

Extrinsic Life Goals and Health-Risk Behaviors in Adolescents¹

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Guided by self-determination theory (Deci & Ryan, 1985), two studies examined adolescents' risk behaviors as a function of their extrinsic aspirations for wealth, fame, and image relative to their intrinsic aspirations for growth, relationships, and community; and as a function of their perceptions of their parents' autonomy support. In the first study, adolescents who reported using cigarettes had significantly stronger relative extrinsic aspirations than did adolescents who reported not smoking. In the second study, a composite risk behavior index for adolescents' use of tobacco, alcohol, and marijuana, and their having had sexual intercourse was significantly predicted by their relative extrinsic life goals, and both students' health-compromising behaviors and their relative extrinsic goals were significantly negatively predicted by their perceptions of their parents' autonomy support.

The major threats to adolescents' physical health are their own risky behaviors (American Medical Association, 1994; Centers for Disease Control and Prevention [CDCP], 1993; Millstein, Petersen, & Nightingale, 1993; Sells & Blum, 1996; U.S. Department of Health & Human Services, 1994). Teens who successfully negotiate adolescence without acquiring unhealthy behaviors are thus expected to have longer and healthier lives. For example, 90% of all long-term smokers started smoking regularly before the age of 20 (U.S. Department of

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Health and Human Services, 1994), and half of all long-term smokers die prematurely from illnesses brought on by smoking (U.S. Department of Health and Human Services, 1996). More generally, it has been estimated that over one third of all Americans die from diseases brought on by their own unhealthy behaviors (McGinnis & Foege, 1993), and many of these behaviors began during adolescence.

Previous reports have linked factors in adolescents' family and social environments to protection from acquiring health-risk behaviors. Turner, Irwin, Tschann, and Millstein (1993) found that when parents of adolescents were understanding and supportive, the adolescents were less likely to initiate sexual intercourse. Resnick et al. (1997) reported results from the National Longitudinal Study on Adolescent Health, which similarly indicated that parent-family connectedness was associated with fewer risk behaviors. Still, it is poorly understood how parenting approaches affect adolescents' health-risk behaviors.

The present studies extend previous research based on self-determination theory (Deci & Ryan, 1985) that has related parental-adolescent relationships to adolescents' life goals or aspirations and, in turn, to adolescents' psychological health and well-being. These cross-sectional studies focus on adolescent health-risk behaviors as the primary outcome.

Self-Determination Theory

Self-determination theory (SDT) assumes that there are three basic psychological needs: the needs for autonomy, competence, and relatedness to others. A need is defined in terms of nutrients or conditions that are necessary for a person to develop and thrive. In other words, the assumption that individuals have needs for autonomy, competence, and relatedness implies that they must experience the satisfaction of these needs in order to experience optimal growth and health (e.g., Ryan, 1995). Contexts that allow satisfaction of these needs are thus theorized to promote psychological health and well-being.

This definition of a need differs from the more common usage that equates a need with any personal desire or conscious goal that people would exert energy to achieve. For example, people might say that they "need more money" or "need more recognition or fame," yet these goals or desires would not be needs according to the formal definition unless they were shown to be directly essential for well-being. Thus, there are important implications of the two definitions of need in terms of the consequences of satisfying versus not satisfying a need. With the more common definition, satisfaction of a need might be associated with some positive feelings and nonsatisfaction with some negative feelings, but our definition goes further, suggesting that satisfaction would be related to health and well-being, and nonsatisfaction would be related to psychological or physical distress and ill-being.

SDT maintains that both the content of people's goals and the regulatory processes through which they are pursued will affect the extent to which goal-directed behavior satisfies the basic psychological needs, and thus how it affects the individuals' health and well-being (Ryan, Sheldon, Kasser, & Deci, 1996). First, the theory distinguishes between autonomous and controlled regulatory processes, and substantial research has supported the hypothesis that controlled (relative to autonomous) regulation allows less need satisfaction and is thus associated with poorer health and well-being (e.g., Williams, Freedman, & Deci, 1998; Williams, Grow, Freedman, Ryan, & Deci, 1996; Williams, Rodin, Ryan, Grolnick, & Deci, 1998).

