Article

Existential Ennui: Examining the Reciprocal Relationship Between Self-Alienation and Academic Amotivation

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Abstract

Two studies ($N = 649$) examined the association between self-alienation (SA; i.e., feelings of detachment from one's *true self*) and academic amotivation (AA; i.e., lack of motivation in the academic domain). Based on classical and contemporary theories, a strong link between alienation and amotivation was predicted. A cross-sectional correlation study (Study 1) found that SA significantly predicted AA controlling for relevant variables (e.g., self-efficacy). A four-wave longitudinal design (Study 2) tested the reciprocal relationship between SA and AA within persons. Contrary to the a priori hypothesis that SA would predict amotivation, the path from AA to SA was more consistent and reliable than the other path. The potential bidirectional links between SA and AA, implications, and future directions are discussed.

Keywords

self-alienation, academic motivation, true self, cross-lagged panel model

> By alienation . . . he has become, one might say, estranged from himself. He does not experience himself as the center of his world, as the creator of his own acts, but his acts and their consequences have become his masters . . . .
>
> —Erich Fromm (1955, p. 120).

How students achieve and maintain academic motivation is a question of great interest to individuals in many professions (e.g., teachers, administrators, educational psychologists). Previous research suggests that a variety of factors influence academic motivation, including personality, perceived belongingness, and affective reactions to one's environment (Aronson & Good, 2003; Cohen & Garcia, 2008; Nicholls, 1984; Steele, 1997, 2010; Walton & Cohen, 2007, 2011). The present research tests whether perceptions of one's *true self* relate to academic motivation. Specifically, we evaluate whether self-alienation (SA), the experience of detachment from one's true self (Wood, Linley, Maltby, Baliousis, & Joseph, 2008), and academic amotivation (AA) are reciprocally associated with each other. Several social psychological theories converge to suggest that individuals will lose motivation when they feel alienated from their true selves and that a lack of motivation will, conversely, detract from perceived self-knowledge. The current research is the first to directly test these predictions by examining the association between SA and AA among college students.

SA and AA

The SA is a component of the larger construct of authenticity (Wood et al., 2008). Authenticity, or being true to oneself, is a widely shared value in modern Western cultures. Nevertheless, people report that they often experience inauthenticity (Lenton, Slabu, Bruder, & Sedikides, 2014). These inauthentic experiences can arise from behaving in a manner that is at odds with one's beliefs values, succumbing to others' expectations and standards (i.e., accepting external influence), or feeling decoupled from one's identity (i.e., SA). Of interest to the current investigation, SA predicts negative emotional states (Wood et al., 2008) and less adaptive cognitive functioning (e.g., mindwandering; Vess, Leal, Hoeldtke, Schlegel, & Hicks, 2016). Furthermore, experimental studies suggest that SA threatens meaning in life (Schlegel, Hicks, King, & Arndt, 2011), erodes satisfaction with decisions (Schlegel, Hicks, Davis, Hirsch, & Smith, 2013), and renders one's perceived moral integrity questionable (Gino, Kouchaki, & Galinsky,

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2015; see also Christy, Seto, Schlegel, Vess, & Hicks, 2016). Although this previous research has primarily focused on affective and cognitive consequences of SA, we suggest that SA can also impact motivational states, specifically by contributing to the experience of amotivation.

The AA refers to a deficit in pursuing academic goals (Deci & Ryan, 1985; Vallerand et al., 1992, 1993). According to organismic integration theory (OIT; Ryan & Deci, 2002), a subtheory derived from self-determination theory (SDT; Deci & Ryan, 1991), motivational states vary in the degree to which they are perceived as originating within the self (as opposed to originating outside the self). Each form of motivation is defined by the perceived reason a person engages in a given activity. Intrinsic motivation refers to activities that are done for the pleasure or satisfaction derived from the activity itself, whereas extrinsic motivation refers to activities that are done as a means to an end rather than for their own sake (e.g., for material or social rewards). By comparison, individuals who are amotivated are neither intrinsically nor extrinsically motivated. Ryan and Deci (2000a) describe the state of amotivation as one in which people have difficulties perceiving the contingencies between their own actions and outcomes and understanding the reasons *why* they engage in a given activity. Amotivation is often accompanied by feelings of incompetence and uncontrollability. As a result, amotivated students perceive their academic pursuits as lacking purpose and anticipate failure, ultimately resulting in a withdrawal of effort.

Amotivated college students tend to display poorer psychological adjustment to college and are more likely to underperform and drop out of their programs (Baker, 2004; Ratelle, Guay, Vallerand, Larose, & Senécal, 2007). Although previous research highlights domain-specific perceived value, self-efficacy, and expectancies as primary antecedents of amotivation (e.g., Bandura, 1997; Wigfield, 1994), the question of how global self-perceptions (e.g., of self-knowledge) bear on amotivation has received less attention. We propose that general feelings of detachment from one's true self (i.e., SA) foster AA.

