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Optimism and Pessimism as Predictors of Alcohol Use Trajectories in Adolescence

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A range of research has recognized the benefits of optimism in a variety of health-related outcomes. Pessimism has received less attention but may be a distinct concept that is uniquely related to certain health behaviors, including drug use. The present study examined relationships between optimism and pessimism and alcohol use trajectories of adolescents using latent growth modeling. Results suggest that optimism was negatively associated with alcohol use at age 14, but pessimism was negatively associated with alcohol use at that age for boys. Findings illustrate the importance of perceptions about the future to patterns of alcohol use at younger ages.

KEYWORDS adolescents, alcohol, optimism, pessimism

INTRODUCTION

Adolescence is a key developmental period during which many individuals initiate alcohol use (Chassin, Flora, & King, 2004). During this period, alcohol use commonly increases systematically with age, peaking in "young adulthood" as individuals acquire increased autonomy (Bachman, Wadsworth, O'Malley, Johnston, & Schulenberg, 1997; Johnston, O'Malley, & Bachman, 1999). However, considerable individual variation exists in the "trajectories" of alcohol use across adolescence (Curran, Stice, & Chassin, 1997; Hussong, Curran, & Chassin, 1998),

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and certain trajectories may be related to the development of alcohol-related problems and other negative consequences. Past studies have identified one particular trajectory, characterized by early initiation of use and rapid escalation (Chassin et al., 2004; Chassin, Pitts, & Prost, 2002), that appears to be associated with later alcohol use-related diagnoses (Colder & Chassin, 1999; Hill, Shen, Lowers, & Locke, 2000; Muthén & Shedden, 1999). Identifying predictors of these particularly hazardous alcohol use patterns is important and can provide useful information concerning the etiology of alcohol use-related disorders.

A number of risk factors related to the development of hazardous adolescent alcohol use patterns have been identified. These include parental alcoholism (Chassin et al., 2002; Dawson, 2000; Hussong et al., 1998), externalizing problems (Sher, 1991), disinhibition and risk taking (Bennett, McCrady, Johnson, & Pandina, 1999; Colder, Campbell, Ruel, Richardson, & Flay, 2002; Hill et al., 2000), and negative affectivity (Chassin et al., 2002; Colder et al., 2002; Colder & Chassin, 1999; Petraitis, Flay, & Miller, 1995; Sher, 1991). Similarly, optimism and pessimism may be two factors that affect adolescent alcohol use initiation and trajectory.

Extensive evidence suggests that one's expectations about the future have the potential to drive behavior in the present (Solberg Nes & Segerstrom, 2006). Scheier and Carver's (1985) model of optimism suggests that it is a "trait-like" tendency to appraise the future from the perspective that desired outcomes are likely to be realized, whereas pessimism involves a "trait-like" tendency to hold negative expectations about the future. As such, optimistic individuals may actively seek positive experiences and outcomes, while pessimists may avoid goal-directed activities because of negative expectations (Thompson & Gaudreau, 2008). Although Scheier, Carver, and Bridges (2001) suggested optimism and pessimism represent opposite ends of a single dimension, recent research has demonstrated that they may actually be distinct constructs with differing relationships to various phenomena (Creed, Patton, & Bartrum, 2002; Kubzansky, Kubzansky, & Maselko, 2004; Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992).

An extensive literature provides a number of useful insights about the benefits of optimism. High optimism is generally associated with improved health outcomes in recovery from illness or surgery (Barnum, Snyder, Rapoff, Mani, & Thompson, 1998; Scheier et al., 1989; Schulz, Bookwala, Knapp, Scheier, & Williamson, 1996), lower overall blood pressure (Raeikkoenen, Matthews, Flory, Owens, & Gump, 1999), and improved immune function (Segerstrom, Taylor, Kemeny, & Fahey, 1998). Individuals with high optimism are also more likely to engage in preventative health behaviors (Lin & Peterson, 1990; Park, Moore, Turner, & Adler, 1997; Taylor et al., 1992) and report an improved sense of overall physical well-being (Scheier & Carver, 1985). In addition to these health-related benefits, optimism may also act as a buffer against negative mood states (Bromberger & Matthews, 1996; Carver & Gaines, 1987) and the impact of stressful life events (Aspinwall & Taylor, 1992; Brissette, Scheier, & Carver, 2002; Chang & Sanna, 2001).

