PREDICTING PROBLEM BEHAVIORS WITH MULTIPLE EXPECTANCIES: EXPANDING EXPECTANCY-VALUE THEORY

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ABSTRACT

Expectancy-value theory emphasizes the importance of outcome expectancies for behavioral decisions, but most tests of the theory focus on a single behavior and a single expectancy. However, the matching law suggests that individuals consider expected outcomes for both the target behavior and alternative behaviors when making decisions. In this study, we expanded expectancy-value theory to evaluate the contributions of two competing expectancies to adolescent behavior problems. One hundred twenty-one high school students completed measures of behavior problems, expectancies for both acting out and academic effort, and perceived academic competence. Students’ self-reported behavior problems covaried mostly with perceived competence and academic expectancies and only nominally with problem behavior expectancies. We suggest that behavior problems may result from students perceiving a lack of valued or feasible alternative behaviors, such as studying. We discuss implications for interventions and suggest that future research continue to investigate the contribution of alternative expectancies to behavioral decisions.

According to expectancy-value theory, individuals choose behaviors based on the outcomes they expect and the values they ascribe to those expected outcomes. Expectancies, or anticipations of likely consequences for a given action, result from individuals’ learning history and then become the basis for future behavioral choices (Del Boca et al., 2002). Empirical support for this theory includes studies of such diverse behaviors as aggression (Perry, Perry, & Rasmussen, 1986; Slaby & Guerra, 1988), alcohol consumption (Del Boca et al., 2002), and academic performance (see Wigfield & Eccles, 2000). Across the board, expectations of greater reinforcement relate to more of the target behavior.

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Nevertheless, research on expectancy-value theory is often limited by a focus on a single behavior and its accompanying expectancies. In studying aggression, for example, researchers generally examine only aggression behaviors and no alternatives to aggression. However, decisions about behavior are rarely this simple. Instead, individuals usually choose from several alternative behaviors in any given situation and therefore compare various expectancies. For instance, aggression expectancies likely compete with expectancies for more prosocial behaviors (e.g., talking with the provoker or getting outside help) in determining behavior choice. Cognitive theories of behavioral choice rarely address this problem of multiple behaviors.

Applied behavior analysis suggests the matching law, which does account for competing behaviors. In his original formulation of the matching law, Herrnstein (1961, 1970) suggested that any given behavioral decision arises from reinforcement for that behavior as well as reinforcement for alternative behaviors. As reinforcement for alternative behaviors increases, performance of the target behavior decreases. Likewise, environments that do not provide alternative reinforcement promote an increase in the target behavior. Although initial studies of this phenomenon focused on animals (for reviews, see Davison & McCarthy, 1988; de Villiers, 1977), researchers now successfully apply the matching law to understanding human alcohol consumption (Vuchinich, 1995) and students' behavior in special education settings (Martens & Houk, 1989; Neef et al., 1992).

The matching law may provide an important contribution to expectancy-value theory (and other cognitive models of behavior choice). Specifically, individuals may make a behavioral decision based on anticipated reinforcement for that behavior as well as anticipated reinforcement for competing, alternative behaviors. In a previous investigation of multiple expectancies, Levy and Earleywine (2003) examined the relations between alcohol use expectancies, studying expectancies, and drinking problems in college students. For students with high alcohol use expectancies, high studying expectancies were associated with fewer perceived drinking problems than were low studying expectancies. In other words, positive studying expectancies attenuate the effect of positive alcohol use expectancies and may buffer against drinking problems. By contrast, students with low alcohol use expectancies did not report drinking problems, regardless of competing expectancies. Besides providing a more complex understanding of drinking behavior, discovering the influence of alternative expectancies also suggests new interventions for drinking problems.

