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Perceived parenting styles, academic achievement, and life satisfaction of college students: the mediating role of motivation orientation

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Abstract
Using the perspective of self-determination theory, we examined college students' motivation orientation as a mediator of the relationship between parenting style and life satisfaction or GPA. The sample was drawn from a medium size university in the northeast of the USA ($N = 432$). While controlling for gender, age, and ethnicity, we used structural equation modeling and found that all three motivation types (intrinsic, extrinsic, and amotivation) act as partial mediators of the relationship between authoritative parenting and life satisfaction, whereas amotivation acts as a partial mediator of the relationship between authoritarian parenting and life satisfaction. Although we did not find support that motivation types act as mediators between perceived parenting style and GPA, we did find that the external and the introjected motivations, as well as the intrinsic motivation to know significantly and negatively correlate with GPA, whereas the identified extrinsic motivation and the intrinsic motivation to accomplish significantly and positively correlate with GPA. Our results imply that both perceived parenting style and motivation types are important and inter-related factors for the wellbeing and performance of college students.

Keywords Parenting styles · Intrinsic and extrinsic motivation · Life satisfaction · Academic achievement · Self-determination theory · College students

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Introduction

College students' success is a fundamental concern for education professionals and policy makers and in recent years has received attention in the USA because it can lead to many societal and personal benefits (Ma et al. 2016, Krumrei-Mancuso et al. 2013). Following Krumrei-Mancuso et al.'s (2013) work, we view success as relating to both academic performance and wellbeing. Indeed, a recent publication by the American Council on Education (Douce and Keeling, 2014) states that the mental health of college students should be a strategic priority on campuses as it can affect both quality of learning and grades. Past studies have identified several factors influencing a college students' performance and wellbeing, including self-efficacy (e.g., Honicke and Broadbent, 2016), grit (e.g., Wolters and Hussain, 2015, Han et al. 2017), motivation type (e.g., Robbins et al. 2004, Lepper et al. 2005), and parental influences and support (e.g., Cullaty 2011, Li et al. 2014, Kriegbaum 2016). In this paper, we explore two such factors (perceived parental style and motivation type) and examine how they relate to students' life satisfaction and academic success.

Parents have long been identified as having an important influence on the academic motivation, wellbeing, and academic performance of children and adolescents (Merlin et al. 2013, Spera, 2005). Furthermore, Waterman and Lefkowitz (2017) concluded that despite the decreased physical proximity, emerging adults' academic engagement can still be affected by past parenting behaviors as well as the current quality of their relationships with their parents. Similarly, Kriegbaum et al. (2016) concluded that "parents still matter" during students' college years. Despite these recent observations, however, few studies have considered motivation orientation as one underlying mechanism by which parental styles may influence wellbeing and performance in emerging adults (defined as people aged 18–30, Arnett, 2000). There is therefore a gap in the literature, particularly for the population of college students. In this vein and grounded in self-determination theory and empirical evidence, we aim to investigate if motivation orientation acts as a mediator of the relationship between perceived parenting style and life satisfaction and between perceived parenting style and academic achievement. To our knowledge, no prior studies have examined college students' motivation orientation as a mediator between perceived parenting style and life satisfaction and performance, and, very few studies have done so for the population of children or adolescents (e.g., Grolnick et al. 1991 and Grolnick and Slowiaczek, 1994).

Theoretical foundations based on self-determination theory

Darling and Steinberg (1993) define parenting style as "a constellation of attitudes toward the child that are communicated to the child and that, taken together, create an emotional climate in which the parents' behaviors are expressed." These behaviors include both goal-directed and non-goal-directed parenting practices such as gestures, changes in tone of voice, and emotional expression. The seminal work by Baumrind (1967, 1971), empirically validated and used in many studies, defines two key parenting styles (*authoritative*, *authoritarian*) each of which influence a child in different ways. These parenting styles can be categorized along two dimensions: demandingness and

responsiveness,[1] according to Maccoby and Martin (1983) who expanded Baumrind's (1967, 1971) conceptualization. Demandingness (monitoring, supervision, consistent discipline) addresses the level of control a parent imposes on their child, and responsiveness (reciprocity, attachment) addresses the level of psychological warmth and autonomy a parent allows (Maccoby and Martin, 1983, Grolnick and Ryan 1989).

Authoritative parents (high in both demandingness and responsiveness) set high behavioral expectations for their children as well as firm behavioral boundaries but also allow them to explore and develop their own sense of self. They are generally accepting and supportive of their children's decisions and provide them with the reasons behind expectations and rules (Koestner et al. 1984). Authoritarian parents on the other hand (high in demandingness but low on responsiveness) are strict and controlling and often use an object-oriented disciplinary style, involving the use of threats and/or punishment to enforce rules and expectations.

Prior studies have hypothesized and empirically established *direct links* between parenting styles and wellbeing or student performance. For example, authoritarian parenting has been found to correlate with negative psychological outcomes, such as depression (e.g., Nguyen, 2008), lower self-esteem (e.g., McKinney et al. 2011), poor mental health (e.g., Bolghan-Abadi et al. 2011), and perfectionism (e.g., Miller et al. 2012). In contrast, authoritative parenting has been linked to various positive psychological outcomes such as children's classroom adjustment (Kauffman et al. 2000) and adolescents' psychological health and life satisfaction (Gonzalez-DeHass et al., 2005, Suldo and Huebner, 2004, Niaraki and Rahimi, 2013). Furthermore, Spera (2005), Merlin et al. (2013), and Masud et al. (2015) and a large meta-analysis by Pinquart (2016) have established positive (negative) links between authoritative(authoritarian) parenting styles and academic achievement. However, few prior studies have explored possible mechanisms that could explain these links. *Self-determination theory* (SDT, Deci and Ryan, 1985) provides a theoretical foundation via which we propose that motivation orientation mediates (at least partially) the relationship between parental influence, wellbeing, and academic achievement.

SDT posits that human beings have innate tendencies towards intrinsic motivation and internalization and that these processes can be facilitated by close relationships, such as those between parent and offspring (Deci and Ryan, 2008). SDT identifies three major motivation orientations—*intrinsic*, *extrinsic*, and *amotivation* that play a role in human development (Deci and Ryan 1985, Ryan and Deci, 2000a, b, Deci and Ryan, 2008). These motivations are distinguished based on the reasons or goals that give rise to an action (Ryan and Deci, 2000c). Intrinsic motivation refers to doing something because it is inherently interesting or enjoyable. People who are intrinsically motivated are interested in performing an activity for its own sake to experience the pleasure and satisfaction inherent in the activity. Extrinsic motivation, on the other hand, refers to doing something because it leads to a separable outcome. It is driven by external, separable rewards such as financial incentives, promotions, or grades. Amotivation is defined as neither intrinsically nor extrinsically motivated, with a general lack of intentionality and personal causation (Deci and Ryan 1985, Vallerand 1992).

