



The path taken: Consequences of attaining intrinsic and extrinsic aspirations in post-college life

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ABSTRACT

Life goals, or aspirations, organize and direct behavior over extended periods of time. The current study, guided by self-determination theory, examined the consequences of pursuing and attaining aspirations over a 1-year period in a post-college sample. Results indicated that placing importance on either intrinsic or extrinsic aspirations related positively to attainment of those goals. Yet, whereas attainment of intrinsic aspirations related positively to psychological health, attainment of extrinsic aspirations did not; indeed, attainment of extrinsic aspirations related positively to indicators of ill-being. Also as predicted, the association between change in attainment of intrinsic aspirations and change in psychological health was mediated by change in the satisfaction of the basic psychological needs for autonomy, competence, and relatedness. Discussion focuses on the idea that not all goal attainment is beneficial; rather, attainment of aspirations with different contents relates differentially to psychological health.

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1. Introduction

When students graduate from college they face the developmental challenges of establishing a career path, an extra-familial network of relationships, and, especially in modern cultures, an identity (Adams & Marshall, 1996; Ryan & Deci, 2003). This critical developmental juncture offers researchers an opportunity to examine a natural period of important change by studying how the pursuit and attainment of different types of life goals, or aspirations, relate to psychological health.

In this study, we examined the consequences of focusing on one of two types of life goals; namely, whether young adults who had recently graduated from college chose to emphasize intrinsic or extrinsic aspirations of their life's path (Kasser & Ryan, 1996, 2001). At 1 and 2 years post-college, young adults reported how much importance they placed on extrinsic aspirations (*viz.*, money, fame, and image) and intrinsic aspirations (*viz.*, personal growth, close relationships, community involvement, and physical health); the degree to which they had attained those aspirations; the level of satisfaction they experienced for their basic psychological needs for autonomy, competence, and relatedness; and a variety of well-being and ill-being outcomes. In line with a number of modern expectancy-value theories (for a review, see Eccles & Wigfield, 2002), we expected that placing importance on particular goals at Time 1 would relate positively to attainment of those goals at Time 2. However, unique to self-determination theory (SDT; Deci

& Ryan, 2000; Niemiec, Ryan, & Deci, *in press*; Ryan & Deci, 2000), we suggested that attainment of intrinsic aspirations at Time 2, because it is associated with basic psychological need satisfaction, would relate positively to psychological health, but that attainment of extrinsic aspirations at Time 2, because it is not associated with basic psychological need satisfaction, would be unrelated, or even negatively related, to psychological health. To explicate these hypotheses, we begin with a review of the literature on aspirations and psychological health.

1.1. The pursuit of intrinsic and extrinsic aspirations

In recent years, a growing body of research has suggested that not all aspirations are equally beneficial for psychological health and social functioning. This research began with studies by Kasser and Ryan (1993) showing that people who strongly valued financial success relative to personal growth, close relationships, and community involvement reported poorer psychological health, suggesting a potential 'dark side to the American dream.' Subsequently, Kasser and Ryan (1996) examined seven life goals—accumulation of wealth and material possessions, social recognition and fame, being physically attractive and having an appealing image, personal growth and development, meaningful affiliation and close relationships, generativity and community involvement, and being physically healthy—and proposed that those aspirations were likely to fall into two general categories. As expected, the researchers found that money, fame, and image loaded on one factor, which they labeled *extrinsic*, whereas personal growth, close relationships, community involvement, and physical health loaded

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on another factor, which they labeled *intrinsic*. The *intrinsic* factor was so labeled because its goals are expressive of humans' inherent growth tendency and are conducive to satisfaction of the basic psychological needs for autonomy, competence, and relatedness; the other factor was labeled *extrinsic* because its goals typically are pursued as a means to some separable outcome and are not directly linked to satisfaction of the basic psychological needs (Kasser & Ryan, 1996).¹

Kasser and Ryan (1996) reported that the importance to individuals of pursuing intrinsic (relative to extrinsic) aspirations related positively to various indicators of well-being, including positive affect, vitality, and self-actualization, and related negatively to various indicators of ill-being, including depression, anxiety, and physical symptoms. Similar results have been found in diverse countries and with working adults as well as college students (e.g., Ryan et al., 1999; Schmuck, Kasser, & Ryan, 2000; Vans-teenkiste et al., 2007).

1.2. The relation of intrinsic and extrinsic aspirations to need satisfaction

Ryan, Sheldon, Kasser, and Deci (1996) suggested that the key difference between intrinsic and extrinsic aspirations, and the reason that the two groups of aspirations are differentially related to psychological health, is the degree to which those goals are linked to satisfaction of the basic psychological needs for autonomy, competence, and relatedness, which are considered by SDT to be the cornerstones of psychological health. The need for autonomy refers to a sense of choice and volition in the regulation of behavior; the need for competence refers to a sense of effective interaction with the environment; and the need for relatedness concerns feeling connected to, and cared about by, important others. More specifically, SDT theorizes that the relations of the two types of aspirations to satisfaction of the basic psychological needs involves two components: first, that satisfaction of the basic psychological needs across development will promote higher importance of intrinsic (rather than extrinsic) aspirations; second, that the pursuit and attainment of intrinsic (rather than extrinsic) aspirations at any given time will facilitate satisfaction of the basic psychological needs and, in turn, will promote psychological health.

Two studies have provided indirect evidence for the first part of this postulate, namely that basic psychological need satisfaction is associated with the development of *valuing* intrinsic (rather than extrinsic) aspirations and with adjustment. Kasser, Ryan, Zax, and Sameroff (1995) studied a community-based sample of 18-year olds and their mothers. Using both self-reports and structured interviews to assess mothers' provision of need support to their children, Kasser et al. found that mothers' support for autonomy and relatedness related positively to their teenagers' valuing intrinsic aspirations (relative to financial success). Similarly, Williams, Cox, Hedberg, and Deci (2000) found that high school students who reported that their parents were autonomy supportive (and thus promoted basic psychological need satisfaction) placed more importance on intrinsic (relative to extrinsic) aspirations and were less likely to engage in risky health behaviors, including use of alcohol, tobacco, and marijuana.

Much more research has addressed the second part of this postulate, namely that the pursuit and attainment of intrinsic (rather than extrinsic) aspirations will facilitate basic psychological need

satisfaction and promote psychological health. Most of the studies that have examined those relations, however, have focused on the association between psychological health and the *pursuit* or *valuing* of intrinsic (relative to extrinsic) aspirations (Kasser, 2002), with very few having focused on the *attainment* of those aspirations. The primary focus of the current study is on aspiration attainment.

1.3. The attainment of aspirations and psychological health

Most contemporary goal theorists suggest that people feel good when they attain their goals (Emmons, 1986) and that goal attainment is beneficial to psychological health (Carver & Scheier, 1990; Locke & Latham, 1990). However, SDT argues that it is primarily when people attain intrinsic (rather than extrinsic) goals that they will experience more well-being and less ill-being because it is only attainment of intrinsic goals that is likely to provide satisfaction of their basic psychological needs. In short, to the extent that goal attainment does not provide basic psychological need satisfaction, it is unlikely to yield long-term psychological health benefits and may cause some decrements.

A few studies have provided initial support for the SDT position that not all goal attainment is beneficial. Kasser and Ryan (2001) examined the relation of attainment of intrinsic (relative to extrinsic) aspirations to various mental health outcomes within two samples of college students. In their first sample, Kasser and Ryan found that attainment of intrinsic (relative to extrinsic) aspirations related positively to psychological health (*viz.*, self-actualization, vitality, self-esteem, and the reverse of depression and anxiety). Moreover, attainment of extrinsic aspirations did not relate to psychological health. Specifically, the adjustment of people who were high in attainment of extrinsic aspirations but low in attainment of intrinsic aspirations was no better than that of people who were low in attainment of both extrinsic and intrinsic aspirations. In a second sample, Kasser and Ryan reported similar results for the quality of interpersonal relationships. Together, these results provide initial evidence that attainment of intrinsic, but not extrinsic, aspirations relates positively to psychological health and social functioning.

Ryan et al. (1999) reported a cross-sectional study of intrinsic and extrinsic aspirations with Russian and U.S. college students. In both samples they showed that, whereas attainment of intrinsic aspirations related positively to psychological health, even after accounting for attainment of extrinsic aspirations, the converse was not true. Attainment of extrinsic aspirations did not add significant variance to the prediction of psychological health once attainment of intrinsic aspirations was considered.

Sheldon and Kasser (1998) reported that students' overall progress toward goal attainment during a semester was beneficial for their psychological health. However, this finding was moderated by whether the progress was instrumental for intrinsic or extrinsic *possible futures*. Specifically, when goal attainment was seen as instrumental for intrinsic possible futures it related positively to psychological health (*viz.*, life satisfaction, positive affect, and the reverse of depression and negative affect), but when goal attainment was instrumental for extrinsic possible futures it was unrelated to psychological health.

In sum, the findings from those studies suggesting differential relations of attainment of intrinsic and extrinsic aspirations to psychological health qualify the general control theory (Carver & Scheier, 1981), expectancy-value theory (e.g., Eccles & Wigfield, 2002; Vroom, 1964), goal setting theory (Locke & Latham, 1990), and social cognitive theory (Bandura, 1986, 1997) views, which suggest that attainment of (valued) goals is beneficial for psychological health. The studies reviewed above, however, were limited by their using an index of intrinsic (relative to extrinsic) aspiration attainment; by their using a psychological health composite, rather

¹ It is important to note that the concepts of intrinsic and extrinsic aspirations are not isomorphic with the concepts of intrinsic and extrinsic motivation. The former refer to life goals that organize and direct behavior over time, whereas the latter refer to the motivation for pursuing a particular goal-directed behavior. Indeed, the constructs of aspirations and motivations have been distinguished both theoretically (Deci & Ryan, 2000) and empirically (Sheldon, Ryan, Deci, & Kasser, 2004).

than considering well-being and ill-being separately; and by their using college students.

1.4. The present research

In the current study, we focused on intrinsic and extrinsic life goals and the relations of those aspirations to their attainments and to psychological health over a 1-year period that spanned from 1 to 2 years post-college. This is a critical developmental period that marks people's transition into their adult identities and lives, as during this time individuals actually can begin to implement the goals they have adopted and internalized.

Specifically, we examined longitudinally the relations among aspiration importance, aspiration attainment, need satisfaction, and psychological health at the beginning (Time 1) and at the end (Time 2) of a 1-year period. More specifically, we examined three important components of the network of relations among those variables, each of which we consider in detail below.