In this study, we examined multiple expectancies to better understand the problem behavior of high school students. Instead of focusing
on drinking behavior, which is typically studied with college populations, we examined general acting-out behavior. Most problem behavior measures for children and adolescents include externalizing (e.g., hitting, throwing things, yelling) and hyperactivity (e.g., trouble sitting still, interrupting) problems. High scores on these scales generally suggest conduct problems, school misbehavior, and poor academic functioning (Achenbach, 1999). In addition, both student self-reports and adult reports correlate with more objective measures of delinquent behavior (Hinshaw et al., 1995; Vazsonyi et al., 1999). We therefore defined problem behaviors as adolescents’ self-reports of their externalizing and hyperactive behaviors.

We predicted that problem behaviors would be related to positive expectancies about misbehaving. Adolescents who expect some benefit (e.g., being popular, exercising power over peers, avoiding unpleasant academic demands) from acting out are more likely to engage in problem behavior. Allen and colleagues (1990) found that high school students’ expectancies about delinquent behavior correlate with self-reported levels of delinquency, hard drug use, and unprotected sexual activity. Moreover, aggressive adolescents report positive aggression expectancies more often than their nonaggressive peers (Slaby & Guerra, 1988). Specifically, aggressive adolescents expect that aggression will increase self-esteem and help avoid a negative image with peers. In work with younger children, Perry and colleagues (1986) found that aggressive children expect aggression to yield tangible rewards and end aversive behaviors by the victim. Furthermore, myriad research on college student drinking behavior suggests that drinkers report higher expectations of relaxation and increased sociability (Del Boca et al., 2002). Finally, behavioral researchers suggest that tangible rewards, peer attention and approval, and avoidance of aversive tasks or people are common reinforcers for classroom misbehavior (Witt, Elliott, & Gresham, 1988). We therefore expected that adolescents’ problem behavior would relate to positive expectancies about the consequences of misbehaving.

In line with previous research, we also predicted that problem behavior would covary with expectancies for alternative behavior. Clearly, a competing set of expectancies involves the anticipated consequences of studying and doing schoolwork. Adolescents who expect positive consequences of working hard in class and completing homework may have more reasons to resist misbehaving in class and getting into fights with peers. This association should exist especially for adolescents who also report high problem behavior expectancies. Based on many years of research, Eccles and colleagues suggest that anticipated reinforcement for academic-related behavior predicts students’ perseverance.
and intentions to keep taking a class (Eccles [Parsons], Adler, & Meece, 1984; Meece et al., 1990; Pajares, 1996; Schunk, 1995; Wigfield & Eccles, 2000). Related work suggests that positive expectations about the future relate to fewer problem behaviors (Dubow et al., 2001). However, Eccles also suggests that perceived academic competence predicts academic performance and constitutes a related but separate construct from expectancies (Eccles et al., 1993; Eccles & Wigfield, 1995; also see Pajares, 1996). Moreover, self-efficacy researchers repeatedly show that perceived competence negatively correlates with behavior problems (Bandura, 1997; Bandura et al., 1999). We therefore predicted that high perceived academic competence and positive academic expectancies would be associated with fewer problem behaviors.

In sum, we examined three cognitive factors in the prediction of adolescent self-reported problem behavior. We hypothesized that problem behavior would be related to high problem behavior expectancies and low perceived academic competence and academic outcome expectancies. Moreover, we expected that problem behavior expectancies and academic outcome expectancies would interact. Specifically, adolescents with high problem behavior expectancies and low academic expectancies should exhibit high levels of problem behavior, as they perceive few valued alternatives to misbehaving. Adolescents with high behavior problem and high academic expectancies, on the other hand, expect to receive alternative reinforcement by studying rather than misbehaving and therefore should exhibit lower levels of problem behavior. In contrast, adolescents who expect little from misbehaving should report few problem behaviors, regardless of competing expectancies. These findings would further demonstrate the value of extending expectancy-value theory to multiple expectancies.