SA as a Precursor to AA

Our hypothesis that SA precedes AA is consistent with several existing theories and bodies of evidence. First, according to a *true-self-as-guide* perspective (Baumeister, 1991; Schlegel et al., 2013), people believe that they should follow their true selves like a compass when setting goals and making decisions. For example, people opt for alternatives that are consistent with their self-concepts (Niedenthal, Cantor, & Kihlstrom, 1985), commonly endorse the view that following the true self results in good decision-making (Schlegel et al., 2013), and display greater persistence when pursuing goals that reflect their inner self (Sheldon & Houser-Marko, 2001). As such, this work suggests SA may undermine one's motivation to complete important goals.

Further, SA is strongly linked to global perceptions of meaning in life (Schlegel, Hicks, Arndt, & King, 2009; Schlegel et al., 2011). Given that purpose is an element of global meaning in life (e.g., George & Park, 2016), self-alienated individuals may struggle to find purpose and importance in their specific goal strivings and thus lose motivation to pursue those goals. This contention is also indirectly supported by work on the link between values and motivation (Battin-Pearson et al., 2000; Legault, Green-Demers, & Pelletier, 2006; Murdock, 1999; Ryan & Deci, 2000a) and work on the importance of having a "calling" (Duffy, Allan, & Dik, 2011; Duffy & Sedlacek, 2010).

Finally, evidence suggests that SA is also associated with impaired cognitive functioning, specifically mindwandering (Vess et al., 2016). As mindwandering is especially detrimental to one's performance in educational contexts (Smallwood, Fishman, & Schooler, 2007), feeling detached from the true self may impair attentional focus on academic activities and subsequently dampen the motivation to pursue academic goals.

Taken together, these perspectives support our proposition that self-alienated they will subsequently lead to academic motivation. While our a priori hypotheses focused on how SA precedes amotivation, we also explored whether AA is a precursor to SA among college students. That is, SA and AA may be interconnected psychological states that reciprocally influence each other (see Wigfield & Wagner, 2005).

AA as a Precursor to SA

The idea that AA provides information about students' understanding of their true self resonates with some perspectives on self-knowledge. For instance, previous work suggests that global self-evaluations are determined by how people perceive their current psychological states, including motivational states (Schoeneman, 1981). Theories on self-regulation also posit that people consistently interrogate their current motivational state by probing how discrepant their current and desired states are and use this information as a source of self-knowledge (e.g., Carver & Scheier, 1982). Given that academic motivation is particularly self-definitive to college students (e.g., Baumeister, 1991), experiencing a lack of academic motivation may obfuscate students' self-concepts, disrupting their sense of self-certainty and perceived self-knowledge.

In addition, Seeman (1959) argues that powerlessness (i.e., lack of control over environment) and meaninglessness (i.e., feelings of triviality and inconsequentiality of behavior and existence) are preconditions for the emergence of SA. As previously discussed, powerlessness (uncontrollability) and meaninglessness (incapability of understanding *why*) are defining characteristics of amotivation (Ryan & Deci, 2000a).

Recent studies linking situational contexts and academic motivation further support this potential path (Browman & Destin, 2016; Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012). These studies collectively showed that a mismatch between situational contexts (e.g., institutions) and one's cultural and socioeconomic identities impairs students' motivation and performance. Experiencing this mismatch is believed to contribute to feelings of incompetence and inefficacy, a lack of motivation, and, ultimately, making individuals deidentify

with the domain (Oyserman & Destin, 2010). This disengagement from academic goals may result in a perceived lack of self-knowledge, considering that many college students have likely incorporated academic components into their self-concepts for years.

Overview of the Present Studies

We conducted two studies examining the association between experiences of SA and AA among college students. Study 1 was a cross-sectional correlational study in which we tested whether SA predicted AA above and beyond several relevant covariates. Study 2 was a four-wave longitudinal study examining whether SA and AA exhibit reciprocal within-person relationships over time.

Study 1

Method

Participants

Participants were 305 self-identified college students (116 females, 185 males, 4 unidentified) recruited via Amazon's Mechanical Turk.[1] A post hoc power analysis using G*power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) revealed that this sample size yielded adequate power for detecting a medium effect size ($1 - \beta = .99$). The sample was predominantly White (76.7%) and non-Hispanic (89.5%), and participants' ages ranged from 18 to 53 years ($M = 25.44$, $SD = 5.77$). Upon completing the study, participants received US$2.00.