The first component concerned the relation of aspiration importance to aspiration attainment. Specifically, we hypothesized that the importance of aspirations (whether intrinsic or extrinsic) at Time 1 would relate positively to the level of attainment of the corresponding aspirations at Time 2. Past studies from various traditions suggest that placing high value on a goal increases people's motivation to pursue the goal, which leads to greater goal attainment (see, e.g., Eccles & Wigfield, 2002; Locke & Latham, 1990; Wigfield & Eccles, 2000). Thus far, however, we know of no longitudinal study that has directly tested the hypothesis that the importance of both intrinsic and extrinsic aspirations would relate to attainment of the corresponding aspirations. One study (Sheldon & Kasser, 1998) showed that commitment, in conjunction with high efficacy beliefs, predicted attainment of intrinsic and extrinsic aspirations during one semester, thus providing some indirect support for this hypothesized relation among college students.² Finding that the importance of each type of aspiration is associated with attainment of the corresponding aspirations in a post-college sample would make only a small contribution to our theoretical understanding of goal pursuits in general. However, it is important for the SDT perspective to ascertain whether the importance of each type of life goal is related to attainment of the corresponding aspirations because we anticipate that attainment of the two types of aspirations will be differentially associated with mental health; therefore, it is important to understand the antecedents of the attainment of those aspirations.

The second component concerned the relations of aspiration attainment to psychological health, assessed both cross-sectionally and longitudinally. As already mentioned, this component has been explored in a preliminary way in some studies, but the studies had various limitations. In the current study, we hypothesized that attainment of intrinsic aspirations at Time 2 would relate pos-

itively to well-being and negatively to ill-being contemporaneously, whereas attainment of extrinsic aspirations at Time 2 would be unrelated or negatively related to well-being and would be unrelated or positively related to ill-being at that time. To examine this hypothesis, we simultaneously examined intrinsic and extrinsic aspirations as separate constructs and well-being and ill-being as separate constructs, which allowed us to assess the unique associations among the aspirations and psychological health constructs. With one current emphasis in psychology being focused on the difference between promoting wellness and ameliorating illness (e.g., Seligman & Csikszentmihalyi, 2000), it would be useful to understand further the antecedents of wellness versus illness. We subsequently tested this same set of relations in terms of change from Time 1 to Time 2, hypothesizing that *change* in attainment of intrinsic aspirations would relate positively to *change* in psychological health, whereas *change* in attainment of extrinsic aspirations would be unrelated or negatively related to *change* in psychological health.

The third component concerned need satisfaction. To our knowledge, no study to date has directly tested the relation of aspiration attainment to basic psychological need satisfaction, nor has any study directly tested the hypothesis that the relation of change in aspiration attainment to change in psychological health would be mediated by change in basic psychological need satisfaction.³ However, there is support for the relation of basic psychological need satisfaction to psychological health (e.g., Deci et al., 2001; Niemiec et al., 2006; Ryan, Deci, Grolnick, & La Guardia, 2006; Vansteenkiste et al., 2007). In the current study, we hypothesized mediation and conducted analyses to test whether change in basic psychological need satisfaction would mediate the expected association between change in aspiration attainment and change in psychological health. To summarize, we predicted that change in attainment of intrinsic aspirations would relate positively to change in indicators of psychological health, whereas change in attainment of extrinsic aspirations would be unrelated or negatively related to change in indicators of psychological health, and that those relations would be mediated by change in basic psychological need satisfaction.

1.4.1. Analytic strategy

The analytic strategy for examining the hypotheses has two aspects. First, a structural equation model was developed to examine the relations of importance of intrinsic and extrinsic aspirations at Time 1 to attainment of those aspirations and in turn to psychological health at Time 2. Second, autoregressive structural equation models (see Hertzog & Nesselroade, 2003) were developed to examine additional hypotheses concerning the absolute continuity of psychological health as related to change in both aspiration attainment and basic psychological need satisfaction from Time 1 to Time 2. Absolute continuity refers to the consistency of some attribute within an individual (Caspi & Roberts, 2001). The autoregressive approach can be used to examine interindividual differences in intraindividual change (Hertzog & Nesselroade, 2003). Structural Equation Modeling (SEM) with latent variables in AMOS 6.0 was used to examine the models consisting of the hypotheses.

1.4.2. Summary of the important contributions of the current study

The current study focused on aspiration attainment over a 1-year period, whereas previous studies were either cross-sectional or followed participants for a shorter period of time. Additionally, the current study examined the unique relations that

² Other work using SDT has examined longitudinally the antecedents of successful goal striving. Of note, Sheldon and his colleagues (Sheldon & Elliot, 1998, 1999; Sheldon & Houser-Marko, 2001) reported that self-concordant goals (i.e., those goals pursued for relatively autonomous reasons) are more likely to be attained over the course of one semester. However, this line of research differs from the current study in at least two important ways. First, Sheldon and his colleagues used an idiographic approach to assess participants' goals; that is, the goal assessment procedures were based either on the personal projects model (e.g., Little, 1983, 1993; Palys & Little, 1983) or on the personal strivings model (e.g., Emmons, 1986; Emmons & King, 1988, 1989), which allow for analyses of goals at intermediate and superordinate levels, respectively (cf., McGregor & Little, 1998). In contrast, the current study used a nomothetic approach in which participants were asked to rate their levels of importance and attainment of seven life goals that were determined *a priori* (see, e.g., Kasser & Ryan, 2001). Second, Sheldon and his colleagues focused their analyses on the *regulation* (i.e., relative autonomy) of participants' goal strivings, whereas the current study focused on the *content* (viz., intrinsic and extrinsic) of participants' aspirations.

³ Sheldon and Elliot (1999) reported that attainment of personal projects related positively to basic psychological need satisfaction, and that this association was moderated by the self-concordance (i.e., relative autonomy) of those goals. However, as we discussed in Footnote 2, this work differs in several important ways from the current study.

Table 1
Aspiration index: Sample items and scale alpha (α) reliabilities.

Aspirations	Sample items	Time 1 Importance (α)	Time 1 Attainment (α)	Time 2 Attainment (α)
Close relationships (intrinsic)	To have deep, enduring relationships	0.84	0.83	0.78
Community involvement (intrinsic)	To help others improve their lives	0.92	0.89	0.91
Personal growth (intrinsic)	To grow and learn new things	0.64	0.79	0.79
Physical health (intrinsic)	To be physically healthy	0.86	0.89	0.90
Money (extrinsic)	To be a wealthy person	0.90	0.85	0.83
Fame (extrinsic)	To be admired by many people	0.85	0.80	0.77
Appealing image (extrinsic)	To achieve the look I've been after	0.84	0.77	0.78

intrinsic and extrinsic aspirations each make to both well-being and ill-being, whereas most previous work investigated how attainment of intrinsic, *relative to* extrinsic, aspirations related to a composite measure of psychological health. Further, the current study examined a post-college sample in which aspirations are likely to substantially shape individuals' life directions, whereas previous research on aspiration attainment has been conducted only on college students. Finally, the current study examined the following relations that have not been examined directly in previous studies: (1) the relations of the importance of intrinsic and extrinsic aspirations to attainment of those aspirations, (2) the relations of change in attainment of intrinsic and extrinsic aspirations to change in basic psychological need satisfaction, (3) the relations of change in attainment of intrinsic and extrinsic aspirations to change in well-being and ill-being, and (4) the mediation of these latter relations by change in basic psychological need satisfaction.

2. Method

2.1. Participants and procedure

Shortly before they graduated, 246 students (84 male, 156 female, and six who failed to indicate gender) who were seniors at a private northeastern university or a mid-western 4-year college gave permission for us to contact them 1 and 2 years after graduation to administer surveys concerning their functioning in post-college life. Of those who gave permission, 164 responded to our mailing 1 year later (46 male, 114 female, and four who failed to indicate gender). Finally, 1 year after that, 147 (90% of the sample) were successfully contacted and returned their surveys. Most participants self-identified as Caucasian (79.9%), whereas the rest were Asian (9.8%), African American (4.9%), Hispanic/Latino(a) (4.1%), or Other (1.2%). Two participants failed to indicate their ethnic background. All participants were volunteers and received no compensation.⁴

All measures were administered to participants at both Time 1 and Time 2, although in the current study we do not focus on the importance of pursuing each aspiration at Time 2.

2.2. Measures

2.2.1. Basic psychological need satisfaction

The 21-item Basic Psychological Need Satisfaction Scale-General (e.g., Gagné, 2003) assessed satisfaction of autonomy (seven items; e.g., I generally feel free to express my ideas and opinions), competence (six items; e.g., People I know tell me I am good at what I do), and relatedness (eight items; e.g., I get along with people I come into contact with). Responses were made on a 7-point Likert-type scale, ranging from 1 (*not at all true*) to 7 (*very true*). The reliability for each subscale was as follows: autonomy $\alpha = .72$ at Time 1 and $\alpha = .73$ at Time 2, competence $\alpha = .73$ at both Time 1 and Time 2, and relatedness $\alpha = .82$ at Time 1 and $\alpha = .83$ at Time 2.

2.2.2. Aspirations

The 35-item aspiration index (e.g., Kasser & Ryan, 2001) assessed the four intrinsic and the three extrinsic aspirations, with each being represented by five items. Participants reported their importance of pursuing each aspiration at Time 1 and their current attainment of each aspiration at Time 1 and Time 2. Responses were made on a 7-point Likert-type scale, ranging from 1 (*not at all*) to 7 (*very much*). Sample items and scale reliabilities are presented in Table 1.

2.2.3. Life satisfaction

The 5-item Satisfaction with Life Scale (Pavot, Diener, & Suh, 1998) assessed life satisfaction (e.g., I am satisfied with my life). Responses were made on a 7-point Likert-type scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The reliability for this measure was $\alpha = .87$ at both Time 1 and Time 2.

2.2.4. Self-esteem

Six items from the MSEI General Self-esteem Scale (O'Brien and Epstein, 1988) assessed self-esteem (e.g., I put myself down too much—reversed). Responses were made on a 7-point Likert-type scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The reliability for this measure was $\alpha = .91$ at Time 1 and $\alpha = .92$ at Time 2.

2.2.5. Affect

The Positive Affect Negative Affect Scale (PANAS; Watson, 1988) assessed positive (10 items; e.g., interested) and negative (10 items; e.g., ashamed) emotions. Responses were made on a 7-point Likert-type scale, ranging from 1 (*not at all*) to 7 (*very much*). The reliability for the positive affect subscale was $\alpha = .91$ at both Time 1 and Time 2; the reliability for the negative affect subscale was $\alpha = .88$ at Time 1 and $\alpha = .91$ at Time 2.

2.2.6. Physical symptoms

The 12-item Penebaker Symptom Checklist (Penebaker, 1982) assessed physical symptoms experienced over the past month (e.g., headaches). Responses were made on a 7-point Likert-type scale, ranging from 1 (*not at all*) to 7 (*very often*). The reliability for this measure was $\alpha = .86$ at Time 1 and $\alpha = .84$ at Time 2.

