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Parents Still Matter: Patterns of Shared Agency With Parents Predict College Students' Academic Motivation and Achievement

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Previous research shows the substantial influence parents have on their children. Many parents invest considerable effort in maintaining this influence during college. Shared agency describes the extent to which parents and children share similar academic goals and jointly engage in obtaining these goals (Chang, Heckhausen, Greenberger, & Chen, 2010). The current study examined different patterns of shared agency with parents as predictors of academic achievement and motivation in college students. Over 800 undergraduate students attending a large, public university in the United States completed a 1-time online survey that measured patterns of shared agency with parents, intrinsic and extrinsic motivation, amotivation, achievement goal orientation, and grade point average. The results of analyses using structural equation modeling provide strong support for the hypothesis that shared agency was associated with students' higher academic achievement, greater intrinsic and extrinsic motivation, and less amotivation. In contrast, students reporting a high level of parental directing and parental uninvolvement (i.e., nonshared agency) attained less academic achievement, experienced lower intrinsic and extrinsic motivation, and higher amotivation. Moreover, the relationship between shared agency and students' academic achievement was partially mediated by students' motivation. The findings demonstrate the importance of parent–child shared agency patterns for postsecondary educational outcomes. Parents may be an underutilized resource for improving college students' motivation and academic achievement.

Keywords: shared agency, academic motivation, academic achievement, parental educational involvement, late adolescence

One of the hallmarks of the transition to adulthood is an increased desire for independence from parents in several life domains (Hill & Holmbeck, 1986; Ryan & LaGuardia, 2000; Steinberg, 1989). However, despite youths' growing desire for independence, parents remain a strong and pervasive influence in the lives of adolescents, especially for important life decisions and goal setting, such as where to attend college or what college major to choose (Smetana, Metzger, Gettman, & Campione-Barr, 2006). Thus, maintaining connectedness with parents is expected to provide certain benefits as young adults pursue higher education.

However, not all types of parent–child relationships are equally beneficial for youths' goal pursuit and attainment. From a life span developmental approach, the parent–child relationship, including the type and amount of parental involvement, should be adjusted according to the developmental needs of the adolescent or young adult (Eccles et al., 1993). For older youth (i.e., college-aged children), support that is autonomous such that parents assist in children's problem solving efforts, facilitates goal progress more so than a directive or controlling approach, which may inhibit goal progress (Gorin, Powers, Koestner, Wing, & Raynor,

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2014; Koestner, Powers, Carbonneau, Milyavskaya, & Chua, 2012).

The current study investigates joint goal setting and pursuit among parents and their college-attending children. The construct of *shared agency with parents* identifies patterns of joint involvement in educational goals (Chang, Heckhausen, Greenberger, & Chen, 2010). A high level of shared agency reported by students indicates a perception of active parental involvement, support and encouragement, and collaboration around educational goals. On the other hand, high levels of nonshared agency indicate that parents are perceived to be either over- or underinvolved in students' educational goals.

There are two main ways in which our shared agency constructs make novel contributions to the motivation literature. The first is that the construct of shared agency with parents addresses joint goal pursuit in a particular domain rather than a general style of interaction. Typically, constructs such as parenting styles and parental involvement address generalized parenting strategies or patterns of interaction independent of the life domain to which they apply. Given the multiple domains of youth's lives, especially as they gain more autonomy during the transition to adulthood, parents may have a different approach to educational and academic goals than other domains (e.g., peers) as well as general approaches to child rearing. Thus, shared agency constructs have the potential to more accurately capture youth's relationships with parents within a given domain and across potential domain-specific differences.

When examining shared agency patterns, the focus in on meaningful goals that in the case of shared agency are, or in the case of nonshared agency, are not, selected by parents and youth together within a specific domain. In this way, shared agency with parents sets itself apart from parenting constructs (e.g., parenting styles, parental involvement, and autonomy support) by focusing on the cooperative way in which parents and children pursue goals together. Parenting styles and related constructs do not address the mutual influence that parents and children have on one another.

The second contribution of the shared agency construct to the literature is its motivational focus on goal engagement and goal pursuit during a difficult developmental transition, the transition to adulthood. Shared agency constructs allow researchers to investigate the relationship between parents and their adult children with respect to important age-normative developmental goals, such as higher education goals, at a time when youth are becoming more autonomous. The construct captures the way in which parents and children combine their perspectives on an important developmental task, recognizing that each of them has goals and that they may or may not be in agreement with each other. Thus, the constructs are inherently focused around agency goals and action in parent–child relationships. Key questions are as follows: (1) do the child and parent share a joint goal, (2) do they actively pursue the goal together, and (3) does the child receive support and encouragement from the parent for his or her goal pursuit?

Moreover, the present research addresses parent–child relationships in a population that typically is studied without reference to parents, except for maladaptive and unusual parenting patterns such as helicopter parenting (Howe & Strauss, 2003; Wolf, Sax, & Harper, 2009). Our approach allows us to investigate the full range of parent–child relationships (i.e., parent-directed, student-directed, and truly shared patterns) as youth transition into college and adopt goals during this important developmental transition. Understanding parent–child joint goal pursuit in the transition to college and its impact on educational outcomes is especially needed because current research on youth's relationships with parents is largely limited to the health domain (e.g., coping with diabetes; Berg et al., 2013).

Shared and Nonshared Agency With Parents

On the basis of research on dyadic coping and individual goal regulation, Chang and colleagues (2010) proposed patterns of shared and nonshared agency with parents that describe shared academic goals with parents and joint engagement in goal pursuit as perceived by the student. Shared agency is comprised of three patterns of joint academic engagement with parents: accommodation, collaboration, and support. Each type is distinct and reflects varying amounts of parental influence, but in contrast to nonshared agency, all acknowledge the parent

as an active source of influence on the child's educational goals.

Among the three, *parental accommodation* represents the least amount of influence on the child. Parents are sensitive and responsive to youth's academic goals, even if they differ from their own, and support the youth's goals. An accommodating parent would allow the child's goals to prevail if differences in educational goals emerge between parent and child.

In *parental collaboration*, parents are perceived as collaborators because they are invested in the child's future and actively involved in educational decision making through open discussion and negotiation with the child. The parent and child work together to decide academic goals and resolve conflicts when they arise.

In *parental support*, parents support and encourage the child's goal pursuit, even if it is different from their own goal for the child's education. Parental support is different from parental accommodation in that parents do not let go of their own goals for their child. For example, parents may praise their child for excelling in college classes even if they wish she pursued a different major.