Materials and Procedure

Participants completed the study described as a personality survey. The following measures were embedded in the survey containing several additional measures that were irrelevant to the current study.[2]

SA. To assess SA, participants completed the SA subscale of the Authenticity Scale (Wood et al., 2008). The SA scale consists of 4 items capturing the feeling that one does not know oneself (e.g., "I don't know how I really feel inside."). Participants rated their agreement with each statement on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*), and the responses were averaged to indicate their SA level ($M = 2.90$, $SD = 1.52$, $\alpha = .89$).

AA. Participants completed the Academic Motivation Scale (AMS; Vallerand et al., 1992). Among the seven subscales of the AMS, we focused on the amotivation subscale. It consists of 4 items with each presenting an amotivated reason for going to college (e.g., "Honestly, I don't know; I really feel that I am wasting my time in school."). Participants indicated the extent to which it corresponds to their own reasons for attending college on a 7-point scale (1 = *does not correspond at all*, 7 = *corresponds exactly*). The ratings were averaged to represent the AA index ($M = 2.99$, $SD = 1.90$, $\alpha = .90$).

Table 1. Correlations Coefficients and Descriptive Statistics for Primary Measures in Study 1.

Measure	1	2	3	4	5	6	7	8
1. Self-alienation	—							
2. Amotivation	.67	—						
3. Autonomy	−.68	−.58	—					
4. Competence	−.64	−.57	.75	—				
5. Relatedness	−.58	−.55	.73	.75	—			
6. Self-efficacy	−.53	−.51	.70	.78	.69	—		
7. Self-esteem	−.62	−.50	.68	.79	.69	.73	—	
8. Grit	−.51	−.46	.58	.71	.56	.67	.63	—
M	2.90	2.99	5.02	5.01	5.07	5.30	5.20	3.46
SD	1.52	1.90	1.03	1.15	1.03	1.09	1.31	0.70

Note. All correlation coefficients were significant at $p < .001$.

Covariates. To examine whether SA is associated with AA above and beyond similar related constructs, we measured a host of relevant variables.

First, we assessed the extent to which an individual is self-determined in a global sense through the Basic Need Satisfaction Scale (Deci et al., 2001). We included this because satisfaction with the three basic needs is negatively associated with amotivation (e.g., Ryan & Deci, 2000b) and inauthenticity (e.g., Sheldon & Elliot, 1999). Subscales for each need revealed good reliabilities (autonomy: $\alpha = .81$, e.g., "I feel like I am free to decide for myself how to live my life"; competence: $\alpha = .83$, e.g., "Most days I feel a sense of accomplishment from what I do"; relatedness: $\alpha = .85$, e.g., "People in my life care about me.").

We measured self-efficacy using the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) given that it predicts academic motivation (e.g., Schunk, 1991). Responses to the 10 items (e.g., "I can always manage to solve difficult problems if I try hard enough.") were averaged ($\alpha = .95$).

We measured self-esteem through the Rosenberg Self-Esteem Scale (Rosenberg, 1965, e.g., "On the whole, I am satisfied with myself"; $\alpha = .94$) because of the negative associations between self-esteem and SA (e.g., Wood et al., 2008) and AA (e.g., Legault et al., 2006).

Finally, we administered the Grit Scale as it is a known predictor of academic motivation and achievement (Duckworth, Peterson, Matthews, & Kelly, 2007) and self-concept clarity (Fite, Lindeman, Rogers, Voyles, & Durik, 2017). It consists of 12 items (e.g., "Setbacks don't discourage me"; $\alpha = .87$). Descriptive statistics for each of these scales can be found in Table 1.

Results and Discussion

Correlations between the variables of interest are presented in Table 1. Effect sizes were interpreted according to recent guidelines suggested by Gignac and Szodorai (2016) for

