Intrinsic versus Extrinsic Goals, Need Satisfaction, and Well-being: Longitudinal Dynamics among College Students

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Abstract

Self-Determination Theory distinguishes extrinsic from intrinsic goals. A more intrinsic goal orientation would facilitate need satisfaction, which would, in turn, increase well-being. Simultaneously, need satisfaction would facilitate a more intrinsic goal orientation. Results of a first longitudinal study among college students (*N* = 371) showed that attaching greater importance to intrinsic than extrinsic goals increased need satisfaction, but this resulted from rather than predicted well-being. The hypothesis that need satisfaction directly affects relative goal importance was not supported. Results of a second study (*N* = 501) did not replicate the effect of relative goal importance on need satisfaction, but, together with results of an additional diary study (*N* = 417), did expose a mechanism through which need satisfaction affects relative goal importance. Specifically, lack of need satisfaction decreased self-esteem on a day-to-day basis. Low self-esteem then predicted over-time increases in contingent self-esteem, which, in turn, predicted increases in the importance attached to extrinsic goals.

Keywords: Goals; Need satisfaction; Well-being; Depression; Self-esteem

Especially in Western Europe, cultural conditions drastically changed over the past few decades. Whereas religious and institutional values traditionally used to provide people with standards to define their identity, the legitimacy of these institutions rapidly declined. In the absence of well-established guidelines for identity development, the need to achieve an individualized sense of identity came to the fore. Adolescents and young adults now face the need to develop a stable identity structure that enables them to maintain a sense of self-continuity across time and situations, and that provides them with a frame of reference for making decisions and solving problems. Developing such an identity structure includes selecting goals to purse and values to commit oneself to. The present article examines whether the goals and values adolescents select impact upon their overall well-being, or whether the choice for certain goals and values is itself guided by one's overall self-image.

Self-Determination Theory (SDT; Deci & Ryan, 2000) distinguishes the goals people pursue and the values they hold in terms of whether they are intrinsic or extrinsic in nature (Kasser & Ryan, 1996). Extrinsic goals such as financial success, popularity, and physical appeal, are considered extrinsic because they promote an ''outward'' (Williams, Cox, Hedberg, & Deci, 2000) or a ''having" orientation (Fromm, 1976). These goals are targeted at making a good impression on others through "acquiring" external indicators of worth, such as money and social recognition, that are considered signs of success in a consumer-oriented culture (Kasser, Cohn, Kanner, & Ryan, 2007; Kasser, Ryan, Couchman, & Sheldon, 2004). In contrast, intrinsic goals such as self-development, affiliation, and community contribution are said to be inherently satisfying to pursue because they are focused on developing one's personal interests and potentials (Fromm, 1976). As such, in agreement with humanist thinking, intrinsic goals are considered manifestations of the human self-actualization tendency.

According to SDT, although pursuing extrinsic goals is not problematic as such, an extrinsic goal pursuit becomes problematic when extrinsic goals become too important within a person's goal-system (Sheldon & Kasser, 2008). Specifically, SDT postulates that, when extrinsic goals become more important than intrinsic goals, this will have a detrimental effect on people's well-being (Ryan & Deci,

2000). In line with this idea, research demonstrated that people who place more importance on extrinsic than intrinsic goals are less well adjusted to their environment and experience less well-being. A relatively greater valuation of extrinsic goals was found to relate negatively to indices of well-being (e.g., self-esteem, life satisfaction, and positive affect) and positively to indices of ill-being (e.g., depression, anxiety, and negative affect; Vansteenkiste, Soenens, & Duriez, 2008). This negative association between a relatively more extrinsic goal orientation and well-being was found in various nations and age groups, and with different measures of both relative goal importance (i.e., nomothetic, ideographic, or implicit) and well-being (i.e., self-reports and interviewer ratings; Kasser 2002; Sheldon & Kasser, 2008). The underlying reason for this association would be that intrinsic and extrinsic goals are differentially related to the satisfaction of basic psychological needs.

SDT proposes three psychological needs that are essential nutriments for adaptive functioning, well-being, and self-actualization (Deci & Ryan, 2000): Autonomy (i.e., feeling volitional with respect to one's behavior), belongingness (i.e., caring for and feeling cared for by others), and competence (i.e., feeling effective in one's actions). Satisfaction of these needs is considered consistent with an intrinsic but not with an extrinsic goal orientation because the latter focuses on making a good impression on others rather than on self-actualization. Hence, differences in need satisfaction would explain why different goal orientations relate differentially to well-being (Vansteenkiste et al., 2008). In line with this idea, research reported a relatively more intrinsic goal orientation to relate positively to need satisfaction (Rijavec, Brdar, & Miljković, 2006). In addition, research supports the relation between need satisfaction and well-being (Deci et al., 2001; Sheldon et al., 2010). Finally, in cross-sectional research, the relation between intrinsic versus extrinsic goal importance and well-being was found to be mediated by differences in need satisfaction (Sebire, Standage, & Vansteenkiste, 2009; Vansteenkiste et al., 2007). However, longitudinal data are needed to test the direction of effects implied here.

So far, longitudinal studies focused on the effects of goal attainment rather than goal importance (Niemiec, Ryan, & Deci, 2009; Sheldon, 2008; Sheldon & Elliot 1999; Sheldon & Houser-Marko 2001).

These studies suggest that the attainment of intrinsic goals contributes more to well-being than the attainment of extrinsic goals and that this would be due to the fact that the attainment of extrinsic and intrinsic goals is differentially associated with need satisfaction. However, these studies do not allow testing whether the relative importance attached to intrinsic and extrinsic goals as such has a beneficial effect on well-being independently of whether these goals are actually attained. Some studies did report the relative importance attached to intrinsic and extrinsic goals to predict goal attainment (e.g., Niemiec et al., 2009; Sheldon & Elliot, 1999). This provides some support for the idea that differences in the relative importance attached to intrinsic and extrinsic goals might also affect well-being. However, it was never explicitly investigated whether this is the case, and if so, whether the effect of goal importance on well-being is mediated by the associated differences in need satisfaction.

