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Basic Psychological Needs, Socioeconomic Status, and Well-Being of Undergraduate Honors and Non-Honors Students

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Abstract

Basic psychological needs, socioeconomic status and involvement in honors programs may impact well-being of undergraduate students. This exploratory study examines these factors and uses Self-Determination Theory as a lens to interpret the effect on well-being of undergraduate honors and non-honors students. Self-Determination Theory (SDT) is a macro theory of motivation and personality development that relates to individuals' need for autonomy, competence, and relatedness, and addresses the social-emotional and cognitive components needed to ensure individuals' well-being. In this study, researchers examined the relationship among basic psychological needs, socioeconomic status, honors participation, and well-being of 252 undergraduates. Results of a regression analysis indicated that well-being is primarily predicted by autonomy, competence, and relatedness. We discuss the implications of our findings for educators and researchers.

Keywords: *basic psychological needs • self-determination theory • well-being • gifted • honors • postsecondary • undergraduate • motivation*

Undergraduate students experience many social and academic stressors that can negatively impact their sense of well-being. Common stressors include the navigation of challenging courses, peer and family relationships, career planning related to an uncertain future, and financial obstacles (Hammond et al., 2007). Psychological distress due to these stressors can lead to anxiety disorders, depression, substance abuse, and suicide in student populations, which is cause for public health concern (Cross & Cross, 2015; Saylor et al., 2015). One study found that nearly half of college-aged individuals experience mental health disorders (Blanco et al., 2008). More recently, the World Health Organization (WHO) reported that 35% of full-time college students in 19 colleges across eight countries including the United States screened positive for at least one of six common mental health disorders (e.g., depression, anxiety) (Auerbach et al., 2018).

The prevalence of mental illness in undergraduate students indicates the importance of examining and supporting their well-being. Subjective well-being is defined as a multi-faceted concept derived from perceptions of happiness, health, and comfort relative to a given context (Cummins, 2010; Davern et al., 2007; Diener, 2000; Pollet & Schnell, 2017). This includes the self-reported impact of positive and/or negative experiences, judgment of overall life satisfaction, sense of purpose, sense of belonging, and the ability to be a contributing

member of a particular group. Considering this, and that a sense of well-being can be associated with positive social and academic experiences, "college represents a specialized educational intervention," in part, because of the quality of teachers who are specialized in their field, selected area of study, and opportunities to learn in different types of settings (Saylor et al., 2015, p. 238). Additionally, self-determination theory (SDT; Deci & Ryan, 2008), a macro theory of motivation, suggests that the three basic psychological needs of *autonomy*, *competence*, and *relatedness*, are essential for optimal well-being. Understanding these factors can help researchers better understand how fulfillment of these needs relates to a student's sense of well-being.

Furthermore, participation in undergraduate honors programs may help support student well-being by providing an environment of appropriate academic rigor and like-minded peers (Boazman et al., 2012; Rinn & Plucker, 2019). In a recent systematic review of research, Rinn and Plucker (2019) found that honors program participation was associated with generally positive academic and socioemotional outcomes. However, they also note that students in these programs already tend to be "high achievers, have positive academic self-perceptions, and are motivated for success" (p. 208), so the extent to which honors participation contributes is not clear and more research is needed. Plominski and Burns (2018) surveyed 1027 undergraduate students (641 enrolled in honors programs) and found higher levels of reported well-being in students who participated in honors programs compared to students who did not. The authors conjectured that the specialized educational context of honors programs was most likely responsible

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for the differences in psychological well-being in their study, although further research was recommended to substantiate their findings. For students who experience the additional challenge of financial constraints and the feeling of “differentness” due to lower socioeconomic status, the support found in honors programs may mitigate some of these barriers.

Study Purpose

The purpose of the current study is to examine how socioeconomic status, basic psychological needs (Deci & Ryan, 2008), and honors program participation relate to well-being in undergraduate students. This is an exploratory study, within the context of general predictions about the well-being of undergraduate honors and non-honors students. We predict that well-being may be impacted directionally by the factors outlined.

