time frame with which to investigate these issues.

Nevertheless, it is important that the reach of such changes is identified, and future studies should seek to examine how humor develops across adolescence into early adulthood. Our research suggests that there is a certain amount of change and variation in the extent to which adolescents use the four humor styles over a nine month period. Thus, rather than viewing these styles of humor as stable personality traits, they should instead be conceptualised as skills that could be nurtured and perhaps even trained. However, it is important to note that some humor styles may be more malleable than others. A recent twin-study found evidence to suggest that the two adaptive styles of humor are largely attributable to genetic and non-shared environmental factors. In contrast, self-defeating humor and aggressive humor were attributable to shared and non-shared environmental factors, with less of a genetic influence (Vernon et al., 2008). It may therefore be more helpful to encourage people to reduce their use of self-defeating and aggressive humor, than to increase their use of affiliative and self-enhancing humor.

Our results have implications for interventions. For many years, young people have been encouraged to use humor as a way of dealing with the bullies, most notably by ‘fogging’ which involves agreeing with the comments of the perpetrator. However, our evidence suggests this could lead to negative outcomes, whereas taking an approach based on affiliative humor may lead to positive outcomes. It is also important to make the distinction between self-defeating humor and ‘self-deprecating humor’. As indicated previously, the latter is used by individuals who gently poke fun at their own faults and do not take themselves too seriously (Martin et al., 2003). They may then be perceived by others as more likeable and less threatening. Self-defeating humor, in contrast, involves a more excessively disparaging type of humor. The distinctions between the two are clearly very subtle and may not be appreciated by younger children, particularly those who are on the receiving end of negative behavior by their peers. Interventions already exist for children who are victimized

by their peers, in the form of Social Skills Training (SST) programmes (e.g. Fox & Boulton, 2003ab). Our findings suggest that a focus on how children use humor would be a welcome addition to such programmes.

Conclusion

The aim of this study was to examine the relationships between peer victimization and children's humor styles, testing predictions put forward by Klein and Kuiper (2006). Using both self-reports and peer nominations within a short-term longitudinal design, the presence of reciprocal relationships between peer victimization and both self-defeating and affiliative humor were supported. This is an important addition to the growing body of knowledge that peer victimization and psychosocial maladjustment are reciprocally related over time, what has been referred to as a 'transactional model' (Kochel et al., 2012). Our findings suggest that peer victimization affects children's use of humor *and* that young people's use of humor may put them at risk or protect them from future experience of peer victimization.

References

- Ahn, H-J., Garandeanu, C. F., & Rodkin, P. C. (2010). Effects of classroom embeddedness and density on the social status of aggressive and victimized children. *Journal of Adolescence, 30*, 76-101.
- Bariaud, F. (1989). Age differences in children's humor. *Journal of Children in Contemporary Society 20*. 12-45.
- Bentler, P. M. (1992). On the fit of models to covariances and method to the Bulletin. *Psychological Bulletin, 112*, 400-404.
- Bergen, D. (1998). Development of a sense of humor. In W. Ruch (Ed.). *The sense of humor: Explorations of a personality characteristic*. Berlin/New York: Mouten de Gruyter, 329-360.
- Biebl, S. J., DiLalla, L. F., Davis, E. K., Lynch, K. A., & Shinn, S. O. (2011). Longitudinal associations among peer victimization and physical and mental health problems. *Journal of Pediatric Psychology, 36*, 868-877.
- Björkqvist, K., Lagerspetz, K. M., & Kaukiainen, A. (1992a). Do girls manipulate and boys fight? Developmental trends in regard to direct and indirect aggression. *Aggressive Behavior, 18*, 117-127.
- Björkqvist, K., Lagerspetz, K. M. J., & Osterman, K. (1992b). *The direct and indirect aggression scales*. Vasa Finland: Abo Akademi University, Department of Social Sciences.
- Bouman, T., van der Meulen, M., Goossens, F. A., Olthof, T., Vermande, M. M., Alesva, E. A. (2012). Peer and self-reports of victimization and bullying. Their differential association with internalizing problems and social adjustment. *Journal of School Psychology, 50*, 759-774.