METHOD

Participants and Procedure

Participants were 121 high school students from a public high school in a multiethnic urban community to the east of Los Angeles. According to 2000 U.S. Census data, the average family in this community earned a yearly income of $32,402. Across the district, 77% of the students are Latino-American, 16% are Asian-American, 4% are Caucasian-American, and less than 1% are African-American (California Department of Education, 2002). The school in this study earned an API (Academic Performance Index) score of 3, indicating below average performance on national and state-wide standardized tests.
All participants were current students of four English teachers who had agreed to participate in a related research study (the larger research study involved training high school teachers in functional assessment procedures and is reported elsewhere; there was no overlap in measures between these two studies). One teacher taught all 9th graders, another two taught only 11th and/or 12th graders, and the fourth teacher taught students in all grades. The teachers had a range of 3 to 30 years teaching experience, and all of them had a master's level education. Students completed the measures either during a single class period or during lunch. The packet of measures took students approximately 30 minutes to complete. Approximately 80% of the participants provided demographic information. Students' mean age was 16 years ($SD = 1.22$, range = 14–18). Eighty-four percent of the students identified themselves as Latino-American, another 12% as Asian-American, and 4% as Caucasian-American. Sixty-two percent were female.

**Measures**

**Problem behaviors.** Participants completed the Problem Behaviors subscale of the Social Skills Rating Scale (SSRS; Gresham & Elliott, 1990). The SSRS is a nationally standardized questionnaire that measures a range of classroom behaviors, social skills, and academic competence. This measure correlates with other well-known problem behavior checklists and adequately discriminates between behavior disordered, emotionally disturbed, and nonhandicapped students (Gresham & Elliott, 1990; Stinnett, Oehler-Stinnett, & Stout, 1989). The Problem Behaviors subscale consists of 18 items that assess externalizing (“fight with others”), internalizing (“feel lonely”), and hyperactivity (“am easily distracted”) problems. Students indicated how often they engage in the behaviors (never, sometimes, or very often). Summing the items created a total score, with higher scores reflecting more behavior problems. Because we were not interested in internalizing symptoms, we summed only the 6 externalizing and 6 hyperactivity items. Internal consistency for this variable was .74.

**Perceived academic competence.** Students also completed the 9-item Academic Competence subscale of the SSRS, which assesses students' beliefs about their overall academic performance, motivation, behavior, and ability in reading and mathematics. For each item, students ranked themselves in the lowest 10% of the class, bottom 20%, middle 40%, highest 20%, or highest 10%. A summed total score indicated higher perceived competence. Internal consistency for this subscale was .74.
Academic expectancies. Students completed a 23-item measure of academic expectancies, adapted from the Studying Expectancies Questionnaire (Levy & Earleywine, 2003). We rewrote several items from the original measure in language appropriate for high school students. The measure assessed expectancies about the positive potential consequences of completing school work, such as going to college and getting a good job, feeling fulfilled, pleasing parents and teachers, and earning the respect of other students. The original measure correlated .43 with amount of study time in college students (Levy & Earleywine, 2003). Students responded to the questions on a 4-point Likert scale (not at all, a little, some, a lot). Higher summed scores indicated more positive expectancies about the benefits of paying attention and completing work. Internal consistency for this measure was .71.

Problem behavior expectancies. Participants also completed a measure of problem behavior expectancies developed for this study. This 19-item questionnaire measured expectancies about the potential consequences of “goofing off” and not paying attention in class. Positive consequences included peer approval, avoiding work, and having more fun in class. Negative consequences included getting into trouble and feeling guilty. Students again responded to each question on a 4-point scale. Higher summed scores reflected more positive expectancies about the consequences of misbehaving. This measure has good internal consistency (coefficient alpha = .90).

RESULTS

All variables met assumptions for normality. Based on the $p < .001$ criterion for Mahalanobis distance (Tabachnick & Fidell, 2001), three cases were identified as multivariate outliers and were therefore excluded from analyses. Boys and girls did not differ statistically on any variable, so we provide only means for the entire sample. The means for problem behaviors and perceived academic competence were 7.15 ($SD = 3.64$) and 30.69 ($SD = 4.59$), respectively. According to percentile ranks from normative data for the SSRS, students in this sample reported higher than average behavior problems and lower than average academic competence (Gresham & Elliott, 1990). The means for academic expectancies and problem behavior expectancies were 49.23 ($SD = 6.95$) and 22.38 ($SD = 11.50$, respectively.