2.2.7. Anxiety

Six items from the State Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970) assessed anxiety (e.g., I have disturbing thoughts). Responses were made on a 7-point Likert-type scale, ranging from 1 (*not at all*) to 7 (*very much*). The reliability for this measure was $\alpha = .85$ at Time 1 and $\alpha = .84$ at Time 2.

3. Results

3.1. Preliminary analyses

A principal components factor analysis with promax rotation was conducted on the three positive (*viz.*, life satisfaction, self-esteem, and positive affect) and the three negative (*viz.*, anxiety,

⁴ Some data from this project were also used in Study 3 of Sheldon et al. (2004).

physical symptoms, and negative affect) indices of psychological health at Time 2. The first factor included the three positive indices of psychological health and yielded an eigenvalue of 3.31 that accounted for 55.11% of the variance. Life satisfaction, self-esteem, and positive affect had factor loadings of .83, .85, and .87, respectively. The second factor included the three negative indices of psychological health and yielded an eigenvalue of 1.27 that accounted for an additional 21.08% of the variance. Anxiety, physical symptoms, and negative affect had factor loadings of .89, .90, and .79, respectively. These results supported our analytic strategy of bifurcating psychological health into separate constructs (viz., well-being and ill-being).

Next, we assessed the stability of attainment of intrinsic and extrinsic aspirations from Time 1 to Time 2. Paired samples *t*-tests revealed one significant difference between aspiration attainments at Time 1 and Time 2. Participants reported higher attainment of the extrinsic aspiration for fame at Time 1 [*M* (*SD*) = 2.32 (0.95)] than at Time 2 [*M* (*SD*) = 2.16 (0.90)], *t* (132) = 2.39, *p* < .05. All paired samples correlations were significant (*p* < .01) and ranged in magnitude from .66 to .79. Thus, as expected, attainment of both intrinsic and extrinsic aspirations remained relatively stable from Time 1 to Time 2.

Independent samples *t*-tests with Bonferroni protection revealed no significant differences between participants who provided data at both Time 1 and Time 2 and those who did not on any of the observed variables used in the models. There was one significant male–female difference. Females [*M* (*SD*) = 4.22 (1.47)] reported higher attainment of the intrinsic aspiration for community involvement at Time 2 than did males [*M* (*SD*) = 3.65 (1.28)], *t* (141) = 2.24, *p* < .05. Because the male and female data were so similar, gender was not considered further.

Table 2 presents means, standard deviations, and intercorrelations for the observed variables used as indicators of the latent constructs examined in the SEM analysis assessing the structural relations among aspiration importance, aspiration attainment, and psychological health.

3.2. Primary analyses: structural modeling of aspirations and psychological health

3.2.1. Testing the measurement model

Six latent constructs were created, each indicated by at least three observed variables. We expected the importance of the four intrinsic aspirations for personal growth, close relationships, community involvement, and physical health at Time 1 to load positively onto a latent construct labeled *intrinsic importance*; the importance of the three extrinsic aspirations for money, fame, and image at Time 1 to load positively onto a latent construct labeled *extrinsic importance*; attainment of the intrinsic aspirations at Time 2 to load positively onto a latent construct labeled *intrinsic attainment*; attainment of the extrinsic aspirations at Time 2 to load positively onto a latent construct labeled *extrinsic attainment*; life satisfaction, self-esteem, and positive affect assessed at Time 2 to load positively onto a latent construct labeled *well-being*; and anxiety, physical symptoms, and negative affect assessed at Time 2 to load positively onto a latent construct labeled *ill-being*.

We followed the recommendations of Cole and Maxwell (2003) to test the measurement model. Accordingly, a Confirmatory Factor Analysis (CFA) on the latent constructs, using established criteria for fit (Kline, 1998), was performed on a model with unanalyzed covariances among all six latent constructs. In addition, covariances were included between the residual variances of the importance of each aspiration at Time 1 and attainment of the corresponding aspiration at Time 2, as well as between the residual variances of positive and negative affect at Time 2. The CFA yielded

Table 2 Associations among observed variables used to indicate latent constructs to assess the structural relations among aspiration importance, aspiration attainment, and psychological health.

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Importance: Relationships–T1	–																			
2. Importance: Community–T1	.18*	–																		
3. Importance: Growth–T1	.30**	.25**	–																	
4. Importance: Health–T1	.31**	.42**	.19*	–																
5. Importance: Money–T1	–.02	–.06	–.03	.16*	–															
6. Importance: Fame–T1	–.01	.05	.02	.09	.51**	–														
7. Importance: Image–T1	.12	.10	.07	.30**	.58**	.59**	–													
8. Attainment: Relationships–T2	.29**	.21*	.15	.35**	.06	.06	.07	–												
9. Attainment: Community–T2	.11	.51**	.28**	.27**	–.05	.10	.17	.36**	–											
10. Attainment: Growth–T2	.14	.29**	.20*	.24**	.10	.11	.09	.49**	.66**	–										
11. Attainment: Health–T2	.08	.19*	.19*	.34**	.06	.02	.11	.49**	.48**	.55**	–									
12. Attainment: Money–T2	.09	.02	–.07	.01	.30**	.23**	.22*	–.04	.18*	.13	.09	–								
13. Attainment: Fame–T2	.00	.08	–.04	.06	.27**	.41**	.30**	.03	.33**	.31**	.21*	.47**	–							
14. Attainment: Image–T2	.13	.13	.10	.24**	.38**	.27**	.52**	.29*	.35**	.52**	.26**	.26**	.44**	–						
15. Life Satisfaction–T2	.13	.20*	.11	.23**	.03	.06	–.02	.52**	.38**	.51**	.40**	.01	.20*	.24**	–					
16. Self-esteem–T2	.02	.04	.18*	.13	.11	.08	.03	.30**	.29*	.43**	.40**	.00	.26**	.29**	.60**	–				
17. Positive affect–T2	.07	.22*	.24**	.25**	.05	.20*	.09	.40**	.41**	.59**	.47**	.10	.33**	.31**	.61**	.59**	–			
18. Negative affect–T2	.12	.06	.06	–.04	.07	.22*	.17	–.26*	–.16*	–.26*	–.31**	.11	.00	–.10	–.44**	–.22**	–			
19. Physical symptoms–T2	.06	.07	.09	–.13	.07	.22*	.23**	–.15	.05	–.06	–.26**	.13	.12	.04	–.24**	–.26**	–.07	–		
20. Anxiety–T2	.10	–.04	–.05	–.13	.11	.21*	.21*	–.27**	–.30**	–.31**	–.34**	.09	.00	–.12	–.49**	–.53**	–.34**	–		
<i>M</i>	6.77	5.99	6.46	6.41	3.80	3.00	3.46	5.47	4.05	4.83	4.81	2.30	2.19	3.41	3.05	4.57	5.16	2.96	2.47	3.09
<i>SD</i>	0.47	1.01	0.75	0.71	1.39	1.21	1.32	1.16	1.42	1.08	1.22	1.06	0.94	1.24	0.77	1.49	0.94	1.23	0.99	1.32

Note. T1, Time 1; T2, Time 2.
* *p* < .05.
** *p* < .01.

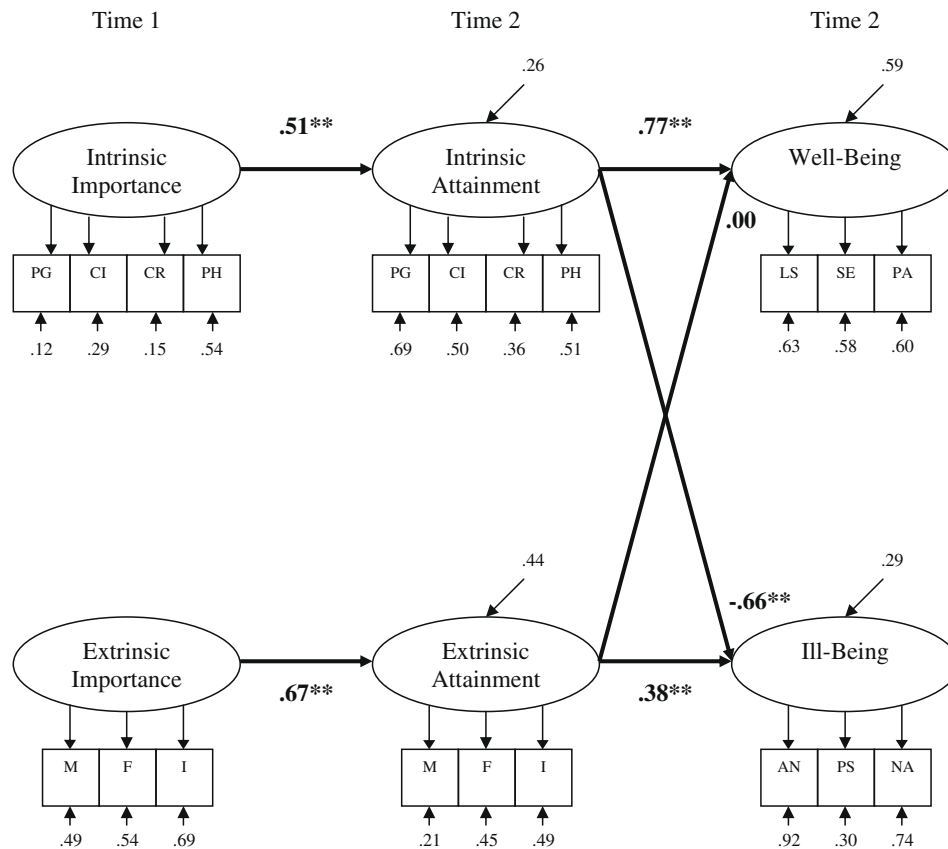


Fig. 1. The structural equation model, with parameter estimates, examining the structural relations among aspiration importance, aspiration attainment, and psychological health over time. *Notes.* Latent variables were used to represent all constructs, and the path coefficients are standardized estimates. Each squared multiple correlation (R^2) value represents the proportion of variance in an endogenous variable that is explained by the predictors of that particular endogenous variable. The covariances (specified in the text) between the residual variances of the observed variables and of the latent constructs were omitted from the figure for clarity. PG, Personal Growth; CI, Community Involvement; CR, Close Relationships; PH, Physical Health; M, Money; F, Fame; I, Image; LS, Life Satisfaction; SE, Self-esteem; PA, Positive Affect; AN, Anxiety; PS, Physical Symptoms; NA, Negative Affect. $^{**} p < .01$.

acceptable fit of the model, $\chi^2(147) = 251.19$, $p < .01$; $\chi^2/df = 1.71$; CFI = .91; NNFI = .87; RMSEA = .05. All factor loadings were significant ($p < .01$) and ranged in magnitude from .39 to .95 (mean $\lambda = .69$).⁵ These results suggest that the observed variables relate only to their underlying latent constructs and that the residual variances relate to one another as expected, and therefore provide justification for proceeding to test the hypothesized structural relations (Cole & Maxwell, 2003).