In addition to these hypotheses, the current study also examines the possibility that the relative importance attached to intrinsic and extrinsic goals follows from need satisfaction. In line with the tenets of humanist motivational psychology, within SDT, it is not only argued that a relatively more intrinsic goal orientation facilitates need satisfaction but also that people will only have the energy to self-actualize (i.e., pursue intrinsic goals) when their needs are fulfilled (Kasser, 2002). People who experience a thwarting of their needs would lack the energy to pursue intrinsic goals and would focus on extrinsic goals to compensate for this. For instance, people who are frustrated in their belongingness need might start to pursue attractive looks, hoping that, this way, they will arouse the interest of a potential partner. The idea that the relative importance of intrinsic and extrinsic goals follows from levels of need satisfaction is not incompatible with the idea that differences in relative goal importance determine need satisfaction. Both processes might co-occur, as would be the case if a reciprocal relationship would exist between goal importance and need satisfaction. Because most research focused on the effects of goal importance (and attainment) on need satisfaction rather than on the possible effects of need satisfaction on goal importance, there is little direct evidence supporting the latter direction of effect. In spite of this, there is some evidence that, under sufficiently need supportive circumstances, people have the natural

inclination to move away from extrinsic goals toward intrinsic goals (Sheldon, Arndt, & Houser-Marko, 2003). In addition, some studies provide indirect evidence for the hypothesis that need satisfaction might install a relatively more intrinsic goal orientation. Kasser, Ryan, Zax, and Sameroff (1995) found that maternal autonomy and relatedness support (i.e., long-term need support) related positively to their teenagers' valuing intrinsic over extrinsic goals. In a similar vein, Williams et al. (2000) found that parental autonomy support was associated with high school students valuing intrinsic over extrinsic goals. However, as already mentioned, there is little evidence showing that short-term need satisfaction rather than long-term need support is a prerequisite for an intrinsic goal orientation and that lack of such need satisfaction would lead people to focus on extrinsic goals instead.

Present Study

In two longitudinal studies with different time intervals, the present manuscript examined whether differences in goal orientation predict changes in well-being, and whether these changes are mediated by changes in need satisfaction. More specifically, it was hypothesized that a predominantly intrinsic goal orientation would predict over-time increases in need satisfaction, which, in turn, would predict over-time increases in well-being. In addition, the present study examined the idea that an intrinsic versus extrinsic goal orientation might not only precede but might also partly follow from differences in need satisfaction. Specifically, it was hypothesized that need satisfaction would energize people to pursue intrinsic rather than extrinsic goals. In contrast, it was expected that lack of need satisfaction would make people turn towards extrinsic goals in an attempt to overcome thwarted needs.

Study 1

In Study 1, the abovementioned hypotheses were tested with a measure of psychological ill-being (i.e., depressive symptoms) using two-wave longitudinal data with a 6-month time interval. Freshman college students were assessed because, upon entering university, youngsters face the challenges of building an extra-familial social network and of adjusting themselves to their new environment (Peterson & Duncan, 1999). These challenges and the associated difficulties might make them vulnerable to

develop depressive symptoms and make them question and re-evaluate the importance of intrinsic relative to extrinsic goals, as other goals might be stressed in their new environment. A 6-month time interval was selected because we figured that this would be a reasonable amount of time for people to get adjusted to their new environment, to experience changes in well-being, and to adjust their goal orientation if necessary. In fact, previous research has shown meaningful fluctuations in goal orientation (Duriez & Meeus, 2011) and depressive symptoms (Duriez, Luyckx, Klimstra, Beyers, & Soenens, in press) among college students across such short periods of time.

Method

Participants. First-year psychology students at a large university in the Dutch speaking part of Belgium were invited to participate in two measurement waves (i.e., Time 1 and 2) six months apart. Prior to Time 1, participants signed a standard consent form in which participants were informed that they could refuse or discontinue participation at any time. Students were assigned a unique code number to protect their confidentiality. The first data wave (Time 1) was collected during a course at the beginning of the first semester and included 371 first-year psychology students (Mean age = 18.25, *SD* = 1.27; 77% female). Six months later, 92% participated at Time 2. In the total sample, 4% of the data at the scale level were missing because of drop-out and/or some people not answering all questions. Participants with and without complete data were compared on the study variables using Little's (1988) Missing Completely At Random test. A non-significant chi-square suggested that missing values were missing completely at random ($\chi^2(19) = 25.84$, *ns*), allowing for a reliable estimation of missing data using the expectation maximization algorithm (Schafer & Graham, 2002).

Measures. Items were administered in Dutch, and unless otherwise indicated, answered on 5-point Likert scales anchored by *Completely disagree (1)* and *Completely agree (5)*. Participants filled out a 12-item version of Kasser and Ryan's (1996) Aspiration Index, assessing the importance of the extrinsic goals of financial success, image, and fame, and the intrinsic goals of growth, community contribution, and affiliation (2 items each). This 12-item version has been used on various occasions,

and proved to have good internal consistency as well as to relate to external variables in the same way as more established versions of the Aspiration Index (Duriez, 2011; Duriez, Luyckx, Soenens, & Berzonsky, in press; Duriez & Meeus, 2011 Duriez, Vansteenkiste, Soenens, & De Witte, 2007). As in previous research, systematic response sets were controlled for by subtracting an individual's mean score from each individual score, after which an exploratory factor analysis was conducted on the subscales. At both time points, the scree plot pointed to a one-factor solution (explaining over 40% of the variance) on which the intrinsic scales loaded > .50 and the extrinsic scales loaded < -.50. Results of this factor analysis are in line with the results of Grouzet et al. (2005), who showed that intrinsic and extrinsic goals represent bipolar ends of a single goal-dimension. Subsequently, after reversing the intrinsic items, an intrinsic-extrinsic score was computed by averaging all items. Cronbach alphas were .76 at Time 1 and .74 at Time 2. A positive score indicates a tendency to value extrinsic over intrinsic goals. In addition, participants filled out a 9-item need satisfaction scale (Luyckx, Vansteenkiste, Goossens, & Duriez, 2009), assessing satisfaction of the needs for autonomy, belongingness and competence (3 items each; Sheldon, Elliot, Kim, & Kasser, 2001). Given that the three subscales were highly positively related (*r*s > .40, $p < .001$) and given that the scree plot of a higher-order factor analysis pointed to one factor (explaining 60% of the variance at both time points) on which all subscales loaded over .70, a global need satisfaction measure was created by averaging all items (for a similar procedure, see Luyckx et al., 2009). Cronbach alphas were .78 at Time 1 and .78 at Time 2. Finally, participants filled out a shortened Center for Epidemiologic Studies Depression scale (Roberts & Sobhan, 1992; Soenens, Luyckx, Vansteenkiste, Duriez, & Goossens, 2008) assessing how often participants experienced each of 12 symptoms over the past month on a 4-point Likert scale from 0 (Never) to 3 (Often). Cronbach alphas were .85 and .86 at Time 1 and 2, respectively.

Results and Discussion

Preliminary Analyses. Means, standard deviations, and correlations are displayed in Table 1. At both time-points, the intrinsic-extrinsic score related negatively to need satisfaction and positively to

depressive symptoms. At both time-points, need satisfaction was negatively related to depressive symptoms. There was substantial rank-order stability in all constructs. There were no significant age or gender differences in any of the study variables at any time point.