Second, the theory distinguishes between intrinsic life goals, such as personal growth, meaningful relationships, community contribution, and physical fitness, and extrinsic life goals, such as wealth, fame, and image, proposing that the pursuit of extrinsic life goals allows less direct satisfaction of the basic psychological needs than does pursuit of intrinsic life goals (Kasser & Ryan, 1996). More specifically, meaningful relationships and community involvement are explicitly concerned with the experience of relatedness, and may also provide some satisfaction of the other intrinsic needs. Further, personal growth and physical fitness entail development of people's sense of self and thus their experience of autonomy, and may also provide some satisfaction of the other two needs. In contrast, relatively strong pursuit of the extrinsic life goals for wealth, fame, and image is more distant from basic need satisfaction and may even interfere with it by directing people's energies toward these extrinsic ends and away from the activities that provide deeper, more direct need satisfaction.

The goals classified as intrinsic by Kasser and Ryan (1996) could, of course, also lead to extrinsic outcomes, as for example when someone pursues a romantic involvement that happens to be with a wealthy partner, and the goals classified as extrinsic could provide some basic need satisfaction. Still, the idea is that the two classes of needs are, on average, of the type specified by Kasser and Ryan. Furthermore, although these goal categories were formed theoretically, a factor analysis did confirm that they loaded cleanly on two factors, as theorized (Kasser & Ryan, 1996).

Because of the theorized relation of the aspirations to need satisfaction, SDT hypothesizes and several studies have shown that pursuing extrinsic, relative to intrinsic, life goals is associated with poorer health and well-being. For example, Kasser and Ryan (1993, 1996) found that holding higher extrinsic goals relative to intrinsic goals was positively related to depression, anxiety, narcissism, negative affect, and physical symptoms, and negatively related to self-actualization, vitality, and positive affect. Thus, poorer mental health outcomes were clearly related to holding strong extrinsic life goals, relative to intrinsic life goals.

Recently, Carver and Baird (1998) suggested that the negative effects of extrinsic aspirations may be because they are more often regulated controllingly

than autonomously. Accordingly, the authors proposed that it is actually the regulatory process rather than the goal content that accounts for the negative effects. However, their study showed, as predicted by SDT, that both the content (extrinsic relative to intrinsic) and the regulatory process (controlled relative to autonomous) explained independent variance in poorer well-being.

SDT further suggests that when parents block satisfaction of their children's basic psychological needs—for example, by directing them with rewards, threats, and contingent love—the children will not only experience distress, but will also tend to defensively lose awareness of their basic needs. This is expected to result, first, in their being less likely to develop autonomous self-regulation, and considerable research has supported that view (e.g., Deci, Eghrari, Patrick, & Leone, 1994; Grolnick & Ryan, 1989). Second, SDT hypothesizes that the parental blocking of basic needs will lead their children to look outward for direction and a sense of satisfaction, adopting extrinsic life goals for wealth, fame, and image that are sanctioned by their peers, prompted by popular culture, and represent visible signs of "worth." A study by Kasser, Ryan, Zax, and Sameroff (1995) has provided initial support for this hypothesis by showing that children of parents who were less nurturing of them (a composite variable closely related to being controlling rather than autonomy supportive) tended to place a higher value on extrinsic, relative to intrinsic, life goals. Thus, autonomy-supportive parents who acknowledge their children's perspectives and provide them with choices would be predicted to promote relatively stronger intrinsic life goals (e.g., Grolnick, Deci, & Ryan, 1997).

The present research applies SDT to the domain of adolescents' health-risk behaviors and the possible influence of parent-child relations on such behaviors. As an initial effort in using motivation variables to examine adolescents' engaging in health-compromising behaviors, we focus on the goal-content portion of SDT. Specifically, our first hypothesis is that adolescents who hold relatively strong extrinsic life goals will be more likely to engage in risky health behaviors because of their external focus and tendency to adopt values endorsed by popular culture as a way of feeling personal worth. In the first study, we consider only cigarette smoking; while in the second study we include tobacco use (both smoking and chewing), alcohol consumption, marijuana use, and sexual intercourse.

Our second hypothesis is that perceived parental autonomy support will predict adolescents' holding weaker extrinsic (relative to intrinsic) goals and displaying fewer risky health behaviors. The third hypothesis is that the importance teens place on extrinsic goals will mediate the relation between perceived parental autonomy support and risky health behaviors.