The intercorrelations between all variables appear in Table 1. As hypothesized, adolescents’ problem behavior related to more positive expectancies about misbehaving. In addition, problem behavior was
associated with lower perceived academic competence and academic expectancies.

We next conducted a hierarchical regression analysis predicting problem behaviors from perceived academic competence, problem behavior expectancies, academic expectancies, and the interaction of these two expectancies. We entered them sequentially in this order to determine whether the individual expectancies and their interaction contributed to the prediction after controlling for perceived academic competence. We entered gender first to control for possible differences in boys’ versus girls’ behavior or expectancies. However, gender made no contribution to the explained variance of either dependent variable, so we excluded it from the final analyses.

The complete model accounted for 17% of the total variance in problem behaviors, $F(4, 113) = 7.51, p < .001$ (see Table 2). Perceived academic competence, entered first, accounted for almost half of the explained variance. Problem behavior expectancies, entered second, contributed some variance, although the test fell short of significance, $F(1, 116) = 3.67, p = .058$. Academic expectancies contributed a large amount of additional variance, independent of the other cognitive factors. Finally, the interaction between problem behavior and academic expectancies accounted for no additional variance.

DISCUSSION

In this study, we expanded traditional expectancy-value theory to examine the contribution of two competing expectancies. Consistent with our hypotheses, we found that behavior problems related to higher expectancies about problem behaviors and lower perceived academic competence and academic expectancies. However, regression analyses indicated that only academic competence and academic expectancies explained a significant amount of variance in problem behaviors. Moreover, academic expectancies did not moderate the association between problem behavior expectancies and problem behaviors. It appears, then, that students do not misbehave in complete accordance with their expectancies for misbehavior. Rather, students’ misbehaving stems predominately from expected outcomes for academic-related behaviors.

This association between behavior problems, academic expectancies, and perceived academic competence constitutes an important finding for the literature. Notably, academic expectancies significantly correlated with behavior problems, even after controlling for perceived com-
### Table 1
Correlation Matrix for All Variables (N = 118)

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<thead>
<tr>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>1. Problem behaviors</td>
<td>-</td>
<td>-.39**</td>
<td>-.36**</td>
<td>.18*</td>
</tr>
<tr>
<td>2. Perceived academic competence</td>
<td>-</td>
<td>.26**</td>
<td>-.05</td>
<td></td>
</tr>
<tr>
<td>3. Academic expectancies</td>
<td>-</td>
<td>-</td>
<td>-.13</td>
<td></td>
</tr>
<tr>
<td>4. Problem behavior expectancies</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05, **p < .01

### Table 2
Hierarchical Regression of Perceived Competence and Expectancies on Problem Behaviors (N = 118)

<table>
<thead>
<tr>
<th></th>
<th>Standardized β</th>
<th>Incremental $r^2$</th>
<th>Incremental $F$ (df)</th>
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<tbody>
<tr>
<td>Perceived academic competence</td>
<td>-.21*</td>
<td>.08</td>
<td>9.98 (1, 115)**</td>
</tr>
<tr>
<td>Problem behavior expectancies</td>
<td>.13</td>
<td>.03</td>
<td>3.67 (1, 116)*</td>
</tr>
<tr>
<td>Academic expectancies</td>
<td>-.25**</td>
<td>.06</td>
<td>7.79 (1, 114)**</td>
</tr>
<tr>
<td>Interaction between problem behavior and academic expectancies</td>
<td>.04</td>
<td>.00</td>
<td>.66 (1, 113)</td>
</tr>
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Complete model: $R = .41$, $R^2 = .17$, Adjusted $R^2 = .14$, $F(4, 113) = 5.64**$

*p < .10, *p < .05, **p < .01
petence and problem behavior expectancies. Of course, because these results are correlational, we cannot determine the causal direction of this relationship. Perhaps a history of behavior problems leads to academic difficulties, resulting in low perceived competence and few expectations about the benefits of academic effort. On the other hand, students with low perceived competence and academic expectancies might see little reason to choose working in class over talking with friends. As the matching law suggests, if students expect little reinforcement for alternative behaviors (e.g., completing their work), they are more likely to misbehave.