The covariances between the residual variances of Time 1 importance and Time 2 attainment of both personal growth and money were not significant and thus were not included in the model used to test the fit of the structural model.

3.2.2. Testing the structural model

The structural model included constructs assessed either at the beginning or at the end of the 1-year period. The model measured Time 1 importance of intrinsic and extrinsic aspirations and Time 2 attainment of intrinsic and extrinsic aspirations, as well as well-being and ill-being at Time 2. Covariances were included in this model between the residual variances of (1) the importance and

attainment of close relationships, community involvement, and physical health, (2) A importance and attainment of fame and image, (3) positive and negative affect, (4) the latent constructs *intrinsic importance* and *extrinsic importance*, (5) the latent constructs *intrinsic attainment* and *extrinsic attainment*, and (6) the latent constructs *well-being* and *ill-being*. The structural model yielded acceptable fit to the data, $\chi^2(155) = 262.52$, $p < .01$; $\chi^2/df = 1.69$; CFI = .91; NNFI = .88; RMSEA = .05. The results for the model appear in Fig. 1.

We assessed the relations of the importance of aspirations at Time 1 to their attainment at Time 2. As hypothesized, A importance of intrinsic aspirations at Time 1 related positively to attainment of intrinsic aspirations at Time 2 ($\beta = .51$, $p < .01$) and A importance of extrinsic aspirations at Time 1 related positively to attainment of extrinsic aspirations at Time 2 ($\beta = .67$, $p < .01$). Thus, the degree to which people valued either intrinsic or extrinsic aspirations related positively to attainment of those aspirations 1 year later. We then assessed the relations of the attainment of intrinsic and extrinsic aspirations to psychological health. As predicted, attainment of intrinsic aspirations at Time 2 related positively to well-being at Time 2 ($\beta = .77$, $p < .01$) and negatively to ill-being at Time 2 ($\beta = -.66$, $p < .01$). Further, attainment of extrinsic aspirations at Time 2 was unrelated to well-being at Time 2 ($\beta = .00$, *ns*), but related positively to ill-being at Time 2 ($\beta = .38$, $p < .01$). Thus, as hypothesized, attainment of intrinsic aspirations related positively to psychological health, whereas attainment of extrinsic aspirations was somewhat negatively related to psychological health.

⁵ We also tested a model in which well-being and ill-being indicators were loaded on one latent construct. However, the CFA yielded poor fit of the model, $\chi^2(152) = 354.66$, $p < .01$; $\chi^2/df = 2.33$; CFI = .83; NNFI = .77; RMSEA = .07. Importantly, this model was significantly different from the model in which well-being and ill-being indicators were loaded on separate latent constructs, $\Delta\chi^2(5) = 103.47$, $p < .01$. This result, in conjunction with the findings from the principal components factor analysis, supported our bifurcation of psychological health into separate well-being and ill-being constructs.

3.3. Primary analyses: Structural modeling of absolute continuity

Because the previous SEM analysis included both aspiration attainment and psychological health measured once at Time 2 (two years post-graduation), we tested autoregressive SEMs to examine the associations between change in attainment of aspirations and change in psychological health indices over the 1-year period from Time 1 to Time 2. We predicted that change in attainment of intrinsic aspirations from Time 1 to Time 2 would relate positively to change in psychological health over that period, but that change in attainment of extrinsic aspirations from Time 1 to Time 2 would be unrelated or negatively related to change in psychological health over that period. Moreover, we predicted that any significant associations between change in aspiration attainment and change in psychological health would be mediated by change in basic psychological need satisfaction from Time 1 to Time 2.

3.4. Change in well-being

First, we considered the relations among change in attainment of intrinsic and extrinsic aspirations (the IVs), basic psychological need satisfaction (the MV), and well-being (the DV) from Time 1 to Time 2. Table 3 presents means, standard deviations, and inter-correlations for the aspiration attainment, basic psychological need satisfaction, and well-being variables used as indicators of the latent constructs examined in the autoregressive SEM analyses to assess those relations. Mediation was tested using the Baron and Kenny (1986) method.

3.4.1. Testing the measurement model

Eight latent constructs were created, each indicated by at least three observed variables. We expected attainment of the four intrinsic aspirations at Time 1 and Time 2 to load positively onto latent constructs labeled *Time 1 intrinsic attainment* and *Time 2 intrinsic attainment*, respectively; attainment of the three extrinsic aspirations at Time 1 and Time 2 to load positively onto latent constructs labeled *Time 1 extrinsic attainment* and *Time 2 extrinsic attainment*, respectively; satisfaction of the basic psychological needs for autonomy, competence, and relatedness at Time 1 and Time 2 to load positively onto latent constructs labeled *Time 1 need satisfaction* and *Time 2 need satisfaction*, respectively; and life satisfaction, self-esteem, and positive affect at Time 1 and Time 2 to load positively onto latent constructs labeled *Time 1 well-being* and *Time 2 well-being*, respectively.

To test the measurement model, a CFA on the latent constructs was performed on a model with unanalyzed covariances among all eight latent constructs. In addition, covariances were included between the residual variances of each observed variable assessed at Time 1 and Time 2 because the same measure was administered at both times. The CFA yielded acceptable fit of the model, $\chi^2(258) = 507.18$, $p < .01$; $\chi^2/df = 1.97$; CFI = .90; NNFI = .86; RMSEA = .06. All factor loadings were significant ($p < .01$) and ranged in magnitude from .59 to .86 (mean $\lambda = .72$).

The covariances between the residual variances of Time 1 and Time 2 satisfaction of both autonomy and competence were not significant and thus were not included in the structural model used to test for mediation. The CFA performed on the model that excluded those covariances yielded acceptable fit of the model, $\chi^2(260) = 507.93$, $p < .01$; $\chi^2/df = 1.95$; CFI = .90; NNFI = .86; RMSEA = .06.

We assessed factorial invariance by examining whether the factor loadings between the observed variables and their respective latent constructs were invariant across the corresponding Time 1 and Time 2 latent constructs (Cole & Maxwell, 2003). A model is considered invariant to the baseline model if its fit is not significantly

different from the baseline model, assessed using a χ^2 difference test (Byrne, 2001). We compared the baseline model (presented above) to a restricted model in which the factor loadings for the corresponding Time 1 and Time 2 constructs were constrained to be equal. The restricted model yielded acceptable fit, $\chi^2(269) = 512.59$, $p < .01$; $\chi^2/df = 1.91$; CFI = .90; NNFI = .86; RMSEA = .06. Importantly, this model did not differ significantly from the baseline model, $\Delta\chi^2(9) = 4.65$, $p = .86$, indicating that the latent constructs were represented and understood equivalently at Time 1 and Time 2, which suggests that any associations between change in the latent constructs are due to actual change in the constructs (Hertzog & Nesselrode, 2003), rather than to differences in how participants understood and/or reported the observed variables at Time 1 and Time 2.

3.4.2. Mediation by change in basic psychological need satisfaction

The structural model included the same variables and paths that were used in the measurement model. Thus, the fit of the model at each subsequent step used to test for mediation was the same as the fit of the measurement model, so fit indices are not repeated. Preliminarily, a model with a direct path from Time 1 well-being to Time 2 well-being was examined. As expected, Time 1 well-being related positively to Time 2 well-being ($\beta = .67$, $p < .01$), indicating that well-being remained relatively stable over time.

The first step for mediation concerns the relation of the IVs (i.e., the residual variances of Time 2 intrinsic attainment and Time 2 extrinsic attainment, controlling for Time 1) to the DV (i.e., the residual variance of Time 2 well-being, controlling for Time 1). To test this step, a model was examined with direct paths from (1) Time 1 well-being to Time 2 well-being, (2) Time 1 intrinsic attainment to Time 2 intrinsic attainment, (3) Time 1 extrinsic attainment to Time 2 extrinsic attainment, (4) the residual variance of Time 2 intrinsic attainment to the residual variance of Time 2 well-being, and (5) the residual variance of Time 2 extrinsic attainment to the residual variance of Time 2 well-being.⁶ The critical relation for Step 1 to be satisfied for attainment of intrinsic aspirations is that the residual variance of Time 2 intrinsic attainment relates to the residual variance of Time 2 well-being. The critical relation for Step 1 to be satisfied for attainment of extrinsic aspirations is that the residual variance of Time 2 extrinsic attainment relates to the residual variance of Time 2 well-being.

As expected, Time 1 intrinsic attainment related positively to Time 2 intrinsic attainment ($\beta = .85$, $p < .01$) and Time 1 extrinsic attainment related positively to Time 2 extrinsic attainment ($\beta = .70$, $p < .01$), indicating that attainment of both types of aspira-

⁶ In the autoregressive SEM analyses, we examined the associations among the residual variances of the Time 2 latent constructs (viz., aspiration attainment, need satisfaction, and psychological health) because instability is reflected in the residual variances of the Time 2 latent constructs, controlling for the corresponding Time 1 latent constructs. Thus, the residual variances are indirect measures of individual differences in change from Time 1 to Time 2 (Hertzog & Nesselrode, 2003). However, MacKinnon, Fairchild, and Fritz (2007) stated that, in the basic autoregressive model, the relations of the Time 1 constructs to the corresponding Time 2 constructs must be specified, as well as covariances between the Time 1 constructs and the residual variances of the Time 2 constructs. Because endogenous variables are not free to covary (Kline, 1998), it was necessary to model an error term for the residual variances of Time 2 need satisfaction and Time 2 psychological health (i.e., well-being and ill-being). After modeling error terms of the residual variances of the endogenous variables, the resulting model would permit the estimation of (1) the relation of the residual variance (i.e., change) of Time 2 aspiration attainment (controlling for Time 1) to the residual variance (i.e., change) of Time 2 need satisfaction (controlling for Time 1), and (2) the relation of the residual variance (i.e., change) of Time 2 need satisfaction (controlling for Time 1) to the residual variance (i.e., change) of Time 2 psychological health (controlling for Time 1), while still allowing the error terms of the residual variances of Time 2 need satisfaction and Time 2 psychological health to covary with the Time 1 latent constructs. The basic model for this analysis (K. Preacher, personal communication, June 26, 2008) is presented in Fig. 2.