[1] We should note that two other parenting styles can be defined along the responsive/demanding axis. Rejecting-neglecting parents are low in both demandingness and responsiveness. Because this parenting style is less frequently observed and measured (Waterman and Lefkowitz, 2017), we do not consider it in this paper. Permissive parents (low in demandingness and high in responsiveness) often are very lax in their expectations of their children and tend to tolerate misbehavior. Although they can be emotionally warm, they generally provide little behavioral guidance for their children. Because in our data sample the permissive parenting construct had low factor loadings and low internal consistency, we do not focus on it in this paper.

Ryan and Connell (1989) introduced four sub-types of extrinsic motivation (External, Introjected, Identified, and Integrated) which vary on their degree of perceived relative autonomy. Ryan and Deci (2000a) proposed that motivations sub-types lie on an "autonomy continuum" along which regulatory styles, *Perceived Locus Of Causality* (PLOC) and regulatory processes vary (see Howard et al., 2016 for a recent review). The continuum begins on the extreme left with amotivation (impersonal PLOC and nonintentional regulatory processes), followed by the four extrinsic motivation sub-types, *external regulation* (with external PLOC and compliance-based regulatory processes), *introjected regulation* (with somewhat external PLOC and self-control-based regulatory processes), *identified regulation* (with somewhat external PLOC and personal-importance-based regulatory process), and *integrated regulation* (with an internal PLOC and congruence-based regulatory processes). At the extreme right of the autonomy continuum lies intrinsic motivation with an internal PLOC and interest/enjoyment-based regulatory processes. Vallerand et al. (1992, and 1993) further sub-divided intrinsic motivation into three sub-types, namely *intrinsic motivation to know*, *intrinsic motivation towards accomplishment*, and *intrinsic motivation to experience stimulation*.

The Basic Psychological Needs branch of SDT suggests a link between parenting style and motivation orientation. According to this theory, human beings have three basic psychological needs: (a) *autonomy* (having a sense of free will and acting in accordance with our personal interests and values), (b) *competence* (the need for people to know that they are performing effectively in their environment), and (c) *relatedness* (the need to feel connected and have close relationships with others in their environment). When these basic needs are met, people enjoy higher level of wellbeing as well as intrinsic motivation. Intrinsic motivation more specifically is critically dependent on all three psychological needs (Ryan and Deci 2000a, Chirkov and Ryan 2001, Bieg et al. 2011). In their review of SDT and its sub-theories, Ryan and Deci (2000a) find that threats, directives, and imposed goals diminish intrinsic motivation, while autonomy support and environments characterized by a sense of security and relatedness are likely to increase intrinsic motivation. Similarly, Furrer and Skinner (2003) found that children's sense of relatedness is vital to their academic motivation and engagement. Accordingly, parenting methods that support the basic psychological needs not only have a positive impact on a person's wellbeing but also on their intrinsic motivation (Ryan and Deci, 2000a). Parents can support autonomy, competence, and relatedness in many ways, including the recognition of a child's feelings and viewpoints, fostering a sense of connectedness, the offering of behavioral choices and encouragement for action, bi-directional communication, the explanation behind behavioral requests, and the avoidance of using overly controlling techniques (Durkin, 1995, Pedersen, 2017). Therefore, the Basic Psychological Needs theory suggests that parents can influence the wellbeing as well as the motivation orientation of their offspring positively or negatively depending on how they attend to their children's psychological needs. Past empirical studies have validated this influence. For example, focusing mostly on adolescents, Rivers et al. (2012) and Antonopoulou et al. (2012) have found that authoritarian parents decrease intrinsic motivation while authoritative parenting increases intrinsic motivation.

SDT further proposes that higher levels of intrinsic motivation lead to positive learning outcomes because it allows for individuals to persist and engage with chosen tasks for longer periods of time (Deci, 1972, Ryan and Deci, 2000, Chirkov and Ryan 2001). In agreement, several past studies have empirically validated that intrinsic motivation is critically important for learning processes as it enables continued goal pursuit and attainment as well as persistence on a task, all of which can lead to higher academic achievement (e.g., Kriegbaum et al. 2016, Cerasoli et al. 2014, Grolnick and Slowiaczek 1994, Gottfried 1990, Harter and Connell 1984,

Deci et al. 1991). In addition to higher levels of achievement, intrinsic motivation has been empirically linked to higher levels of wellbeing (e.g., Gagné et al. 2015, O'Donnell et al. 2013, Chirkov and Ryan 2001, Ryan et al., 1985).

Literature review: connecting perceived parenting styles, motivation orientation, wellbeing, and performance for the population of college students

Although our focus is the population of college students, many papers in prior literature have focused on children and adolescents to examine primarily the direct connections between perceived parenting style and motivation style or achievement. To our knowledge, only two other studies have examined motivation-related constructs as a mediator between parental influences and school performance in children and adolescents. Grolnick et al. (1991) considered three motivation variables (a child's understanding of who is in control of school outcomes, perceived competence, and perceived autonomy control) and found that they mediated the relationship between two parental variables (parental involvement and autonomy support) and school performance. Similarly, Grolnick and Slowiaczek (1994) found that various dimensions of parental involvement indirectly affected adolescents' grade performance via influencing motivation-related resources of perceived confidence and control.

Focusing our literature review more specifically on the population of college students, we find that the relationship among the constructs of perceived parenting styles, motivation orientation, academic performance, and wellbeing is sparse and has so far focused on the direct links among constructs (Table 5 in Appendix summarizes the most relevant papers).

Taylor et al. (2014) examined the direct relationship between motivation orientation and performance and showed that high school and colleges students' intrinsic motivation was positively correlated with academic performance, while amotivation reduced academic performance. With respect to direct links between perceived parenting style and performance, Strage and Brandt (1999) concluded that higher college grades were generally correlated with authoritative-like styles of parenting that had high parental autonomy granting, demandingness, and supportiveness. Turner et al. (2009) discovered that authoritative parenting and intrinsic motivation independently (i.e., without using a mediation model) influenced college students' academic performance while authoritative parenting was significantly correlated with intrinsic and extrinsic motivation. Wintre and Yaffe (2000) studied the transition of first year college students to university life and found that perceived authoritative parenting correlates with a good adjustment to university life. With a sample of university students from Hong-Kong, Chen (2014) found that authoritative parenting contributes positively to life satisfaction. Alt (2015) employed a sample of female Arab college students and found that authoritative parenting was negatively associated with amotivation, whereas authoritarian and permissive parenting was positively related with extrinsic motivation.

Kriegbaum et al. (2016) examined the impact of shared agency on academic achievement and motivation of college students. The construct of shared agency identifies patterns of joint involvement between parents and students with respect to educational goals. Kriegbaum et al. (2016) concluded that shared agency (accommodating, collaborating, and supporting a student—similar to authoritative parenting) is associated with students' higher academic achievement, greater intrinsic and extrinsic motivation, and less amotivation, whereas nonshared agency (parental directing—similar to authoritarian parenting) or uninvolvement was associated with lower academic achievement, intrinsic and extrinsic motivation, and

higher amotivation. Moreover, the authors showed that the relationship between shared agency and students' academic achievement was partially mediated by students' motivation. Waterman and Lefkowitz (2017) examined parenting styles and their relationship to academic engagement outcomes (perceived grade importance, class attendance, and grades) and found that authoritative and permissive parenting was not associated with any of these outcomes, but authoritarian mothering was associated with lower grades.