Primary Analyses. Following the guidelines of Cole and Maxwell (2003) for testing longitudinal mediation in a two-wave design, a fully saturated structural equation model was tested including all manifest variables at Time 1 and 2, all within-time correlations at Time 1 and 2, and all possible prospective effects from Time 1 to 2. According to Cole and Maxwell (2003), longitudinal mediation is evidenced when there are significant paths from the independent variable at Time 1 to the mediator at Time 2 and from the mediator at Time 1 to the dependent variable at Time 2. Figure 1 displays the structural paths (i.e., stability coefficients and cross-lagged effects) in the final model. Although intrinsic-extrinsic predicted increases in need satisfaction, it did not predict changes in depressive symptoms. Need satisfaction did not predict changes in depression either. Instead, depressive symptoms predicted decreases in need satisfaction. Neither need satisfaction nor depressive symptoms predicted changes in intrinsic-extrinsic. Within-time correlations at Time 2 indicated that changes in intrinsic-extrinsic were correlated neither with need satisfaction (r = -.03, *ns*) nor with depressive symptoms (r = .06, *ns*). In contrast, changes in need satisfaction were correlated with changes in depression (r = -.18, p < .01).

Discussion. Study 1 did not support the hypothesis that an intrinsic goal orientation predicts increases in well-being. There was no direct effect on depressive symptoms, and there was no indirect effect via need satisfaction. Although an intrinsic goal orientation predicted increases in need satisfaction, and although changes in need satisfaction were correlated with changes in depressive symptoms, need satisfaction did not predict decreases in depressive symptoms. Instead, in line with a vast research tradition showing that depression traps people in a downward spiral by increasing future chances of experiencing negative life events and decreasing future chances of experiencing positive life events (Duriez, Luyckx, Klimstra, et al., in press; Orth, Robins, & Meier, 2009), depressive symptoms predicted decreases in need satisfaction.

Study 2

In Study 2, self-esteem was selected as a well-being indicator, as has been done in other studies (e.g., Niemiec et al., 2009). Self-esteem seemed a particularly interesting well-being indicator because it takes on an important place in Maslow's (1954) hierarchy of human needs, according to which it is a requirement for self-actualization (and hence for an intrinsic goal pursuit). According to Maslow, when a person's need for self-esteem is frustrated, that person will get stuck in a search for self-esteem and will be unable to self-actualize. In this respect, Maslow described two sources of self-esteem: Self-respect and respect from others. He believed self-esteem stemming from respect from others to be more fragile. In line with this, Kernis (2003) distinguished between secure and fragile self-esteem. Fragile self-esteem refers to the degree to which self-esteem is vulnerable to or affected by external influences. One form of fragile self-esteem that seems especially relevant in this context is contingent self-esteem. Contingent self-esteem refers to a person extracting self-worth from specific attainments or evaluations (Kernis, 2003). In other words, contingent self-esteem refers to a form of self-esteem that is contingent upon success. From an SDT-perspective, it has been argued that people with low secure self-esteem will turn towards contingencies in order to repair this low self-esteem (Vansteenkiste et al., 2008). The problem is that, because failure can occur at any moment, contingent self-esteem is inherently unstable, with failure inevitably leading to a collapse in self-esteem, and, hence, in well-being.

In line with our primary hypothesis, we expected the relative importance attached to intrinsic and extrinsic goals to influence self-esteem, and we expected need satisfaction to mediate this relationship. In other words, we expected a relatively more intrinsic orientation to facilitate need satisfaction, which would then, in turn, provide a secure sense of self-esteem. At the same time, we expected need satisfaction to affect goal importance. In addition, in line with the finding that low self-esteem predicts increases in depression (Orth et al., 2009) and in line with the finding that depression predicts decreases in need satisfaction (see Study 1), we expected self-esteem to predict increases in need satisfaction. Finally, we expected self-esteem to exert an indirect influence on goal importance. More

specifically, given that people with low secure self-esteem can be expected to try to overcome this deficit by seeking respect from others, we expected low self-esteem to predict increases in the degree to which self-esteem is made contingent upon respect and approval of others. Given that, in a consumer-oriented culture, respect from others is most easily gained through financial success and social recognition (Vansteenkiste et al., 2008), we expected contingent self-esteem to predict over-time increases in the importance attached to extrinsic relative to intrinsic goals.

It should be noted that, although theoretically, we expected need satisfaction to affect well-being, Study 1 did not support this reasoning. One reason for this might be that this effect manifests itself in a different time-span (e.g., over shorter periods of time or even on a day-to-day basis). Therefore, we decided to use shorter time intervals (i.e., 3 months) and to incorporate a diary study as well. In line with Heppner et al. (2008) who reported daily fluctuations in self-esteem to be associated with daily fluctuations in need satisfaction, we expected that need satisfaction would augment self-esteem on a day-to-day basis. In sum, although Study 1 did not support the expected effect of need satisfaction on goal importance either, we did expect such an effect, albeit in a rather indirect way. Specifically, we expected lack of need satisfaction to decrease self-esteem on a day-to-day basis. In the longer run, we then expected low self-esteem to predict increases in contingent self-esteem, which, in turn, would predicte increases in the importance attached to extrinsic goals

Method

Participants. Freshman psychology students at a large university in the Dutch speaking part of Belgium were invited to participate in three measurement waves (i.e., Times 1 to 3), each three months apart. In addition, right in between Time 1 and 2, participants were invited to take part in a five-day diary study in which they completed daily assessments of some study variables. Prior to Time 1, participants signed a standard consent form in which they were informed that they could refuse or discontinue participation at any time. Students were assigned a unique code number to protect their confidentiality. Out of a total of 530 enrolled students, 501 took part in at least one of the measurement waves and 417

participated in the diary study. Individuals were included in the three-wave sample if they participated at least twice, resulting in a sample of 446 participants (of which 384 participated in all three waves), and individuals were included in the diary study if they participated at least twice, resulting in a sample of 417 participants (of which 370 participated on at least 4 days). The mean age at Time 1 was 18.62 years (*SD* = 2.48; range 17 to 29), with 83% of the participants being female. In the three-wave sample, 5% of the data at the scale level was missing because of drop-out, drop-in, or because of some people not answering all questions. In the diary study, the percentage of missing data at the scale level was 9%. Both in the three-wave sample and the diary study, participants with and without complete data were compared on the study variables using Little's (1988) Missing Completely At Random test. A non-significant chi-square suggested that, both in the three-wave sample ($\chi^2(45) = 41.64$, *ns*) and the diary study ($\chi^2(120) = 133.50$, *ns*), values were missing completely at random, allowing for an estimation of missing data using the expectation maximization algorithm (Schafer & Graham, 2002).