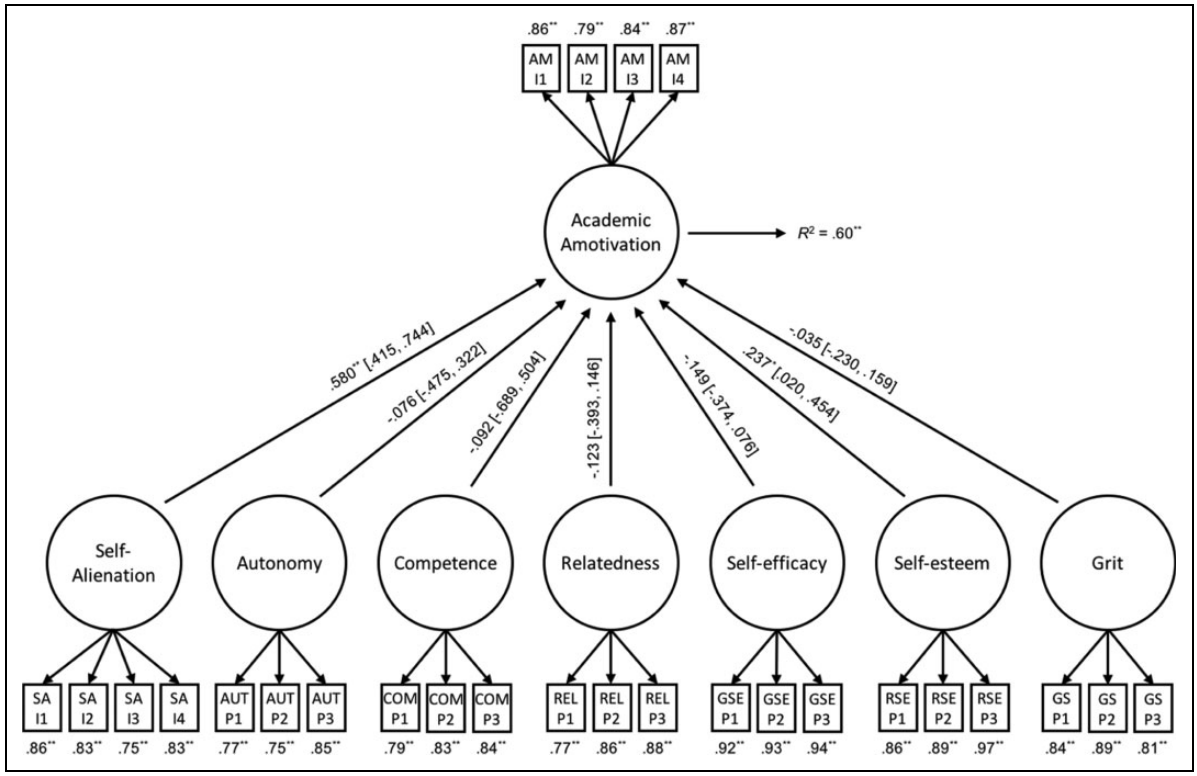

Figure 1. Regression model with latent variable for self-alienation (SA) and academic amotivation (AA) in Study 1. Observed variables are shown as squares, and latent variables are presented as circles. Standardized coefficients and factor loadings are reported below the manifest variables. Asterisks indicate structural coefficients and factor loadings significant at $^{*}p < .05$, $^{**}p < .001$. SA and AA are latent constructs indexed by four individual items, and all covariates (e.g., self-esteem) are latent constructs indexed by three parcels. Correlations between the exogenous variables were omitted from the figure for clarity.

individual differences research with correlations of .10, .20, and .30 considered to be small, typical, and large correlations. As seen in Table 1, all variables including SA had a strong association with amotivation. Moreover, all variables were strongly correlated with each other. This raises the possibility of potential redundancy among these variables.

To test whether SA predicted AA while accounting for covariates, we used a regression model with latent variables (i.e., a basic structural equation model) defined by either individual items (i.e., SA, AA) or item parcels (Kishton & Widaman, 1994). All covariates were defined by three parcels (e.g., three parcels of 4 items for Grit). A baseline model that only included SA and AA had good fit, $\chi^2(19) = 27.431$, $p = .095$ (RMSEA = .038, 90% confidence interval (CI) [.000, .068]; CFI = .995) and indicated a positive association between SA and AA ($\beta = .74$, $p < .001$, 95% CI [.677, .805]). Figure 1 illustrates the model that also includes the covariates (model fit: $\chi^2(271) = 678.824$, $p < .001$, RMSEA = .070, 90% CI [.064, .077]; CFI = .942). The relation between SA and AA was still significant ($\beta = .58$, $p < .001$, 95% CI [.415, .744]). Although the evaluation of incremental validity is controversial (Westfall & Yarkoni, 2016), this results suggests that there is a unique association between SA and amotivation, at least in these data.

The current findings support the idea that SA and AA are strongly associated. This association remains in a regression model with a number of other relevant constructs. Although these findings support our notion that SA and AA are closely intertwined at a between-person level, they do not provide any evidence of temporal dynamics between SA and amotivation within persons. Therefore, Study 2 adopted a longitudinal approach.

Study 2

Method

Participants

Three hundred and forty-four undergraduates (252 females, 91 males, 1 unidentified; $M_{age} = 18.58$, $SD = 1.11$) recruited from Texas A&M university participated in the study in exchange for course credit.[3] We used a relatively new analytic model for longitudinal data, so we did not have a strong foundation for sample size planning or evaluation. However, our overall goal was to maximize power within the constraints of availability of participants. To evaluate the adequacy of this sample size, we note that it exceeds the recommendation of 250 minimum participants for obtaining stable correlation estimates (Schönbrodt & Perugini, 2013) although we did not expect there to be large cross-lagged effects.

Table 2. Response Rate and Descriptive Statistics and Reliabilities of Self-Alienation and Academic Amotivation for Waves in Study 2.