With respect to direct links between perceived parenting style and wellbeing, Pedersen (2017) found that female university students with more autonomy supporting parents were more satisfied with university life. Dawson and Pooley (2013) concluded that perceived parental autonomy support was correlated with first year college students' resilience, and Reed et al. (2016) determined that both autonomy supportive parenting and helicopter parenting had indirect effects on life satisfaction and physical health through self-efficacy, while autonomy supportive parenting also had a direct effect on life satisfaction and physical health.

Overall, past work on children and adolescents as well as college students has primarily focused on the direct links between constructs. Our work fills a gap by establishing support for motivation orientation as a partial mediator between perceived parenting style and life satisfaction; (Pedersen, 2017 did consider a mediation model for the link between parenting and wellbeing, but employed different constructs—parental autonomy support instead of perceived parenting style, and school-related stress and spillover instead of life satisfaction—and did not establish any significant results with respect to mediation, while Kriegbaum et al., 2016 did not consider a wellbeing measure but did establish motivation as a mediator between parenting and performance using a different parenting constructs—joint involvement instead of perceived parenting style).

Hypotheses development

As we discussed in the theory development section, SDT as well as past empirical work supports the idea that parents can influence their offspring's psychological needs and thus their motivation orientation, and in turn that motivation orientation can influence a person's performance and wellbeing. It is therefore logical to postulate that motivation orientation may—at least partially—explain the relationship between perceived parental influence and wellbeing or academic performance.

More specifically, we expect that authoritative parents, with their responsive and non-invasive guiding style, can enable a student to develop a healthy sense of autonomy, competence, and relatedness which can increase their intrinsic motivation and lead to higher life satisfaction and academic achievement. Even during the college years, authoritative parents can continue to provide support and encouragement while students move towards full independence (Grolnick et al. 1991). We thus propose the following hypothesis:

> H1: Authoritative parenting leads to stronger intrinsic motivation and weaker amotivation and more positive outcomes (greater life satisfaction and higher GPA) for college students.

In contrast, overly controlling parenting (i.e., authoritarian) can undermine a student's basic psychological needs and thus lead to amotivation or extrinsic motivation, which can in turn reduce a student's sense of wellbeing and academic achievement (Deci, et al. 1999). In agreement with these arguments, Grolnick and Ryan (1989) concluded that while authoritative parenting fosters autonomy by providing emotional support and enabling self-regulation, confidence, and

persistence, excess parental control (authoritarian) may inhibit children's ability to internalize academic values and requirements, thus negatively affecting their overall performance. Similarly, Ryan and Deci (2000a) suggested that excessive control and lack of connectedness can disrupt a person's inherent actualizing and organizational tendencies, causing a general lack of initiative (amotivation) as well as distress and psychopathology. Our second hypothesis is thus:

> H2: Authoritarian parenting leads to stronger extrinsic motivation and stronger amotivation which in turn can lead to negative outcomes (lower life satisfaction and lower GPA) for college students.

Method

Participants and procedure

We administered an online survey questionnaire to undergraduate students taking general business courses in a medium sized, non-profit university in the northeastern USA. With the permission of the instructor, the survey was introduced in class, and students were given about 15 min of class time to fill the survey, if they wanted to. Data was collected over a period of 5 weeks. Our final sample consisted of 432 observations (12 observations were deleted due to significantly incomplete data).

Measures

Parenting style We employed the Parental Authority Questionnaire (PAQ) (Buri, 1991), extensively used in past research studies. The scale is composed of 30 items, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). The scale has 3 sub-scales with 10 questions each that correspond to the three parenting styles of permissive, authoritative and authoritarian. As we mentioned earlier, due to low factor loadings for the permissive parenting style, we only focus on the authoritative and authoritarian constructs of the PAQ scale. Sample questions included "While I was growing up my parents felt that in a well-run home the children should have their way in the family as often as the parents do" (for authoritative), "As I was growing up my parents did not allow me to question any decision they had made" (for authoritarian), and "As I was growing up, my parents seldom gave me expectations and guidelines for my behavior" (for permissive). Although some discrepancies have been found across racial, cultural, and socio-economic status variables, the PAQ overall exhibits satisfactory reliability and convergent validity (Reitman et al. 2002). As is common in past studies using this instrumentation (Milevsky, 2007, Glasgow et al. 1997, Durbin et al. 1993, Baumrind, 1971), we asked participants to report their parenting style perceptions without specifically differentiating between maternal or paternal style, but rather focusing on how both parents (or legal guardian(s)) as a composite may have affected their academic choices while growing up.

Motivation Participants' motivation orientation was assessed using the Academic Motivation Scale (AMS) (Vallerand et al., 1992). Based on the tenets of SDT, this scale asks students to identify the reasons they go to college and contains 28 items. More specifically, the scale has 7 motivation sub-constructs evaluated with 4 items each: amotivation, 3 extrinsic, and 3 intrinsic motivation sub-types. As discussed in the theory sub-section, amotivation expresses a general lack of both intrinsic and extrinsic motivation, corresponds to non-intentional regulatory

processes and an impersonal PLOC, and is the least self-determined along the self-determination continuum (example AMS question: "Honestly, I don't know; I really feel that I am wasting my time in school"). The AMS also measures three sub-types of extrinsic motivation: external regulation (EXEXT), with the lowest degree of self-determination among the extrinsic motivation types (example: "In order to obtain a more prestigious job later on"), introjected motivation (EXINTRO) (example: "To show myself that I am an intelligent person"), and identified regulation (EXID), the most autonomous form of extrinsic motivation included in this scale reflecting motives that, though still extrinsic, they are judged by the individual to have personal value and may be perceived as chosen by one-self (example: "Because this will help me make a better choice regarding my career orientation").[2] These three example scale questions illustrate that extrinsic motivation sub-types are driven by values and goals and not driven by emotions that emerge while engaging in the activity.

Finally, the AMS sub-divides intrinsic motivation in 3 sub-constructs: *intrinsic motivation to know* (INKN) reflecting the motive of performing an activity for the pleasure and satisfaction one experiences when learning something new (example: "Because I experience pleasure and satisfaction while learning new things"), *intrinsic motivation toward accomplishment* (INACC) reflecting the motive of engaging in an activity for the pleasure and satisfaction of accomplishing or creating something (example: "For the pleasure I experience while surpassing myself in my studies"), and *intrinsic motivation to experience stimulation* (INEXP) reflecting the motive of engaging in an activity to experience stimulating sensations (sensory pleasure, fun, excitement, esthetic experiences) (example: "For the pleasure that I experience when I read interesting authors").