This study is important because it examines the potential role of psychological needs, socioeconomic status, and honors college participation on the well-being of undergraduate students. Previous studies have examined undergraduate honors programs with regard to student well-being but minimally so in the context of basic psychological needs despite their potential role in supporting positive socioemotional development (see Plominski & Burns, 2018). Additionally, in a study of educational outcomes and well-being among 380 undergraduate students, El Ansari and Stock (2010) found there to be a “reciprocal relationship” between academic achievement and well-being variables (p. 13). Given the critical timing of undergraduate studies on the talent development trajectory for many gifted and talented individuals, the study of undergraduate experiences, and particularly the experiences of students enrolled in programs designed to facilitate the development of academic talent, such as an honors program, is important. The results of the current study may provide universities with the knowledge of how academic rigor, motivation fostered by fulfillment of basic psychological needs, and well-being are potentially connected in ways that may shape current and future mental health of students who participate in undergraduate honors programs. The findings from this study may also help undergraduate honors program administrators and counselors to better understand and serve students in their programs.

Undergraduate Student Well-Being

Well-being is a multi-faceted concept derived from the evaluation of self in the context of purpose, life satisfaction, sense of belonging, belief about ability to contribute to society in meaningful ways or living up to one’s potential within a given context (Cummins, 2010; Diener, 2000; Pollet & Schnell, 2017). Among undergraduates, in particular, research largely shows

that well-being is associated with opportunities to experience meaningful relationships with peers and faculty, to have support across academic areas (e.g., appropriately rigorous, meaningful work and agency to self-select courses of interest) and non-academic areas (e.g., extracurricular activities, resident life), to have opportunities to engage in areas of academic interest, and to feel connected via group membership (Morrow & Ackerman, 2012; Pollet & Schnell, 2017; Sayler et al., 2015). Ridner et al. (2016) suggested that pressure to maintain acceptable levels of academic performance as determined by external criteria experienced by college students may be related to well-being. Well-being among diverse samples of undergraduates has been examined according to their participation in different organizations on campus including honors programs (Boazman et al., 2012; Liu et al., 2019; Mammadov et al., 2018; Plominski & Burns, 2018; Rinn, 2005).

Undergraduate Honors Programs and Well-Being

Undergraduate honors programs exist on many college and university campuses to serve academically talented undergraduates. These programs provide “opportunities for measurably broader, deeper, and more complex learning-centered and learner-directed experiences for its students than are available elsewhere in the institution” (The National Collegiate Honors Council, n.d.). Cross and Cross (2015) suggest social interactions with equally able peers impact an individual’s development and experience. Additionally, in a review of the literature, Baumeister and Leary (1995) concluded that there are “multiple links between the need to belong and cognitive processes, emotional patterns, behavioral responses, and health and wellbeing” (p. 522). Being part of an undergraduate honors program may influence social interactions, sense of belonging, and ultimately well-being because of the opportunity for engagement with equally able and like-minded peers.

Rinn (2007) found that honors college participants had higher levels of self-concept than non-honors college participants unrelated to GPA and/or SAT scores, indicating that participation alone positively impacted one aspect of well-being. Plominski and Burns (2018) examined the status of well-being among 641 honors students and 386 non-honors students using students’ self-reported responses on measurements of well-being. They found that among sophomores and juniors, honors students had higher levels of life satisfaction and academic self-efficacy; and among seniors, honors students had higher levels of life satisfaction, satisfaction with self, and academic self-efficacy, and lower levels of negative perfectionism, depressed affect, anxiety, and perceived stress as compared to non-honors students.

Feelings of belongingness and connections to the university contribute to self-concept, well-being, and

academic achievement in the context of an undergraduate honors program (Hébert & McBee, 2007; Morrow & Ackerman, 2012). Young et al. (2016) examined honors students' perspectives in the context of college honors program participation and found the following three emergent themes among college honors students: *connectedness*, *community*, and *opportunity*. Specifically, students expressed a sense of connectedness among their honors peers, feeling like they were part of a community, and the role of access to professors and other opportunities which contributed to their academic success and motivation. As feelings of *connectedness*, *community*, and *opportunity* promote healthy social-emotional outcomes, these findings suggest the importance of participation in honors programs in fostering a sense of belonging and well-being among academically talented undergraduates.