On the other hand, optimism may have negative effects. In particular, self-control theory suggests that optimists believe that their life can be improved by exerting effort (rather than disengaging) and may pay less attention to situational risks, thereby promoting involvement in risky behavior in some domains (Gibson & Sanbonmatsu, 2004; Tennen & Affleck, 1987; Weinstein, 1980). However, the findings from studies examining such a possibility have reached mixed conclusions. In financial domains, for example, high optimism has indeed been associated with more risky investment decisions and increased gambling (Gibson & Sanbonmatsu, 2004). Likewise, Taylor and colleagues (1992) found that high optimism was related to lower perception of HIV risk among men who have sex with men, but there was no difference between those high in optimism and pessimism and actual protective behaviors. In contrast, *low* optimism has also been associated with increased likelihood of engaging in risky sexual behavior (Somlai et al., 2000) and consumption of alcohol and drugs (Alterman, Cacciola, Dugosh, Ivey, & Coviello, 2010; Harju & Bolen, 1998). Less information is available concerning relationships between pessimism and substance use, but some studies have examined associations between pessimism and similar domains of behavior. Chapin (2001), for example, found no association between high pessimism and various risk behaviors. However, Adler and colleagues (2000) found relationships between high levels of pessimism and various adverse health and socioeconomic indicators. In addition, Smith and Fogg (1978) found that high pessimism was related to marijuana use. To our knowledge, no studies have yet evaluated associations between pessimism and alcohol use among adolescents.

Taken together, relevant research highlights the importance of examining factors that may influence potentially hazardous alcohol use patterns in adolescence, and optimism and pessimism are two such factors. Thus, the current study examined the associations between optimism and pessimism on alcohol use trajectories of adolescents. Limited research conducted on these factors and their associations with global levels of alcohol use suggests that low optimism may be associated with increased use. Thus, we hypothesized that optimism may be negatively associated with alcohol use at younger ages and with use trajectories over the adolescent years. Given its association with use of other drugs (Smith & Fogg, 1978), we additionally hypothesized that pessimism would be positively related to alcohol use at younger ages and with more rapid escalation of alcohol use over the adolescent years.

METHODS

Data

The data for this analysis come from the National Longitudinal Study of Youth 1997 (NLSY97). The NLSY97 is a study of 8,984 youths who, as of December 31, 1996, ranged in age from 12 to 16. The nationally-representative sample consists of 6,748 youths and an over-sample of 2,236 Hispanic and

non-Hispanic black youths. During the initial NLSY97 screening, there were 9,806 individuals sampled, resulting in a 91.6% response rate at baseline. The current analysis was limited to ages 14 to 18 in order to examine growth across adolescence. This can represent a problem because ages vary on each sampling time point across the five-year study. Thus, the data were rearranged by age rather than by wave. For example, 12-year-olds across all time points were aggregated by age. This reduced confounds in drinking growth across sampling time points.

Participants

The analytic sample included participants who ranged in age from 14 to 18 years and had data for relevant optimism and pessimism items, which was not collected for all participants. Thus, the final sample included 5,375 participants (59.86% of the total sample). The analysis sample was 48.50% ($N = 2,607$) female. Fifty-two percent ($N = 2,807$) of the sample were white, 25.51% ($N = 1,371$) black/non-Hispanic, 21.32% ($N = 1,146$) Hispanic, and 0.95% ($N = 51$) mixed race/non-Hispanic.