In the two patterns of nonshared agency, on the other hand, parent and child do not jointly invest in academic goals, either because the parent is overly directive or not invested in the child's educational goals. Chang et al. (2010) differentiated between two types of nonshared agency: parental directing and parental uninvolvement. *Parental directing* occurs when parents are overinvolved and domineering in the child's education. In this parenting type, the parents dictate the child's educational goals. They use behavioral control strategies to enforce control, such as setting strict rules and carefully monitoring their child's behavior. In some cases, this type of control may be welcomed by the child because the parents may be more invested in their education than they are. Although this approach may lead to less conflict between the two, it may interfere with the acquisition of autonomy, an important developmental outcome in the transition to young adulthood.

By contrast, *parental uninvolvement* occurs when parents are disengaged from the child's education, and the child must self-reliantly pursue his or her goals. This type of nonshared agency, although infrequently endorsed by college students, may have negative consequences when novel academic challenges arise (Chang et al., 2010).

In an initial validation study with college students, shared agency with parents had positive associations with academic adjustment indicators (e.g., educational satisfaction), but no significant associations with academic achievement or educational behaviors (Chang et al., 2010). Nonshared agency (i.e., parental directing), by contrast, had a significant negative association with academic achievement, but no significant relationship with educational behavior or satisfaction. The current study seeks to expand the initial validation study by examining academic motivation in addition to academic achievement.

Parental Influence on Academic Motivation

One of the most challenging aspects of the transition to adulthood for today's youth is persisting in long-term goal pursuit, such as graduating from college, after experiencing setbacks along the way (e.g., receiving a low grade in a course) or becoming distracted by family, work, or extracurricular activities. When difficulties arise, motivational and self-regulatory processes are especially important for continued goal pursuit and attainment (Hamm et al., 2013; Heckhausen, Wrosch, & Schulz, 2010).

The current study addresses an understudied phenomenon: youth's academic motivation as influenced by parental involvement at the college level (Gonzalez-DeHass, Willems, & Holbein, 2005). Moreover, we investigate the role of students' motivation as a potential moderator between shared agency and academic achievement. Specifically, student motivation is examined in terms of intrinsic and extrinsic motivation (Deci & Ryan, 1985; Ryan & Deci, 2000) and achievement goal orientation (Dweck, 1986; Elliot & Church, 1997; Nicholls, 1984; Pintrich, 2000).

Intrinsic, Extrinsic, and Amotivation

The literature on intrinsic and extrinsic motivation (Deci & Ryan, 1985; see also review in Rheinberg, 2007), amotivation (Vallerand et al., 1992), and parenting styles has consistently found positive associations between parental

constructs that are similar, but more domain-general, than shared agency with parents and intrinsic motivation. In a study of first-year female college students, an authoritative parenting style was positively associated with intrinsic motivation and negatively associated with amotivation (Alt, 2014). In a separate study, college students with authoritative parents reported higher levels of intrinsic motivation, academic performance, and confidence (Strage & Brandt, 1999). In addition, these students were more likely to persist when encountering academic challenges. Parental involvement (Ames, Khoju, & Watkins, 1993) and perceived parental support (Vitoroulis, Schneider, Vasquez, Soteras de Toro, & Gonzales, 2012) were also associated with greater intrinsic motivation in students.

In a review by Gonzalez-DeHass et al. (2005), parental investment was positively related to intrinsic and extrinsic motivation in students. Permissiveness, which is conceptually similar to parental uninvolvement, was positively related to youth's amotivation (Alt, 2014).

Achievement Goal Orientations

In terms of college students' adaptive outcomes, several researchers (Elliot & Church, 1997; Elliot & McGregor, 2001; Grant & Dweck, 2003; Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Pintrich, 2000; Wolters, Shirley, & Pintrich, 1996) have found that a combination of high mastery-approach and performance-approach orientations, on the one hand, and low performance-avoidance and mastery-avoidance orientations, on the other hand, led to the greatest academic achievement. Although performance-approach goals are strongly associated with superior academic performance, mastery-approach goals are strongly associated with motivation, particularly intrinsic motivation (see review in Harackiewicz, Barron, & Elliot, 1998).

Few studies investigate the relationship between parenting styles and goal orientations among college students (Blumenfeld, 1992). In studies of children and adolescents, maternal authoritativeness, parental involvement, and perceived parental support (similar to shared agency with parents) were related to students' mastery-approach orientation (Garcia, Restubog, Toledano, Tolentino, & Rafferty, 2012; Gonzalez-DeHass et al., 2005; Gonzalez, Holbein, & Quilter, 2002; Gonzalez & Wolters, 2006; Hoang, 2007). Permissive parenting styles (similar to the uninvolved pattern of nonshared agency) were negatively related to a mastery-approach orientation (Gonzalez et al., 2002; Gonzalez & Wolters, 2009; Hoang, 2007).

Parental Influence on Academic Achievement

Parenting styles and parental involvement influence students' academic performance and provide support for our hypothesis that shared and nonshared agency with parents predicts academic achievement. For example, a number of researchers (Baumrind, 1991; Bronstein, Ginsburg, & Herrera, 2005; Dearing, 2004; Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Spera, 2005; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994; Steinberg, Elmen, & Mounts, 1989; Steinberg, Lamborn, Dornbusch, & Darling, 1992; Turner, Chandler, & Heffer, 2009; Weiss & Schwarz, 1996) have found that authoritative parenting styles and autonomy-supporting behaviors were associated with greater academic engagement in school and better academic performance for children and adolescents. Parental involvement is also a consistent significant predictor of children and adolescent' academic success (Desimone, 1999; Domina, 2005; Fan & Chen, 2001; Greenwood & Hickman, 1991; Hill & Tyson, 2009; Jeynes, 2003, 2005; Marchant, Paulson, & Rothlisberg, 2001; Paulson, 1994; Spera, 2005; Steinberg et al., 1992; Trusty, 1996).

In contrast, authoritarian and permissive parenting styles were not associated with adolescents' academic performance (Turner et al., 2009). Ginsburg and Bronstein (1993) and Bronstein et al., (2005) found that over- (i.e., directing) and under- (i.e., uninvolvement) controlling family styles were related to lower academic performance.

Although numerous studies investigate the influence of parenting styles and parental involvement on children's academic achievement, few studies address the role of academic motivation as a potential mediator in this relationship. In one such study, Grolnick and Slowiaczek (1994) found that motivational outcomes

(i.e., perceived competence, understanding, and autonomy) functioned as a mediator between parental involvement and academic performance. This study provides initial support for our hypothesis that motivation plays a meditational role in the relationship between shared agency with parents and academic achievement.

Research Questions and Hypotheses

The current study examined shared and nonshared agency with parents as predictors of academic achievement and motivation in college students. In addition, students' motivational characteristics were expected to at least partially mediate the relationship between shared agency with parents and youth's achievement outcomes.