A number of researchers have examined the well-being of high ability and high achieving college students (Boazman & Sayler, 2011; Hertzog & Chung, 2015; Mun & Hertzog, 2019; Sayler et al., 2015). For example, Boazman and Sayler (2011) examined well-being as a measure of happiness among gifted students who entered college early. They found students who participated in early college programs had greater levels of well-being based on self-reported life satisfaction, safety, and security compared to same-age peers. Sayler et al. (2015) examined 533 participants, 415 of whom were early college students (current participants or completers of the program) and 118 of whom were college honors students. They found that high-ability college students' overall well-being was reported as positive with higher-than-expected rates in the areas of standard of living, achievement, and feelings of safety and lower than expected rates in the areas of relationships and connections to others. Comparatively, early college entrance students reported higher standard of living and relationships but lower sense of safety and security.

Pollet and Schnell (2017) examined predictors of well-being and meaningfulness in the context of goal pursuit as demonstrated by an active, involved lifestyle and self-acceptance as demonstrated by positive self-perceptions among gifted adults compared to the general population. Predictors of well-being included satisfaction with work as it relates to school experiences and self-compassion. Additionally, the authors considered the varied paths toward well-being of gifted adults compared to non-gifted adults. Participants were categorized as follows: intellectually gifted ($n = 198$), high achievers ($n = 141$), and non-gifted ($n = 136$). They found that *generativity*, or consideration of the greater good, was the strongest predictor of meaningfulness among intellectually gifted participants, and joy of working was a strong predictor of well-being among all participants and to a greater extent for intellectually gifted participants. They also found that high achie-

vers reported more positive school experiences than the intellectually gifted. These findings suggest that paths toward meaningfulness and well-being not only differ among gifted and non-gifted adults but also indicate that meaningful work and school experiences are related to well-being among gifted adults. Based on these findings which showed "demotivating school experiences" and perceptions of less meaningful, less joyful work among highly intellectual participants, the authors recommended further research to address "diminished meaningfulness and subjective-wellbeing among Intellectually Gifted" (p. 1479). The authors' findings indicate the need for continued research on well-being and SDT, and specifically, in the context of SDT as a means to measure perceptions of meaningful, thus motivating, work.

Influence of Socioeconomic Status

Castillo-Lavergne and Destin (2019) examined the intersection of multiple identities including the ethnic and socioeconomic status of 98 college females who identified as Latinx and as from working-class families and found that the complexity of multiple identities of race and ethnicity along with socioeconomic status was related to experiences dependent on supportiveness of college environments. If participants had high stability in racial or ethnic identity but low sense of stability or certainty in socioeconomic status, the influence of the college environment was less significant. Whereas, when both ethnic and socioeconomic status factors were low, the influence of the college environment had greater significance. These findings indicate that the role of socioeconomic status needs to be understood and addressed in supportive ways by post-secondary institutions and programs as low socioeconomic status creates barriers to success for students experiencing intersectionality of identities.

The burden of helping low-income students overcome academic challenges may lie with teachers and experts who are empowered to address the academic and economic needs of these students (Boaler, 2003). "Gifted and talented students from underrepresented populations of ethnic minority and low-income students are too often oversimplified" which may conflict with the academic qualifications to participate in rigorous programs versus external support and internal feelings of self-doubt about ability to succeed in rigorous programs (Callahan, 2005, p. 99). Students from low socioeconomic status may not have access to affordable and appropriate social services (Bolland et al., 2018). Instability in daily life such as limited access to affordable health care may hinder a student's health and adversely affect academic performance and/or achievement (Bolland et al., 2018).