- Camodeca, M., & Goossens, F.A. (2005). Aggression, social cognitions, anger and sadness in bullies and victims. *Journal of Child Psychology and Psychiatry*, *46*, 186-197
- Champion, K., Vernberg, E., & Shipman, K. (2003). Nonbullying victims of bullies: Aggression, social skills, and friendship characteristics. *Applied Developmental Psychology*, *24*, 535-551.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, *66*, 710-722.
- Dempsey, A. G., Haden, S. C., Goldman, J., Sivinski, J., & Wiens, B. A. (2011). Relational and overt victimization in Middle and High Schools: Associations with self-reported suicidality. *Journal of School Violence*, *10*, 374-392.
- Dyck, K. T. H., & Holtzman, S. (2013). Understanding humor styles and well-being: The importance of social relationships and gender. *Personality and Individual Differences*, *55*, 53-58.
- Egan, S. K., & Perry, D. G. (1998). Does low self-regard invite victimization? *Developmental Psychology*, *34*, 299-309.
- Eslea, M., & Rees, J. (2001). At what age are children most likely to be bullied at school? *Aggressive Behavior*, *27*, 419-429.
- Fox, C. L. & Boulton, M. J. (2003a). Evaluating the effectiveness of a social skills training (SST) programme for victims of bullying. *Educational Research*, *45*, 231-247.
- Fox, C. L. & Boulton, M. J. (2003b). A social skills training (SST) programme for victims of bullying. *Pastoral Care in Education*, *21*, 19-26.
- Fox, C. L., & Boulton, M. J. (2006a). Friendship as a moderator of the relationship between social skills problems and peer victimisation. *Aggressive Behavior*, *32*, 110-121.
- Fox, C. L., & Boulton, M. J. (2006b). Longitudinal associations between social skills problems and different types of peer victimisation. *Violence and Victims*, *21*, 387-404.

- Fox, C. L., Dean, S., & Lyford, K. (2013). Development of a humor styles questionnaire for children and young people. *Humor: International Journal of Humor Research, 26*, 295-319.
- Führ, M. (2002). Coping humor in early adolescence. *Humor: International Journal of Humor Research, 15*, 283-304.
- Galloway, G. (2010). Individual differences in personal humor styles: Identification of prominent patterns and their associates. *Personality and Individual Differences, 48*, 563-567.
- Gest, S. D., Graham-Bermann, S. S., & Hartup, W. W. (2001). Peer experience: Common and unique features of number of friendships, social network centrality, and sociometric status. *Social Development, 10*, 23-40.
- Gini, G., & Pozzoli, T. (2009). Association between bullying and psychosomatic problems: A meta-analysis. *Pediatrics, 123*, 1059-1065.
- Hanish, L. D., & Guerra, N. G. (2000). Predictors of peer victimization among urban youth. *Social Development, 9(4)*, 521-543.
- Hanish, L. D., & Guerra, N. G. (2002). A longitudinal analysis of patterns of adjustment following peer victimization. *Development and Psychopathology, 14*, 69-89.
- Harris, J. R. (1998). *The nurture assumption: Why children turn out the way they do*. New York: Free Press.
- Hawker, D. S. J., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry, 41*, 441-455.
- Hodges, E. V. E., & Perry, D. G. (1999). Personal and interpersonal antecedents and consequences of victimization by peers. *Journal of Personality and Social Psychology, 76(4)*, 677-685.