The validity of the Academic Motivation scale has been extensively examined by Vallerand et al. (1993), Cokley (2000), Fairchild et al. (2005), Barkoukis et al. (2008), Smith et al. (2010), and Litalien et al. (2017) among others. Although some specific concerns have been raised regarding the SDT assumption of motivation sub-types lying in a continuum of self-determination, all studies have concluded that the seven-factor configuration of the scale is supported and that the scale generally exhibits good convergent and discriminant validity.

Life satisfaction Life satisfaction is defined as one's cognitive judgment on their overall quality of life (Diener 1985). The corresponding 5-item Satisfaction with Life scale has been extensively examined and shows good convergent and discriminant validity (Pavot and Diener 1993). The scale is based on a 7-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (7) and includes questions such as "In most ways my life is close to my ideal" and "The conditions of my life are excellent."

Performance Participants reported their Grade Point Average (GPA), which was used as a measure of performance.

Data and model

The percentage of male/female students in our sample ($N = 432$) was 56% and 43%, respectively, and the racial profile identified by students was 65% Caucasians, 14% Asians, 10%

[2] Recall that there are 4 sub-types of extrinsic motivation along the self-determination continuum. However, according to Vallerand et al. (1992), Integrated regulation did not distinguish itself from Identified regulation and thus, it was not included in the AMS.

Hispanic, and 10% other, including African American. About 92% of respondents were between the ages of 18 and 23, with 60% of students being up to 20 years old, and 40% being 21 or older. With respect to age, we collected data using a group scale (with 1 for < 18, 2 for 18–20, 3 for 21–23, and 4 for > 24); the mean value of the age scale was 2.42 with a standard deviation of .55.

Construct validity and construct correlations

Our confirmatory factor (CFA) analysis was based on the threshold of .60 for factor loadings (see Kline, 2005). In our data set, and as mentioned earlier, items for the permissive parenting style were consistently low (below .60) and thus not included in our subsequent analysis. Once the low loading items (below .60) were removed, factor loadings for all our constructs were in the .60 to .90 range. No items were removed from the satisfaction with life scale (with a factor loadings range of .64 to .83); two items were removed from the authoritarian scale (with loadings from to .62 to .70); five items were removed from the authoritative scale (loadings from .60 to .74); one item was removed from the INKN sub-scale; and one item was removed from the EXEXT sub-scale (loadings for all motivation subscales ranged from .66 to .90). Table 1 reports Pearson correlations among the constructs with the last column reporting the Cronbach alpha based on standardized items for each construct; the internal consistency of each of the final constructs ranged from .78 to .88. The correlations among the motivation sub-constructs are presented in italics in Table 1.

Table 1 shows that both parenting styles are significantly correlated with life satisfaction and GPA (positively with authoritative and negatively with authoritarian). Life satisfaction is positively correlated with INACC (to accomplish), INKN (to know), EXID (identified), and EXEXT (external), and negatively correlated with amotivation. Notably, we found that the correlation of life satisfaction with introjected motivation is slightly higher (at .297, with three-digit precision) than the correlation with intrinsic to know (at .229); however, the difference between the two correlations is not significant (p value = .13, based on Steiger's, 1980 test). Furthermore, the intrinsic motivation sub-types are significantly correlated with each other, as are extrinsic motivation sub-types. And both intrinsic and extrinsic types of motivation are generally negatively correlated with amotivation, as expected. We should also note that we verified via crosstabs that the positive correlation between amotivation and INEXP (to experience stimulation) is due to the majority of observations in our sample having concurrently low values (1, or 2 on a 5-point Likert scale) in both amotivation and the INEXP; note also that the mean values for amotivation/INEXP are the two lowest among all motivation sub-types at 1.38/2.32, respectively. In the same vein, crosstabs for all the (authoritarian item, INEXP item) pairs showed that in the majority of cases, the values were concurrently low, thus generating a positive correlation.

Structural equation modeling approach

Our focus is on investigating motivation orientation as a mediator variable between perceived parenting style and life satisfaction or GPA, and thus we employ structural equation modeling (SEM). Throughout our analysis, we included gender, ethnic group, and age as control variables. All SEM models presented in this paper were tested using the AMOS software package. Our results tables report only significant model pathways, with the column labeled "Estimate" reporting the standardized regression weights and the column labeled "p value" reporting the p value of the model; the "***" sign in the "p value" column indicates a significance level of < .001. We only report direct effects because we did not find any

Table 1 Pearson correlations among constructs and mean and standard deviation of each

Variables			Intrinsic			Extrinsic								
	1	2	3	4	5	6	7	8	9	10	11	α	Mean	St. Dev
1. Authoritative	1	− .40**	− .01	.14**	.17**	.22**	.08	.15**	− .26**	.37**	.12*	.78	2.94	.80
2. Authoritarian		1	.17**	.06	− .00	.03	.20**	.05	.15**	− .23**	− .24**	.84	2.92	1.06
3. To experience (INEXP)			1	***.73***	***.69***	***.15***	***.51***	*− .09*	***.22***	.00	− .05	.88	2.32	1.19
4. To accomplish (INACC)				1	***.89***	***.51***	***.87***	***.16***	***− .11****	.18**	− .00	.84	3.19	1.18
5. To know (INKN)					1	***.52***	***.65***	***.11****	***− .21***	.30**	− .01	.83	3.65	1.04
6. Identified (EXID)						1	***.63***	***.86***	***− .52***	.30**	.00	.88	4.27	.87
7. Introjected (EXINTRO)							1	*.41***	*− .070*	.04	− .06	.87	3.36	1.26
8. External (EXEXT)								1	***− .37***	.10*	− .04	.85	4.36	.89
9. Amotivation (AMOT)									1	−.32**	− .07	.88	1.38	.81
10. Life satisfaction (LS)										1	.05	.85	3.75	.93
11.GPA											1	NA	3.39	35

**Correlation is significant at the .01 level (two-tailed). α Cronbach's alpha is based on standardized items

*Correlation is significant at the .05 level (two-tailed). Means and standard deviation (St. Dev.) score are on a 5-point Likert scale

The correlations among the motivation sub-constructs are presented in italics

significant indirect effects in our models. The model fit statistics are included at the bottom of each table of results. In general, an SEM is considered to have good fit when the Tucker-Lewis Index (TLI) and the Comparative Fit Index (CFI) are greater than .95, and the root mean squared error of approximation (RMSE) is less than .06 (Hu and Bentler, 1999).

To test for mediation, we express both intrinsic and extrinsic motivations as two-level hierarchical constructs. To illustrate, Figs. 1 and 2 show the path models that consider life satisfaction and GPA as two dependent variables, authoritative(authoritarian) parenting as the independent variable, and the two-level intrinsic (extrinsic) motivation construct as a mediator variable. All other models can be represented in a similar way.[3] The two-level constructs for the intrinsic (Fig. 1) and the extrinsic (Fig. 2) motivations allow us to test for mediation while at the same time maintaining the three separate sub-scales for both the intrinsic and extrinsic motivation sub-types for all our SEM models corresponding to Tables 2, 3, and 4.