Specifically, we predicted that being engaged in academic goals and having positive support and involvement from parents (i.e., shared agency with parents) would be associated with superior academic motivation patterns (i.e., greater intrinsic and extrinsic motivation, mastery- and performance-approach orientations, less amotivation) and achievement outcomes in college students (Hypothesis 1).

On the other hand, not being actively involved in academic goals and lacking positive parental support and involvement (i.e., either parental directing or uninvolvement) was expected to be associated with less adaptive academic motivation patterns and lower academic achievement in college students (Hypothesis 2). Finally, we anticipated that the effect of shared and nonshared agency on academic achievement would be mediated by the following motivation constructs: intrinsic, extrinsic, and amotivation and achievement goal orientations (performance-approach and avoidance goals and mastery-approach and avoidance goals; Hypothesis 3, Figure 1).

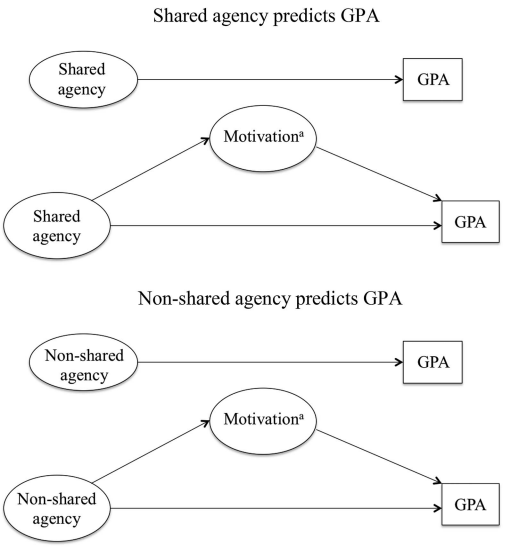

Figure 1. Hypothesis 3 mediational models. [a]Each motivation variable was entered as a separate mediator in the model: intrinsic motivation, extrinsic motivation, amotivation, mastery-approach goals, performance-approach goals, mastery-avoidance goals, and performance-avoidance goals.

Method

Sample and Procedure

The sample included 862 undergraduate students (75.9% female) from a large, public university in California. Participants ranged in age from 18 to 30 ($M = 20.4$, $SD = 1.89$) and were ethnically diverse: 18.2% European American ($n = 153$), 24.9% East Asian American ($n = 210$), 19.6% Southeast Asian American ($n = 165$), and 37.3% Hispanic ($n = 314$). The sample consisted of 22.3% freshmen ($n = 188$), 18.2% sophomores ($n = 153$), 33.6% junior ($n = 283$), and 25.9% seniors ($n = 218$). Participants who were older than 30 years of age were excluded from analyses because of decreased reliance on parents in young adulthood (Arnett, 2000).

Participants were recruited online through the university subject pool and were primarily social science majors. Study participants were recruited over three academic years and included the following academic terms: winter quarter 2013, summer Session 2014, and spring quarter 2015. Online surveys were available from the beginning to the end of each quarter. Participants were compensated with extra credit in a course of their choosing. Preliminary analysis found no differences in the results of the structural equation models based on quarter of data collection.

Measures

Shared agency and nonshared agency with parents. Shared and nonshared agency with parents was measured using the 16-item Shared

and Non-Shared Agency with Parents in Education scale (Chang, 2008). This scale addressed the perceptions of shared agency with parents using three subscales (parental accommodation, support, and collaboration) and nonshared agency with parents using two subscales (parental directing and uninvolvement). Because of the conceptual similarity of the shared agency subscales, the three subscales were combined into one shared agency scale. As two dissimilar subscales, parental directing and uninvolvement were analyzed as distinct nonshared agency types.

Items were answered on a 4-point Likert scale ranging from 1 = *strongly disagree* to 4 = *strongly agree*. Higher scores on the shared and nonshared agency scales indicated more shared and nonshared agency with parents, respectively. Sample items from the shared agency scale are as follows: "My mother/father just wants me to be happy in college" (accommodation); "I seek support from my mother/father after making important educational decisions" (support); and "My mother/father and I tend to negotiate when we disagree on the direction of my college education" (collaboration). Sample item from the nonshared agency subscale are as follows: "My mother/father makes me do what s/he thinks is best for my education" (directing) and "My mother/father is not responsible for helping me achieve my educational goals" (uninvolvement). All subscales in our sample, except for Collaboration (α = .47), demonstrated acceptable to high reliability: Accommodation (α = .67), Support (α = .80), Uninvolvement (α = .83), and Directing (α = .78). This is consistent with alphas reported in the original validation study by Chang et al. (2010): Accommodation (α = .77), Support (α = .83), Uninvolvement (α = .75), and Directing (α = .76), with collaboration demonstrating lower validity than the other subscales (α = .58).

Intrinsic, extrinsic, and amotivation. The 28-item Academic Motivation Scale (Vallerand et al., 1992) measured students' intrinsic motivation, extrinsic motivation, and amotivation. Students were asked, "Why do you go to college?" and responded on a 7-point Likert scale ranging from 1 = *does not correspond at all* to 7 = *corresponds exactly*. An overall intrinsic motivation score was created by combining the following subscales: To Know, To Accomplish Things, and To Experience Stimulation. An extrinsic motivation score was calculated by combining "external," "introjected," and "identified regulation" subscales. Four individual items were summed to create the amotivation score.

Sample items of why students attended college included the following: "Because I experience pleasure and satisfaction while learning new things" (intrinsic motivation); "Because I think that a college education will help better prepare for the career I have chosen (extrinsic motivation); and "I can't see why I go to college, and, frankly, I couldn't care less" (amotivation). Cronbach's coefficient alphas for each scale were high and ranged from .90 to .93.

Achievement goal orientations. Mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals were assessed using the Achievement Goal Questionnaire (Elliot & McGregor, 2001). Each goal orientation was measured with three items, for a total of 12 items. Items were answered on a 7-point Likert scale ranging from 1 = *not at all true of me* to 7 = *very true of me*. Participants were asked to answer questions in terms of their classes that quarter. Sample items included, "I want to learn as much as possible from this class" (mastery-approach), "I worry that I may not learn all that I possibly could in this class" (mastery-avoidance), "It is important for me to do better than other students" (performance-approach), and "I just want to avoid doing poorly in this class" (performance-avoidance). Cronbach's coefficient alphas for the subscales were high and ranged from .82 to .90.

Academic achievement. Similar to previous studies on academic achievement (e.g., Ahn Toupin & Son, 1991), academic achievement was measured using self-reported cumulative grade point average (GPA). A higher GPA indicated greater academic achievement.