Measures. All items were administered in Dutch. In the longitudinal study, items were answered on 5-point Likert scales anchored by *Completely disagree* and *Completely agree*. At all time points, participants filled out the same Aspiration Index as in Study 1. Again, after controlling for systematic response sets, at all time points, the scree plot of an exploratory factor clearly pointed to a one-factor solution on which the intrinsic scales loaded > .50 and the extrinsic scales loaded < -.50. Subsequently, after reversing the intrinsic items, an intrinsic-extrinsic score was computed by averaging all items. Cronbach alphas were .83, .81 and .84 at Time 1, 2 and 3, respectively. A positive score indicates a tendency to value extrinsic over intrinsic goals. In addition, participants filled out the same 9-item need satisfaction scale as in Study 1. Again, a global need satisfaction measure was created by averaging all items. Cronbach alphas were .83, .81 and .85 at Time 1, 2 and 3, respectively. Finally, participants filled out a 10-item self-esteem scale (Rosenberg, 1965; Van der Linden, Dijkman, & Roeders, 1983) and a 15-item contingent self-esteem scale (Kernis, 2003), assessing to what extent one's self-esteem is contingent upon success and other's reactions. Cronbach alphas were .92, .92 and .93 for self-esteem

and .81, .82 and .84 for contingent self-esteem at Time 1, 2 and 3, respectively. In the diary study, participants filled out the need satisfaction and self-esteem scale. Daily, these measures were made available online at 6:00 PM and participants were instructed to complete them in the evening. Following Kernis, Grannemann, and Mathis (1991), items were answered on 10-point Likert scales anchored by *Completely disagree* and *Completely agree*. Cronbach alphas exceeded .90 for both scales on all days. The measures of goals and contingent self-esteem were not administered because, given the content of these scales (i.e., ratings of importance attached to goals and contingencies rather than of feelings and sentiments), responses seemed unlikely to fluctuate significantly from day to day.

Results and Discussion

Preliminary Analyses. Means, standard deviations, and correlations for the longitudinal data are displayed in Table 2. At all time-points, the intrinsic-extrinsic score was negatively related to need satisfaction, unrelated to self-esteem, and positively related to contingent self-esteem. At all time points, need satisfaction was positively related to self-esteem and negatively to contingent self-esteem. At all time-points, self-esteem and contingent self-esteem were negatively related. There was substantial rank-order stability in all construct. There were no significant age differences in the study variables, but gender was significantly related to contingent self-esteem at Time 1, 2 and 3 [F (1, 444) = 6.47, 6.95, and 5.65, $p < .01$], with boys scoring lower (M = 3.20, 3.21, and 3.18; SD = 0.44, 0.49 and 0.46) than girls (M = 3.53, 3.56 and 3.49; SD = 0.45, 0.47 and 0.47). Means, standard deviations, and correlations for the diary data are displayed in Table 3. At all time-points, need satisfaction and self-esteem were positively related and there was substantial rank-order stability in both constructs. There were no significant gender or age differences in the study variables at any point in time.

Primary Analyses. Structural equation modeling with manifest variables was used to examine our hypotheses. Analysis of the covariance matrices was conducted using LISREL, and solutions were generated on the basis of maximum-likelihood estimation. To evaluate model fit, the Satorra-Bentler Scaled chi-square (SBS-χ^2, Satorra & Bentler, 1994) instead of the regular chi-square was inspected

because the former corrects for data non-normality. An SBS-χ^2 to degree of freedom ratio (SBS-χ^2/df) close to 3.0 indicates good model fit (Kline, 1998). In addition, the Comparative Fit Index (CFI) and the Standardized Root Mean Square Residual (SRMR) were inspected. Good model fit is indicated by combined cut-off values of ≥ .95 for CFI and ≤ .09 for SRMR (Hu & Bentler, 1999).

First, following the guidelines of Cole and Maxwell (2003) for testing mediation in a longitudinal design with at least three time points, a structural model was tested including all manifest variables at Time 1, 2 and 3 (i.e., intrinsic-extrinsic, need satisfaction, self-esteem and contingent self-esteem), their within-time correlations, all stability coefficients (i.e., between Time 1 and 2, between Time 2 and 3, and between Time 1 and 3), and all possible cross-lagged effects. Because of the gender differences in contingent self-esteem, gender was controlled for by including paths from gender to all constructs at all time points. The initial model fitted the data well (SBS-χ^2 (12) = 33.94; CFI = 0.995; SRMR = .016). In order to test the stability of the cross-lagged effects across the time gaps (i.e., from Time 1 to 2 and from Time 2 to 3), this model in which structural paths were allowed to vary across time was compared to a more parsimonious model in which structural coefficients were fixed across time (see Orth et al., 2009). Fixing these coefficients did not worsen model fit (ΔSBS-χ^2 (12) = 13.89; *ns*). Figure 2 displays the structural paths (i.e., stability coefficients and cross-lagged effects) in this final model. In this final model, intrinsic-extrinsic did not significantly predict changes in any of the other study variables. However, there were significant effects of self-esteem on need satisfaction (positive) and contingent self-esteem (negative) as well as of contingent self-esteem on intrinsic-extrinsic (positive). Within-time correlations at Time 2 and 3 pointed to the existence of correlated change between need satisfaction and self-esteem only (r = .18 and .14, ps < .01, respectively).

Second, structural equation modeling was conducted on the diary data. A structural model was tested including the manifest variables (i.e., need satisfaction and self-esteem) at Day 1, 2, 3, 4 and 5, all within-time correlations, all stability coefficients (i.e., between Day 1 and 2, between Day 2 and 3, Day 3 and 4, Day 4 and 5, Day 2 and 4, Day 2 and 5, and Day 3 and 5), and all cross-lagged effects.

The initial model fitted the data well (SBS-χ^2 (12) = 40.37; CFI = 0.996; SRMR = .032). Stability coefficients between adjacent time points ranged from .34 to .61 for need satisfaction and from .46 to .68 for self-esteem (all *p*s < .01). In order to test the stability of the cross-lagged effects across the four time gaps (i.e., from Day 1 to 2, from Day 2 to 3, from Day 3 to 4, and from Day 4 to 5), the model in which structural paths were allowed to vary across time was compared to a more parsimonious model in which these coefficients were fixed across time. Fixing coefficients did not worsen model fit (ΔSBS-χ^2 (6) = 7.93; *ns*). In the final model (SBS-χ^2 (18) = 47.77; CFI = 0.996; SRMR = .030), the cross-lagged paths from self-esteem to need satisfaction (β = .08, $p < .01$) and from need satisfaction to self-esteem (β = .05, $p < .05$) were significant. Within-time correlations at Day 2, 3, 4 and 5 pointed to correlated change between need satisfaction and self-esteem (*r* = .33, .16, .23 and .21, *p*s < .01, respectively).