In this study, we examine students' perceptions of the degree to which their parents generally support their autonomy. Darling and Steinberg (1993) argued that specific parenting behaviors (in the present case, behaviors related to their children's health-risk behaviors) hold greater promise than do general styles for

explaining child outcomes, and we agree that the ways that parents relate to their children regarding the critical risk behaviors will have a substantial effect on those behaviors. However, we choose to focus on general parental styles because we are interested in the mediation of the health-risk behaviors by the students' extrinsic relative to intrinsic values. In fact, the value of the general formulation that relates parenting styles to children's life goals and in turn to their specific risk behaviors is part of what we intend to test in this research. If support is found for the present hypotheses, it would suggest that autonomy-supportive parental environments could help to protect adolescents from engaging in health-compromising behaviors by facilitating their internalization of intrinsic relative to extrinsic life goals.

Study 1

Method

Participants were volunteers from health classes of a suburban high school ($n = 141$) who completed a questionnaire prior to being addressed about smoking on National Smoke-Out Day. The students were allowed to substitute this session for their regular health class, and anyone who smoked or who wanted to know more about the effects of smoking was encouraged to attend. Participants ranged in age from 14 to 18 years ($M = 16.1$ years, $SD = 0.86$), 13% ($n = 18$) were minority, 52% ($n = 73$) were female, and the participants had a mean household income of \$55,000 per year.

Individuals who showed up for the session were informed that the questionnaire was entirely voluntary and confidential. By signing and returning a detached cover sheet, they gave informed consent for their participation. In addition to the demographic variables of age, gender, race, and SES, the participants answered the dichotomous question "Have you smoked 100 cigarettes in your life?" This item represents the National Cancer Institute's definition of a smoker (*Tobacco Use*, 1994). The percentage of the participants who smoked was 45% ($n = 63$), which was above the national average of about 25% for high school smokers at that time, and this is probably a result of the fact that although students had a choice between this session and their health class, smokers were strongly urged to attend this session.

Participants then completed Guiding Principles Scale, which is a rank-order version of the aspirations questionnaire that was used in Study 2 (Kasser & Ryan, 1996). Participants were presented with three sets of seven values each and were asked to rank-order the seven values within each set according to how much each one is an important goal in their lives. Each set had an item related to the following value categories: wealth, fame, appealing image, personal growth, affiliation, community contribution, and physical fitness. A summary importance score was

computed for each value category by summing across the three rank orderings. The average within-category Cronbach's alphas for college students were reported by Kasser and Ryan to range from .68 to .75, with an average of .72; while in the current sample of high school students they ranged from .53 to .84, with an average of .66. Because we used a rank-order method, scores for extrinsic values implicitly represent extrinsic values relative to intrinsic values. Kasser and Ryan reported the rank order for extrinsic values correlated positively with physical symptoms and negatively with self-actualization.

Results and Discussion

Relative extrinsic values had a mean of 47.0 ($SD = 11.0$; range = 25 to 75), with higher numbers reflecting stronger valuing of the extrinsic factors. A total of 63 (45%) of the participants answered "Yes" to having smoked 100 cigarettes in their lives. A t test revealed that smokers had significantly higher extrinsic values than did nonsmokers ($M_s = 49.2$ vs. 45.5, respectively), $t(139) = 1.99$, $p < .05$. None of the demographic variables were significantly related to smoking, although there was a marginal effect suggesting that older students smoked more.

This initial study of high school smokers indicates that they placed a significantly greater value on the extrinsic values of wealth, fame, and image than did nonsmokers. It seems plausible that the visible signs of worth represented by the extrinsic values are substitutes for basic needs that have gone unsatisfied. The smokers' placing greater importance on the extrinsic values than did the nonsmokers suggests that smoking may be another attempt to cope with an underlying lack of intrinsic-need satisfaction.

The second study includes additional risk behaviors, as well as students' perceptions of the degree to which their parental environments are autonomy supportive and thus meet their basic psychological needs. The aim of this study, given that we found a relation between extrinsic values and the risk behavior of smoking in the first study, is to examine whether the relative importance of extrinsic values plays a role in mediating the relation between autonomy-supportive parenting and a variety of adolescent risk behaviors.