- Hu, L. T., & Bentler, P. M. (1990). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modelling, 6*, 1-55.
- Hunter, S. C., Boyle, J. M. E., & Warden, D. (2007). Perceptions and correlates of peer-victimization and bullying. *British Journal of Educational Psychology, 77*, 797-810.
- Huuki, T., Manninen, S., & Summari, V. (2010). Humour as a resource and strategy for boys to gain status and power in the field of informal school. *Gender and Education, 22*, 369-383.
- Juvonen, J., Nishina, A., & Graham, S. (2001). Self-views versus peer perceptions of victim status among early adolescents. In J. Juvonen, & S. Graham (Eds.), *Peer harassment in school: The plight of the vulnerable and the victimized* (pp. 105-124). New York: Guilford.
- Karatzias, A., Power, K.G., & Swanson, V. (2002). Bullying and victimisation in Scottish Secondary Schools: Same or separate entities? *Aggressive Behavior, 28*, 45-61.
- Klein, D. N., & Kuiper, N. A. (2006). Humor styles, peer relationships and bullying in middle childhood. *Humor: International Journal of Humor Research, 19*, 383-404.
- Kochel, K. P., Ladd, G. W., & Rudolph, K. D. (2012). Longitudinal associations among youth depressive symptoms, peer victimization, and low peer acceptance: An interpersonal perspective. *Child Development, 83*, 637-650.
- Kuiper, N. A., Grimshaw, M., Leite, C., & Kirsh, G. A. (2004). Humor is not always the best medicine: Specific components of sense of humor and psychological well-being. *Humor: International Journal of Humor Research, 17*, 135-168.
- Kuiper, N. A., Kirsh, G. A., & Leite, C. (2010). Reactions to humorous comments and implicit theories of humor styles. *Europe's Journal of Psychology, 6*, 236-266.

- Kuiper, N. A., & Leite, C. (2010). Personality impressions associated with four distinct humor styles. *Scandinavian Journal of Psychology, 51*, 115-122.
- Leadbetter, B. J., Boone, E. M., Sangster, N. A., & Mathieson, N. A. (2006). Sex differences in the personal costs and benefits of relational and physical aggression in high school. *Aggressive Behavior, 32*, 409-419.
- Martin, R. A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in use of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. *Journal of Research in Personality, 37*, 48-75.
- Masten, A. (1986). Humor and social competence in school-aged children. *Child Development, 57*, 461-473.
- McGhee, P. E. (1974). Cognitive mastery and children's humor. *Psychological Bulletin, 81*, 721-730.
- McGhee, P. E. (1979). *Humor: Its origin and development*. San Francisco, CA: W. H. Freeman.
- Nakamoto, J., & Schwartz, D. (2010). Is peer victimization associated with academic achievement? A meta-analytic review. *Social Development, 19*, 221-242.
- Olweus, D. (1978). *Aggression in the schools: Bullies and whipping boys*. Washington, DC: Hemisphere.
- Owens, C., Daly, A., & Slee, P. (2005). Sex and age differences in victimisation and conflict resolution among adolescents in a South Australian school. *Aggressive Behavior, 31*, 1-12.
- Pellegrini, D. S., Masten, A. S., Garmezy, N., & Ferrarese, M. J. (1987). Correlates of social and academic competence in middle childhood. *Journal of Child Psychology and Psychiatry, 25*, 699-714.

- Perry, D. G., Hodges, E. V. E., & Egan, S. K. (2001). Determinants of chronic victimization by peers: A review and a new model of family influence. In J. Juvonen, & S. Graham (Eds.), *Peer harassment in school: The plight of the vulnerable and the victimized* (pp. 73-104). New York: Guilford.
- Perry, D. G., Kusel, S. J., & Perry, L. C. (1988). Victims of peer aggression. *Developmental Psychology, 24*, 807-814.
- Perry, D. G., Willard, J. C., & Perry, L. C. (1990). Peer perceptions of the consequences that victimised children provide aggressors. *Child Development, 61*, 1310-1325.
- Reijntjes, A., Kamphuis, J. H., Prinzie, P., Boelen, P. A., van der Schoot, M., & Telch, M. J. (2011). Prospective linkages between peer victimization and externalizing problems in children: A meta-analysis. *Aggressive Behavior, 37*, 215-222.
- Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies. *Child Abuse & Neglect, 34*, 244-252.
- Rose, D., & Abramson, L. (1992). Developmental predictors of depressive cognitive style: Research and theory. In D. Cicchetti & S. Toth (Eds.) *Developmental perspectives on depression* (pp. 323-349). Rochester, NY: University of Rochester Press.
- Saraglou, V., & Scariot, C. (2002). Humor Styles Questionnaire: Personality and educational correlates in Belgian high school and college students. *European Journal of Personality, 16*, 43-54.
- Schneider, B. H. (2000). *Friends and enemies: Peer relations in childhood*. London: Arnold.
- Schwartz, D., Dodge, K. A., & Coie, J. D. (1993). The emergence of chronic peer victimization in boy's play groups. *Child Development, 64*, 1755-1772.
- Schwartz, D., Gorman, A. H., Nakamoto, J., & Toblin, R. L. (2005). Victimization in the peer