Measures

Alcohol use was measured at each time point by three items: frequency of alcohol use in the past 30 days (frequency), average number of drinks per day over the past 30 days (quantity), and number of days in the past 30 days in which 5 or more drinks were consumed in a single occasion.

Optimism/pessimism was assessed by two statements administered at a single time point: *"I'm always optimistic about my future,"* and *"I rarely count on good things happening to me."* All responses were recorded on a 4-point scale (1= strongly disagree and 4 = strongly agree). Although these constructs were assessed using single items, several authors have suggested that single-item measures can be sufficient for relatively unambiguous concepts (Wanous & Hudy, 2001).

Data Handling and Analysis

Analyses were conducted in Mplus 6.12 (Muthén & Muthén, 2011). Parameter estimates were derived using maximum likelihood estimation with robust standard errors (MLR). MLR estimation is a full-information maximum likelihood (FIML) estimator that is robust to non-normality and non-independence of observations (Raykov, 2005). Standard errors were estimated using a sandwich estimator (White, 1980). Difference testing utilized the Satorra-Bentler χ^2 difference test (Satorra & Bentler, 2001). MLR estimation is appropriate with missing data that are, at the very least, missing at random (MAR; Enders, 2001; Enders & Bandalos, 2001). Due to complex sampling procedures, a custom sampling weight based on all available participants across the five

waves of data was utilized. To evaluate our hypotheses, we utilized a multigroup latent growth curve model in which optimism and pessimism were used to predict the latent intercept and slope of alcohol use.

RESULTS

Descriptive Statistics

The average frequency of alcohol use in the past 30 days was 0.95 days ($SD = 2.82$) at age 14, 1.36 days ($SD = 3.41$) at age 15, 1.74 days ($SD = 3.84$) at age 16, 2.76 days ($SD = 5.13$) at age 17, and 3.27 days ($SD = 5.48$) at age 18. Average quantity of alcohol use in the past 30 days was 1.03 drinks ($SD = 3.93$) at age 14, 1.51 drinks ($SD = 4.83$) at age 15, 1.99 drinks ($SD = 5.42$) at age 16, 2.56 drinks ($SD = 6.08$) at age 17, and 2.84 drinks ($SD = 6.21$) at age 18. The average number of days in the past 30 days in which participants had 5 or more drinks was 0.36 days ($SD = 1.60$) at age 14, 0.58 days ($SD = 2.05$) at age 15, 0.81 days ($SD = 2.40$) at age 16, 1.30 days ($SD = 3.39$) at age 17, and 1.53 days ($SD = 3.70$) at age 18. All alcohol use indicators were positively correlated across all ages, ranging from $r = 0.23$ to 0.58, $p < 0.01$.

Optimism was negatively correlated with pessimism, $r = -0.037$, $p < 0.01$. Optimism was also positively associated with gender such that females tended to have higher optimism scores, $r = 0.041$, $p < 0.01$.

Model Estimation

As a first step, we estimated a measurement model with three alcohol use indicators—frequency, quantity, and frequency of binge drinking—predicted from latent variables at each age. Examination of modification indices suggested correlated residuals between several of the indicators within each time point. These parameters were freed and the model was reestimated. The model fit the data well, $\chi^2(242) = 565.31$, $p < .05$, CFI = 0.95, TLI = 0.95, RMSEA = 0.02 (90% CI: 0.02–0.03). Next, we estimated the latent growth curve of alcohol use over time from the latent alcohol use variables at each age. All intercept parameters were fixed to 1, and slope parameters were fixed to 0 for age 14, 1 for age 15, 2 for age 16, 3 for age 17, and 4 for age 18. Again, this model fit the data well, $\chi^2(270) = 705.50$, $p < .05$, CFI = 0.94, TLI = 0.94, RMSEA = 0.01 (90% CI: 0.02–0.03). Then, we evaluated whether a linear or quadratic curve offered the best fit to the data. The quadratic slope fit significantly better than the linear-only slope (Satorra & Bentler, 2001; $\Delta\chi^2(8) = 33.46$, $p < .001$), thus we retained the quadratic slope in the full model. Finally, to evaluate the study hypotheses, we predicted the latent intercept, linear slope, and quadratic slope by optimism and pessimism, grouping by gender. Depicted in Figure 1, the full model successfully converged with an admissible solution and fit the data well, χ^2 (252) = 641.98, $p < .05$, CFI = 0.94, TLI = 0.94, RMSEA = 0.024 (90% CI: 0.022–0.026), SRMR = 0.05. For