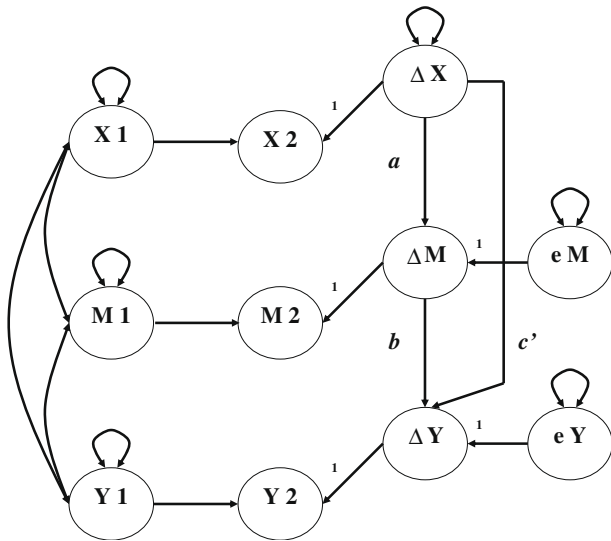


Fig. 2. The basic autoregressive structural equation model. *Notes.* The variables X1, M1, and Y1 represent the Time 1 independent variable, mediating variable, and dependent variable, respectively. The variables X2, M2, and Y2 represent the Time 2 independent variable, mediating variable, and dependent variable, respectively. The variables ΔX , ΔM , and ΔY represent change in the independent variable, mediating variable, and dependent variable, respectively. The variables eM and eY represent the error terms of change in the mediating variable and change in the dependent variable, respectively. The covariances between (1) ΔX and both M1 and Y1, (2) ΔM and both X1 and Y1, and (3) ΔY and both X1 and M1 were omitted from the figure for clarity. Mediation of the direct relation of ΔX to ΔY can be obtained from the path coefficients labeled a and b. The path coefficient labeled c' represents the direct relation of ΔX to ΔY while controlling for ΔM .

tions remained relatively stable over time. As hypothesized, the residual variance of Time 2 intrinsic attainment related positively to the residual variance of Time 2 well-being ($\beta = .63$, $p < .01$), whereas the residual variance of Time 2 extrinsic attainment was unrelated to the residual variance of Time 2 well-being ($\beta = -.02$, ns). Thus, Step 1 for mediation was satisfied for the relation of change in attainment of intrinsic, but not extrinsic, aspirations to change in well-being.

The second step for mediation concerns the relation of the IVs (i.e., the residual variances of Time 2 intrinsic attainment and Time 2 extrinsic attainment, controlling for Time 1) to the DV (i.e., the residual variance of Time 2 need satisfaction, controlling for Time 1). To test this step, a model was examined with direct paths from (1) Time 1 well-being to Time 2 well-being, (2) Time 1 intrinsic attainment to Time 2 intrinsic attainment, (3) Time 1 extrinsic attainment to Time 2 extrinsic attainment, (4) Time 1 need satisfaction to Time 2 need satisfaction, (5) the residual variance of Time 2 intrinsic attainment to the residual variance of Time 2 well-being, (6) the residual variance of Time 2 extrinsic attainment to the residual variance of Time 2 well-being, (7) the residual variance of Time 2 intrinsic attainment to the residual variance of Time 2 need satisfaction, and (8) the residual variance of Time 2 extrinsic attainment to the residual variance of Time 2 need satisfaction. The critical relation for Step 2 to be satisfied for attainment of intrinsic aspirations is that the residual variance of Time 2 intrinsic attainment relates to the residual variance of Time 2 need satisfaction. The critical relation for Step 2 to be satisfied for attainment of extrinsic aspirations is that the residual variance of Time 2 extrinsic attainment relates to the residual variance of Time 2 need satisfaction.

Time 1 need satisfaction was unrelated to Time 2 need satisfaction ($\beta = -.09$, ns). As hypothesized, the residual variance of Time 2 intrinsic attainment related positively to the residual variance of Time 2 need satisfaction ($\beta = .44$, $p < .01$), whereas the residual var-

iance of Time 2 extrinsic attainment was unrelated to the residual variance of Time 2 need satisfaction ($\beta = .03$, ns). Thus, Step 2 for mediation of the relation of change in attainment of intrinsic aspirations to change in well-being by change in basic psychological need satisfaction was satisfied.

The third step for mediation concerns the relation of the MV (i.e., the residual variance of Time 2 need satisfaction, controlling for Time 1) to the DV (i.e., the residual variance of Time 2 well-being, controlling for Time 1) while controlling for the IVs (i.e., the residual variances of Time 2 intrinsic attainment and Time 2 extrinsic attainment, controlling for Time 1). To test this step, a model was examined with direct paths from (1) Time 1 well-being to Time 2 well-being, (2) Time 1 intrinsic attainment to Time 2 intrinsic attainment, (3) Time 1 extrinsic attainment to Time 2 extrinsic attainment, (4) Time 1 need satisfaction to Time 2 need satisfaction, (5) the residual variance of Time 2 intrinsic attainment to the residual variance of Time 2 well-being, (6) the residual variance of Time 2 extrinsic attainment to the residual variance of Time 2 well-being, (7) the residual variance of Time 2 intrinsic attainment to the residual variance of Time 2 need satisfaction, (8) the residual variance of Time 2 extrinsic attainment to the residual variance of Time 2 need satisfaction, and (9) the residual variance of Time 2 need satisfaction to the residual variance of Time 2 well-being. The critical relation for Step 3 to be satisfied is that the residual variance of Time 2 need satisfaction relates to the residual variance of Time 2 well-being. As hypothesized, the residual variance of Time 2 need satisfaction related positively to the residual variance of Time 2 well-being ($\beta = .83$, $p < .01$), which satisfied Step 3 for mediation.

The fourth step for mediation concerns the reduction of the relations of the IVs (i.e., the residual variances of Time 2 intrinsic attainment and Time 2 extrinsic attainment, controlling for Time 1) to the DV (i.e., the residual variance of Time 2 well-being, controlling for Time 1) while controlling for the MV (i.e., the residual variance of Time 2 need satisfaction, controlling for Time 1). When both direct and indirect paths were included in the model, the relation of the residual variance of Time 2 intrinsic attainment to the residual variance of Time 2 well-being was reduced from $\beta = .63$ ($p < .01$) to $\beta = .16$ (ns), indicating mediation of the direct relation. The model for these analyses is depicted in Fig. 3.

We used the procedure outlined by MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) to test the significance of the mediation of the relation of change in attainment of intrinsic aspirations to change in well-being by change in basic psychological need satisfaction. The z' test indicated that change in basic psychological need satisfaction was a significant mediator of the direct relation ($z' = 2.69$, $p < .01$).

3.5. Change in ill-being

Next, we considered the relations among change in attainment of intrinsic and extrinsic aspirations (the IVs), basic psychological need satisfaction (the MV), and ill-being (the DV) from Time 1 to Time 2. Table 4 presents means, standard deviations, and intercorrelations for the aspiration attainment, basic psychological need satisfaction, and ill-being variables used as indicators of the latent constructs examined in the autoregressive SEM analyses to assess these relations. Mediation was tested using the Baron and Kenny (1986) method.

3.5.1. Testing the measurement model

The latent constructs labeled intrinsic attainment, extrinsic attainment, and need satisfaction at Time 1 and Time 2 were constructed in the same way as in the previous model used to assess change in well-being. We expected anxiety, physical symptoms, and negative affect at Time 1 and Time 2 to load positively onto la-

Table 3
Associations among observed variables used to indicate latent constructs to assess the structural relations among change in aspiration attainment, basic psychological need satisfaction, and well-being.

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		
1. Relationships–T1	–																											
2. Community–T1	.35**	–																										
3. Growth–T1	.56**	.68**	–																									
4. Health–T1	.49**	.43**	.47**	–																								
5. Money–T1	.07	.35**	.25**	.12	–																							
6. Fame–T1	.17*	.46**	.39**	.20*	.54**	–																						
7. Image–T1	.34**	.41**	.35**	.41**	.42**	.45**	–																					
8. Relationships–T2	.67**	.29**	.46**	.41**	–.06	.23**	.32**	–																				
9. Community–T2	.42**	.75**	.60**	.47**	.23**	.41**	.43**	.36**	–																			
10. Growth–T2	.47**	.61**	.79**	.45**	.23**	.41**	.37**	.49**	.66**	–																		
11. Health–T2	.38**	.37**	.40**	.77**	.04	.15	.41**	.49**	.48**	.55**	–																	
12. Money–T2	–.05	.15	.07	.06	.66**	.29**	.22*	–.04	.18*	.13	.09	–																
13. Fame–T2	.06	.30**	.22*	.19*	.37**	.67**	.33**	.03	.33**	.31**	.21*	.47**	–															
14. Image–T2	.25**	.31**	.30**	.42**	.18*	.34**	.72**	.29**	.35**	.35**	.52**	.26**	.44**	–														
15. Autonomy–T1	.14	.12	.13	.12	–.11	.09	–.01	.13	.08	.19	.10	–.12	.16	–.08	–													
16. Competence–T1	.00	.04	.02	.04	–.01	.17	.12	.05	.04	.11	.06	.08	.19	.08	.56**	–												
17. Relatedness–T1	.09	.08	–.01	.04	–.06	–.01	.06	.01	.05	.07	.04	–.07	.03	–.09	.58**	.55**	–											
18. Autonomy–T2	.29**	.30**	.47**	.31**	.01	.29**	.18*	.37**	.34**	.62**	.42**	.04	.23**	.23**	–.01	.02	.00	–										
19. Competence–T2	.15	.34**	.40**	.33**	.01	.32**	.16	.27**	.41**	.45**	.39**	.09	.26**	.29**	–.10	–.02	–.08	.58**	–									
20. Relatedness–T2	.38**	.25**	.37**	.37**	–.15	.30**	.29**	.55**	.30**	.38**	.41**	–.07	.15	.36**	–.09	–.04	.02	.56**	.56**	–								
21. Life satisfaction–T1	.51**	.33**	.56**	.43**	.23*	.32**	.34**	.50**	.31**	.48**	.40**	.08	.15	.33**	–.03	–.05	–.19*	.34**	.34**	.34**	–							
22. Self-esteem–T1	.43**	.22**	.46**	.44**	.04	.22**	.35**	.36**	.24**	.36**	.42**	.05	.18*	.39**	.35**	.03	–.05	.39**	.43**	.42**	.62**	–						
23. Positive affect–T1	.58**	.49**	.60**	.52**	.18*	.36**	.41**	.44**	.38**	.52**	.42**	.07	.26**	.30**	.19*	.06	.07	.33**	.34**	.33**	.63**	.59**	–					
24. Life satisfaction–T2	.28*	.24**	.44**	.30**	–.03	.26**	.17*	.52**	.38**	.51**	.40**	.01	.20*	.24**	–.09	–.05	–.16	.50**	.59**	.57**	.58**	.45**	.43**	–				
25. Self-esteem–T2	.24**	.24**	.34**	.31**	–.02	.27**	.25**	.30**	.29**	.43**	.40**	.00	.26**	.29**	–.13	–.02	–.11	.50**	.53**	.41**	.40**	.72**	.44**	.60**	–			
26. Positive affect–T2	.34**	.48**	.54**	.43**	.10	.38**	.30**	.40**	.41**	.59**	.47**	.10	.33**	.31**	.15	.05	.05	.58**	.58**	.46**	.37**	.46**	.65**	.61**	.59**	–		
M	5.44	4.04	4.75	4.74	2.27	2.34	3.45	5.47	4.05	4.83	4.81	2.30	2.19	3.41	4.91	5.15	5.58	4.97	5.16	5.58	4.76	4.57	5.08	3.05	4.57	5.16		
SD	1.28	1.31	1.11	1.21	1.05	0.96	1.22	1.16	1.42	1.08	1.22	1.06	0.94	1.24	0.89	0.99	0.89	0.86	0.99	0.85	1.30	1.39	1.01	0.77	1.49	0.94		

Note. T1, Time 1; T2, Time 2. Only the attainment of the aspirations was assessed in these analyses.