Study 2

Method

All 9th- through 12th-grade students attending their homerooms in a suburban high school in upstate New York on a particular day in 1997 were asked to complete a questionnaire regarding their health-related behaviors. A cover sheet explaining the study, ensuring confidentiality, and clearly stating the voluntary nature of participation was signed and returned separately from the

questionnaire. There were 300 students in their homerooms at the time of data collection on that day, and 271 provided complete data.

The questionnaire included demographic items to determine gender, race, grade level, and father's education level. The dependent measure of health-risk behavior was assessed by five questions taken from the 1992 Youth Risk Behavior Survey (CDCP, 1993). These questions are: "During the past 7 days, how many cigarettes did you smoke on a typical day?"; "During the past 30 days, did you use chewing tobacco?"; "In the past 30 days, on how many days did you have at least one drink of alcohol?"; "During your life, how many times have you used marijuana?"; and "Have you ever had sexual intercourse?" Responses to each of these items were divided into seven or eight categories, except for the sexual-intercourse and chewing-tobacco questions which were coded *Yes* or *No*. Responses were combined into a single risk-behavior index (RBI) by first standardizing each variable and then summing the standard scores. In each case, a higher number was associated with greater risk. Spearman and point-biserial correlation coefficients indicated that every risk behavior was significantly correlated with every other, thus justifying the use of the index. Two motivation variables that had been validated elsewhere were also measured on the questionnaire—perceived parental autonomy support (Robbins, 1994) and extrinsic aspirations index (Kasser & Ryan, 1996).

Measures

Perceptions of parents (Robbins, 1994). A 10-item scale of perceived autonomy support (PAS) represents the degree to which parents are seen as being actively involved in listening to their children's perspectives, acknowledging their children's feelings, and providing choices. In the present data, the Cronbach's alpha for this measure was .91.

Aspirations index (Kasser & Ryan, 1996). This index has seven individual aspiration categories—four intrinsic categories (personal growth, affiliation, community contribution, and physical health) and three extrinsic categories (financial success, fame, and appealing image)—each of which is represented by five items. Although the original scale had only 32 items, in subsequent work 3 items were added in order to have an equal number of items for each aspiration category. Students rated the 35 aspirations items on 9-point Likert-type scales representing the importance of the aspirations in their day-to-day living. A higher order factor analysis (varimax rotation) verified that the seven aspirations do fall into the two groups of intrinsic and extrinsic, as had been found in previous studies (Kasser & Ryan, 1996). Table 1 presents the factor loadings and also presents alphas for each aspiration scale, all of which were above .80.

The relative extrinsic aspirations index (REAI) for the adolescents was calculated as follows. First, each participant's overall mean aspiration score across all

Table 1

Loadings From Higher Order Factor Analysis of Aspiration Subscale Scores—Study 2

	Factor 1	Factor 2	Cronbach's α
Intrinsic			.85
Personal growth	.86	.27	.81
Affiliation	.81	.24	.82
Community contribution	.82	.07	.86
Physical fitness	.70	.37	.86
Extrinsic			.84
Fame	.23	.85	.88
Appealing image	.12	.86	.80
Financial success	.32	.80	.84

seven aspiration categories was calculated. Then, the score for each extrinsic aspiration category, which was the average of the five items in that category, was regressed onto the overall mean aspirations score, providing a residual score for that category. Then, the three residuals for the extrinsic aspiration categories were summed. This was done so that variance as a result of response sets and other irrelevant individual-difference factors could be removed before considering the relation of the REAI to parental autonomy support and risk behaviors (Kasser & Ryan, 1996). Because the REAI was calculated by removing individuals' overall average aspiration score, the REAI is implicitly relative to their intrinsic aspirations. In Study 1, because aspirations were assessed with a rank-order method, this procedure was not necessary for determining the relative strength of extrinsic aspirations.