Self-Determination Theory of Motivation and Psychological Need Fulfillment

SDT can be conceptualized as a macro theory of motivation that looks at positive individual functioning as a whole by investigation of basic needs and what Ryan and Deci (2000) call “inherent growth tendencies” (p. 68). The theory includes four interrelated sub-theories: basic needs theory, cognitive evaluation theory, organismic integration theory, and causality orientations theory. In the basic needs theory, Ryan and Deci (2000) argue that three fundamental psychological needs—*competence*, *autonomy*, and *relatedness*—are vital for promoting innate growth propensities that facilitate best functioning in an individual. Having a sense of autonomy is derived from having agency to make decisions; having a sense of competence is derived from feelings of effectiveness in a given context; and having a sense of relatedness is derived from feelings of connectedness to others in a meaningful capacity (Deci & Ryan, 2000, 2008).

Satisfaction of these basic needs leads to many positive effects including a positive sense of well-being whereas an obstacle to fulfilling one or more of these needs leads to various deleterious effects. Thus, one focus of SDT is to explore how factors in the environment affect the acquisition of the three needs and therefore promote or undermine “self-motivation, social functioning, and personal well-being” (Ryan & Deci, 2000, p. 69). SDT is used to examine the well-being of undergraduates through each of these components and a number of researchers have applied this theory in their study with high-ability undergraduate students (e.g., Almukhambetova & Hernandez-Torrano, 2020; Mammodov et al., 2018).

Mammodov et al. (2018) conducted a mixed-methods analysis through the SDT lens on 26 early college entrance alumni who were also honors program participants. They found that students who enrolled in an early college program did so to achieve autonomy in multiple ways which include seeking more rigorous academic challenge and having control over their academic choices. Interest and self-motivation were drivers of the competence component of SDT as participants sought to find intellectual experiences in which they were both interested and challenged. In the component of relatedness, the authors found that intrinsic motivation was relative to being surrounded by others with similar characteristics, such as high achievement.

The findings supported that needs and characteristics associated with SDT are foundational to well-being (Mammodov et al., 2018). The experience of gifted undergraduate students in academic and social-emotional areas includes the need for meaningful coursework and quality personal relationships respectively; both of these areas may influence psychological well-being (Almukhambetova & Hernandez-Torrano, 2020).

Using the SDT lens, Almukhambetova and Hernandez-Torrano (2020) examined the experience of students who are gifted in university settings. Specifically, SDT was used to examine influences on college students’ intrinsic (autonomous) and extrinsic (reward-based) motivation as it relates to adjustment and achievement in post-secondary settings. They found that the following factors were considered influential on well-being of high-ability students: quality of pre-college gifted programs; ability of the university to provide appropriately matched academic and social opportunities; the support of parent and others’ expectations aligning with self-concept; students’ ability to rise to the challenge of unstructured, impersonal environment; overcoming the fear of failure and negative self-image; growth and acceptance of evolving identities. The experience of gifted undergraduate students in academic and social-emotional areas includes the need for meaningful coursework and quality personal relationships respectively, both of which may influence psychological well-being (Almukhambetova & Hernandez-Torrano, 2020).

Research Questions

The following research questions guided this study:

1. How do the three basic psychological needs (competency, relatedness, and autonomy), socioeconomic status, and honors college membership relate to well-being in undergraduates?
2. To what extent does socioeconomic status affect the relationship among competency, relatedness, autonomy, and honors college membership in undergraduates?

Hypotheses

Interest-driven programs such as college honors programs may provide the goodness-of-fit needed for high-ability and high-achieving undergraduates. Furthermore, SDT outlines how fulfillment of basic psychological needs is vital for students’ sense of well-being. Therefore, we hypothesize that participation in an honors program will be related to higher levels of well-being since the student’s sense of competence, autonomy, and relatedness could potentially be met by access to meaningful, self-selected coursework and access to equally able and like-minded peers. We also hypothesize that the level of socioeconomic status will directly correspond to the level of well-being (e.g., higher level of SES will correspond to higher level of well-being).