* $p < .05$.

** $p < .01$.

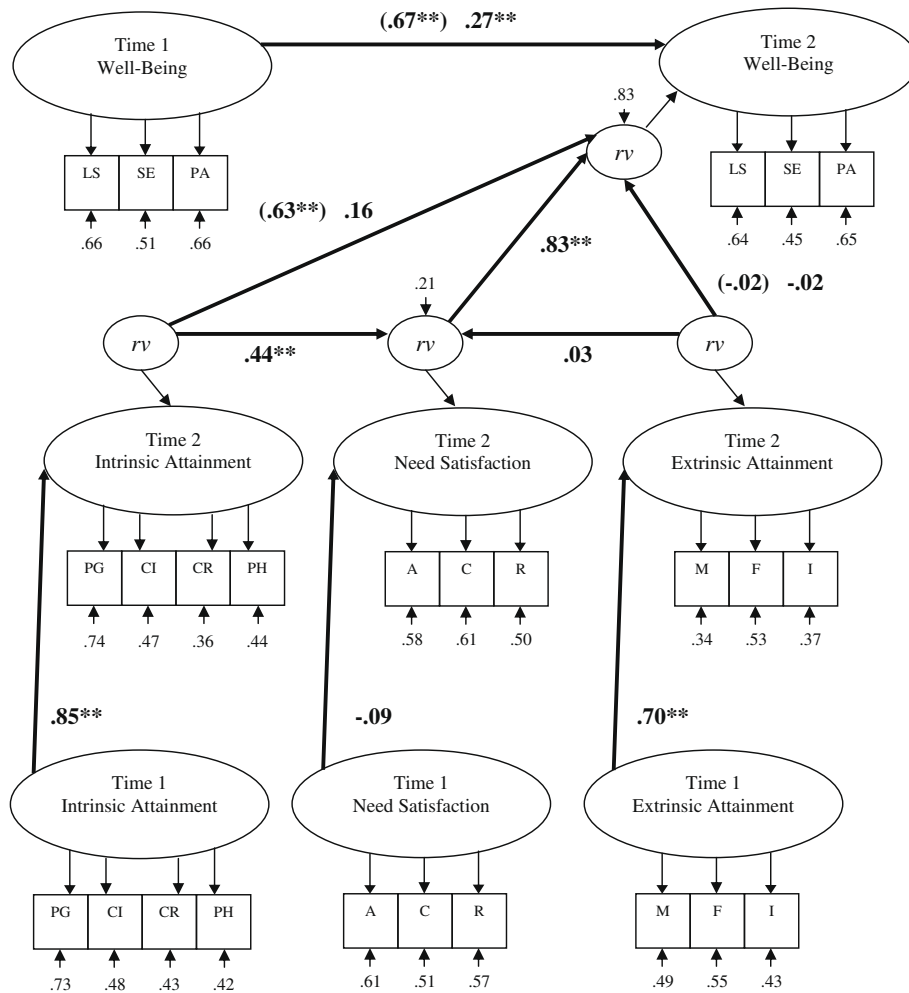


Fig. 3. The autoregressive structural equation model, with parameter estimates, examining the structural relations among change in aspiration attainment and well-being, as mediated by change in basic psychological need satisfaction. *Notes.* Latent variables were used to represent all constructs, and the path coefficients are standardized estimates. Each squared multiple correlation (R^2) value represents the proportion of variance in an endogenous variable that is explained by the predictors of that particular endogenous variable. The residual variances (labeled rv) of the Time 2 latent constructs represent change in those constructs from Time 1 to Time 2. As depicted by the reduced beta coefficient, the relation of change in intrinsic attainment to change in well-being was mediated by change in need satisfaction. Moreover, the relation of Time 1 well-being to Time 2 well-being was reduced by inclusion of the motivation variables. The covariances (specified in the text) between the residual variances of the observed variables and of the latent constructs were omitted from the figure for clarity. PG, Personal Growth; CI, Community Involvement; CR, Close Relationships; PH, Physical Health; M, Money; F, Fame; I, Image; A, Autonomy; C, Competence; R, Relatedness; LS, Life Satisfaction; SE, Self-esteem; PA, Positive Affect. ** $p < .01$.

tent constructs labeled *Time 1 ill-being* and *Time 2 ill-being*, respectively.

To test the measurement model, a CFA on the latent constructs was performed on a model with unanalyzed covariances among all eight latent constructs. In addition, covariances were included between the residual variances of each observed variable assessed at Time 1 and Time 2 because the same measure was administered at both times. The CFA yielded acceptable fit of the model, $\chi^2(258) = 479.55$, $p < .01$; $\chi^2/df = 1.86$; CFI = .91; NNFI = .88; RMSEA = .06. All factor loadings were significant ($p < .01$) and ranged in magnitude from .56 to .93 (mean $\lambda = .73$).

The covariances between the residual variances of Time 1 and Time 2 satisfaction of both autonomy and competence, as well as between Time 1 and Time 2 anxiety, were not significant, and thus were not included in the structural model used to test for mediation. The CFA performed on the model that excluded those covariances yielded acceptable fit of the model, $\chi^2(261) = 480.07$, $p < .01$; $\chi^2/df = 1.84$; CFI = .91; NNFI = .88; RMSEA = .06.

We assessed factorial invariance by examining whether the factor loadings between the observed variables and their respective latent constructs were invariant across the corresponding Time 1

and Time 2 latent constructs (Cole & Maxwell, 2003). The restricted model yielded acceptable fit, $\chi^2(270) = 488.84$, $p < .01$; $\chi^2/df = 1.81$; CFI = .91; NNFI = .88; RMSEA = .06. Importantly, this model did not differ significantly from the baseline model, $\Delta\chi^2(9) = 8.77$, $p = .46$.

3.5.2. Mediation by change in basic psychological need satisfaction

The structural model included the same variables and paths that were used in the measurement model. Thus, the fit of the model at each subsequent step used to test for mediation was the same as the fit of the measurement model, so fit indices are not repeated. Preliminarily, a model with a direct path from Time 1 ill-being to Time 2 ill-being was examined. As expected, Time 1 ill-being related positively to Time 2 ill-being ($\beta = .65$, $p < .01$), indicating that ill-being remained relatively stable over time.

Time 1 intrinsic attainment related positively to Time 2 intrinsic attainment ($\beta = .85$, $p < .01$) and Time 1 extrinsic attainment related positively to Time 2 extrinsic attainment ($\beta = .71$, $p < .01$), indicating that attainment of both types of aspirations remained relatively stable over time. As hypothesized, the residual variance of Time 2 intrinsic attainment related negatively to the residual variance of Time 2 ill-being ($\beta = -.59$, $p < .01$), whereas

Table 4
Associations among observed variables used to indicate latent constructs to assess the structural relations among change in aspiration attainment, basic psychological need satisfaction, and ill-being.

Measures	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		
1. Relationships–T1	–																											
2. Community–T1	.35**	–																										
3. Growth–T1	.56**	.68**	–																									
4. Health–T1	.49**	.43**	.47**	–																								
5. Money–T1	.07	.35**	.25**	.12	–																							
6. Fame–T1	.17*	.46**	.39**	.20*	.54**	–																						
7. Image–T1	.34**	.41**	.35**	.41**	.42**	.45**	–																					
8. Relationships–T2	.67**	.29**	.46**	.41**	–.06	.23**	.32**	–																				
9. Community–T2	.42**	.75**	.60**	.47**	.23**	.41**	.43**	.36**	–																			
10. Growth–T2	.47**	.61**	.79**	.45**	.23**	.41**	.37**	.49**	.66**	–																		
11. Health–T2	.38**	.37**	.40**	.77**	.04	.15	.41**	.49**	.48**	.55**	–																	
12. Money–T2	–.05	.15	.07	.06	.66**	.29**	.22*	–.04	.18*	.13	.09	–																
13. Fame–T2	.06	.30**	.22*	.19*	.37**	.67**	.33**	.03	.33**	.31**	.21*	.47**	–															
14. Image–T2	.25**	.31**	.30**	.42**	.18*	.34**	.72**	.29**	.35**	.35**	.52**	.26**	.44**	–														
15. Autonomy–T1	.14	.12	.13	.12	–.11	.09	–.01	.13	.08	.19	.10	–.12	.16	–.08	–													
16. Competence–T1	.00	.04	.02	.04	–.01	.17	.12	.05	.04	.11	.06	.08	.19	.08	.56**	–												
17. Relatedness–T1	.09	.08	–.01	.04	–.06	–.01	.06	.01	.05	.07	.04	–.07	.03	–.09	.58**	.55**	–											
18. Autonomy–T2	.29**	.30**	.47**	.31**	.01	.29**	.18*	.37**	.34**	.62**	.42**	.04	.23**	.23**	–.01	.02	.00	–										
19. Competence–T2	.15	.34**	.40**	.33**	.01	.32**	.16	.27**	.41**	.45**	.39**	.09	.26**	.29**	–.10	–.02	–.08	.58**	–									
20. Relatedness–T2	.38**	.25**	.37**	.37**	–.15	.30**	.29**	.55**	.30**	.38**	.41**	–.07	.15	.36**	–.09	–.04	.02	.56**	.56**	–								
21. Anxiety–T1	–.31**	–.17	–.38**	–.41**	–.01	–.08	–.21**	–.36**	–.14	–.30**	–.41**	.05	–.06	–.24**	–.01	.00	.08	–.39**	–.32**	–.33**	–							
22. Symptoms–T1	–.09	.11	–.06	–.31**	–.03	.06	–.02	–.14	.04	–.06	–.29**	.00	.00	–.05	–.04	–.02	.01	–.20*	–.19*	–.20*	.61**	–						
23. Negative affect–T1	–.28**	–.08	–.28**	–.34**	.06	.07	–.14	–.29**	–.12	–.22**	–.39**	.04	.02	–.16	.02	.05	.10	–.28**	–.23**	–.27**	.83**	.62**	–					
24. Anxiety–T2	–.21*	–.13	–.19*	–.22*	.10	–.05	–.19*	–.27**	–.30**	–.31**	–.34**	.09	.00	–.12	.11	–.02	.06	–.47**	–.40**	–.35**	.54**	.41**	.56**	–				
25. Symptoms–T2	–.11	.13	.03	–.13	.10	.10	.01	–.15	.05	–.06	–.26**	.13	.12	.04	–.01	–.01	.04	–.23**	–.14	–.15	.37**	.66**	.35**	.53**	–			
26. Negative affect–T2	–.16	–.01	–.09	–.16	.21	.05	–.08	–.26**	–.16*	–.26**	–.31**	.11	.00	–.10	.17	–.05	.05	–.46**	–.39**	–.34**	.48**	.35**	.59**	.83**	.49**	–		
M	5.44	4.04	4.75	4.74	2.27	2.34	3.45	5.47	4.05	4.83	4.81	2.30	2.19	3.41	4.91	5.15	5.58	4.97	5.16	5.58	3.07	2.54	2.90	3.09	2.47	2.96		
SD	1.28	1.31	1.11	1.21	1.05	0.96	1.22	1.16	1.42	1.08	1.22	1.06	0.94	1.24	0.89	0.99	0.89	0.86	0.99	0.85	1.26	1.04	1.11	1.32	0.99	1.23		