Statistical Analyses

Structural equation models. We used structural equation modeling to examine the extent to which shared and nonshared agency with parents predicted students' academic achievement and motivation. Shared agency, nonshared agency, and the motivational constructs were specified as latent variables in the models.

To analyze our hypotheses, we specified a set of six different models, with shared and non-

shared agency in separate models, predicting each of the outcome variables (intrinsic, extrinsic and amotivation, goal orientation, and GPA). The model fit was much better when using shared and nonshared agency as separate predictors than when including both in one model. In the first step, shared agency was used as a single predictor of the outcome variables (see Figure 2 for an example). In the second step, the two nonshared agency subscales (parental directing and parental uninvolvement) were used as predictors (see Figure 2 for an example). Student's sex, age, ethnicity, and their parents' education were used as covariates in the models.

The mediation analysis was also conducted using structural equation modeling. First, a basic model was specified to test the effect of shared and nonshared agency, respectively, on academic achievement. Subsequently, several models were computed, each including one motivational construct (intrinsic motivation, extrinsic motivation, amotivation, and the four goal orientations) as a mediator of the aforementioned relationship. The independent variable (shared or nonshared agency, respectively) and each mediator was modeled as a latent variable. Only the dependent variable (GPA) was an observed variable.

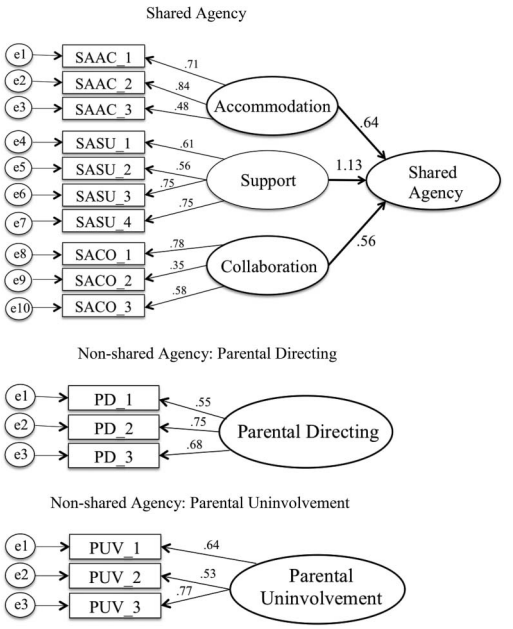

Figure 2. Measurement models of shared and nonshared agency. SAAC = shared agency accommodation; SASU = shared agency support; SACO = shared agency collaboration; PD = parental directing; PUV = parental uninvolvement.

Evaluation of model fit. To evaluate the model fit of the structural equation models, we assessed the comparative fit index (CFI) and the root mean square error of approximation (RMSEA). Values greater than .95 for the CFI and less than .05 for the RMSEA were regarded as excellent model fits (Hu & Bentler, 1999). The chi-square value was also taken into account, but it is well known that the chi-square value strongly depends on the sample size, is highly sensitive in large samples, and often leads to significant chi-square values (Ullman, 2007). Therefore, we interpreted this value carefully.

Handling of missing data. We used the FIML approach in Mplus to handle missing data because this approach typically produces less biased results than list-wise deletion while also maintaining statistical power (Enders, 2010).

Computing confidence intervals. Confidence intervals (95%) were computed for each mediator using the RMediation Package (Tofighi & MacKinnon, 2011) to investigate the significance of the mediated effect. The mediation effect was significantly different from zero if the confidence intervals did not contain zero.

Computing the explained variance of the mediated relationship. We calculated the variance explained by the mediator in the relationship between shared or nonshared agency and academic achievement. To compute the explained variance of the mediated relationship, the indirect effect was divided by the direct effect. Specifically, the indirect effect was computed by multiplying the beta coefficient of the *a* path (i.e., the effect of the independent variable on the mediator) by the beta coefficient of the *b* path (i.e., the effect of the mediator on the dependent variable). Afterward, this indirect effect was divided by the *c* path (i.e., the effect of the independent variable on the dependent variable in the basic model) to get the explained variance of the mediated relationship.

Demographic variables. Student's sex, age, ethnicity, and their parents' education were entered into the regression models first to account for the effect of these demographic differences.

Results

Descriptive Statistics

The means (*M*), standard deviations (*SD*), and internal consistencies (α) of all measures are presented in Table 1. The internal consistencies for all study variables ranged from good to very good (α = .68−.93). The correlations among study variables were inspected for multicollinearity and ranged from moderately negative for shared agency and parental uninvolvement ($r = -.55$) to highly positive for intrinsic motivation and mastery-approach goals ($r = .61$).

Measurement Models

To test the factorial validity of our shared and nonshared agency constructs, we computed confirmatory factor analyses (measurement models). The measurement models for shared and nonshared agency are depicted in Figure 2. For shared agency, we included three subfactors, namely accommodation, collaboration, and support, that loaded onto the second-order factor of shared agency. The second-order factor model of shared agency fit the data well, $\chi^2(28) = 79.22$, $p = .000$, CFI = .977, RMSEA = .047. We included three measurement correlations between items to reach this fit. The two measurement models for nonshared agency were just identified and the fit indices were CFI = 1 and RMSEA = 0. In sum, the results of the measurement models provide support for the factorial validity of shared and nonshared agency constructs.

Hypothesis 1: Shared Agency as Predictor of Motivation and Academic Achievement

Our first hypothesis addressed the associations between shared agency and academic motivation and achievement.

Motivation. Results from the structural equation models for motivational variables are depicted in Figures 3 and 4.

Intrinsic, extrinsic, and amotivation. When predicting intrinsic and extrinsic motivation and amotivation, the fit of the model for shared agency was acceptable, $\chi^2(778) = 4238.53$, $p < .000$, CFI = 0.78, RMSEA = 0.072, suggesting the results should be interpreted with caution. In line with our hypothesis, shared

Table 1
Means (M), Standard Deviations (SD), Internal Consistencies (α), and Latent Intercorrelations Among All Variables

Variable	Descriptive statistics			Intercorrelations									
	M	*SD*	α	PD	PUV	IM	EM	AM	Map	Mav	Pap	Pav	GPA
Shared agency	2.94	.50	.80	−.08	−.55***	.38***	.35***	−.37***	.34***	.01	.12**	.13***	.10**
Parental directing (PD)	2.48	.73	.70		−.11*	.01	.06	.19***	−.02	.16***	.12**	.12**	−.28***
Parental uninvolvement (PUV)	1.91	.66	.68			−.18***	−.33***	.40***	−.16***	−.03	−.04	−.16***	−.03
Intrinsic motivation (IM)	5.01	1.18	.93				.67***	−.41***	.61***	.14***	.30**	.15***	.13***
Extrinsic motivation (EM)	5.90	.92	.91					−.45***	.45***	.16***	.31***	.47***	.01
Amotivation (AM)	1.97	1.27	.89						−.32***	.09*	−.13***	−.11**	−.23***
Mastery-approach goals (Map)	5.32	1.26	.88							.35***	.33***	.28***	.06
Mastery-avoidance goals (Mav)	4.74	1.42	.86								.20***	.33***	−.17***
Performance-approach goals (Pap)	4.84	1.50	.90									.21***	.23***
Performance-avoidance goals (Pav)	5.47	1.35	.82										−.19***
Achievement (grade point average [GPA])	3.00	.54	—										

* $p < .05$. ** $p < .01$. *** $p < .001$.