Wave	Number of Responses (% of Original Sample)	Mean (*SD*)		Cronbach's α	
		Self-Alienation	Amotivation	Self-Alienation	Amotivation
1	344 (100.0)	2.83 (1.40)	1.47 (0.84)	.90	.83
2	320 (93.0)	2.79 (1.37)	1.82 (1.15)	.90	.88
3	313 (90.9)	2.82 (1.39)	1.92 (1.29)	.91	.92
4	269 (78.2)	2.75 (1.32)	1.90 (1.24)	.91	.90

Materials and Procedure

Participants completed the first wave of the survey in a laboratory setting. Participants then received e-mails containing links to each of the three follow-up surveys, with 2-week time lags between waves. We opted for this four-wave design with an approximate 2-week lag between each wave to provide good coverage of a single academic semester while keeping the overall study short enough to minimize participant attrition.

To assess SA and AA, participants completed the Authenticity Scale (Wood et al., 2008) and the AMS (Vallerand et al., 1992) that were used in Study 1. Descriptive data and internal reliabilities for these scales at each wave of the study are presented in Table 2. There was attrition, but we used full-information maximum-likelihood estimation which is often recommended for handling missing data in longitudinal studies (Allison, 2003; Schlomer, Bauman, & Card, 2010). We also conducted attrition analyses and found that there were no significant differences in scores of SA ($M_{\text{no drop}} = 2.82$ vs. $M_{\text{drop}} = 2.89$) and AA ($M_{\text{no drop}} = 1.42$ vs. $M_{\text{drop}} = 1.62$) reported at Wave 1 between participants who remained in every wave ($n = 263$) and those who dropped out from any wave ($n = 81$), $p = .69$, $p = .11$, respectively.

Analytic Approach

To evaluate the reciprocal relationship between amotivation and SA, we estimated a structural equation model (SEM) using a random-intercepts cross-lagged panel model (RI-CLPM; Hamaker, Kuiper, & Grasman, 2015), a recently proposed alternative to traditional cross-lagged panel models (CLPM). Using a cross-lagged model is appropriate here because it allows for testing the temporal priority in variables' interrelations. Unlike the CLPM, however, the RI-CLPM decomposes observed variance into (a) trait-like, time-invariant, "between-person" factors that account for the fact that there are consistent individual differences in amotivation and SA (represented by random intercepts) and (b) time-varying "within-person" factors that represent within person deviations from stable baselines at each occasion. These within-person deviations can exhibit some carryover from one occasion to the next so "with-in" person variables at one time point are regressed on the prior time point (i.e., there are autoregressive paths). Likewise, variation in one construct (e.g., SA) at one time point might be associated with within-person variation at the next occasion for the other construct (e.g., amotivation), so there are cross-lagged paths.

It is important to separate between-person variance from cross-lagged models, otherwise there is a potential for biased cross-lagged estimates (Hamaker et al., 2015). By modeling stable "trait" components and considering time-varying "state" parts of observed variables, the RI-CLPM helps minimize the possibility that stable between-person variance contaminate within-person cross-lagged effects. Thus, the RI-CLPM is a promising approach for testing reciprocal within-person relations between constructs.

We illustrated the RI-CLPM of SA and AA across four waves in Figure 2. In this model, the autoregressive paths (e.g., SA_1 to SA_2 in latent variables) reflect the associations between deviations in SA and amotivation on their future deviations. The cross-lagged paths (e.g., SA_1 to AA_2 in latent variables) indicate the predictive associations between time-varying within-person aspects of SA and future amotivation and vice versa.

We used Mplus (version 7.2; Muthén & Muthén, 1998–2012) to estimate the model in Figure 2. All factor loadings for observed variables and random intercepts (reflecting "trait" parts) were fixed at 1 to reflect consistency in their trait-like factors. We also compared an unconstrained model with a constrained model in which autoregressive and cross-lagged paths were held equal across each interval to increase the precision of estimates. In other words, for example, the predictive effect of SA at Wave 1 on amotivation at Wave 2 was held equal to the predictive effect of SA at Wave 2 on amotivation at Wave 3. Our rationale for imposing this equality constraint was based on the assumption that the autoregressive and cross-lagged effects should not vary across time lags in our study (i.e., we did not expect them to become more or less tightly coupled over time given the design constraints). These constraints are also a common baseline specification in similar type models (e.g., Curran, Howard, Bainter, Lane, & McGinley, 2014).

Results and Discussion

Estimated correlation coefficients between SA and AA across waves are displayed in Table 3.