Methods

This study examines the well-being of undergraduate students who elected to participate in a larger study examining an array of psychosocial constructs of under-

graduates including perfectionism, imposter phenomenon, personality, motivation, and well-being. Only the data needed to answer our research questions for the current study—the self-reported responses to the 21-item Basic Psychological Needs Satisfaction questionnaire, the 5-item well-being assessment, and relevant demographic characteristics—are reported. Recruitment of participants was facilitated by faculty members and graduate student research assistants. Participation was voluntary and no incentives or compensation for participation were offered. Age requirement for participation was a minimum of 18 years old. An online survey was used to anonymously collect participants' responses following receipt of an informed consent document. Participants had the option of discontinuing the survey at any point. Participants' responses were collected anonymously.

Participants

The sample consisted of 252 undergraduate students. In the sample, 37.5% ($n = 95$) of students were members of an honors college and 62.5% ($n = 157$) were not members of an honors college at a Southwest university in the United States. Eligibility for honors college participation is based on nationally standardized SAT/ACT tests representing minimum scores—a minimum of 1200 combined on both the verbal and mathematics sections on the SAT or a minimum of 27 on the ACT, high school grade point average > 3.75 , and rank in the top 20% of their high school graduating class. Additionally, the honors admissions process considers the following: a written component, an optional addendum, and high school academic record.

The honors students in this study are participants of the honors program at a university located in the southwest region of the United States. The program offers incentives for high-achieving students who are earning first-time bachelor's degrees. The program incentives include specialized residence halls, smaller class sizes designed to facilitate a broad range of interests and to stimulate intellectual curiosity, and a choice of culminating honors assignments leading to honors distinction upon graduating.

The average age of participants was 21.34 years ($SD = 5.06$). Additional demographics of the sample included the following: 21.5% identified as male, 76.9% identified as female, and 1.6% identified as non-binary. Participants reported their ethnic/racial background as White (53.0%), Hispanic or Latinx (23.9%), African American or Black (8.4%), Multiracial (7.2%), Asian American or Asian (6.0%), American Indian or Alaska Native (.8%), and other (.8%). The sample was 21.9% freshmen, 29.9% sophomores, 25.1% juniors, and 22.3% seniors. When compared to the general university demographics, this sample included a greater percentage of

students identified as female (76.9% compared to 53%), some differences in ethnic/racial representation (notably 53% White as compared to 41% and 8.4% Black as compared to 14%), and fair distribution of grade levels from freshman to senior with slightly more sophomores represented overall.

Variables and Measures

In our analysis, we included one dependent variable and five independent variables. Well-being is our dependent variable. The independent variables are autonomy, relatedness, competence, socioeconomic status, and honors college membership. Autonomy, relatedness, and competence are noted as the three basic psychological needs according to the Self-determination Theory—a macro theory of motivation.

Well-being. The World Health Organization-Five Well-Being Index (WHO, 1998; Topp et al., 2015) measure of well-being is a five-question assessment used for children and young people aged 9 years and older. It is administered as a self-report survey with a six-point Likert scale ranging from 0 (*at no time*) to 5 (*all of the time*). The WHO-5 is considered a valid assessment (Topp et al., 2015) used to screen for depression and measure subjective well-being in children and young people. For example, in a review of the literature, Topp et al. (2015) found that among 213 articles published in clinical and medical journals, the WHO-5 held its clinical validity and is useful across multiple fields. In a study of 2,099 participants, Naor et al. (2022) assessed the well-being of participants using the WHO-5 to determine the effectiveness of implementing an intervention. In the study, participants' well-being significantly improved following the intervention and using the results of the WHO-5 pre and post-intervention as a baseline. The study is an example of the prevalent use of the WHO-5 due to its long-established validity (Autin et al., 2022; Blom et al., 2012; Uzman, 2014). The WHO-5 uses responses about mood and vitality to measure quality of life. Questions about mood include, "I have felt cheerful and in good spirits," and questions about vitality include, "I woke up restful and refreshed." The WHO-5 measure of well-being has been used in other studies of gifted and non-gifted adults (Pollet & Schnell, 2017; Saylor et al., 2015; Topp et al., 2015). In a systematic review of the literature, Topp et al. (2015) examined multiple studies across a variety of disciplines to assess the validity of the WHO-5. They found that research consistently supports the use of the WHO-5 across multiple fields as an informative and integral tool to assess levels of well-being including the detection of depression and suicidality among other medical conditions.