Results

The response rate was 90%, with complete data being provided by 271 of the 300 students who were in school on the day of data collection. The risk-behavior portion of the questionnaire was completed by 294 of the students. The percentage of the students reported having had at least one drink of alcohol on 1 or 2 of the last 30 days was 53%, and 23% reported having had a drink on at least 3 to 5 of the last 30 days. The percentage of the students reported having smoked at least 1 to 5 cigarettes on a typical day in the past week was 30%, and 19% reported having smoked at least 6 to 10 cigarettes per day. The percentage of par-

Table 2

Means, Standard Deviations, and Ranges for Demographic, Motivation, and Risk-Behavior Variables—Study 2

	<i>M</i>	<i>SD</i>	Range
Demographics			
Grade	10.42	1.07	9-12
Fathers' education	4.23	1.08	1-5
Gender ^a	0.53		
Race ^b	0.81		
Motivation variables			
Parental autonomy support	68.10	16.24	14-90
Relative extrinsic aspirations index	0.00	11.20	-37.8 - +51.9
Dependent variables			
Alcohol ^c	1.92	1.20	1-7
Smoking ^d	1.74	1.54	1-8
Marijuana ^e	2.70	2.24	1-7
Chewing tobacco ^f	0.06		
Sexual intercourse ^f	0.41		

^a0 = male, 1 = female. ^b0 = non-White, 1 = White. ^cDrinks in last 30 days. ^dAverage cigarettes smoked in last 7 days. ^eNumber of times used. ^f0 = No, 1 = Yes.

ticipants reporting having had sexual intercourse was 41%, and 6% reported having used chewing tobacco or snuff in the past 30 days. The lifetime prevalence of having used marijuana at least one time was 47%. The prevalence of risk behaviors in this population was fairly similar to national averages (CDCP, 1998), with the largest discrepancies being that the national average during the same year for smoking was 36%, compared to our 30%; and for sexual intercourse was 48%, compared to our 41%.

The means, standard deviations, and ranges of the demographic and motivational variables appear in Table 2. A Mann-Whitney test on the risk-behavior index for the 271 who provided complete data (and thus made up the sample for our analyses) compared to the 23 who provided risk-behavior data but did not complete all questionnaires revealed a *z* of .87, thus indicating that those who failed to provide complete data did not engage in more risk behaviors overall.

Relations among independent variables. Fathers' highest level of education was represented on a 5-point quasicontinuous scale and will be hereafter referred

to as *fathers' education*. A score of 4 or less indicates having completed high school or below. Fathers' education was significantly higher for Whites than for non-Whites ($M = 4.3$ vs. 3.8), $t = 2.6$, $n = 293$, $p < .01$. Also, fathers' education was positively correlated with perceived parental autonomy support ($r = .28$, $n = 293$, $p < .001$) and was negatively correlated with relative extrinsic aspirations of their children ($r = .13$, $n = 287$, $p < .01$).

There was a significantly higher percentage of males among the non-White students (60%) than among the White students (45%), $\chi^2(1, N = 294) = 4.69$, $p < .05$, and males had significantly higher relative extrinsic aspirations than did females, $t(286) = 4.5$, $p < .001$. Non-Whites perceived significantly less autonomy support from their parents than did Whites ($M = 61.5$ vs. 68.9), $t(292) = 3.0$, $p < .01$, and had higher relative extrinsic aspirations, $t(284) = 2.9$, $p < .01$. Students' grade level did not relate to either their perceptions of parental autonomy support ($r = -.04$, $n = 294$, $p = .55$) or to their relative extrinsic aspirations ($r = .04$, $n = 286$, $p = .51$). Parental autonomy support was negatively correlated with relative extrinsic aspirations ($r = -.26$, $n = 286$, $p < .001$), thus confirming one of our primary expectations.

Relations between independent variables and risk behaviors. The RBI was positively correlated with student grade level ($r = .23$, $n = 294$, $p < .001$) and with the relative extrinsic aspiration index ($r = .21$, $n = 283$, $p < .001$), and it was negatively correlated with fathers' education ($r = -.13$, $n = 292$, $p < .01$) and with parental autonomy support ($r = -.23$, $n = 291$, $p < .001$). It was unrelated to race. Further, relative extrinsic aspirations and parental autonomy support were also significantly predictive of each individual risk behavior except chewing tobacco (which had a very low prevalence), as shown in Table 3. Overall, there was substantial support for the hypotheses that parental autonomy support would predict less risk behavior and that relative extrinsic aspirations would predict more risk behavior.