Overall fit for the SEM was evaluated by considering the χ^2 value, the RMSEA value, and the CFI values. Exact fitting models have a χ^2 value that is not statistically significant. Models with acceptable fit usually have RMSEA values that are less

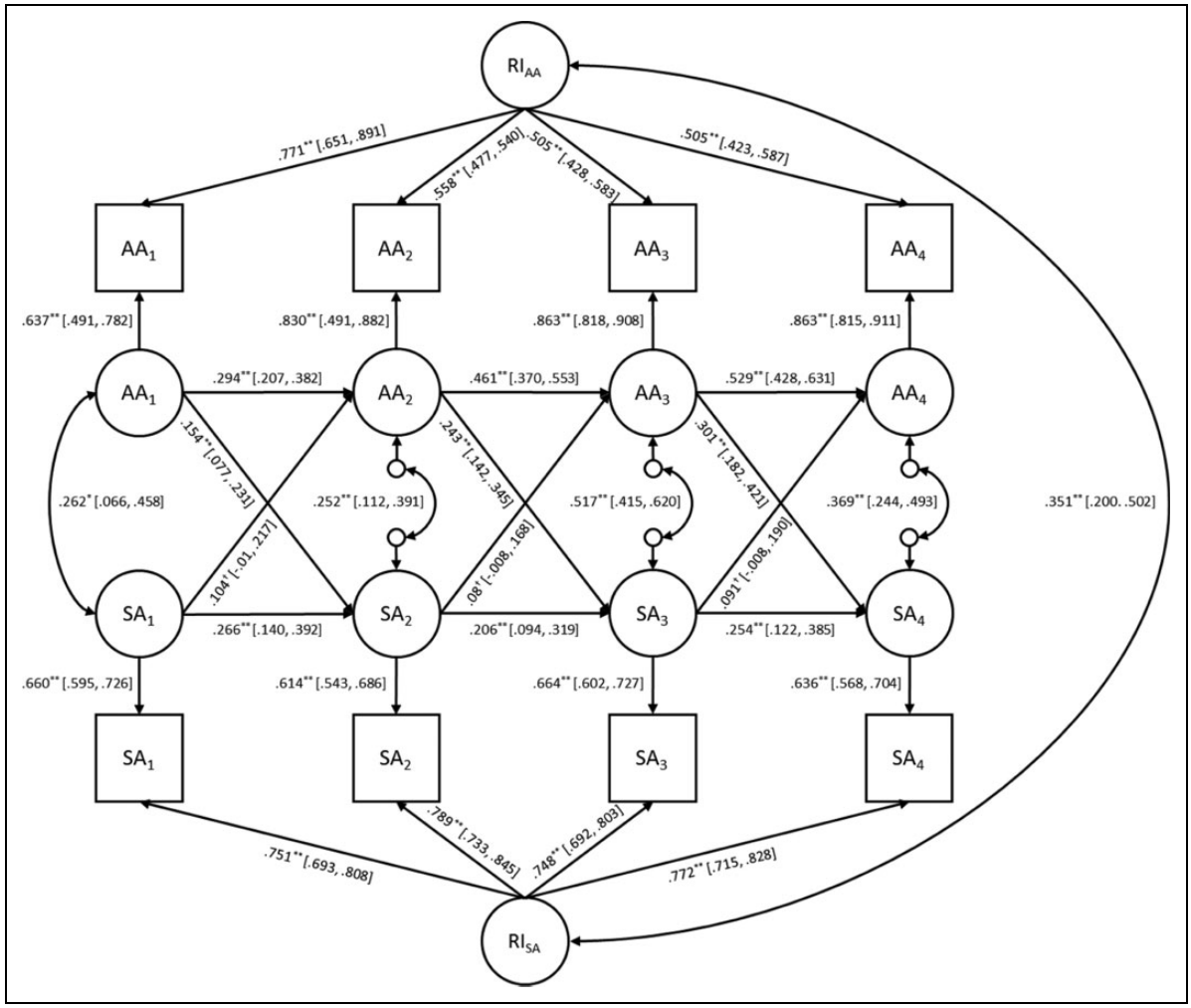

Figure 2. Random intercept cross-lagged panel model (RI-CLPM; Hamaker et al., 2015) of the reciprocal relationship between self-alienation (SA) and academic amotivation (AA) across four waves, with 2-week time lags in Study 2. Squares represent observed variables, and circles denote latent variables (RI represents random intercepts). Numbers attached to arrows between the same latent variables (e.g., AA_1 to AA_2) indicate standardized autoregressive parameter estimates; numbers attached to arrows between different latent variables (e.g., AA_1 to SA_2) indicate standardized cross-lagged parameter estimates; numbers given in brackets indicate 95% CI. The subscript numbers attached to AA and SA indicate wave numbers. $^{\dagger}p < .10$. $^{*}p < .01$. $^{**}p < .001$.

Table 3. Estimated Correlation Coefficients Among Self-Alienation (SA) and Academic Amotivation (AA) Across Waves in Study 2.