In our study, well-being is a composite variable. It is the summation of the WHO-5 Likert scale

scores; as such, an individual can score from 0 to 25, with higher scores indicating higher levels of well-being.

Basic Psychological Needs Satisfaction. Psychological needs satisfaction in general in one's life was measured using the Basic Psychological Needs Satisfaction questionnaire (Deci & Ryan, 2000; Gagné, 2003), which is a 21-item questionnaire and self-report measure to which participants respond to questions on a seven-point Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). The Basic Psychological Needs Satisfaction questionnaire measures satisfaction of three intrinsic needs of participants in one's life which are associated with motivation—autonomy, competence, and relatedness. Of the 21 questions, 7 are related to autonomy, 6 to competence, and 8 to relatedness.

Socioeconomic Status. Socioeconomic status is defined as perceived household income prior to entering college. Participants self-reported socioeconomic status by answering a single question about perceived socioeconomic status based on parents or individuals with whom one resided prior to entering college. Participants were asked to respond to the question, "Think about your parents, or the individuals you lived with for most of your life prior to college. How you would describe their income level?" on the following scale: 1 = *poverty or close to it*, 2 = *low/middle*, 3 = *middle (average)*, 4 = *middle/high*, and 5 = *wealthy or close to it*. Responses were recoded as 1 and 0, where 1 and 2 were recoded as 1 and 3, 4, 5 were recoded as 0 (1 = *poverty*, 0 = *not poverty*). Doing this allows us to treat our categorical scale as a binary variable. We did this because there were small areas (i.e., categories with few observations) that would make any inference on those categories likely misleading (Manor et al., 2000). As such, we chose to limit our inference on socioeconomic status rather than misrepresent participants' SES.

Honors college participation. Honors college participation was defined as being a member of the university honors program. Honors college participation is signified within our model by a binary variable, such that 1 = *honors college participation* and 0 = *non-honors college participation*.

Analysis

We conducted our regression analysis using R 4.0.5 (R Core Team, 2021) in conjunction with the following packages: *mice* (van Buuren & Groothuis-Oudshoorn, 2011), and *ggplot2* (Wickham, 2011).

Model

In our analysis, we used the following model:

$$\text{Well-Being} = \text{Honors College Participation} + \text{Autonomy} + \text{Competence} + \text{Relatedness} + \text{SES}$$

Table 1: Descriptives of undergraduate honors and non-honors students

Variables	<i>n</i>	<i>M</i>	<i>SD</i>
Well-being	252	16.4	4.8
Autonomy	252	4.02	0.6
Competency	252	3.76	0.6
Relatedness	252	4.42	0.51

This model states that an undergraduate's reported sense of well-being (*Well-Being*) is predicted by their membership within the honors college program (*Honors College Participation*), their self-reported feelings of autonomy (*Autonomy*), their self-reported feelings of competence (*Competence*), their self-reported feelings of relatedness (*Relatedness*), and their self-reported socioeconomic status (*SES*). Finally, model effect size was calculated using the method described by Gelman et al. (2013).

Missing Data

In total, there were 17 respondents with missing data (6.78% of cases). Of those 17, 2 had missing data across multiple variables representing an overall rate of missing of 1.26% across the dataset. To address missing data, we used a strategy of multiple imputations following von Hippel's (2020) guidelines. Under von Hippel's guidelines, the number of imputations is calculated based on the overall missingness of the data coupled with a researcher-determined coefficient of variation (where a smaller coefficient of variation yields a greater number of total imputations). Using this formula, and a coefficient of variation of .005, we calculated needing four imputations. To conduct these imputations, we used the *mice* package for R (van Buuren & Groothuis-Oudshoorn, 2011).