Results

Tables 2 and 3 summarize our SEM models for both authoritative and authoritarian parenting styles; model 1 is the one depicted in Fig. 1 and model 6 is depicted in Fig. 2. All models in Tables 2 and 3 have acceptable fit.

Authoritative parenting results

We see from Table 2 (models 1–3) that authoritative parenting style relates to life satisfaction as well as to each of the three motivation types. Specifically, the standardized estimated values imply that when perceived authoritative style goes up by 1 standard deviation, we would expect intrinsic motivation to go up by .18 standard deviations (model 1), extrinsic motivation to go up by .22 standard deviations (model 2), and amotivation to go *down* by .29 standard deviations (model 3). Moreover, we see that authoritative parenting and both intrinsic and extrinsic motivation positively correlate with life satisfaction, whereas amotivation negatively correlated with life satisfaction.

The direct relationship between authoritative parenting and life satisfaction or GPA (i.e., when no motivation constructs were included) is shown in model 4. Comparing the results in models 1–3 and model 4, we can conclude that motivation orientation partially mediates the relationship between authoritative parenting style and life satisfaction, providing partial support for hypothesis H1. Specifically, the standardized regression weight for the relationship from authoritative to life satisfaction is .33 in model 4, whereas for the mediation models (models 1–3), the estimates fall to .30, .29, and .27, respectively.[4] Our data did not support a partial mediation model for GPA (because the paths from any of the three motivation sub-constructs to GPA were not significant). However, the non-

[3] We did consider combining all three motivation types—i.e., amotivation, and intrinsic and extrinsic motivation (as two-level hierarchical constructs)—as three mediator variables in a larger SEM model, but this larger model only had mediocre fit, so we do not report it here; however, the results of the combined SEM model were consistent with the results of the separate models we include in the paper.

[4] We also verified the significance of the partial mediation via a bootstrap estimated, bias-corrected, and two-tailed p value (Mallinckrodt et al. 2006); this method yielded a p value of .01 for the effect of intrinsic motivation on life satisfaction, .018 for the effect of extrinsic motivation on life satisfaction, and .006 for the effect of amotivation on life satisfaction.

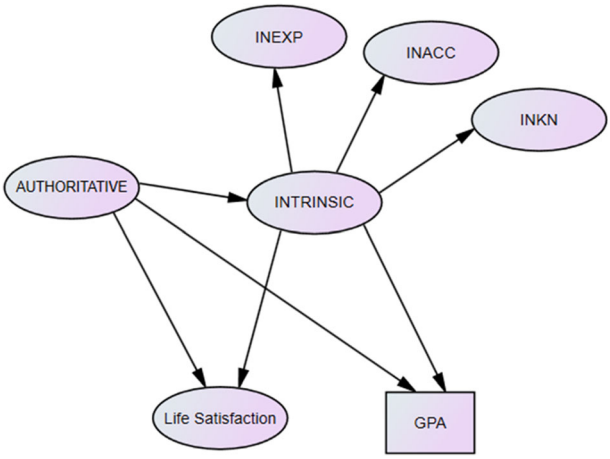

Fig. 1 Example path model (model 1) from authoritative to intrinsic motivation (as a two-level construct) and to life satisfaction and GPA

confirmation of a mediation model with respect to GPA does not mean that motivation orientation has no impact on GPA; rather it only suggests that a mediator model was not supported in our sample (see also Table 4).

Authoritarian parenting results

We see from models 5 and 6 in Table 3 that the relationship between authoritarian parenting and intrinsic or extrinsic motivation is not significant. Model 7, however, shows a significant negative correlation between authoritarian parenting and life satisfaction (by − .16 standard deviation) and a significant positive correlation between authoritarian parenting and students' amotivation (by .12 standard deviations). Indeed, Ryan and Deci (2000a) suggested that excessive control and lack of connectedness can disrupt a person's inherent actualizing and organizational tendencies, causing a general lack of initiative, which is akin to increases in amotivation.

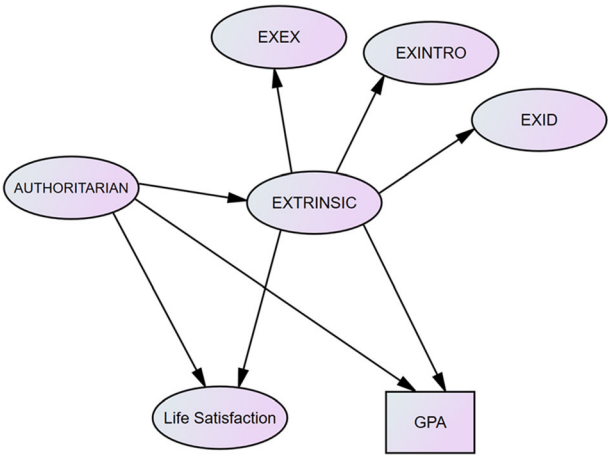

Fig. 2 Example path model (model 6) from authoritarian to extrinsic motivation (as a two-level construct) and to life satisfaction and GPA

Table 2 Path analysis results for authoritative parenting style

	Estimate	*p*
Model 1		
Intrinsic ← authoritative	.18	.00
Intrinsic ← gender	.19	***
Authoritative ← age	− .11	.04
Authoritative ← race	.16	.00
LifeSat ← intrinsic	.15	.01
LifeSat ← authoritative	.30	***
GPA ← age	− .10	.03
GPA ← race	.23	***
TLI = .94; CFI = .95; RMSE = .04		
Model 3		
Extrinsic ← authoritative	.22	***
Extrinsic ← gender	.15	.00
Authoritative ← age	− .11	.04
Authoritative ← race	.16	.00
LifeSat ← extrinsic	.18	.00
LifeSat ← authoritative	.29	***
GPA ← age	− .10	.03
GPA ← race	.23	***
TLI = .90; CFI.92; RMSE = .05		
Model 2		
Amotivation ← authoritative	− .29	***
Authoritative ← age	− .11	.04
Authoritative ← race	.16	.00
LifeSat ← authoritative	.27	***
LifeSat ← amotivation	− .20	***
GPA ← age	− .11	.03
GPA ← race	.23	***
TLI = .94;m CFI = .96; RMSE = .05		
Model 4		
Authoritative ← age	− .11	.04
Authoritative ← race	.16	.00
LifeSat ← authoritative	.33	***
GPA ← age	− .10	.03
GPA ← race	.23	***
TLI = .93; CFI = .93; RMSE = .05		

"***" indicates a p value < .001; All results report standardized regression weights

Models 1–3: Mediation models from authoritative to motivation to life satisfaction or GPA

Model 4: Direct model from authoritative to life satisfaction or GPA

The direct relationship between authoritarian parenting and life satisfaction or GPA is shown in model 8. Comparing the results in models 7 and 8, we see that amotivation (but not intrinsic or extrinsic motivation) partially mediates the relationship between authoritarian parenting style and life satisfaction. Specifically, we see that for the benchmark model 8, which did not include motivation orientation variables, the standardized regression weight for the relationship from authoritarian to life satisfaction is − .19, whereas for the amotivation mediation model 7, the corresponding estimate is − .16.[5] With respect to GPA, we did not find support for the mediation models, although we did find that authoritarian parenting negatively correlates with GPA.