Note. T1 = Time 1; T2 = Time 2. Only the attainment of the aspirations was assessed in these analyses.

* $p < .05$.

** $p < .01$.

the residual variance of Time 2 extrinsic attainment related marginally positively to the residual variance of Time 2 ill-being ($\beta = .27, p < .07$). Thus, Step 1 for mediation was satisfied for the relation of change in attainment of intrinsic, but not extrinsic, aspirations to change in ill-being.

Time 1 need satisfaction was unrelated to Time 2 need satisfaction ($\beta = -.09, ns$). As hypothesized, the residual variance of Time 2 intrinsic attainment related positively to the residual variance of Time 2 need satisfaction ($\beta = .45, p < .01$), whereas the residual variance of Time 2 extrinsic attainment was unrelated to the residual variance of Time 2 need satisfaction ($\beta = .02, ns$). Thus, Step 2 for mediation of the relation of change in attainment of intrinsic aspirations to change in ill-being by change in basic psychological need satisfaction was satisfied.

Step 3 for mediation was satisfied, as the residual variance of Time 2 need satisfaction related negatively to the residual variance of Time 2 ill-being ($\beta = -.39, p < .01$). In Step 4, when both direct and indirect paths were included in the model, the relation of the residual variance of Time 2 intrinsic attainment to the residual variance of Time 2 ill-being was reduced from $\beta = -.59$

($p < .01$) to $\beta = -.42$ ($p < .01$), indicating partial mediation of the direct relation. The model for these analyses is depicted in Fig. 4.

The procedure outlined by MacKinnon et al. (2002) was used to test the significance of the mediation of the relation of change in attainment of intrinsic aspirations to change in ill-being by change in basic psychological need satisfaction. The z' test indicated that change in basic psychological need satisfaction was a significant mediator of the direct relation ($z' = -2.26, p < .01$).

4. Discussion

Aristotle (trans. 1946, pp. 280–281) stated that,

“(Happiness) belongs more to those who have cultivated their character and mind to the uttermost, and kept acquisition of external goods within moderate limits, than it does to those who have managed to acquire more external goods than they can possibly use, and are lacking goods of the soul. . . . Any excessive amount of such things must either cause its possessor some injury, or, at any rate, bring him no benefit.”

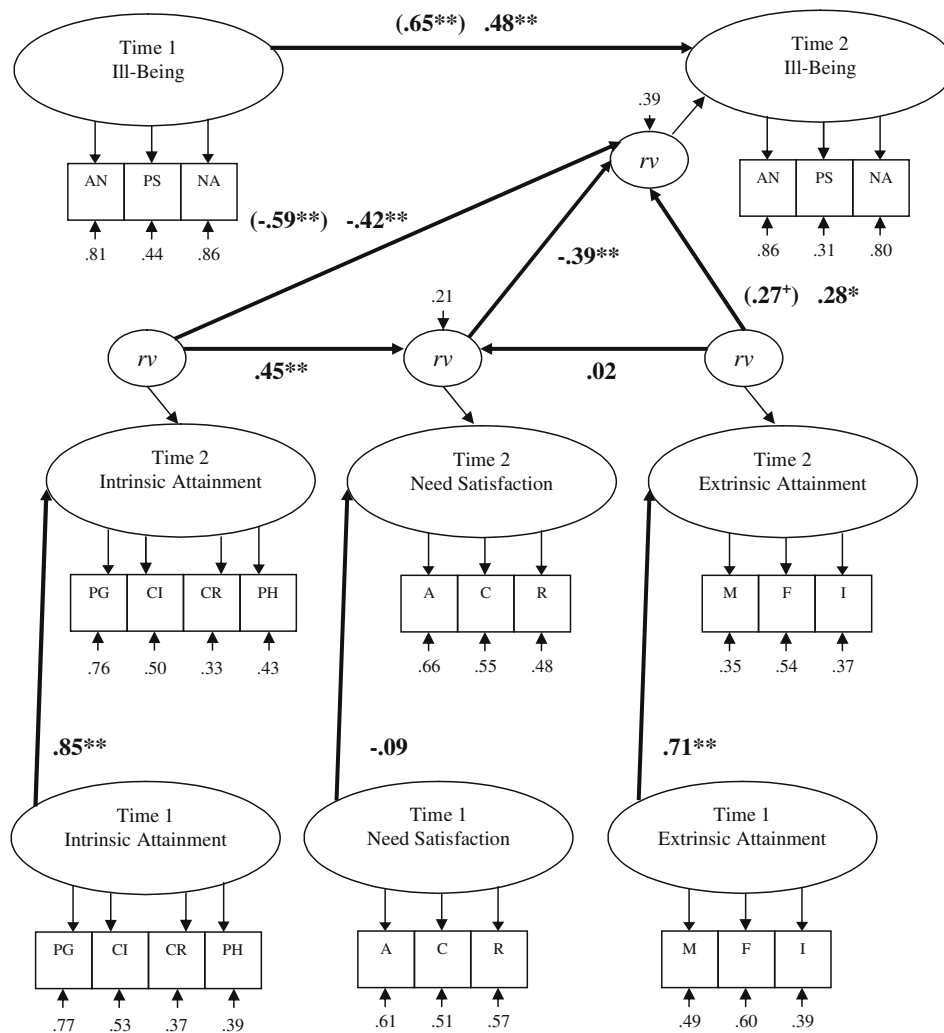


Fig. 4. The autoregressive structural equation model, with parameter estimates, examining the structural relations among change in aspiration attainment and ill-being, as mediated by change in basic psychological need satisfaction. Notes. Latent variables were used to represent all constructs, and the path coefficients are standardized estimates. Each squared multiple correlation (R^2) value represents the proportion of variance in an endogenous variable that is explained by the predictors of that particular endogenous variable. The residual variances (labeled *rv*) of the Time 2 latent constructs represent change in those constructs from Time 1 to Time 2. As depicted by the reduced beta coefficient, the relation of change in intrinsic attainment to change in ill-being was mediated by change in need satisfaction. Moreover, the relation of Time 1 ill-being to Time 2 ill-being was reduced by inclusion of the motivation variables. The covariances (specified in the text) between the residual variances of the observed variables and of the latent constructs were omitted from the figure for clarity. PG, Personal Growth; CI, Community Involvement; CR, Close Relationships; PH, Physical Health; M, Money; F, Fame; I, Image; A, Autonomy; C, Competence; R, Relatedness; AN, Anxiety; PS, Physical Symptoms; NA, Negative Affect. * $p < .10$, $p < .05$, $p < .01$.

In line with this quote and guided by self-determination theory, the current study assessed (1) the relations of valuing intrinsic aspirations (i.e., “goods of the soul”) and extrinsic aspirations (i.e., “external goods”) to attainment of those goals over a 1-year period, (2) how attainment of intrinsic and extrinsic aspirations related to psychological health, (3) whether change in attainment of intrinsic aspirations and extrinsic aspirations over the course of 1 year related differentially to change in psychological health, and (4) whether change in basic psychological need satisfaction mediated the relations of change in aspiration attainment to change in psychological health. Data were collected at two points in time over 1 year, which allowed for analyses of both individual differences and absolute continuity to test the hypotheses that supported Aristotle’s astute assertions.

We used *SEM* to examine the first set of hypotheses concerning the structural relations among aspiration importance, aspiration attainment, and psychological health, which revealed two important findings. First, as hypothesized, the importance of both intrinsic and extrinsic aspirations at Time 1 related positively to the level of attainment of the corresponding aspirations 1 year later. This finding is in line with a number of goal theories suggesting that valued goals are more likely to be attained (e.g., Eccles & Wigfield, 2002; Wigfield & Eccles, 2000). However, it was important for the SDT perspective to establish that the importance of both intrinsic and extrinsic aspirations is related to the attainment of the corresponding aspirations because of their presumed differential associations with psychological health.

Second, as hypothesized, attainment of intrinsic and extrinsic aspirations at Time 2 related differentially to psychological health at that time. Specifically, attainment of intrinsic aspirations related positively to well-being and negatively to ill-being; in contrast, attainment of extrinsic aspirations was unrelated to well-being and related positively to ill-being. Although predicted by SDT, these findings are rather striking, as they suggest that attainment of a particular set of goals (viz., extrinsic aspirations) has no impact on well-being and actually contributes to ill-being. In fact, this intriguing pattern of results seems to contradict past research on goal striving that has found that goal attainment relates positively to various indices of psychological health, including positive affect (e.g., Emmons & Diener, 1986), life satisfaction (e.g., Emmons, 1986), and subjective well-being (e.g., Sheldon & Elliot, 1999). It is important to note, though, that this research on goal striving did not consider the content of the goals. From the perspective of SDT, the content (viz., intrinsic and extrinsic) of people’s life goals is expected to relate differentially to satisfaction of the basic psychological needs, which in turn is expected to predict psychological health.