Results

Descriptives

Descriptive statistics were calculated for all variables. The mean of our dependent variable, well-being, was 16.4 (*SD* = 4.80). For our three Basic Psychological Needs variables, the mean of autonomy was 4.02 (*SD* = 0.60), competence was 3.76 (*SD* = 0.60), and relatedness was 4.42 (*SD* = 0.51). For our demographic variables, 37.5% of respondents indicated they participated in honors. Of all respondents, 26.69% self-identified as being from low socioeconomic status backgrounds. Table 1 contains complete descriptive statistics.

Model Estimates

The full results can be found in Table 2. Model estimates should be interpreted such that a one-unit change in the estimate corresponds to a one-unit change in the

Table 2: Results from the regression with multiple imputations

Variable	Estimate	Error	CI Lower	CI Upper	Rhat
Intercept	-0.782	0.557	-1.874	0.313	1.023
Relatedness	0.194	0.119	-0.041	0.429	1.003
Autonomy	0.534	0.104	0.329	0.739	1.001
Competence	0.26	0.103	0.062	0.465	1.06
SES	0.017	0.064	-0.108	0.143	1.001
Honors	0.085	0.114	-0.137	0.306	1.001

Note: CI=confidence interval

composite score of a participant’s reported sense of well-being (0 to 25 scale). Honors college membership, autonomy, competence, relatedness, and SES were used in a standard regression analysis to predict well-being of college undergraduates. The honors college membership, autonomy, competence, and relatedness variables were statistically significant, but the SES variable was negligible. The model accounted for 24% of the variance explained in well-being. Well-being was related to autonomy, competence, and relatedness (all of which are components of the SDT assessment measuring basic psychological needs). Table 4 shows the structure coefficients and standardized beta coefficients. Structure coefficients provide insight into the variance which is uniquely explained by the independent variables (Henson, 2002). In our study, autonomy was strongly related to well-being ($\beta = .340, p < .001$) making it the strongest predictor of well-being followed by competence and relatedness. Relatedness was also related to well-being ($\beta = .097, p < .001$). Competence was also related to well-being ($\beta = .173, p = .001$) This provides evidence that respondents reported competence is related to their reported well-being. In comparison, this suggests that the relationship between autonomy and well-being is likely meaningfully different from the relationship between relatedness or competence and well-being. This can be interpreted as each reported unit increase in a respondent’s self-reported feeling of autonomy translated to a 0.55 increase in the composite well-being score on a 0 to 25 scale.

Socioeconomic status was not related to well-being in our study ($\beta = .014, p = .75$). This provides strong evidence that the relationship between respondents’

reported well-being and their reported socioeconomic status is non-existent to negligible. Additionally, the relationship between whether a respondent participated in the honors college was not strongly related to their reported well-being ($\beta = .048, p = .04$).

Diagnostics

An analysis of the residual plots provided no evidence for a violation of homogeneity. An analysis of the correlation plot (see Figure 1) provided evidence of multicollinearity between the three variables of interest (*autonomy, relatedness, and competence*). Given the theoretical background related to these constructs (Deci & Ryan, 2000), multicollinearity between them was not surprising. It is likely that the confidence intervals associated with these three variables are overly wide (i.e., the standard errors of the coefficients are larger than they would otherwise be if there was not multicollinearity). Figures 2 and 3 contain raincloud plots of well-being and honors college membership and SES, respectively. Figure 2 shows the distribution and centrality of well-being based on honors college membership. Figure 3 shows the distribution and centrality of well-being based on SES.