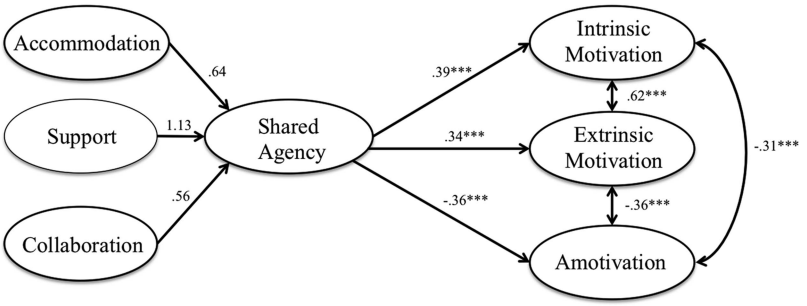

Figure 3. Shared agency as a predictor of intrinsic, extrinsic, and amotivation. Age as a control variable had a significant effect on intrinsic motivation ($b = .09$, $p < .05$) and gender had a significant effect on extrinsic motivation ($b = .12$, $p < .001$) and amotivation ($b = .15$, $p < .001$). R^2 of intrinsic motivation was .16, for extrinsic motivation R^2 was .15, and for amotivation R^2 was .16. *** $p < .001$.

agency with parents positively predicted intrinsic ($b = .39$, $p < .001$) and extrinsic motivation ($b = .34$, $p < .001$), and negatively predicted amotivation ($b = -.36$, $p < .001$).

Achievement goal orientations. When predicting goal orientations, the model fit for shared agency, $\chi 2\ (260) = 536.54$, $p < .000$, CFI = 0.96, RMSEA = 0.036, was very good. As expected, shared agency was positively associated with mastery-approach ($b = .32$, $p < .001$) and performance-approach goals ($b = .12$, $p < .01$). Contrary to our hypothesis, shared agency was also positively associated with performance-avoidance goals ($b = .11$, $p < .01$). Compared with mastery-approach goals, the beta coefficients of shared agency predicting performance goals are small and should be interpreted with caution.

Academic achievement. Results from the structural equation model for shared agency

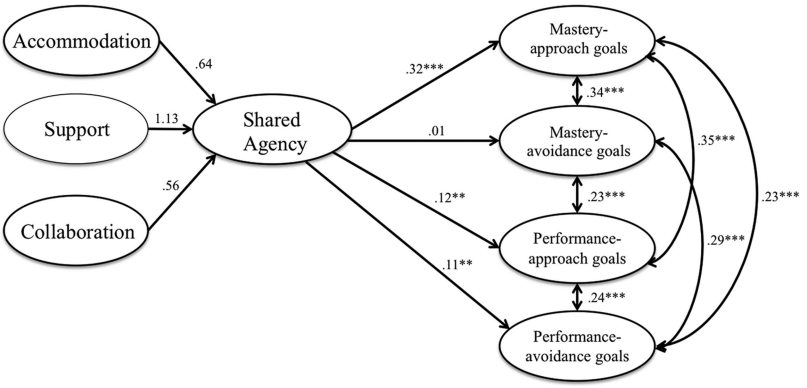

Figure 4. Shared agency as a predictor of goal orientations. Gender as a control variable had a significant effect on mastery-avoidance goals ($b = -.10$, $p < .01$), performance-approach goals ($b = .09$, $p < .01$) and performance-avoidance goals ($b = -.12$, $p < .01$). Age was negatively associated with performance-avoidance goals ($b = -.08$, $p < .05$). Parents' education had a negative effect on mastery-approach ($b = -.12$, $p < .01$) and performance-avoidance goals ($b = -.09$, $p < .05$). And ethnicity was positively associated with mastery-($b = .12$, $p < .01$) and performance avoidance goals ($b = .15$, $p < .001$), but negatively associated with mastery- and performance-approach goals ($b = -.11$, $p < .01$). R^2 of mastery-approach goals was .14, for mastery-avoidance goals R^2 was .04, for performance-approach goals R^2 was .03 and for performance-avoidance goals R^2 was .08. ** $p < .01$; *** $p < .001$.

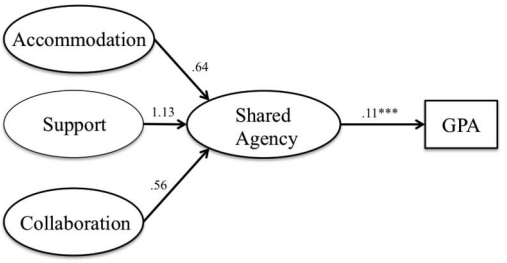

Figure 5. Shared agency as a predictor of academic achievement. Three of our control variables had a significant effect on grade point average (GPA). These were gender ($b = -.07^{*}$), age ($b = .16^{***}$), and ethnicity ($b = -.22^{***}$). R^2 of GPA was .11. *** $p < .001$.

with parents predicting academic achievement are depicted in Figure 5. Overall, the fit of the model was good, χ^2 (73) = 217.23, CFI = 0.93, RMSEA = 0.048. In line with our hypothesis, shared agency had a positive effect on academic achievement ($b = .11$, $p < .01$).

Hypothesis 2: Nonshared Agency as Predictor of Motivation and Academic Achievement

Our second hypothesis addressed the associations between nonshared agency and academic motivation and achievement.

Motivation. Results from the structural equation models for motivational variables are depicted in Table 2.

Intrinsic, extrinsic, and amotivation. When predicting intrinsic and extrinsic motivation and amotivation, the fit of the model for nonshared agency was hardly acceptable with $\chi^2(633, N = 862) = 3922.35$, $p = .001$, CFI = .764, RMSEA = .08. Therefore, the results should be interpreted with caution. In line with our hypothesis, parental uninvolvement negatively predicted intrinsic ($b = -.19$, $p < .001$) and extrinsic motivation ($b = -.31$, $p < .001$) and positively predicted amotivation ($b = .41$, $p < .001$). Parental directing was not significantly associated with intrinsic or extrinsic motivation, but had a significant positive effect on amotivation ($b = .23$, $p < .001$).