Multivariate analyses. The demographic variables of grade level, fathers' education, ethnicity, and gender were controlled for in the first step of the regression predicting risk behaviors in order to ensure that the motivational effects were beyond those of the demographic variables. These four variables accounted for 8.5% of the variance in the RBI, $F(4, 266) = 6.18$, $p < .001$, with students' grade and fathers' education being significant ($\beta = 0.18$ and -0.19 , respectively, $ps < .01$). When the motivation variables were entered, perceived parental autonomy support and relative extrinsic aspirations accounted for an additional 5.7% of the variance in the RBI, $F(2, 264) = 8.70$, $p < .001$ (parental autonomy support, $\beta = -0.16$, $p < .01$; relative extrinsic aspirations, $\beta = 0.17$, $p < .01$). When the motivation variables were entered, the beta for students' grade became nonsignificant and for fathers' education fell to -0.12 ($p < .05$). In sum, as predicted, both parental autonomy support and the relative importance of adolescents' extrinsic life goals did predict significant variance in adolescents' health-risk behaviors. The results are shown in Table 4.

Table 3
Bivariate Relations of the Demographic and Motivational Predictor Variables With the Risk-Behavior Variables

	RBI	Alcohol	Smoking	Marijuana	Chewing tobacco	Sex
Demographic variables						
Grade (9th-12th)	.23***	.21***	.07	.16**	z = -0.3	z = -3.9***
Father's education	-.23**	-.14**	-.20***	-.07	z = -0.3	z = -1.5
Gender (0 = male, 1 = female)	z = -1.4	z = -0.8	z = -1.0	z = -1.0	$\chi^2 = 11.8***$	$\chi^2 = 0.4$
Ethnicity (0 = non-White, 1 = White)	z = -1.0	z = -1.2	z = -1.8+	z = -0.2	$\chi^2 = 5.4*$	$\chi^2 = 3.6†$
Motivation variables						
Parental autonomy support	-.23***	-.16**	-.23***	-.15**	z = -1.7†	z = -2.8**
Relative extrinsic aspirations (7 domains)	.21***	.18***	.14**	.14**	z = 1.5	z = 2.2*

Note. In order to determine bivariate relations between pairs of variables, we had to use three different statistics depending on whether the variables being considered were continuous or dichotomous. If both variables were continuous, a Spearman correlation coefficient is reported; if one was continuous and one dichotomous, a Mann-Whitney z statistic is reported; and if both were dichotomous, a chi-square statistic is used. All entries in the table are correlation coefficients unless they are shown as z or χ^2 . Grade had four levels, 9th through 12th; gender was coded 0 for males and 1 for females; ethnicity was coded 0 for non-Caucasian and 1 for Caucasian. RBI = Risk Behavior Index.
†p < .10. *p < .05. **p < .01. ***p < .001.

Table 4

Model Explaining Risk Behaviors (Parameter Estimates: N = 271)

	RBI	RBI (trimmed model)
	F(6, 264) = 7.3***	F(4, 266) = 12.8***
	R ² = .14	R ² = .13
Demographics		
Grade level	.18**	.18***
Fathers' education	-.12*	—
Gender	-.06	—
Ethnicity	.04	—
Motivation variables		
Parental autonomy support	-.16**	-.19**
Relative extrinsic aspirations	.17**	.18**

Note. RBI = risk behavior index.
*p < .05. **p < .01. ***p < .001.

In a subsequent run of the regression, we also examined interactions between each demographic variable and each motivation variable in predicting the risk index. Only the interaction between students' grade level and extrinsic aspiration was significant ($\beta = 1.16, p < .05$). As the students advanced in grade level, the relation of extrinsic aspiration to risk behaviors became stronger.