Measure	1	2	3	4	5	6	7	8
1. SA_1	—							
2. SA_2	.74***	—						
3. SA_3	.64***	.70***	—					
4. SA_4	.60***	.68***	.75***	—				
5. AA_1	.32***	.32***	.19**	.25***	—			
6. AA_2	.32***	.37***	.31***	.38***	.58***	—		
7. AA_3	.23***	.29***	.45***	.42***	.47***	.65***	—	
8. AA_4	.19**	.24***	.29***	.43***	.44***	.60***	.67***	—

Note. The subscript numbers attached to AA and SA indicate wave numbers. $^{**}p < .01$. $^{***}p < .001$.

than or equal to .05 and CFI values about .95 (e.g., Kline, 2016). In interpreting specific paths, the α level of .05 was used to determine statistical significance.

The unconstrained RI-CLPM fit the data well, $\chi^2(9) = 19.939$, $p = .02$ (RMSEA = .059, 90% CI [.023, .095]; CFI = .990). In this model, the separate wave-to-wave stability paths were freely estimated (e.g., SA at Time 1 to SA at Time 2 was freely estimated as was SA at Time 3 to SA at Time 4) as were the cross-lagged paths (e.g., SA at Time 2 predicted by amotivation at Time 1 was freely estimated as was SA at Time 4 predicted by amotivation at Time 3). This is not an especially parsimonious model, and we believed it was theoretically reasonable to place equality constraints on the stability coefficients and cross-lags. We thus imposed equality constraints on the autoregressive paths (e.g., the path from amotivation at Wave 2–Wave 3) and the cross-lagged paths (e.g., the path from amotivation at Wave 2 to SA at Wave 3). These additional constraints did not significantly worsen fit and thereby produced a more parsimonious model, $\chi^2(17) = 31.321$, $p = .02$, RMSEA = .049, 90% CI [.020, .076]; CFI = .989; change in

$\chi^2(8) = 11.382$, critical value = 15.51. This justifies our assumptions about the stability of the autoregressive and cross-lagged paths across adjacent intervals. In this analysis, the cross-lag from SA to AA did not reach statistical significance ($p = .066$), providing minimal support for our hypothesis. However, results also revealed that the cross-lag from AA to SA was statistically significant ($p < .001$). Constraining both cross-lags to the same value significantly impaired fit, $\chi^2(18) = 35.418$, difference in $\chi^2(1) = 4.097$; critical value = 3.84, so this simplification was not empirically supported. Thus, the results suggest that there is limited evidence for the reciprocal relationship between AA and SA and more support for the path from AA to SA.

Standardized estimates from the cross-lagged are displayed in Figure 2. As seen in the figure, there was evidence of a path from AA to SA. That is, AA at a previous wave was consistently a statistically significant predictor of future SA (e.g., $\beta = .301$ predicting SA at Wave 4 from AA at Wave 3). In contrast, the effects of SA on future levels of AA ranged from .08 to .10 (standardized estimates; *p*s from .071 to .073), suggesting that the path from SA to AA is weaker. There was a moderate correlation between the trait factors for amotivation and SA, as indicated in the correlation between random intercepts ($r = .351$, $p < .001$).

We also estimated a traditional CLPM for comparison purposes. As expected from the methodological literature, the CLPM did not fit the data well, unconstrained model: $\chi^2(12) = 100.090$, $p < .001$; RMSEA = .146, 90% CI [.120, .173]; constrained model: $\chi^2(20) = 110.519$, $p < .001$; RMSEA = .115, 90% CI [.094, .136]. The cross-lags were both statistically significant in the constrained model. The comparatively poor fit of the CLPM underscores the importance of modeling the stable trait-like aspects of constructs. Complete details are available upon request or can be generated using the input data file posted on the Open Science Framework.

The findings of Study 2 suggest that amotivation is a potential precursor of SA among college students. Evidence for the SA to amotivation path or a simple reciprocal relationship was relatively weak. These findings run somewhat counter to our a priori predictions but are consistent with the idea that amotivation and SA are related to each other at both the between-person level (people higher in amotivation are higher in SA) and within-person level (higher levels of amotivation relevant to an individual's baseline are associated with future deviations in SA).

General Discussion

Both studies demonstrate a consistent relationship between SA and AA. In Study 1, the overall association remained significant after controlling for a number of variables theoretically and empirically associated with SA (e.g., self-esteem) and amotivation (e.g., basic need satisfaction, self-efficacy, and grit), suggesting that the relationship is robust and independent of these related constructs. These results indicate that SA and amotivation are correlated between persons, while the within-person longitudinal analyses in Study 2 provide a more nuanced view of this association. The RI-CLPM in Study 2 indicated that amotivation is a more reliable predictor of future within-person deviations in SA. By comparison, SA was only a marginally significant predictor of future deviations in AA.