[5] As with the authoritative parenting models, we verified the significance of the partial mediation via a bootstrap method, which yielded a two-tailed p value of .002 for the effect of amotivation on life satisfaction.

Table 3 Path analysis results for authoritarian parenting style

	Estimate	*p*
Model 5		
Intrinsic ← gender	.19	***
Authoritarian ← race	−.18	***
LifeSat ← intrinsic	.21	***
LifeSat ← authoritarian	−.20	***
GPA ← authoritarian	−.21	***
GPA ← age	−.10	.04
GPA ← race	.21	***
TLI = .94; CFI = .95; RMSE = .04		
Model 6		
Extrinsic ← gender	.15	.00
Extrinsic ← race	.12	.02
Authoritarian ← race	−.18	***
LifeSat ← extrinsic	.26	***
LifeSat ← authoritarian	−.21	***
GPA ← authoritarian	−.21	***
GPA ← age	−.09	.04
GPA ← race	.21	***
TLI = .90; CFI.92; RMSE = .05		
Model 7		
Amotivation ← authoritarian	.12	.03
Authoritarian ← race	−.18	***
LifeSat ← amotivation	−.26	***
LifeSat ← authoritarian	−.16	.00
GPA ← authoritarian	−.21	***
GPA ← age	−.10	.04
GPA ← race	.21	***
TLI = .94;m CFI = .96; RMSE = .05		
Model 8		
Authoritarian ← age	.08	***
LifeSat ← authoritarian	−.19	***
GPA ← authoritarian	−.21	***
GPA ← age	−.10	.04
GPA ← race	.21	***
TLI = .93; CFI.95; RMSE = .05		

"***" indicates a p value < .001; All results report standardized regression weights

Models 5–7: Mediation models from authoritarian to motivation to life satisfaction or GPA

Model 8: Direct model from authoritarian to life satisfaction or GPA

Parenting style and motivation sub-types as independent variables

To further our understanding of the above results, we also analyzed four models that considered the authoritative/authoritarian parenting styles and each of the seven motivation sub-types as independent variables influencing life satisfaction or GPA; Fig. 3 illustrates one of the 4 models—for the authoritative, motivation sub-types, and life satisfaction constructs. Table 4 summarizes the results from these 4 models.

Models 9 and 10 in Table 4 show that authoritative(authoritarian) parenting positively(negatively) correlates with life satisfaction as well as that identified(introjected) motivations independently positively(negatively) correlate with life satisfaction. Models 11 and 12 further show that, even though we did not find support for a mediation effect, motivation orientation does independently relate to GPA with identified and intrinsic to

Table 4 Path analysis results from parenting style and motivation sub-constructs (as independent variables) to life satisfaction or GPA

	Estimate	*p*
Model 9		
Authoritative ← age	.18	.00
Authoritative ← racer	.19	***
Life satisfaction ← authoritative	.15	.01
Life satisfaction ← identified (EXID)	.30	***
Life satisfaction ← introjected (EXINTRO)	− .10	.03
TLI = .91; CFI = .93; RMSE = .05		
Model 10		
Authoritative ← racer	− .18	.00
Life satisfaction ← authoritative	− .16	.00
Life satisfaction ← identified (EXID)	.66	.03
Life satisfaction ← introjected (EXINTRO)	− .38	.05
TLI = .91; CFI.93; RMSE = .05		
Model 11		
Authoritative ← age	− .11	.04
Authoritative ← race	.16	.00
GPA ← external (EXEX)	− .48	.03
GPA ← identified (EXID)	.71	.02
GPA ← introjected (EXINTRO)	− .58	.01
GPA ← to accomplish (INACC)	.91	.01
GPA ← to know (INKN)	− .71	.01
GPA ← race	.15	.01
TLI = .90; CFI = .92; RMSE = .05		
Model 12		
Authoritative ← race	− .18	***
GPA ← authoritarian	− .20	***
GPA ← external (EXEX)	− .48	.03
GPA ← identified (EXID)	.73	.02
GPA ← introjected (EXINTRO)	− .51	.01
GPA ← to accomplish (INACC)	.86	.01
GPA ← to know (INKN)	− .72	.00
GPA ← race	.14	.03
TLI = .91; CFI = .92; RMSE = .05		

"***" indicates a p value < .001; All results report standardized regression weights

Model 9: authoritative and motivation as independent variables to life satisfaction

Model 10: authoritarian and motivation as independent variables to life satisfaction

Model 11: authoritative and motivation as independent variables to GPA

Model 12: authoritarian and motivation as independent variables to GPA

accomplish motivations having positive correlations, and external, introjected, and intrinsic to know motivations having negative correlations.

Discussion

Recognizing success as dependent on both wellbeing and academic performance, we investigated if motivation orientation mediates the relationship between college students' perceived parenting style and life satisfaction or GPA. Such mediation models are sparse in the literature (across all age groups of students), and, to our knowledge, no prior work has established partial mediation between parenting style and life satisfaction in college students.

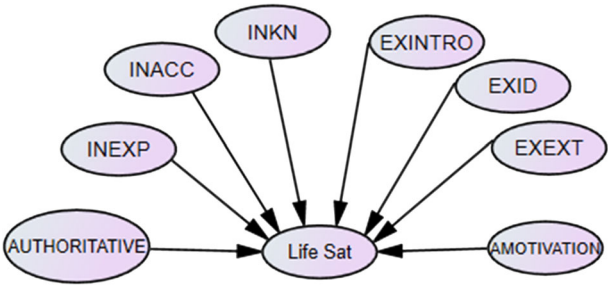

Fig. 3 Example path model (model 9) with authoritative and motivation styles as independent variables predicting life satisfaction

Overall, our results provide partial support for our hypotheses. Specifically, we found that all three motivation types (intrinsic, extrinsic, and amotivation) act as partial mediators of the relationship between authoritative parenting and the life satisfaction of college students (partially supporting hypothesis H1—for the positive outcome of increased life satisfaction). Furthermore, we found that amotivation acts as a partial mediator of the relationship between authoritarian parenting and life satisfaction (partially supporting hypothesis H2—for the negative outcome of decreased life satisfaction).