- group and children's academic functioning. *Journal of Educational Psychology*, 97, 425–435.
- Sherman, L. W. (1988). Humor and social distance in elementary school children. *Humor: International Journal of Humor Research*, 1, 389-404.
- Sinnott, J. D., & Ross, B. M. (1976). Comparison of aggression and incongruity as factors in children's judgement of humor. *Journal of Genetic Psychology* 128, 241–249.
- Smith, P. K., Shu, S., & Madsen, K. (2001). Characteristics of victims of school bullying: Developmental changes in coping strategies and skills. In J. Juvonen & S. Graham (Eds). *Peer-harassment in school: The plight of the vulnerable and victimised* (pp332-351). London: Guilford Press.
- Snyder, J., Brooker, M., Patrik, M. R., Snyder, A., Schrepferman, L., & Stoolmiller, M. (2003). Observed peer victimization during early Elementary school: Continuity, growth, and relation to risk for child antisocial and depressive behavior. *Child Development*, 74, 1881-1898.
- Sweeting, H., Young, R., West, P., & Der, G. (2006). Peer victimization and depression in early-mid adolescence: A longitudinal study. *British Journal of Educational Psychology*, 76, 577–594.
- Troy, M., & Sroufe, A. (1987). Victimization among preschoolers: Role of attachment relationship history. *Journal of the American Academy of Child and Adolescent Psychiatry*, 2, 166-172.
- Tucker, R. P., Wingate, L. R., O'Keefe, V. M. O. Sligh, M. L., Judah, M. R., & Rhoades-Kerswill, S. (2013). The moderating effect of humor style on the relationship between interpersonal predictors of suicide and suicidal ideation. *Personality and Individual Differences*, 54, 610-615.
- Vernon, P. A., Martin, R. A., Schermer, J. A., & Mackie, A. (2008). A behavioral genetic

- investigation of humor styles and their correlations with the Big-5 personality dimensions. *Personality and Individual Differences*, 44, 1116-1125.
- Veselka, L., Schermer, J. A., Martin, R. A., & Vernon, P. A. (2010). Relations between humor styles and the Dark Triad traits of personality. *Personality and Individual Differences*, 48, 772-774.
- Whitney, I., & Smith, P. K. (1993). A survey of the nature and extent of bullying in junior, middle and secondary schools. *Educational Research*, 35, 3-25.
- Williams, K.R., & Guerra, N.G. (2007). Prevalence and predictors of internet bullying. *Journal of Adolescent Health*, 41, S14-S21.
- Woodhouse, S. S., Dykas, M. J., & Cassidy, J. (2012). Loneliness and peer relations in adolescence. *Social Development*, 21, 274-293.
- Yip, J. A., & Martin, R. A. (2006). Sense of humor, emotional intelligence and social competence. *Journal of Research in Personality*, 40, 1202-1208.
- Ziegler-Hill, V., Besser, A., & Jett, S. E. (2013). Laughing at the looking glass: Does humor style serve as an interpersonal signal? *Evolutionary Psychology*, 11, 201-226.
- Ziv, A. (1984). *Personality and sense of humor*. New York: Springer.