One possible account for this asymmetry is that motivational states are psychologically more accessible than global self-perceptions. That is, questions about whether one is academically motivated (I don't feel like going to school today) come to mind more easily and frequently than broader existential inquiries (Do I know who I am). This makes sense given that academic achievement is likely a central goal for college students. Further, students encounter frequent external cues signaling their academic progress (e.g., grades). In comparison, students rarely think about existential questions unless they encounter events that threaten their meaning in life (Heintzelman & King, 2014). In this way, academic concerns may be one such threat that prompts more general existential concerns about identity.

The weak support for the pathway from SA to AA is somewhat at odds with previous research. As discussed earlier, influential theories including SDT (Ryan & Deci, 2000a), expectancy-value theory (Wigfield & Eccles, 2000), and the self-concordance model (Sheldon & Elliot, 1999) suggest that SA should lead to motivational deficits (e.g., Battin-Pearson et al., 2000; Ratelle et al., 2007). These ideas are consistent with a number of theories highlighting the role of the self as an internal guide for making decisions and pursuing goals (e.g., Niedenthal et al., 1985). As people believe they should consult their true self when making life decisions and goal-relevant actions (Schlegel et al., 2013), the feeling of self-doubt may ultimately temper one's desire to put forth effort in a given domain. Future research should therefore continue to investigate when and how SA fosters AA.

There are several implications based on our findings. First, to our knowledge, this is the first study to provide empirical evidence of an important self-judgment of AA. While previous studies examined both motivation and identity as outcomes of cultural and contextual mismatch in academic domain (e.g., Browman & Destin, 2016), our findings suggest a reasonably sized association between academic motivation and issues of identity. Second, the current research underscores the importance of differentiating between-person and within-person variability in amotivation and SA. As shown in Study 2, this is especially important when designing studies examining temporal precedence and changes over time in the relationship concerning both or either construct. Finally, our findings offer a practical implication for future research. For example, efforts to maintain student motivation and engagement over the course of a semester might help reduce SA. Given the evidence for the asymmetrical nature of the reciprocal association between the two constructs, an intervention designed to directly boost the perceived meaningfulness of pursuing academic goals may be more effective in enhancing both engagement in the classroom and self-understanding (Davis, Kelly, Kim, Tang, & Hicks, 2016). It is also important to note that naturally

occurring patterns in data may not directly map to intervention results.

Our findings are limited in several respects. First, both studies used convenience samples of American undergraduates who may or may not represent the total population of college students. It is also unclear whether the results observed in the present studies would emerge in other educational contexts, such as high school. The college years are an important time of identity development, so the relations reported here might not generalize to different phases of the life span. Even if the present results were found to generalize to other American samples, they may not generalize to educational contexts in other cultures. Similarly, because we focused only on AA, it is unclear from the present studies whether SA is also predicted by amotivation in nonacademic contexts. The contextual generality versus specificity of the present findings remains an open question to be settled by future investigations. However, it is plausible that amotivation in any important self-relevant domain (e.g., work, family life) also engenders global SA.

Another limitation of the present studies is their exclusive use of correlational methods, which precludes drawing strong causal conclusions about the relationship between SA and AA. While the longitudinal data in Study 2 provide hints about temporal precedence, this evidence is far from conclusive and experimental research is necessary to elucidate the underlying causal mechanisms.

Finally, the current studies relied on self-report measures of SA and AA. Although self-report may be the best way to assess SA and amotivation given the intrapsychic nature of both constructs, informant reports (e.g., teacher report) or behavioral indicators (e.g., attendance rates, GPA) can be used to assess AA. Future research should employ more diverse ways of assessment to draw a firmer conclusion about the relationship between SA and AA.

Despite these limitations, the current findings suggest personal agency and identity are intertwined; the self-concept is not simply a passive representation of who one is, but plays an active role in guiding goal-relevant action and decision-making. Perhaps more importantly, courses of goal-relevant action and the explanations for those actions inform how individuals think about themselves and their judgments about how well they truly know themselves.

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Notes

1. We initially recruited 154 participants and subsequently gathered 151 additional participants. The results did not differ across the samples. Nonetheless, we opted to report the combined sample only given a recent analysis that suggests correlations stabilize at a sample size of 250 (Schönbrodt & Perugini, 2013). We thank Wiebke Bleidorn for this recommendation.
2. All study materials, including exploratory measures, and data are available on the Open Science Framework at https://osf.io/vmx9t.
3. These data were pooled from two data sets (Ns = 202 and 142) that were conducted in different semesters. The sample sizes were constrained by the availability of the local participant pool during the respective semesters. The study designs and measures of the two data sets were mostly the same (e.g., the time lag between waves was about 2 weeks) with one of them including several additional measures. Given concerns over the use of small sample sizes with structural equation modeling, we decided to pool the longitudinal data. Results of analyses of the separate data are available upon request.

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