Perceived parenting style, motivation, and life satisfaction

The direct link between authoritative parenting and extrinsic motivation (model 2) is worth discussing further. Although not explicitly stated in hypothesis H1, our results show that perceived authoritative parenting correlates with not only intrinsic but also extrinsic motivation. Prior work provides some justification for this possibility. For example, Pedersen, 2017, Joussemet et al. 2004, and Grolnick and Ryan, 1989 have found that autonomy support can aid children to internalize external rules, to willingly participate in inherently unexciting activities such as homework, and to exhibit higher levels of integration of school-related values. Additionally, Ryan and Deci, (2000b, page 331) state that a fully integrated activity is still extrinsically motivated but also something with which the person fully concurs (thereby being very similar to an intrinsic type of motivation), while Ryan and Deci (2000c, page 64) state that often extrinsic motivation primarily stems from a person's efforts to satisfy their need of relating to someone important in their lives, such as a parent. Ryan and Deci (2000a) further propose that the combination of autonomy and relatedness supports that authoritative parents provide can increase some forms of extrinsic motivation for their children. Taken together, this prior literature, the correlation results in Table 1, and the results of model 2 corroborate our findings and suggest that although an activity can be perceived as internally chosen, the motivation can be extrinsic yet fully identified with (as with identified motivation) and can be fostered by authoritative parenting. Similarly, extrinsically motivated activities based on rewards (as with external motivation) can be pursued for the satisfaction of relatedness with authoritative parents.

In the same vein, the lack of support for the link between authoritarian parenting and extrinsic motivation (stated in H2 and tested with model 6) may be explained by separately considering the three sub-types of extrinsic motivation. As suggested by the correlations among authoritarian parenting and extrinsic motivation in Table 1, it may be that authoritarian parenting significantly influences only the least internalized forms of extrinsic motivation (introjected) and thus within the two-level hierarchical construct (that combined all three extrinsic motivation sub-types to enable the

test of a mediation model) did not produce a significant enough effect. Accordingly, Ryan and Deci (2000c) and Grolnick and Ryan (1989) found that controlling contexts (such as authoritarian parenting) tend to produce only introjected self-regulation.

Models 2 and 6 point to another noteworthy result: extrinsic motivation positively correlates with life satisfaction. Models 9 and 10 help us to better understand why, as they demonstrate that only identified motivation, which is more self-determined and more internalized, significantly correlates with life satisfaction (estimate weight of .65 in model 9 and .66 in model 10), while, as would be expected via SDT, the introjected motivation correlates negatively with life satisfaction (estimate weight of − .43 in model 9 and − .38 in model 10), but the positive influence from identified motivation is greater in magnitude than the negative influence from introjected motivation, suggesting that the overall effect can be positive.

Perceived parenting style, motivation, and GPA

With respect to performance, we found that (perceived) authoritative parenting does not correlate with GPA, while authoritarian parenting negatively correlated with GPA. Waterman and Lefkowitz (2017) similarly observed no association between authoritative parenting and perceived grade importance, class attendance, or GPA in their study with college students while authoritarian parenting correlated with lower grades.

We also did not find support that motivation acts as a mediator variable on the relationship between perceived parenting style and GPA. Notably, since amotivation was not found to independently correlate with GPA (models 11 and 12), for either parenting style, it is not surprising that amotivation did not act as a mediator (recall also, from Table 1, that the majority of the students in our sample had low amotivation).

The non-confirmation of our hypothesized mediation models with respect to GPA does not mean that motivation orientation has no impact on GPA; rather, it only suggests that a mediator model was not supported in our sample. Indeed, when we considered each intrinsic and extrinsic motivation sub-constructs as independent variables in models 9–12, we verified that there are both significant positive (for identified and intrinsic to accomplish) and negative (for external, introjected and intrinsic to know) correlations between motivation sub-types and GPA. These independent positive and negative influences of the intrinsic/extrinsic motivation sub-types on GPA may counteract each other, thus weakening the combined mediation effect.

It is also worthwhile discussing the difference in the sign of the estimates (see models 11 and 12 in Table 4) between intrinsic to accomplish motivation and GPA (positive) as well as intrinsic to know motivation and GPA (negative) in the context of goal theory. Normative performance approach goals (i.e., performance goals that relate to outperforming others or oneself) have been linked to higher achievement outcomes (see for example Elliot and Moller, 2003, and Senko et al., 2011). Because the intrinsic to accomplish motivation sub-type, as measured via the AMS, reflects the intention of surpassing oneself in studies and accomplishments, it is comparable with normative performance goals and thus correlates with improved performance. On the other hand, the intrinsic to know motivation sub-construct relates to learning or mastery goals, rather than performance goals, which may explain its negative correlation with GPA; being motivated to know a particular subject for the enjoyment and satisfaction it generates (intrinsic to know) does not necessarily imply the goal orientation of getting a higher grade on this subject. Indeed, although a few past studies have found some positive correlations between mastery goals and intrinsic motivation, in their extensive review of goal theory and its empirical validation, Senko et al. (2011) state "Mastery goals are often

unrelated to academic achievement…. Surprisingly, students who adopt mastery goals seldom perform better in the classroom than students who do not pursue these goals."

Overall, our results demonstrate the important role that motivation orientation plays for academic performance, and that each motivation sub-type of the intrinsic and extrinsic motivation constructs has its own unique influence. Our results echo those by Cerasoli et al.'s (2014) who concluded that not only intrinsic motivation but also the right type of extrinsic incentives can increase college students' performance (when the external incentives can be viewed as personally important).

The role of gender, race, and age

Consistently across our models in Tables 2, 3, and 4, we saw that gender significantly correlates with both intrinsic and extrinsic motivation orientations, while age and ethnic group significantly correlate with perceived parenting style. With respect to gender, our results suggest that female students report higher levels of both intrinsic and extrinsic motivation, which parallel findings by prior work. Smith et al. (2010) reported significant differences among male and female college students for all sub-types of motivation except the intrinsic motivation to experience stimulation, with females scoring significantly higher in all categories, and Vallerand et al. (1992) also found that female college students scored significantly higher in all three of the intrinsic motivation sub-scales and two of the extrinsic motivation sub-scales (introjected and identification). Furthermore, prior work has found that the development of autonomy as a psychological need is gender dependent, with daughters requiring stronger parental attachment compared with sons even during the college years (Schultheiss and Blustein, 1994, Sorokou and Weissbrod, 2005).

Earlier studies have also revealed differences in parenting styles and parental involvement across racial and ethnic groups and differences in the relationship between parenting styles and performance (e.g., Fan et al. 2012, Hill and Craft, 2003, Park and Bauer, 2002). In fact, Reitman et al. (2002) observed that Buri's (1991) parental authority questionnaire has poorer psychometric properties for certain ethnic groups, such as African American Populations. The significance of race as a control variable in our models is thus consistent with prior findings.

With respect to age, recall that we used a group scale. Since there were very few data points in groups 1 (zero data points) and 4 (eleven data points), in our SEM models, we divided students in two age groups, the first including students ≤ 20 years old and the second students ≥ 21 years old, and found that there were no significant differences across the two groups for life satisfaction and most of the motivation styles. However, there were significant differences between the two age groups with respect to (a) GPA, with older students having slightly lower GPA, and (b) the way each group perceived their parenting styles, with older students perceiving their parents as less authoritative and more authoritarian. In a meta-analysis, Pinquart (2016) also identified a child's age as a significant variable when considering academic performance as well as parenting style.