Discussion. Study 2 again failed to support the hypothesis that an intrinsic goal orientation predicts increases in well-being. There was no direct effect on self-esteem and there was no indirect effect via need satisfaction either. This time, an intrinsic goal orientation did not predict increases in need satisfaction. Although changes in need satisfaction and self-esteem were correlated, in the long run, it was self-esteem that predicted need satisfaction. The diary data did, however, expose reciprocal relations on a day-to-day basis, attesting to the importance of the time interval. In addition, Study 2 supported the hypothesis that the constellation of well-being and need satisfaction affects the relative importance of intrinsic and extrinsic goals. Specifically, need satisfaction buffered against low self-esteem on a day-to-day basis. In the longer run, low self-esteem increased contingent self-esteem, which, in turn, increased the relative importance attached to extrinsic goals.

General Discussion

The present studies examined longitudinal dynamics between an intrinsic versus extrinsic goal orientation, need satisfaction, and well-being among college students. It was hypothesized (1) that an intrinsic goal orientation would facilitate need satisfaction, which would, in turn, increase well-being, and (2) that need satisfaction would facilitate an intrinsic goal orientation.

Results provide little support for the idea that, among late adolescents, attaching importance to intrinsic rather than extrinsic goals predicts over-time increases in well-being (Ryan & Deci, 2000) and for the idea that differences in need satisfaction would mediate this effect (Vansteenkiste et al., 2008). First, neither study supported the idea that an intrinsic goal orientation directly predicts increases in well-being: An intrinsic goal orientation predicted neither decreases in depressive symptoms (Study 1) nor increases in self-esteem (Study 2). Second, neither study provided evidence for an indirect effect of an intrinsic goal orientation on well-being through need satisfaction. Although an intrinsic goal orientation predicted over-time increases in need satisfaction in Study 1, Study 2 could not confirm this. Moreover, in neither study, need satisfaction predicted increases in well-being. Although both studies indicate that need satisfaction and well-being develop simultaneously over time (as indicated by the existence of correlated change in Study 1 and 2 as well as by reciprocal effects in the diary study), both studies converge on the conclusion that, in the long run, it is well-being that drives this association (as indicated by the cross-lagged paths in Study 1 and 2). Although not fully consistent with SDT, this finding is in line with a vast body of research showing that ill-being traps people in a downward spiral of negative affect by increasing their future chances of experiencing negative life events and decreasing their chances of experiencing positive life events (e.g., Duriez, Luyckx, Klimstra, et al., in press; Orth et al., 2009), both of which might hinder the future experience of need satisfaction.

Results do support the idea that need satisfaction facilitates an intrinsic goal orientation and that lack of need satisfaction gives way to an extrinsic goal orientation (Kasser, 2002). Although both studies failed to show direct effects of need satisfaction on goal importance over longer time intervals (i.e., 6 and 3 months, respectively), when taking daily associations into account, Study 2 exposed an interesting mechanism through which need satisfaction does affect goal importance. In particular, on a day-to-day basis, lack of need satisfaction decreased self-esteem. In the longer run, low self-esteem gave rise to a contingent form of self-esteem, which, in turn, increased the importance attached to extrinsic goals. Interestingly, although low self-esteem instigated people to compensate for this lack of

what Maslow (1954) would call self-respect by focusing on obtaining respect from others, contingent self-esteem predicted increases in neither need satisfaction nor self-esteem. This is in line with the idea put forward by both SDT and researchers elaborating on the distinction between secure and fragile self-esteem (e.g., Kernis, 2003; Vansteenkiste et al., 2008) that rendering one's self-esteem contingent upon success and social recognition is not a route to secure self-esteem.

Limitations and Suggestions

First, future studies might not only want to include measures of goal importance but of goal attainment as well. In this way, future studies might check whether goal attainment moderates the effect of goal importance on need satisfaction. It might well be that differences in goal attainment can explain why goals affected need satisfaction in Study 1 but not in Study 2. Taking goal attainment into account would also allow investigating whether contingent self-esteem might nevertheless lead to a more secure form of self-esteem in some cases. This might depend on whether one manages to attain one's extrinsic aspirations. Second, future studies might want to focus on task-oriented goals instead of on life goals, as was done in the present study. It seems likely that task-oriented goals are less stable and more dependent upon fluctuations in need satisfaction. This would allow for meaningful daily assessments of differences in goal importance as well as for experimental studies in which task goals are manipulated (e.g., Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004) to examine their effect on need satisfaction. Third, future research might do well to not just focus on need satisfaction but to take differences in need frustration into account as well (e.g., Sheldon & Gunz, 2009). It might be that it takes need frustration and not just lack of need satisfaction for people to adjust their goals. Again, experimental studies might examine whether manipulating need satisfaction (e.g., Sheldon et al., 2010; Sheldon & Filak, 2008; Vansteenkiste et al., 2004) and/or need frustration (e.g., Baumeister, Brewer, Tice, & Twenge, 2007) causes changes in goal importance. Fourth, future research might study the associations between goals, need satisfaction, and well-being in other populations. A focus on college students might distort results due to sampling biases inherent to this population. People low in self-esteem, for instance, might

not take the step to university. Such a self-selection bias could mask direct effects of well-being and need satisfaction on goal importance. Finally, rather than exclusively relying on self-reports, future research might want to check the stability of these associations using alternative measures of goal importance, need satisfaction and well-being, including implicit measures, reports from others (e.g., parents, peers, teachers, or friends), interviewer ratings or observational measures.

Conclusion

Although the present studies are among the first to examine longitudinal associations between intrinsic versus extrinsic goal importance, need satisfaction, and well-being, and although there are ways in which these studies can be improved, they do provide some thought-provoking results. First, results provide little support for the idea that, among late adolescents, an intrinsic goal orientation predicts over-time increases in well-being, whether directly or indirectly (i.e., through its effect on need satisfaction). Second, the present studies support the idea that need satisfaction facilitates an intrinsic goal orientation and that lack of need satisfaction gives way to an extrinsic goal orientation. In particular, on a day-to-day basis, need satisfaction buffered against low self-esteem, and, in the long run, low self-esteem triggered a compensatory mechanism. That is, low self-esteem gave rise to a contingent form of self-esteem, which, in turn, increased the relative importance attached to extrinsic goals.

References

Baumeister, R. F., Brewer, L. E., Tice, D. M., & Twenge, J. M. (2007). Thwarting the need to belong: Understanding the interpersonal and inner effects of social exclusion. *Social and Personality Psychology Compass, 1*, 506–520.