Achievement goal orientations. When predicting goal orientations, the model fit for nonshared agency, $\chi^2(168, N = 826) = 365.08$, $p = .001$, CFI = .963, RMSEA = .04, was very good. Parental directing was positively associated with mastery-avoidance ($b = .19$, $p < .01$), performance-approach ($b = .11$, $p < .01$), and performance-avoidance goals ($b = .12$, $p < .05$). Parental uninvolvement was negatively associated with mastery-approach goals ($b = -.15$, $p < .001$) and performance-avoidance

Table 2
Non-Shared Agency (Parental Directing and Uninvolvement) Predicting Academic Achievement and Academic Motivation: Results From Structural Equation Modeling

Predictor variables, explained variance, and fit statistics	Academic motivation				Goal orientation			
	GPA	IM	EM	AM	Map	Mav	Pap	Pav
Parental directing	$-.29^{***}$	$-.02$	.07	$.23^{***}$	.01	$.19^{***}$	$.11^{*}$	$.12^{**}$
Parental uninvolvement	$-.06$	$-.19^{***}$	$-.31^{***}$	$.41^{***}$	$-.15^{**}$	$-.01$	$-.04$	$-.13^{**}$
Control variables								
Sex	$-.05$	.01	$.09^{*}$	$.10^{**}$	$-.03$	$-.10^{**}$	$.09^{*}$	$-.11^{**}$
Age	$.10^{**}$	$.10^{*}$	.07	.01	.06	.03	.01	$-.05$
Parents' education	$.14^{***}$	$-.07$	$-.09^{*}$	.01	$-.11^{*}$	$-.12^{**}$	$-.01$	$-.13^{**}$
Ethnicity	$-.19^{***}$	.04	.06	$-.06$	$.12^{*}$	$.10^{*}$	$-.11^{**}$	$.13^{**}$
R^2	.18	.05	.13	.23	.06	.07	.03	.10
Model fit								
χ^2	125.79		3922.35			365.08		
df	28		633			168		
CFI	.906		.764			.963		
RMSEA	.06		.08			.04		

Note. GPA = Grade point average; IM = intrinsic motivation; EM = extrinsic motivation; AM = amotivation; Map = mastery-approach goals; Mav = mastery-avoidance goals; Pap = performance-approach goals; Pav = performance-avoidance goals; df = model degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation.
* $p < .05$. ** $p < .01$. *** $p < .001$.

goals ($b = -.13$, $p < .01$). Here, the findings should also be interpreted with caution because of the small beta coefficients.

Academic achievement. When predicting academic achievement, the fit of the model was acceptable, $\chi^2(28, N = 862) = 125.79$, $p = .001$, CFI = .906, RMSEA = .06. In line with our hypothesis, nonshared agency, specifically parental directing, had a negative effect on academic achievement ($b = -.29$, $p < .001$). Parental uninvolvement had no significant effect on academic achievement.

Hypothesis 3: Motivation Mediates the Relationship Between Shared and Non-Shared Agency and Academic Achievement

Our third hypothesis addressed the role of motivational variables as possible mediators of the relationship between shared and nonshred agency and academic achievement, respectively. The model fit indices for all motivational variables indicated a good to satisfactory model fit (see Table 3 for shared agency and Table 4 for nonshared agency). The basic model displays the results for shared and nonshared agency predicting academic achievement, respectively; the subsequent models display the mediation analyses for the motivation variables.

Shared agency. Intrinsic motivation (see Figure 6), amotivation, performance-approach, and performance-avoidance orientations functioned as significant mediators of the association between shared agency and academic achievement. Intrinsic motivation explained 27% of the variance in the relationship between shared agency and academic achievement, amotivation explained 45%, performance-approach goals explained 23%, and performance-avoidance goals explained 26%. The fact that performance-avoidance goals positively mediated the relationship between shared agency and GPA was inconsistent with our hypotheses. In particular, shared agency was positively associated with GPA as well as with performance-avoidance goals; however, performance avoidance goals had a negative effect on GPA (the c' path was opposite in sign to the b path).

Nonshared agency. As parental uninvolvement was not significantly related to GPA and parental directing was negatively associated with GPA, we only report the mediation models for parental directing. Indeed, we found that amotivation (see Figure 7), mastery-avoidance, performance-approach, and performance-avoidance goals significantly mediated the relationship between parental directing and GPA. Amotivation explained 12% of the variance in the relationship between parental directing and academic achievement; mastery-avoidance explained 7%, performance-approach goals explained 11%, and performance-avoidance goals

Table 3
Results of Structural Equation Modeling (Full Information Maximum-Likelihood Estimations) Testing Motivation as Mediator of the Relationship Between Shared Agency and GPA and Confidence Intervals (CIs) for the Mediated Effects

	Fit indices				Standardized coefficients			CIs of mediated effect
Model	$\chi^2(df)$	CFI	RMSEA	R^2	SA → GPA	SA → Mot	Mot → GPA	Mot
Basic	174.48 (41)	.927	.06	.01	.08*			
IM (med)	1637.32 (225)	.822	.09	.02	.03	.39***	.12**	**[.016; .082]**
EM (med)	1637.94 (225)	.786	.09	.01	.08	.35***	−.02	[−.035; .021]
AM (med)	319.46 (85)	.934	.06	.05	.01	−.33***	−.22***	**[.042; .109]**
Map (med)	234.88 (72)	.946	.05	.01	.07	.34***	.04	[−.013; .041]
Mav (med)	233.24 (72)	.943	.05	.03	.09*	.03	−.17***	[−.02; .008]
Pap (med)	232.17 (72)	.949	.05	.05	.05	.12**	.22***	**[.005; .052]**
Pav (med)	225.45 (72)	.943	.05	.05	.10**	.10*	−.21***	**[−.041; −.004]**

Note. CIs not including zero indicate a significant mediation effect. CIs in bold mean that the mediating effect is significant. *df* = model degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; → = path weight; SA = shared agency; Mot = motivational variable; GPA = grade point average.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4
Results of Structural Equation Modeling (Full Information Maximum-Likelihood Estimations) Testing Motivation as Mediator of the Relationship Between Parental Directing (Nonshared Agency) and Grade Point Average (GPA) and Confidence Intervals for the Mediated Effects