Table 1

Means (and SDs) for the total sample and males and females

	Total sample		Male	Female	<i>t(df)</i>
	<i>M(SD)</i>	<i>N</i>	<i>M(SD)</i>	<i>M(SD)</i>	
1. T1 SR Vic	1.55(0.61)	936	1.57(0.65)	1.53(0.58)	0.94(922)
2. T2 SR Vic	1.55(0.59)	808	1.59(0.65)	1.51(0.53)	1.71(799)
3. T1 PN Vic	3.76(7.27)	2061	4.81(8.51)	2.78(5.81)	4.55(1044)***
4. T2 PN Vic	4.37(8.02)	926	5.23(9.46)	3.57(6.32)	3.15(915)**
5. T1 SD	2.06(0.54)	1173	2.09(0.55)	2.03(0.52)	1.79(1156)
6. T2 SD	1.95(0.58)	990	1.97(0.66)	1.93(0.57)	1.08(979)
7. T1 Ag	2.10(0.49)	1184	2.20(0.50)	2.00(0.47)	7.03(1167)***
8. T2 Ag	2.15(0.49)	990	2.24(0.49)	2.07(0.48)	5.49(978)***
9. T1 Aff	2.94 (0.57)	1188	2.96(0.60)	2.92(0.53)	1.15(1171)
10. T2 Aff	2.96(0.57)	991	2.98(0.63)	2.95(0.52)	0.72(979)
11. T1 SEn	2.65(0.53)	1187	2.68(0.55)	2.63(0.51)	1.67(1170)
12. T2 SEn	2.62(0.57)	987	2.63(0.61)	2.62(0.55)	0.32(975)

* $p < .05$; ** $p < .01$, *** $p < .001$. SR = Self-report. PN = Peer-nomination. Vic =

victimization. SD = Self-defeating humor. Ag = Aggressive humor. Aff = Affiliative humor.

SEn = Self enhancing humor. T1 = Time 1. T2 = Time 2.

Table 2

Means (and SDs) for those children who participated at Time 1 and Time 2 and for those that took part at Time 1 only

	T1 and T2	T1 only	<i>t(df)</i>
	<i>M(SD)</i>	<i>M(SD)</i>	
T1 SR Vic	1.54(0.60)	1.59(0.70)	0.44(934)
T1 PN Vic	3.58(7.32)	4.88(6.83)	1.99(1059)*
T1 SD	2.04(0.53)	2.15(0.55)	2.81(1171)**
T1 Ag	2.07(0.47)	2.24(0.55)	4.38(1182)***
T1 Aff	2.93(0.56)	2.99(0.57)	0.17(1186)
T1 SEn	2.66(0.52)	2.62(0.59)	0.34(1185)

* $p < .05$; ** $p < .01$, *** $p < .001$. SR = Self-report. PN = Peer-nomination. Vic =

victimization. SD = Self-defeating humor. Ag = Aggressive humor. Aff = Affiliative humor.

SEn = Self enhancing humor. T1 = Time 1.

Table 3

Intercorrelations for peer victimization and humor styles at Time 1 and Time 2

	Correlations											
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. T1 SR Vic	--											
2. T2 SR Vic	.52***	--										
3. T1 PN Vic	.35***	.27***	--									
4. T2 PN Vic	.30***	.38***	.73***	--								
5. T1 SD	.34***	.30***	.15***	.13***	--							
6. T2 SD	.36***	.44***	.09**	.15***	.55**	--						
7. T1 Ag	.07*	.02	.01	.02	.14***	.07*	--					
8. T2 Ag	.02	.02	-.08*	-.08*	.15***	.20***	.50***	--				
9. T1 Aff	-.15***	-.21***	-.19***	-.23***	-.16***	-.19***	.13***	.13***	--			
10. T2 Aff	-.16***	-.26***	-.23***	-.30***	-.15***	-.29***	.11***	.14***	.62***	--		
11. T1 SEn	-.05	-.03	-.10***	-.08*	.09*	.04	.03	.05	.36***	.22***	--	
12. T2 SEn	-.06	-.07	-.08*	-.08*	.05	.02	-.01	.01	.21***	.29***	.51***	--

* $p < .05$; ** $p < .01$, *** $p < .001$. SR = Self-report. PN = Peer-nomination. Vic = victimization. SD = Self-defeating humor. Ag = Aggressive

humor. Aff = Affiliative humor. SEn = Self enhancing humor. T1 = Time 1. T2 = Time 2.