We then did a regression using only the variables that had been significant as main effects, including students' grade level, fathers' education, perceived parental autonomy support, and relative extrinsic aspirations. In that run, fathers' education failed to reach significance, so a final regression was run using only adolescents' variables of grade, perceived parental autonomy support, and relative extrinsic aspirations, which had all been significant in the prior regressions. As shown in Table 4 as the trimmed model, when students' grade level was entered first, it had a beta of 0.18 ($p < .001$); when parental autonomy support was entered in the second step, it had a beta of -0.24 ($p < .0001$); and when relative extrinsic aspirations were entered in the third step, it had a beta of 0.18 ($p < .01$). Together, these three variables accounted for 13% of the variance in the RBI. In the third step, the beta for parental autonomy support fell from -0.24 ($p < .0001$) to -0.19 ($p < .01$). Because the beta of -0.19 was still significant, the results do not satisfy the criteria established by Baron and Kenny (1986) for mediation, but the drop in the beta and in its significance level suggest that although adolescents' extrinsic aspirations are not a strong mediator in the relation between parental autonomy support and student risk behavior, they may

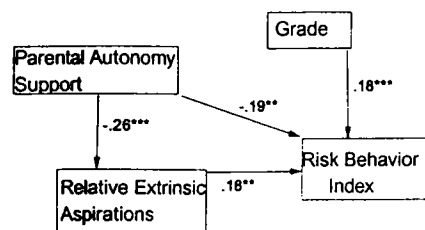


Figure 1. Final self-determination model for adolescent health risk behaviors. $F(3, 267) = 12.8, p < .001, R^2 = 13\%$. ** $p < .01$. *** $p < .001$.

play a partial mediating role. The results appear in the final self-determination model presented in Figure 1.

General Discussion

The present research, guided by SDT, tested the hypotheses that adolescents' risk behaviors would be associated with their placing strong relative importance on extrinsic aspirations (i.e., wealth, fame, and image) and that their perceptions of their parenting environments being low in autonomy support would be associated with their holding relatively strong extrinsic aspirations and engaging in more high-risk behaviors. Study 1 found a significant relation between relatively strong extrinsic aspirations and the risk behavior of smoking. Study 2 demonstrated that extrinsic aspirations predicted a wider array of health-risk behaviors and that the extrinsic values had a weak mediational relation between parental autonomy support and the risk behaviors.

Together, the findings confirm that autonomy-supportive parental environments are associated with adolescents having stronger intrinsic relative to extrinsic life values, presumably because the autonomy-supportive parenting style facilitates adolescents in experiencing satisfaction of their basic psychological needs. Further, the results indicate that adolescents' holding relatively strong extrinsic values was positively associated with their engaging in more risk behaviors, thus extending previous studies showing strong extrinsic values to be associated with poorer mental health. It has been suggested that relatively strong extrinsic aspirations result from individuals' having learned to look outward, rather than to their own basic needs, for regulatory direction and for goals that represent visible signs of worth. This then makes adolescents more vulnerable to tobacco and alcohol advertising, and to peer pressures to use drugs and to have sex at an early age.

The current results showing relations between low autonomy-supportive parenting and adolescents' holding strong extrinsic aspirations and also between adolescents' holding strong extrinsic aspirations and engaging in high-risk

behaviors are consistent with previous work by Kasser et al. (1995), who found associations between adolescents' placing more importance on extrinsic aspirations and their mothers' providing less nurturance, and with findings by Resnick et al. (1997) that linked teen smoking and other risk behaviors to lack of parent-family connectedness.

Because data from the current study are cross-sectional, it is not possible to make causal inferences. Thus, longitudinal research investigating these issues is needed. The use of self-reports of behavior, rather than objective assessment of behavior, represents another limitation to the present studies, although the Youth Risk Behavior Surveillance System (YRBSS) is well-validated and has been shown to relate to actual behavior. Further, now that we have established a relation between parents' autonomy support and their children's intrinsic versus extrinsic aspirations, and between aspirations and risk behaviors, it will be important to examine the other aspect of SDT, namely whether regulatory style mediates between parents' autonomy support and their children's risk behaviors. Finally, it would be interesting to investigate whether community or educational interventions that have been demonstrated to reduce adolescent health-risk behaviors (e.g., Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995) also relate to adolescents' basic need satisfaction and promote a shift from their strongly valuing extrinsic goals toward valuing more intrinsic ones.