	Fit indices				Standardized coefficients			CIs of mediated effect
Model	$\chi^2(df)$	CFI	RMSEA	R^2	PD → GPA	PD → Mot	Mot → GPA	Mot
Basic	6.31 (2)	.989	.05	.08	$-.28^{***}$			
IM (med)	1267.61 (102)	.800	.12	.09	$-.28^{***}$	.01	$.13^{***}$	[−.012; .015]
EM (med)	1182.15 (102)	.753	.11	.08	$-.28^{***}$	.07	.02	[−.005; .009]
AM (med)	97.78 (18)	.953	.07	.11	$-.24^{***}$	$.19^{***}$	$-.18^{***}$	**[−.06; −.014]**
Map (med)	34.09 (12)	.984	.05	.08	$-.28^{***}$	−.02	.05	[−.009; .005]
Mav (med)	22.73 (12)	.991	.03	.09	$-.26^{***}$	$.16^{***}$	$-.13^{***}$	**[−.042; −.005]**
Pap (med)	31.92 (12)	.987	.04	.14	$-.31^{***}$	$.12^{**}$	$.26^{***}$	**[.006; .061]**
Pav (med)	24.05 (12)	.989	.04	.10	$-.26^{***}$	$.12^{**}$	$-.16^{***}$	**[.005; .037]**

Note. CIs not including zero indicate a significant mediation effect. (CIs in bold mean that the mediating effect is significant). *df* = model degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; → = path weight; PD = Parental directing; Mot = motivational variable; GPA = grade point average; CI = 95% interval.
$^{**}p < .01$. $^{***}p < .001$.

explained 7%. Nevertheless, it should be noted that performance-approach goals inconsistently mediated the association between parental directing and GPA because parental directing was negatively associated with GPA (*c′* path), but the association between parental directing and performance-approach goals (*a* path) as well as between performance-approach goals and GPA (*b* path) were positive.

Discussion

College students continue to be influenced by parents when it comes to making important decisions about their futures and pursuing developmental goals (Smetana et al., 2006). The proposed study investigated patterns of shared and nonshared agency with parents in predicting college students' academic motivation and achievement. Overall, we found preliminary support that shared agency with parents was associated with an advantageous motivational profile in college (greater intrinsic and extrinsic motivation, mastery- and performance-approach orientations, less amotivation) and greater academic achievement. In contrast, nonshared agency was associated with a less advantageous motivational profile and poorer academic achievement. In particular, parental uninvolvement was associated with less intrinsic and extrinsic motivation, fewer mastery-approach goals, and greater amotivation. Parental directing was positively associated with amotivation and mastery- and performance-avoidance orientations and negatively associated with GPA. Some of the associations between nonshared agency and motivational constructs, especially performance goals,

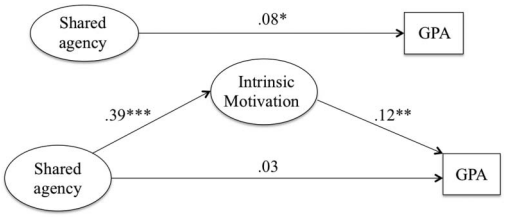

Figure 6. The relationship between shared agency and academic achievement mediated by intrinsic motivation. $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

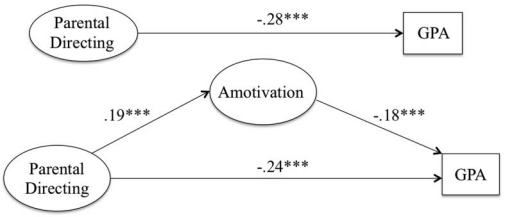

Figure 7. The relationship between parental directing and academic achievement mediated by amotivation. $^{***}p < .001$.

were weak and should be interpreted with caution.

In general, our predictions were confirmed with regard to approach orientations, but not for avoidance orientations. Typically, avoidance goals are associated with poorer academic performance (Elliot & Church, 1997; Elliot & McGregor, 2001; Grant & Dweck, 2003; Harackiewicz et al., 1997; Pintrich, 2000; Wolters et al., 1996). In the current study, performance-avoidance goals were positively associated with shared agency (which was subsequently positively associated with academic achievement) and negatively associated with parental uninvolvement (which had no significant associations with academic achievement). One of the largest limitations of the study (see Limitations section for full discussion) is that we do not have longitudinal data to determine how parents and youths' relationships change over time, particularly with respect to academic performance. One possible explanation for our findings is that changes in academic performance trigger changes in parental behavior. For example, if college students perform poorly or fail, parents may be more likely to intervene. That is, parents may respond to poor performance by becoming more involved, resulting in higher levels of shared agency with parents. As a result, students may focus on avoiding negative academic outcomes via performance-avoidance goals in an effort to placate their parents. Future studies can test this hypothesis by observing how parent–child relationships change after college students perform poorly, such as failing a class or being placed on academic probation.

On the flip side, college students who perform satisfactorily or even better than expected may have parents who withdraw involvement in their child's education. That is, when youth are doing fine on their own, parents may reduce their involvement and allow youth to increase their autonomy. After all, parents granting increased autonomy is supposed to be the hallmark of successful development during the transition to adulthood. In terms of shared agency patterns, withdrawing involvement may look similar to parental uninvolvement, although the reasons for uninvolvement differ in these two scenarios. This may explain the unanticipated findings that performance-avoidance goals were negatively associated with parental uninvolvement and that parental uninvolvement did not significantly negatively predict GPA. Unfortunately, we are unable to test these hypotheses without longitudinal data.

An additional unexpected finding related to goal orientations was that students who reported more parental directing reported greater performance-approach orientations. Performance-approach goals are typically associated with greater academic achievement in college (Elliot & Church, 1997; Elliot & McGregor, 2001; Grant & Dweck, 2003; Harackiewicz et al., 1997; Pintrich, 2000; Wolters et al., 1996). However, in the current study, parental directing has a negative association with GPA. Recent discussions of performance goals (Senko, Hulleman, & Harackiewicz, 2011) note that there may actually be two different components of performance goals, one that focuses on assessing one's own standing in the context of others' performance (i.e., normative function) and another that focuses on social display or competence demonstration in front of other people. Inconsistent findings about the effect of performance goal orientation on performance may be a result of measuring different critical aspects of performance goals. Normative standards are not expected to undermine achievement, however, the same cannot be said of social display orientations because of the threat of being looked down upon by others. Overall, additional research is needed to test the various interpretations for performance-approach and avoidance unanticipated findings.

Parental directing also failed to show the expected negative association with intrinsic and extrinsic motivation, but was not positively associated with these constructs either. Maybe students' attitudes toward parental directing influences how it affects students' motivation and achievement. Students who are ambivalent about education and welcome parental directing of their educational goals may experience a boost in their intrinsic and/or extrinsic motivation. On the other hand, if parents are directing of goals that are in conflict with students' goals, the student may experience decreased intrinsic and/or extrinsic motivation. Thus, the overall effect of parental directing may be cancelled out. Unfortunately, we did not collect data on students' attitudes toward parental directing and cannot test this interpretation, but it is a promising avenue for future inquiry.