Table 4

Cross-lagged measurement models

Model	χ^2	<i>df</i>	χ^2/df	CFI	RMSEA
Model 1: SR peer victimization	2964.68***	575	5.16	.87	.058
Model 2: Model 1 with constraints	2112.18***	563	3.75	.92	.047
Model 3: PN of peer victimization	68.11***	15	4.54	.99	.054
Model 4: SR of humor styles	2515.22***	1029	2.44	.91	.034
Model 5: Model 4 with constraints	2350.82***	1023	2.30	.92	.032

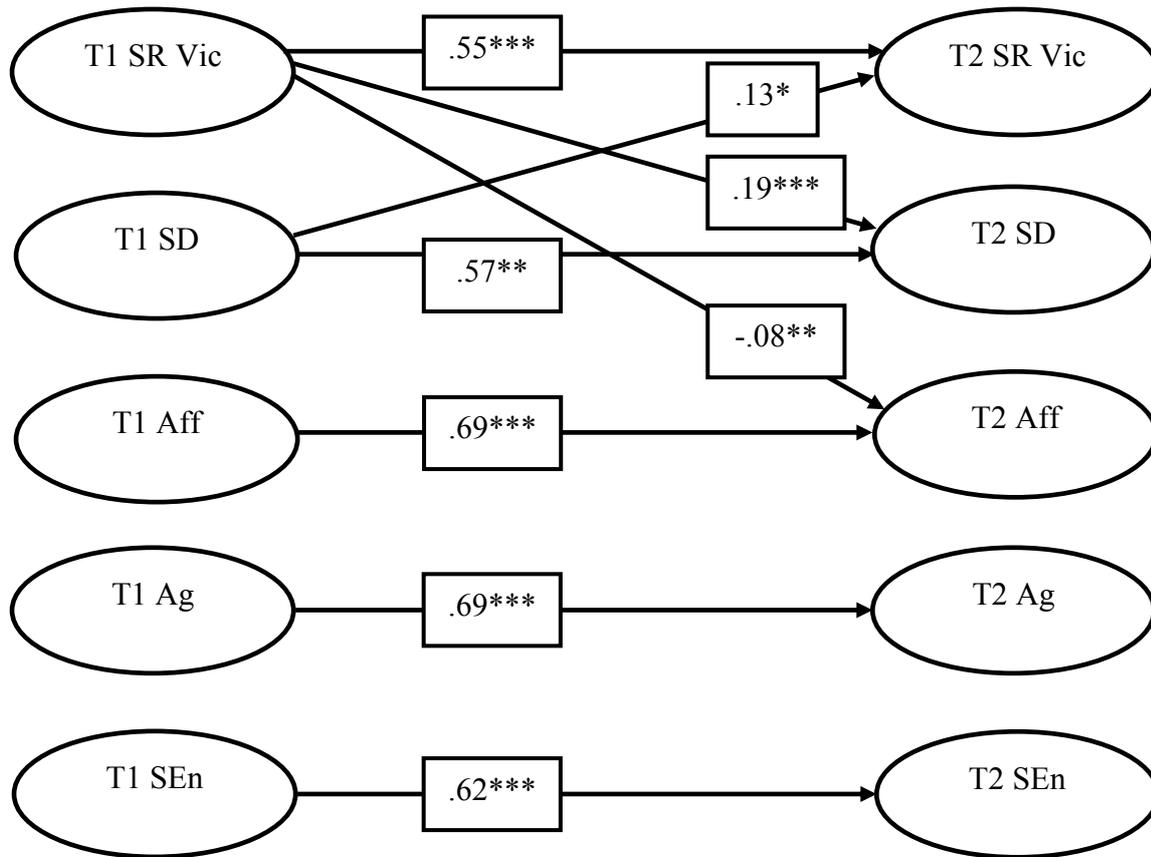
*** $p < .001$. SR = Self-report. PN = Peer-nomination

Table 5

Full cross-lagged models combining peer victimization and humor styles

Model	χ^2	<i>df</i>	χ^2/df	CFI	RMSEA
Model 6: SR peer victimization and humor	6924.25***	3298	2.10	.91	.030
Model 7: PN peer victimization and humor	2927.54***	1406	2.08	.93	.030