Cole, D. A., & Maxwell, S. E. (2003). Testing mediation models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology, 112*, 558-577.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11,* 227-268.

Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need satisfaction, motivation, and well-being in the work organizations of a former Eastern Bloc country: A cross-cultural study of self-determination. *Personality and Social Psychology Bulletin,* 27, 930-942.

Duriez, B. (2011). The social costs of extrinsic relative to intrinsic goal pursuits revisited: The moderating role of general causality orientation. *Personality and Individual Differences, 50*, 684-687.

Duriez, B., Luyckx, K., Soenens, B., & Berzonsky, M. (in press). A process-content approach to adolescent identity formation: Examining longitudinal associations between identity styles and goal pursuits. *Journal of Personality.*

Duriez, B., Luyckx, K., Klimstra, T., Beyers, W., & Soenens, B. (in press). Right-Wing Authoritarianism: Protective factor against or risk factor for depression. *European Journal of Personality.*

Duriez, B., & Meeus, J. (2011). Tales about greed and anxiety: Extrinsic versus intrinsic goal pursuits and susceptibility to threat. *Manuscript submitted for publication.*

Duriez, B., Vansteenkiste, M., Soenens, B., & De Witte, H. (2007). The social costs of extrinsic relative to intrinsic goal pursuits: Their relation with social dominance and racial and ethnic prejudice. *Journal of Personality, 75*, 757-782.

Fromm, E. (1976). *To have or to be?* New York: Continuum Publishing Co.

Grouzet, F. M. E., Kasser, T., Ahuvia, A., Dols, J. M. F., Kim, Y., Lau, S., Ryan, R. M., Saunders, S., Schmuck, P., & Sheldon, K. M. (2005). The structure of goal contents across 15 cultures. *Journal of Personality and Social Psychology, 89*, 800-816.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.

Kasser, T. (2002). Sketches for a self-determination theory of values. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 123-140). Rochester, NY: University Press.

Kasser, T., Cohn, S., Kanner, A. D., & Ryan, R. M. (2007). Some costs of American corporate capitalism: A psychological exploration of value and goal conflicts. *Psychological Inquiry, 18*, 1-22.

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin, 22*, 280-287.

Kasser, T., Ryan, R. M., Couchman, C. E., & Sheldon, K. M. (2004). Materialistic values: Their causes and consequences. In T. Kasser, & A. D. Kanfer (Eds.), *Psychology and consumer cultures: The struggle for a good life in a materialistic world* (pp. 11-28). Washington DC: American Psychological Association.

Kasser, T., Ryan, R. M., Zax, M., & Sameroff, A. J. (1995). The relations of maternal and social environments to late adolescents' materialistic and prosocial values. *Developmental Psychology, 31*, 907-914.

Heppner, W. L., Kernis, M. H., Nezlek, J. B., Foster, J., Lakey, C. E., & Goldman, B. M. (2008). Within-person relationships among daily self-esteem, need satisfaction, and authenticity. *Psychological Science,* 19, 1140-1145.

Kernis, M. H. (2003). Toward a conceptualization of optimal self-esteem. *Psychological Inquiry, 14,* 1-26.

Kernis, M. H., Grannemann, B. D., & Mathis, L. C. (1991). Stability of self-esteem as a moderator of the relation between level of self-esteem and depression. *Journal of Personality and Social Psychology, 61,* 80-84.

Kline, R. B. (1998). *Principles and practices of structural equation modeling.* New York: Guilford.

Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 83,* 1198-1202.

Luyckx, K., Duriez, B., Klimstra, T. A., Van Petegem, S., Beyers, W., & Goossens, L. (2011). Identity and self-esteem in adolescence and emerging adulthood: Temporal sequences and developmental pathways. *Manuscript submitted for publication.*

Luyckx, K., Vansteenkiste, M., Goossens, L., & Duriez, B. (2009). Basic need satisfaction and identity formation: Bridging self-determination theory and process-oriented identity research. *Journal of Counseling Psychology, 56*, 276-288.

Maslow, A. H. (1954). *Motivation and Personality*. New York: Harper.

Niemiec, C. P., Ryan, R. M., & Deci, E. L. (2009). The path taken: Consequences of attaining intrinsic and extrinsic aspirations in post-college life. *Journal of Research in Personality*, *43*, 291-306.

Orth, U., Robins, R. W., & Meier, L. L. (2009). Disentangling the effects of low self-esteem and stressful events on depression: Findings from three longitudinal studies. *Journal of Personality and Social Psychology, 97*, 307-321.

Peterson, B. E., & Duncan, L. E. (2007). Midlife women's generativity and authoritarianism: Marriage, motherhood, and 10 years of aging. *Psychology and Aging, 22*, 411-419.

Rijavec, M., Brdar, I., & Miljković, D. (2006). Extrinsic vs. intrinsic life goals, psychological needs and life satisfaction. In A. Delle Fave (Ed.), *Dimensions of well-being. Research and Intervention* (pp. 91-104). Milan: Franco Angeli.

Roberts, R. E., & Sobhan, M. (1992). Symptoms of depression in adolescence: A comparison of Anglo, African, and Hispanic Americans. *Journal of Youth and Adolescence, 21*, 639–651.

Rosenberg, M. (1965). *Society and the adolescent self-image.* Princeton, NJ: University Press.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist, 55,* 68-78.

Satorra, A., & Bentler, P. M. (1994). Corrections to test statistics and standard errors in covariance structure analysis. In A. von Eye, & C.C. Clogg (Eds.), *Latent variable analysis: Applications in developmental research* (pp. 399-419). Newbury Park, CA: Sage.

Schafer, J. L., & Graham, J. W. (2002). Missing data: Our view of the state of the art. *Psychological Methods, 7,* 147-177.

Sebire, S. J., Standage, M., & Vansteenkiste, M. (2009). Examining goal content in the exercise domain: Intrinsic versus extrinsic goals; cognitive, affective, and behavioral outcomes; and psychological need satisfaction. *Journal of Sport and Exercise Psychology, 31*, 1-24.

Sheldon, K. M. (2008). Assessing the sustainability of goal-based changes in adjustment over a four-year period. *Journal of Research in Personality, 42*, 223-229.

Sheldon, K. M., Abad, N., Ferguson, Y., Gunz, A. Houser-Marko, L., Nichols, C. O., & Lyubomirsky, S. (2010). Persistent pursuit of need-satisfying goals leads to increased happiness: A 6-month experimental longitudinal study. *Motivation and emotion, 34*, 39-48.