Four motivational constructs were significant partial mediators of the relationship between shared agency and academic achievement. Students who reported stronger shared agency with parents also reported higher intrinsic motivation, lower amotivation, and a higher performance-approach orientation, which in turn was associated with better achievement. Higher levels of shared agency were also associated with performance-avoidance orientations, but this orientation was negatively associated with GPA, as discussed previously. Taken together, having parents who are supportive and actively involved in students' academic goals allows youth to find inherent pleasure and satisfaction in working toward an educational goal, while also valuing their academic performance in comparison to others. The mediation results from the current study are consistent with those reported by Grolnick and Slowiaczek (1994) who found motivational constructs mediated the relationship between parental involvement and academic performance. It is through this adaptive motivational profile that supportive parents positively influence youth's GPA, which has implications for future education and career prospects.

Amotivation, mastery-avoidance, performance-approach, and performance-avoidance goals were significant partial mediators of the relationship between parental directing and GPA. This pattern of data suggests that college students who perceive higher parental directing have higher amotivation and avoidance goal orientations, which in turn was associated with lower academic achievement. As noted earlier, parental directing was positively associated with performance-approach orientation, but negatively associated with GPA.

Both patterns of shared agency with parents have an influence on GPA through youth's amotivation, performance-approach, and performance-avoidance orientations. This gives us insights into the possible mechanisms involved in how patterns of shared agency directly and indirectly influence academic achievement. In other words, it is partially through their influence on motivational constructs that parents influence youths' motivation and achievement.

Limitations and Future Directions

There were several limitations in the current study that should be addressed in future studies. Because we used a cross-sectional design, we cannot conclude that shared and nonshared agency with parents causally influenced the outcome variables. Longitudinal data are required to conclusively support the meditational hypothesis that shared agency with parents influenced college students' motivation and, in turn, their academic achievement. On the basis of developmental principles, it is unclear whether shared and nonshared agency with parents is stable across the transition to college for the majority of youth. Although parental styles and involvement are relatively stable from childhood to adolescence, increases in autonomy and the challenges of the college environment may change existing patterns of shared agency with parents. Future studies should investigate the impact of shared agency with parents across the high school to college transition. It may be that shared agency with parents is especially beneficial to students in their freshmen year of college as they adjust to a new academic environment, or when students encounter academic failures or setbacks.

Another challenge of the current study was its reliance upon student reports of parental support and involvement. Ideally, shared agency should be measured using the perceptions of both students and their parents given its focus on joint engagement in academic goals. This is an important limitation that should be addressed and studied in future research. Discrepancies in perception, on both ends, may have an impact on students' academic motivation and performance.

Furthermore, standard assessment of shared agency with parents asks students about their perceptions of both parents and/or guardians ("mother/father") rather than separating the two. The literature has consistently demonstrated differences between mothers' and fathers' parenting styles and involvement. The current study was not able to assess these differences.

An additional limitation was that academic motivation constructs were assessed at different levels of specificity. Intrinsic, extrinsic, and amotivation were measured at a broad educational level while achievement goal orientations

were measured at the class level. Future studies are needed to examine the impact of the level of measurement (broad vs. specific) on overall academic motivation and achievement.

Last, although self-reported GPA is a strong indicator of school grades, there may be systematic biases in students' reporting. According to a meta-analysis conducted by Kuncel, Credé, and Thomas (2005), self-reporting of GPA is more accurate among college students and students with higher cognitive ability scores, both of which are likely characteristic of our sample. Kuncel et al. (2005) also reported that self-reported GPA predicts outcomes in a comparable way to actual grades (Kuncel et al., 2005). Nevertheless, the results for academic achievement using self-reported GPA should be interpreted with caution.

Implications

Current interventions addressing college students' academic achievement and motivation primarily focus on the individual as the point of change. However, Holahan, Valentiner, and Moos (1994) found that a harmonious relationship between the child and the mother and father was associated with a smoother transition to college. Thus, an ideal intervention should include multiple points of influence beyond the individual, including parents and school personnel (Bronfenbrenner, 1977, 1979).

Although we cannot conclude causality, the findings of the current study suggest that supportive joint engagement in academic goals between a college student and their parents may have a positive influence on students' academic achievement and motivation. Therefore, in addition to more research confirming this relationship, we support the pilot testing of interventions that increase parents' supportive involvement in collaborative academic decision making and planning with their child. College administrators may play a key role in these types of interventions to educate parents about the positive effects of supporting their child's postsecondary educational goals.

Despite the fact that college students are often away from home, current technology allows frequent, high-quality communication between parents and their children. Given the past literature on the beneficial effects of parents fostering youth's agency in education (Grolnick & Slowiaczek, 1994; Wang, Pomerantz, & Chen, 2007), parents should be encouraged to initiate conversations with their children about day-to-day academic activities and progress toward educational goals in a way that promotes autonomy and supports and encourages youth. This has the potential to reengage students who are struggling with academics or motivation at virtually no cost for schools. At the same time, college administrators and staff may seek to discourage parental behavior that is overcontrolling or autonomy inhibiting for students.

Evidence for the potential effectiveness of this type of intervention is supported by research on autonomy-supportive training, an intervention designed to support autonomy in others (vs. directing or controlling interaction styles; Su & Reeve, 2011). Cheon, Reeve, and Moon (2012) found that significant others (e.g., teachers and coaches) can be successfully trained to differentiate between autonomy support and directive support. Increasing autonomy-supportive communication with students led to an increase in students' classroom engagement, motivation, skill development, and academic achievement. Compared to students in the control group, students of trained teachers continued to benefit from the intervention 1-year later (Cheon & Reeve, 2013). Thus, current interventions based on promoting adaptive shared agency patterns show promise for college-aged students.

Conclusion

The results of the current study emphasize the influence that parents have on college student outcomes. Specifically, we used the constructs of shared and nonshared agency with parents to measure parent and child's joint investment and engagement in higher education goals. The findings of our study suggest that shared agency with parents was consistently beneficial for college students' academic motivation and achievement. Consistent with Chang et al. (2010), the current study found that, out of the two nonshared agency types, parental directing was especially maladaptive for college students. However, it should be noted that both types of nonshared agency with parents were associated with different, but nevertheless generally maladaptive, motivational profiles. The effects of shared and nonshared agency on academic

achievement were largely mediated through their association with the students' academic motivation. Future interventions for increasing college students' academic motivation and achievement may consider the parent–child relationship as a point of intervention. Specifically, focused communication with parents about educational goals in a supportive and collaborative environment can positively influence college student outcomes. Overall, we believe that among college students, parental active involvement and support remains an important contributor to youth's educational goal pursuit and striving.

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