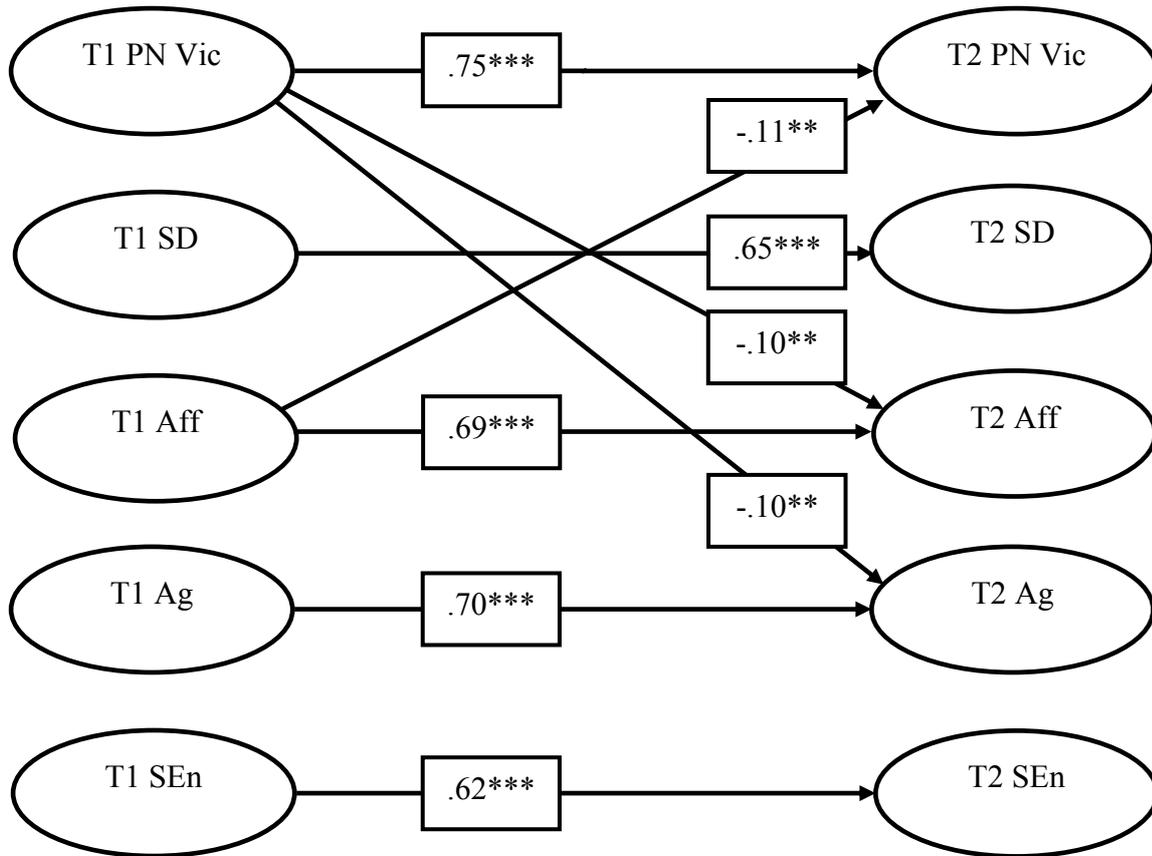
*** $p < .001$. SR = Self-report. PN = Peer nomination



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

SR Vic = self-reported peer victimization; SD = self-defeating humor; Aff = affiliative humor; Ag = aggressive humor; SEn = self-enhancing humor; T1 = Time 1; T2 = Time 2.

Figure 1. Schematic of structural model for self-reported peer victimization and humor styles (omitting error terms, indicators for latent variables and covariance paths). Only significant paths shown.



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

PN Vic = peer nominations of peer victimization; SD = self-defeating humor; Aff = affiliative humor; Ag = aggressive humor; SEn = self-enhancing humor; T1 = Time 1; T2 = Time 2.

Figure 2: Schematic of structural model for peer nominated peer victimization and humor styles (omitting error terms, indicators for latent variables and covariance paths). Only significant paths shown.