Implications

Our results have important implications. Firstly, we have shown that perceived parenting styles as well as motivation orientation are important and inter-related factors when considering college students' success. Our results suggest that parents continue to play an important role in college students' wellbeing and performance both directly as well as indirectly via motivation orientation. It is, therefore, important for the society as a whole and for early, primary, secondary, and higher

education institutions to educate and inform parents of the significant influence they can have on their offspring's success even during their emerging adult years and to help them morph their parenting towards an authoritative style. Higher education institutions in particular may want to determine their students' perceptions of parenting styles via routine survey methods and to consider providing personalized guidance accordingly. For example, especially for the population of students with authoritarian perceptions of parenting styles, colleges may consider offering personalized interventions (possibly taking advantage of modern technology such as online course modules) aimed to enhance students' resiliency and their ability to independently satisfy their basic psychological needs.

Furthermore, since intrinsic and extrinsic motivations are important factors when it comes to both the wellbeing and the performance of college students, policies and interventions, in and outside the classroom, that can help college students re-orient themselves towards intrinsic motivation can improve their wellbeing and decrease amotivation. For example, colleges can design their curriculum to allow and encourage students to take (at least a few) courses with no performance/grade pressure just for the sake of learning something new they may be interested in. Of course, parents and educators must also rely on external incentives. However, that does not necessarily mean that external incentives will decrease student's wellbeing or performance. As we showed (in models 2 and 6), when extrinsic motivation is identified as being important to one's self, it positively correlates with life satisfaction. Parents and educators can thus still make a positive influence on college students' life satisfaction as well as performance by aligning external rewards to what students will find relevant and significant. Curriculum design that addresses students' perceptions of relevancy and significance is therefore an important first step in enhancing the academic experience and chance of success of college students.

Limitations

We acknowledge several limitations. Because our data are cross-sectional, our sample cannot determine the exact causal direction of the hypothesized relationships. Future work could examine these relationships with a longitudinal study design. It may be the case, for example, that parents who perceive their child as lacking in motivation become stricter and involved in their child's life, thereby creating a perception of the more demanding (authoritarian) parenting style in their children. It is also possible that the links between parenting and motivation are bi-directional. The overall homogeneity of our sample which predominately consisted of Caucasian students from a single college with a high emphasis on business education is limiting. Our findings may thus not be generalizable. Furthermore, since we found significant differences among gender, age, and ethnic groups in our sample, more control variables of interest could be considered in future studies. For example, past studies have considered parental education and parent's socio-economic status as control variables (e.g., Alt, 2014, Waterman and Lefkowitz 2017). Moreover, although our study did investigate academic performance, it did not control for students' previous achievement. There are currently very few studies in the literature that examine motivation in a cross-sectional or longitudinal fashion while also controlling for baseline achievement (Taylor et al. 2014). Thus, such studies would be important future work.

Another limitation is that our data are based solely on self-reports. Our survey only asked for the perceptions of students and did not cross-validate these perceptions with parents' perceptions. It is possible that children and parents may not agree on their perceptions of parenting style as suggested by Feinberg et al. (2000) and Paulson (1994). However, other researchers have found that children and their parents have similar perceptions of their relationship (Demo et al. 1987, Grolnick et al. 1991). In any case, the student's perspective is critical to examine, as it is really the

students' perceptions of overparenting that can lead to negative outcomes (Reed et al. 2016). Academic performance, measured via GPA, was also self-reported, and thus may be biased. This could partially explain the failure of establishing motivation as a significant mediator variable for authoritative parenting. At the same time, however, prior work has found self-reporting of grades to be fairly reliable (Kuncel et al., 2005).

Furthermore, we acknowledge that recent research studies have further sub-divided the construct of introjected motivation into two types—based on avoiding low self-worth or attaining high self-worth—(see Assor et al., 2009 and Sheldon et al. 2017), which we have not accounted for in this paper.

A final limitation relates to having only a composite measure of parental influence. In accordance with some prior work (Baumrind 1971, Steinberg et al., 1994, Glasgow et al. 1997, Turner et al. 2009), our study treated parenting style as a composite measure, without differentiating between maternal and paternal influences. Although this was impractical in our case, it is possible that by differentiating between maternal and paternal parenting, future studies may reveal significant differences among paternal and maternal parenting styles.

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Current themes of research:

Motivation and student achievement. Motivation. Wellbeing

Most relevant publications the field of Psychology of Education:

No previous publications.

Mingfei Li. Management Department, Bentley University, Waltham, MA, USA.

Current themes of research:

Motivation and student achievement. Motivation. Wellbeing

Most relevant publications the field of Psychology of Education:

No previous publications.

Juhi Gupta. Management Department, Bentley University, Waltham, MA, USA.

Current themes of research:

Motivation and student achievement. Motivation. Wellbeing

Most relevant publications the field of Psychology of Education:

No previous publications.

Appendix

Table 5 Summary of key findings from prior work and comparisons with this paper for the population of college students

Parenting Style	Motivation	Performance	Wellbeing	Papers	Sample size/methods
NA	Intrinsic/amotivation →	Higher/lower grades	NA	Taylor et al. (2014)	Meta-analysis and 2 empirical studies with $N = 524$ and 638
Authoritative →	NA	Higher grades	NA	Strage and Brandt (1999)	Empirical study, $N = 236$
Authoritative →	NA	Better adjustment to university life	NA	Wintre and Yaffe (2000)	Empirical study, $N = 408$
Authoritative → Authoritative →	Higher Intrinsic and extrinsic motivation	Higher grades	NA	Turner et al. (2009)	Empirical study, $N = 264$
Authoritarian →	NA	Lower grades	NA	Waterman and Lefkowitz (2017)	Empirical study, $N = 633$
Authoritative → Authoritarian/permissive →	Decreases amotivation Increases extrinsic motivation	NA	NA	Alt (2014)	Empirical study, $N = 202$
Perceived parental autonomy →	NA	NA	Higher resilience	Dawson and Pooley (2013)	2 empirical studies, with $N = 95$ and 103
Authoritative →	NA	NA	Higher life satisfaction	Chen (2014)	Empirical study, $N = 461$
Autonomy supportive →	NA	NA	Higher life satisfaction and physical health	Reed et al. (2016)	Empirical study, $N = 633$
Perceived parental autonomy →	*(Mediation considered but not supported)*	NA	Higher satisfaction with university life	Pedersen (2017)	Empirical study, $N = 492$
Joint involvement (shared agency) →	Higher intrinsic and extrinsic motivation	Higher grades	NA	Kriegbaum et al. (2016)	Empirical study, $N = 862$
Authoritative/authoritarian →	Higher intrinsic/extrinsic motivation→		Higher/lower life satisfaction	This paper	Empirical study, $N = 432$
Authoritative/authoritarian →	*(Mediation theorized but not supported)*	Higher/lower grades			

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