In our results, problem behavior expectancies did not significantly predict behavior problems. In addition, students in this sample reported high amounts of problem behaviors but few positive expectancies for misbehavior. We suggest, therefore, that students may engage in problem behavior even though they do not expect this behavior to work for them. Instead, students might engage in problem behaviors because they do not perceive valued alternative options.

This conclusion, as well as the importance of perceived competence and academic expectancies, suggests new directions for interventions. Existing programs aim to increase students’ perceived competence and subsequent academic performance through teaching new skills and providing students with the experience of academic success (for a review, see Schunk & Ertmer, 2000). We suggest, in addition, that increasing perceived competence may also lead to decreased behavior problems. Presumably, students who gain a sense of academic competence will have more reasons to complete their schoolwork and behave well in school.

Increasing students’ academic expectancies seems equally important. If students come to expect that academic achievement produces benefits, they may start to see valuable alternatives to not working and their problem behaviors may decrease. Increasing students’ expectations about academic achievement, therefore, may constitute an alternative to more traditional behavioral approaches to adolescent behavior problems. Further research can investigate whether interventions for behavioral problems should include components that enhance academic expectancies.

In this study, we relied exclusively on self-report data, allowing for the possibility of common method variance. Our results argue against this conclusion, however, as not all variables covary with each other. Indeed, method variance would predict a different pattern of regression results. It is also possible that students provided inaccurate representations of their own behavior problems. Unfortunately, parents, teach-
ers, and children rarely agree on child problems (Yeh & Weisz, 2001), leaving researchers to decide between various imperfect methods of assessment. For this study, we cared most about obtaining students’ perceptions of their misbehavior. The potential impact of expectancies likely requires the cognitive capacity to evaluate one’s behavior and potential consequences; adolescents with no insight into their misbehavior might have other factors at work. Fortunately, research does suggest that students’ self-reports of antisocial behavior correlate with both laboratory observations and official records (Hinshaw et al., 1995; Vazsonyi et al., 1999). That said, our conclusions would be strengthened by multi-method measurements. Future studies should try to include both subjective and objective measures of problem behaviors.

Another limitation is that the results are correlational, preventing causal conclusions. Longitudinal studies would address this problem, as would interventions designed to increase perceived competence and outcome expectancies. In addition, we measured expectancies using questionnaires developed or adapted for this study. Although this was necessary, due to the lack of pre-existing measures in the field, these measures lack established psychometrics. Nevertheless, internal consistency of these measures was good and their associations fit the matching law. We hope continued effort is undertaken to validate these or other measures of expectancies. Finally, because we sampled from a high school population of predominantly Latino-American students, the results might generalize only to adolescent students of this ethnicity. Moreover, these results could differ with students of either higher or lower intellectual abilities. Researchers should further investigate the relationship between problem behaviors, academic outcome expectancies, and perceived competence in elementary students as well as students with varied ethnicities, intellectual abilities, and psychosocial functioning.

Despite these limitations, this study contributes some important findings to the field. First, perceived academic competence and academic outcome expectancies may be important determinants of problem behaviors. Therefore, efforts to improve behavior should work to increase students’ sense of competence and the value they ascribe to academic success, instead of focusing solely on punishing problem behaviors. We suggest that students who perceive valued and feasible alternatives to acting out will exhibit fewer problem behaviors and more academic achievement. Finally, this study demonstrates the value of including alternative expectancies in studies of behavior choice. Expectancy-value and other cognitive theories of behavior choice are limited by their focus on single expectancies. Expanding
these theories, with the help of the matching law, may lead to other important findings about the complexities of behavioral decisions.

REFERENCES


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