We used autoregressive *SEM* to examine the second set of hypotheses concerning the structural relations of change in attainment of intrinsic and extrinsic aspirations to change in psychological health, as mediated by change in basic psychological need satisfaction. As predicted, and consistent with the Time 2 cross-sectional analysis of aspiration attainment and psychological health, change in attainment of intrinsic aspirations related positively to change in well-being and negatively to change in ill-being from 1 to 2 years post-graduation. Also consistent with the cross-sectional analysis, change in attainment of extrinsic aspirations did not relate to change in well-being; however, whereas in the cross-sectional analysis attainment of extrinsic aspirations related significantly positively to ill-being, in the autoregressive analysis the positive relation of change in attainment of extrinsic aspirations to change in ill-being was only marginal. Moreover, change in basic psychological need satisfaction mediated the relations of change in attainment of intrinsic aspirations to change in both well-being and ill-being. Thus, it seems that attainment of intrinsic aspirations is associated with psychological health because those

goals are closely related to satisfaction of the basic psychological needs for autonomy, competence, and relatedness.

In contrast, change in attainment of extrinsic aspirations does not relate positively to change in psychological health, presumably because it does not relate positively to change in satisfaction of the basic psychological needs, although there are other possible explanations for this lack of association that deserve mention. First, Bandura and Locke (2003) suggested that people experience feelings of pride and satisfaction when they attain valued goals; however, it is possible that the satisfaction associated with attainment of extrinsic (compared to intrinsic) aspirations is short-lived and temporary. Second, it is possible that the pursuit and attainment of extrinsic aspirations interfere with, or ‘crowd out’ (Frey, 1997), other important aspects of people’s lives (e.g., close relationships),⁷ thus detracting from their experiences of psychological health. In support of these two possibilities, which is consistent with the idea that attainment of extrinsic aspirations provides little satisfaction of the basic psychological needs, Vansteenkiste et al. (2007) reported that employees who held an extrinsic (relative to an intrinsic) work value orientation reported both short-lived satisfaction after successful goal attainment and also conflict between their work and family. A third possible explanation for the lack of association is derived from research based on Festinger’s (1954) theory of social comparison processes. It is possible that the pursuit of extrinsic aspirations leads people to engage in the process of upward social comparison, which may leave them feeling that they will never have as much attainment of extrinsic aspirations as others. Thus, as Wheeler and Miyake (1992) reported, upward social comparisons are associated with lower well-being, perhaps, as these authors suggested, because such comparisons leave people feeling jealous (Salovey & Rodin, 1984) or in a state of relative deprivation (Crosby, 1976; Martin, 1986). Future research is needed to examine the relations of the pursuit and attainment of extrinsic aspirations to short-lived satisfaction, conflict among different aspects of people’s lives, and upward social comparison processes, as they all relate to lessened satisfaction of the basic psychological needs and/or contribute independently to diminished psychological health.

It is noteworthy that, in the current study, an inspection of the zero-order correlations reveals modest positive associations between attainment of extrinsic aspirations and indices of well-being (mean $r = .19$) (see Table 2 or Table 3), no association between attainment of extrinsic aspirations and indices of ill-being (mean $r = .03$) (see Table 2 or Table 4), and modest positive associations between attainment of extrinsic aspirations and basic psychological need satisfaction (mean $r = .18$) (see Table 3 or Table 4). Thus, some possible explanations for the discrepancy between the results from the zero-order correlations and those from the *SEM* analyses seem warranted.

Some theorists outside the SDT tradition have proposed that perceptions of self-efficacy (Bandura, 1982) or feelings of competence (Raynor, 1982) are derived from successful pursuits of any goal, which in turn may contribute to psychological health (cf., Emmons, 1986). Our data, which assessed basic psychological need satisfaction in participants’ lives in general, suggest an association between attainment of extrinsic aspirations and satisfaction of the need for competence (mean $r = .21$), as well as somewhat weaker associations between attainment of extrinsic aspirations and satisfaction of the needs for autonomy (mean $r = .17$) and relatedness (mean $r = .15$). However, the data do suggest much stronger asso-

⁷ This idea is drawn from both psychological (Deci & Ryan, 1985) and economic (Frey, 1997) theories on the detrimental consequences of external inducements (e.g., monetary incentives) on intrinsic motivation. Studies conducted by both psychologists (for a review, see Deci, Koestner, & Ryan, 1999) and economists (e.g., Frey & Oberholzer-Gee, 1997) have demonstrated that external inducements undermine, or crowd out, intrinsic motivation.

ciations between attainment of intrinsic aspirations and satisfaction of the needs for autonomy (mean $r = .44$), competence (mean $r = .38$), and relatedness (mean $r = .41$) (see Table 3 or Table 4). These correlations offer two possible explanations for the positive relation of attainment of intrinsic (but not extrinsic) aspirations to psychological health found in the SEM analyses. First, a statistical explanation suggests that, because of the more robust pattern of associations between attainment of intrinsic aspirations and psychological health at the zero-order level, the relation of attainment of extrinsic aspirations to psychological health may have been nullified when both aspiration attainments were allowed to compete for variance in the outcomes. Second, a theoretical explanation based on SDT suggests that, because it had a stronger relation to basic psychological need satisfaction, attainment of intrinsic aspirations maintained a strong relation to psychological health when allowed to compete for variance with attainment of extrinsic aspirations.

Together, the findings from the current study elucidate the dynamics through which valuing and attaining intrinsic aspirations are associated with psychological health. According to SDT, the pursuit and attainment of intrinsic aspirations are associated with psychological health because intrinsic aspirations relate positively to basic psychological need satisfaction. In contrast, to the extent that extrinsic aspirations are out of balance with intrinsic aspirations, their pursuit and attainment are expected to be unrelated to basic psychological need satisfaction and to relate negatively to psychological health (Ryan, Huta, & Deci, 2008). Indeed, in the current study, attainment of intrinsic aspirations related positively to psychological health, whereas attainment of extrinsic aspirations was either unrelated or negatively related to psychological health, which is consistent with SDT predictions (Deci & Ryan, 2000; Niemiec et al., in press; Ryan & Deci, 2000) and with past research (Kasser & Ryan, 1993, 1996, 2001), although there was not clear mediation of the relatively weak relations of attainment of extrinsic aspirations to psychological health.

This study builds on previous work relevant to the pursuit and attainment of aspirations in several important ways. Although most previous investigations used cross-sectional designs to examine the associations among aspirations and psychological health, the current study used a 1-year longitudinal design to allow change analyses of the relations among those motivation constructs. Specifically, we found that change in attainment of intrinsic aspirations over 1 year related to change in psychological health over that year, and that this relation was mediated by change in satisfaction of the basic psychological needs. Additionally, whereas previous research on aspiration attainment used college samples, this research used individuals who were 1–2 years post-college, engaged in their new lives that likely involved developing careers and relationships. The importance and attainment of aspirations were likely to have been very salient and ecologically relevant to their lives. Therefore, finding that change in attainment of intrinsic aspirations over a year-long period related strongly to change in psychological health is important for understanding the role of aspirations in people's ongoing lives.

Theoretically, finding that the relation of change in attainment of intrinsic aspirations to change in psychological health was mediated by change in basic psychological need satisfaction is especially important because it is the first empirical evidence testing this relation, which is a critical aspect of the theory. The finding indicates clearly that the processes underlying the salubrious effects of intrinsic aspirations are related to the satisfaction of the basic psychological needs for autonomy, competence, and relatedness. In contrast, the current research indicated that attainment of extrinsic aspirations was only slightly negatively related to mental health, although considerable work has indicated that the pursuit of extrinsic aspirations is strongly negatively related to mental

health. Presumably, the negative relation of pursuing extrinsic aspirations to mental health results from those pursuits 'crowding out' (Frey, 1997) opportunities for basic psychological need satisfaction, although this idea awaits further empirical inquiry. However, it seems that the actual attainment of extrinsic aspirations does not interfere with basic psychological need satisfaction, although as our results suggest, neither does it facilitate such need satisfaction. Finally, the fact that we analyzed the importance and attainment of intrinsic aspirations separately from the importance and attainment of extrinsic aspirations and that we analyzed well-being separately from ill-being allowed us to understand the set of relations more precisely than was the case in previous studies, which used a relative aspiration index and a psychological health composite combining well-being and ill-being indicators.

4.1. Broader implications

Thus far, most of our discussion has focused on the implications of the current study for SDT. However, our findings also have implications beyond SDT and into the broader domain of personality psychology. In particular, the results of the current study suggest an important qualification to most general theories of motivation within psychology, which posit that valued goals (e.g., Eccles & Wigfield, 2002; Locke & Latham, 1990; Vroom, 1964; Wigfield & Eccles, 2000) and feelings of self-efficacy to attain those goals (Bandura, 1986, 1997) are the bases for motivation, feelings of personal agency, and psychological health. Certainly, much research suggests that successful goal attainment is conducive to psychological health (e.g., Emmons, 1986), although our perspective, which is based on a theory of basic psychological needs (i.e., SDT), suggests that certain goals are conducive to psychological health, whereas others are not, even when those latter goals are valued and attained. As our results suggest, the reason for this is that attainment of intrinsic aspirations is closely related to satisfaction of the basic psychological needs for autonomy, competence, and relatedness, whereas attainment of extrinsic aspirations is unrelated to basic psychological need satisfaction.

In addition, our results complement other research using SDT that has examined the antecedents and consequences of successful goal striving. Specifically, the self-concordance model (e.g., Sheldon & Elliot, 1999) suggests that the regulation, or relative autonomy, of people's goal strivings has important implications for both goal attainment and psychological health. Findings based on the self-concordance model suggest that personal strivings (Emmons, 1986) and personal projects (Little, 1993) that are pursued for more autonomous reasons are more likely to be attained, and that attainment of self-concordant goals is particularly conducive to enhanced subjective well-being over time (e.g., Sheldon & Elliot, 1998, 1999; Sheldon & Houser-Marko, 2001). Thus, the results of the current study suggest that the *content*, in addition to the *regulation*, of goals matters for psychological health.

4.2. Limitations

The current study was limited in several ways. First, all data were collected with self-report measures. Future research that objectively measures, or uses multiple reporters to assess, the associations among aspiration attainment and psychological health is needed to more fully understand these dynamics. Second, our sample was rather homogenous. Most participants were Caucasian Americans and all were recent college graduates. Therefore, it is important to replicate these findings using a more diverse sample, especially among older working adults and post-retirement, elderly samples. Third, our findings were correlational, so they do not provide evidence for the direction of effects among the constructs under investigation. Therefore, we can conclude

only that changes in aspiration attainment and psychological health were correlated, so future research could further examine the issue of directionality.

5. Conclusion

The relation of aspiration attainment to psychological health was found to differ as a function of the content of the goals. Attainment of the intrinsic aspirations for personal growth, close relationships, community involvement, and physical health related positively to basic psychological need satisfaction and psychological health. In contrast, attainment of the extrinsic aspirations for money, fame, and image was unrelated to basic psychological need satisfaction and related slightly negatively to psychological health. Thus, the importance of providing need-supportive contexts that allow for the development of intrinsic aspirations and the facilitation of psychological health is apparent.

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