References

- American Medical Association. (1994). *Guidelines for adolescent preventive services*. Chicago, IL: Author.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182.
- Botvin, G. J., Baker, E., Dusenbury, L., Botvin, E. M., & Diaz, T. (1995). Long-term follow-up results of a randomized drug abuse prevention trial in a White middle-class population. *Journal of the American Medical Association*, *273*, 1106-1112.
- Carver, C. S., & Baird, E. (1998). The American dream revisited: Is it what you want or why you want it that matters? *Psychological Science*, *9*, 289-292.
- Centers for Disease Control and Prevention. (1993). Measuring the health behavior of adolescents: The Youth Risk Behavior Surveillance System and recent reports on high-risk adolescents. *Public Health Reports*, *108*, 1-96.
- Centers for Disease Control and Prevention. (1998). Youth Risk Behavior Surveillance data: Center for Disease Control Surveillance Summaries. *Morbidity and Mortality Weekly Report*, *47* (55-3), 1-89.
- Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin*, *113*, 487-496.

- Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality, 62*, 119-142.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum.
- Grolnick, W. S., Deci, E. L., & Ryan, R. M. (1997). Internalization within the family: The self-determination theory perspective. In J. E. Grusec & L. Kuczynski (Eds.), *Parenting strategies and children's internalization of values: A handbook of theoretical and research perspectives* (pp. 135-161). New York, NY: John Wiley & Sons.
- Grolnick, W. S., & Ryan, R. M. (1989). Parent styles associated with children's self-regulation and competence in school. *Journal of Educational Psychology, 81*, 143-154.
- Kasser, T., & Ryan, R. M. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology, 65*, 410-422.
- Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin, 22*, 80-87.
- Kasser, T., Ryan, R. M., Zax, M., & Sameroff, A. (1995). The relations of maternal and social environments to late adolescents' materialistic and prosocial values. *Developmental Psychology, 31*, 907-914.
- McGinnis, M. J., & Foege, W. H. (1993). Actual causes of death in the United States. *Journal of the American Medical Association, 270*, 2207-2212.
- Millstein, S., Petersen, A., & Nightingale, E. (1993). *Promoting the health of adolescents: New directions for the 21st century*. New York, NY: Oxford University Press.
- Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., Tabor, J., Beuhring, T., Seiving, R. E., Shaw, M., Ireland, M., Bearinger, L. H., & Udry, R. (1997). Protecting adolescents from harm: Findings from the national longitudinal study on adolescent health. *Journal of the American Medical Association, 278*, 823-832.
- Robbins, R. (1994). *Parental autonomy support versus control: Child and parent correlates and assessment*. Unpublished doctoral dissertation, University of Rochester, Rochester, NY.
- Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality, 63*, 397-427.
- Ryan, R. M., Sheldon, K. M., Kasser, T., & Deci, E. L. (1996). All goals are not created equal: An organismic perspective on the nature of goals and their regulation. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: Linking cognition and motivation to behavior* (pp. 7-26). New York, NY: Guilford.
- Sells, C. W., & Blum, R. (1996). Morbidity and mortality among U.S. adolescents: An overview of data and trends. *American Journal of Public Health, 86*, 513-519.
- Turner, R. A., Irwin, C. E., Jr., Tschann, J. M., & Millstein, S. G. (1993). Autonomy, relatedness, and the initiation of health-risk behaviors in early adolescence. *Health Psychology, 12*, 200-208.
- U.S. Department of Health and Human Services, Office on Smoking and Health. (1994). *Preventing tobacco use among young people. A report of the Surgeon General* (Document No. S/N 017-001-00491-0). Washington, DC: U.S. Government Printing Office.
- U.S. Department of Health and Human Services. (1996). Clinical Practice Guideline Number 18. *Smoking cessation* (AHCPR Publication No. 96-0692). Washington, DC: Author.
- Williams, G. C., Freedman, Z. R., & Deci, E. L. (1998). Supporting autonomy to motivate glucose control in patients with diabetes. *Diabetes Care, 21*, 1644-1651.
- Williams, G. C., Grow, V. M., Freedman, Z., Ryan, R. M., & Deci, E. L. (1996). Motivational predictors of weight loss and weight-loss maintenance. *Journal of Personality and Social Psychology, 70*, 115-126.
- Williams, G. C., Rodin, G. C., Ryan, R. M., Grolnick, W. S., & Deci, E. L. (1998). Autonomous regulation and long-term medication adherence in adult outpatients. *Health Psychology, 17*, 269-276.