boys, pessimism was positively related to the latent alcohol use intercept ($\beta = 0.07$, $p < .05$), while optimism was negatively associated with the intercept ($\beta = -0.02$, $p < .001$). These results suggest that those who have more positive expectations of the future report lower levels of use at age 14, while those with more negative future perspectives report higher levels of use at that age. For girls, optimism was also negatively related to the latent alcohol use intercept ($\beta = -0.02$, $p < .001$), suggesting that those with more positive future perspectives report lower levels of alcohol use at age 14.

DISCUSSION

This study used a multiple group, multiple indicator latent growth model to investigate the associations between optimism and pessimism in adolescent alcohol use trajectories. It was hypothesized that optimism would be negatively associated with use at younger ages and with use trajectory over the

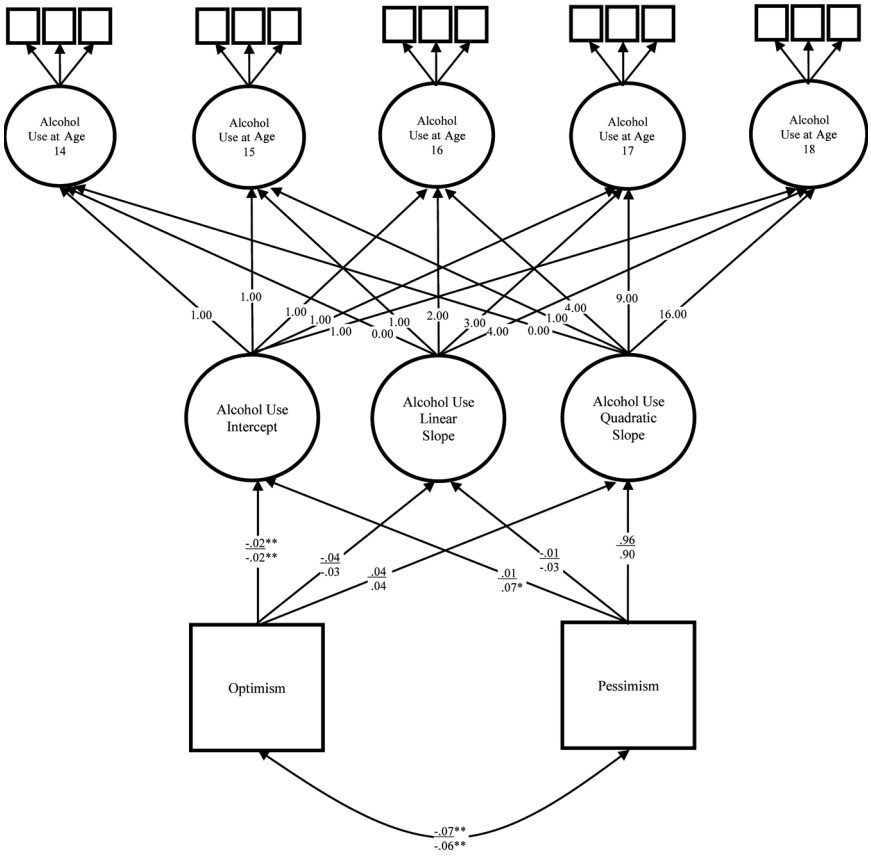

FIGURE 1 Optimism and pessimism as predictors of adolescent alcohol use trajectory by gender. *Notes.* *$p < .05$. **$p < .001$. All values are standardized coefficients. Path coefficients that were allowed to vary across gender are depicted with females above and males below the horizontal lines.