Sheldon, K. M., Arndt, J., & Houser-Marko, L. (2003). In search of the organismic valuing process: The human tendency to move toward beneficial goal choices. *Journal of Personality, 71*, 835-886.

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: The self-concordance model. *Journal of Personality and Social Psychology, 76*, 482-497.

Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology, 80*, 325-339.

Sheldon K. M., & Filak, V. (2008). Manipulating autonomy, competence, and relatedness support in a game-learning context: New evidence that all three needs matter. *British Journal of Social*

Psychology, 47, 267–283

Sheldon K. M., & Gunz, A. (2009). Psychological needs as basic motives, not just experiential requirements. *Journal of Personality, 77*, 1467-1492.

Sheldon K. M., & Houser-Marko, L. (2001). Self-concordance, goal attainment, and the pursuit of happiness: Can there be an upward spiral? *Journal of Personality and Social Psychology, 80*, 152-165.

Sheldon, K. M., & Kasser, T. (2008). Psychological threat and extrinsic goal striving. *Motivation and Emotion, 32*, 37-45.

Van der Linden, F. J., Dijkman, T. A., & Roeders, P. J. B. (1983). *Metingen van kenmerken van het persoonssysteem en sociale systeem* [Measurements of features of the person system and the social system]. Nijmegen, The Netherlands: Hoogveld Instituut.

Vansteenkiste, M., Neyrinck, B., Niemiec, C. P., Soenens, B., De Witte, H., & Van den Broeck, A. (2007). On the relations among work value orientations, psychological need satisfaction, and job outcomes: A self-determination theory approach. *Journal of Occupational and Organizational Psychology, 80,* 251-277.

Vansteenkiste, M. Simons, J. Lens, W., Sheldon, K. M., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic role of intrinsic goals and autonomy-support. *Journal of Personality and Social Psychology, 87*, 246–260.

Vansteenkiste, M., Soenens, B., & Duriez, B. (2008). Presenting a positive alternative to strivings for material success and the thin-ideal: Understanding the effects of extrinsic relative to intrinsic goal pursuits. In S. J. Lopez (Ed.), *Positive psychology: Exploring the best in people* (Vol. 4, pp. 57-86). Westport, CT: Praeger.

Williams, G. C., Cox, E. M., Hedberg, V. A., & Deci, E. L. (2000). Extrinsic life goals and health-risk behaviors in adolescents. *Journal of Applied Social Psychology, 30*, 1756-1771.

Table 1 *Means, Standard Deviations and Correlations Between the Variables in Study 1*

	M	SD	01.	02.	03.	04.	05.
01. T1 Intrinsic-Extrinsic	-0.46	0.35					
02. T2 Intrinsic-Extrinsic	-0.47	0.33	.73**				
03. T1 Need Satisfaction	3.84	0.44	-.26**	-.16**			
04. T2 Need Satisfaction	3.97	0.38	-.24**	-.19**	.58**		
05. T1 Depression	0.77	0.50	.11*	.08	-.41**	-.35**	
06. T2 Depression	0.80	0.51	.16**	.17**	-.32**	-.43**	.58**

Note: * $p < .05$; ** $p < .01$

Table 2 *Means, Standard Deviations and Correlations Between the Variables in the Three-wave data of Study 2*

	M	SD	01.	02.	03.	04.	05.	06.	07.	08.	09.	10.	11.
01. T1 Intrinsic-Extrinsic	-0.56	0.37											
02. T2 Intrinsic-Extrinsic	-0.51	0.33	.76**										
03. T3 Intrinsic-Extrinsic	-0.55	0.35	.73**	.76**									
04. T1 Need Satisfaction	3.99	0.51	-.21**	-.21**	-.14**								
05. T2 Need Satisfaction	3.87	0.49	-.14**	-.21**	-.19**	.58**							
06. T3 Need Satisfaction	3.92	0.52	-.12*	-.17**	-.22**	.53**	.62**						
07. T1 Self-esteem	3.76	0.71	-.07	-.11*	-.05	.58**	.48**	.52**					
08. T2 Self-esteem	3.79	0.70	-.01	-.07	-.02	.47**	.56**	.52**	.79**				
09. T3 Self-esteem	3.92	0.73	-.02	-.12**	-.08	.36**	.49**	.57**	.71**	.78**			
10. T1 Self-esteem (Contingent)	3.48	0.46	.27**	.26**	.24**	-.23**	-.11*	-.08	-.36**	-.29**	-.24**		
11. T2 Self-esteem (Contingent)	3.51	0.49	.14**	.20**	.17**	-.22**	-.10*	-.10*	-.37**	-.36**	-.28**	.74**	
12. T3 Self-esteem (Contingent)	3.45	0.48	.17**	.14**	.15**	-.23**	-.05	-.11*	-.37**	-.32**	-.26**	.67**	.74**

Note: * $p < .05$; ** $p < .01$

Table 3 *Means, Standard Deviations and Correlations Between the Variables in the Diary Study*

	M	SD	01.	02.	03.	04.	05.	06.	07.	08.	09.
01. Day 1 Need Satisfaction	6.48	1.22									
02. Day 2 Need Satisfaction	6.64	1.23	.68**								
03. Day 3 Need Satisfaction	6.71	1.20	.70**	.78**							
04. Day 4 Need Satisfaction	6.71	1.20	.60**	.68**	.75**						
05. Day 5 Need Satisfaction	6.72	1.21	.57**	.69**	.68**	.76**					
06. Day 1 Self-esteem	6.80	1.42	.71**	.53**	.55**	.51**	.47**				
07. Day 2 Self-esteem	6.88	1.43	.56**	.73**	.59**	.52**	.53**	.73**			
08. Day 3 Self-esteem	6.91	1.39	.58**	.61**	.69**	.59**	.56**	.77**	.79**		
09. Day 4 Self-esteem	6.88	1.42	.46**	.52**	.55**	.70**	.63**	.70**	.69**	.77**	
10. Day 5 Self-esteem	6.96	1.42	.46**	.48**	.49**	.61**	.74**	.66**	.66**	.74**	.81**

Note: * $p < .05$; ** $p < .01$

Figure captions

Figure 1. Structural paths in the final Study 1 model. For clarity reasons, within-time correlations and paths from gender to the study variables are not represented. Coefficients are standardized estimates. * $p < .05$; ** $p < .01$.

Figure 2. Structural paths in the final Study 2 model. For clarity reasons, within-time correlations, stability coefficients from Time 1 to Time 3, and paths from gender to the study variables are not represented. Coefficients are standardized estimates. * $p < .05$; ** $p < .01$.

Figure 1.