adolescent years. It was also hypothesized that pessimism would be positively associated with use at younger ages and with more rapid escalation in use over adolescence. These hypotheses were partially supported, as both optimism and pessimism exhibited expected effects on the intercept. However, neither was related to the *trajectory* of alcohol use across adolescence. Each of these findings is discussed in turn.

Consistent with previous research (Reilley, Geers, Lindsay, Deronde, & Dember, 2005), optimism was modestly negatively correlated with pessimism. Given this modest relationship, such a finding may lend more weight to the conclusion that optimism and pessimism are distinct concepts with unique relationships with variables of interest. Although previous studies have yielded mixed results (Extremera, Durán, & Rey, 2007; Reilley et al., 2005), optimism was associated with gender in our findings, such that girls tended to be generally higher in optimism than boys, suggesting that boys' and girls' views of the future are not always congruent.

For boys, both optimism and pessimism significantly predicted the latent alcohol use intercept. This intercept represents an estimate of the average level of alcohol use (based on a linear combination of the three alcohol use indicators) at age 14. As such, optimism was negatively, and pessimism positively, associated with alcohol use at age 14. This suggests that those higher in optimism are less likely to report having initiated alcohol use at age 14, while those higher in pessimism are more likely to report alcohol use at this age. Thus, as hypothesized, those boys with more negative expectations about the future may be more likely to report heavier use at younger ages, while those with positive future perspectives report less use at younger ages. This hypothesis partially held true for girls, however, as only optimism was negatively associated with the latent alcohol use intercept. Such a result suggests that those girls who are higher in optimism report less frequent alcohol use, less overall quantity, and fewer binge-drinking occasions at age 14. Thus, those girls who have a more positive outlook on the future may report less alcohol use at younger ages. Since there were no effects on the linear or quadratic slopes for either optimism or pessimism for either gender, associations between these predictors and the latent intercept associations result in a net change in alcohol use across adolescence. That is, for both boys and girls, the negative relationship between optimism and the latent intercept suggests that individuals who are higher in optimism consume alcohol less frequently, in less quantity, and binge-drink less across adolescence relative to those low in optimism. Likewise, boys higher in pessimism consume more drinks on more occasions and binge-drink more across adolescence relative to those low in pessimism. Thus, these associations illustrate the potential importance of one's expectations and perceptions about the future in understanding patterns of adolescent alcohol use. Furthermore, this represents one potential avenue of intervention which may have long-lasting effects across adolescence and into young adulthood. For example, these findings suggest that the use of positive psychology for adolescent substance users may have lasting impacts on substance use behavior across adolescence.

Several limitations of the current study should be noted. First, although the data were collected from a large, nationally-representative sample of youths, the data set is now 14 years old. As such, the results of this study may not generalize to the current generation of youths. Second, the optimism and pessimism constructs used in the current study were measured by single items with unknown psychometric properties. Future studies examining relationships among optimism, pessimism, and alcohol use trajectories would benefit from utilizing more comprehensive measures of optimism and pessimism. Finally, although the current study is examining predictors of problematic alcohol use patterns, causal inferences cannot be made with this nonexperimental design.

The current study contributes to the existing knowledge of factors associated with alcohol use patterns in adolescents, and to date, is the first study to examine the role of optimism and pessimism in the trajectory of alcohol use through adolescence to young adulthood. The results of this study affirm the importance of examining pessimism and optimism in individuals approaching adolescence and add to knowledge of important predictors of emergent alcohol use patterns. Identifying these predictors is useful for identifying at-risk individuals for focused prevention efforts.

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