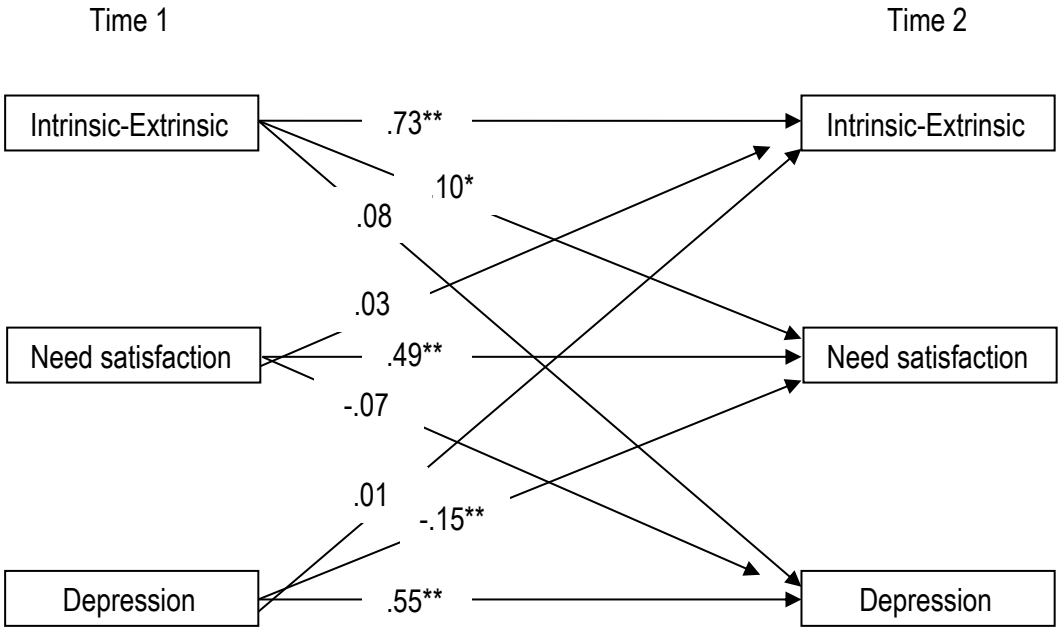
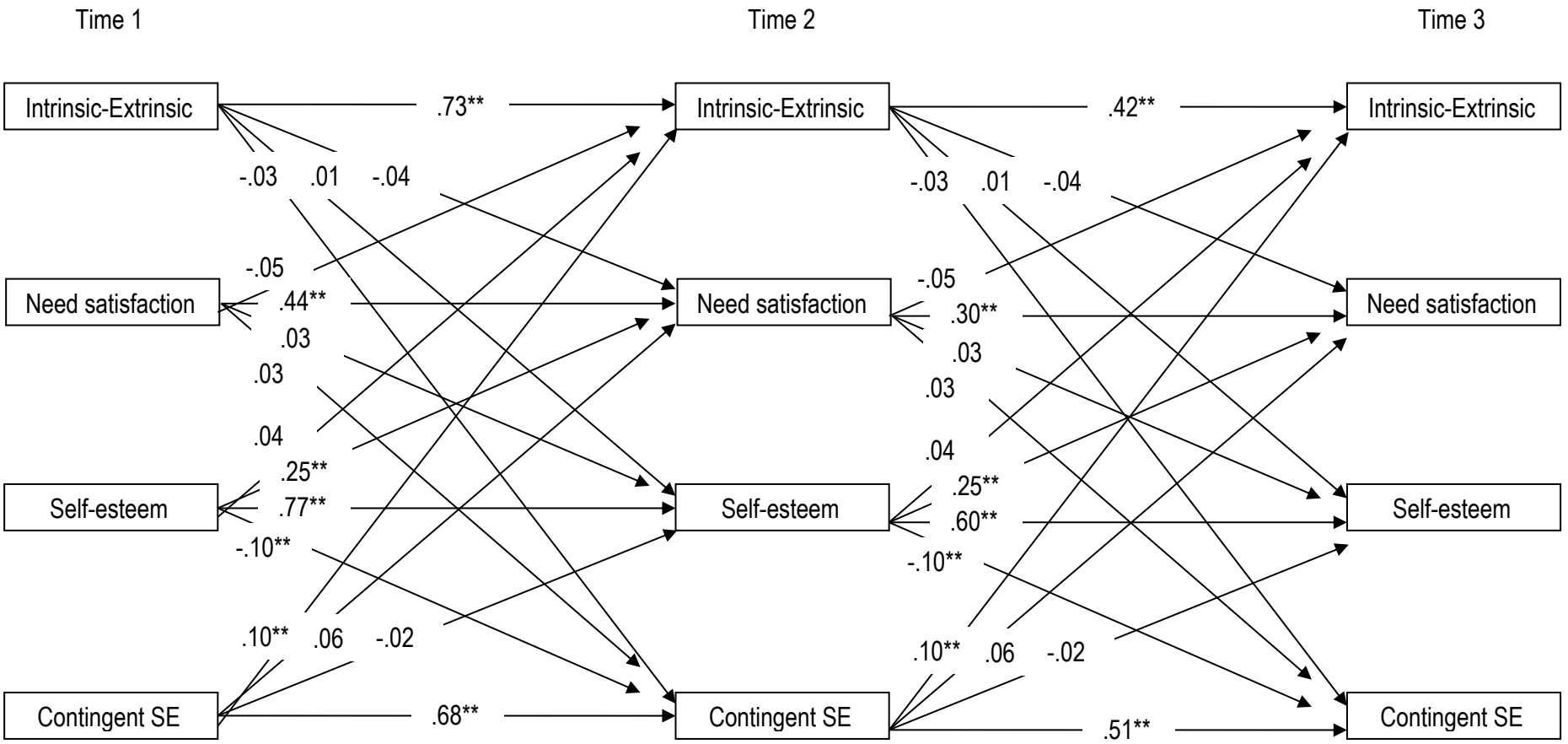

Time 1
Time 2
Intrinsic-Extrinsic
Need satisfaction
Depression
Intrinsic-Extrinsic
Need satisfaction
Depression
.73**
.10*
.08
.03
.49**
-.07
.01
-.15**
.55**

Figure 2.


Time 1
Time 2
Time 3
Intrinsic-Extrinsic
Need satisfaction
Self-esteem
Contingent SE
Intrinsic-Extrinsic
Need satisfaction
Self-esteem
Contingent SE
Intrinsic-Extrinsic
Need satisfaction
Self-esteem
Contingent SE
.73**
-.03
.01
-.04
-.05
.44**
.03
.03
.04
.25**
.77**
-.10**
.10**
.06
-.02
.68**
.42**
-.03
.01
-.04
-.05
.30**
.03
.03
.04
.25**
.60**
-.10**
.10**
.06
-.02
.51**