Discussion

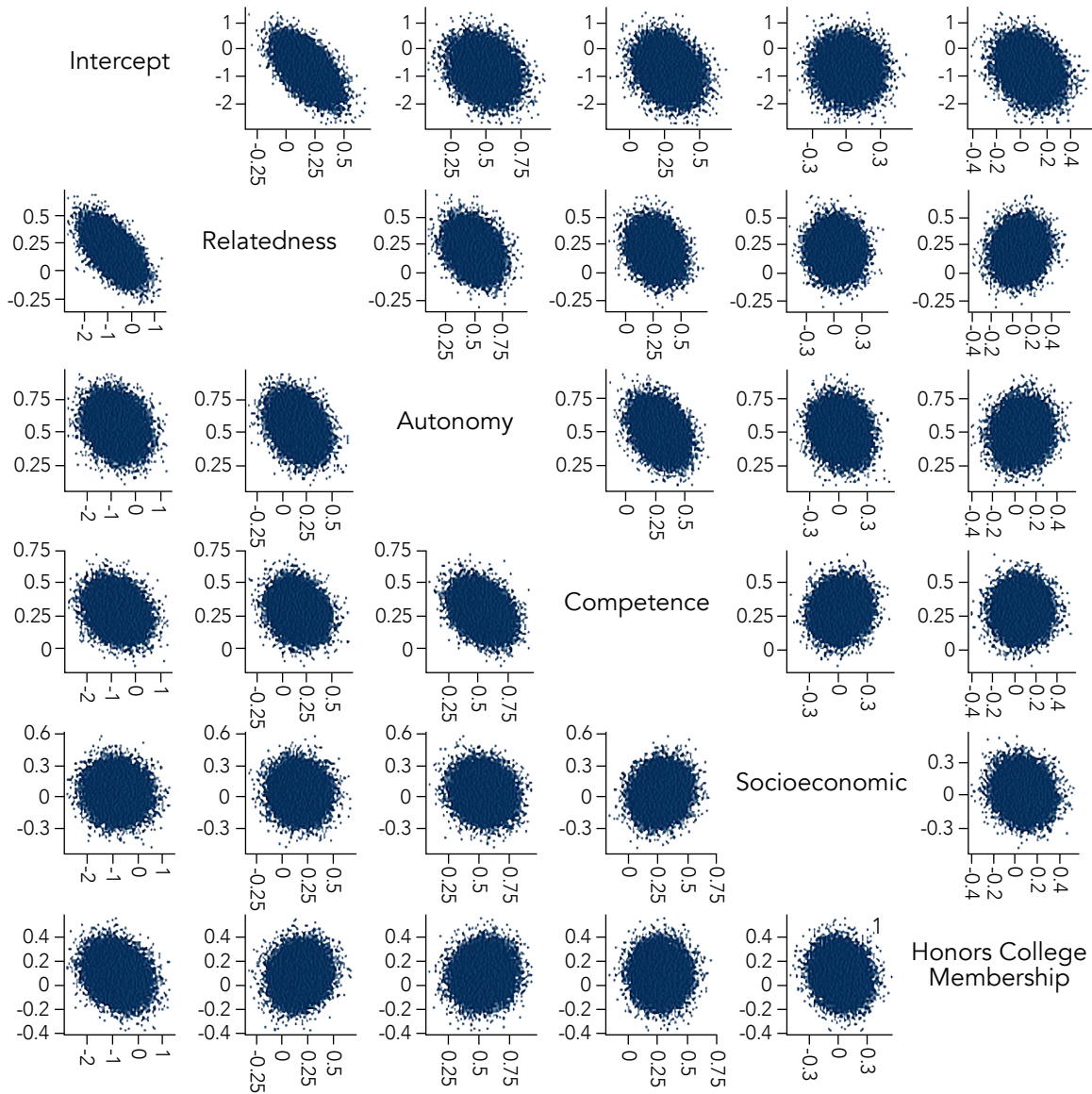
This study examined the relationship among socioeconomic status, psychological need fulfillment, honors program participation, and well-being of undergraduate students. We found that *autonomy, competence, and relatedness* had the strongest relationships with well-being,

Table 3: Beta weights and structure coefficients

Variable	B	β	r	r_s	r_s^2
Honors College Member	0.95	0.48	.044	.089613	.008*
Autonomy	.544	.340	.450	.91496	.83996**
Competence	.278	.173	.351	.714867	.51104**
Relatedness	.181	.097	.298	.606924	.36836**
SES	.016	.014	.068	.138492	.01918

Note: *p = <.05, **p = <.001

Figure 1: Correlation plot



respectively, indicating that these components of basic psychological needs play the largest roles in predicting well-being. This aligns with previous findings which indicate that subjective well-being among undergraduate students is related to relatedness, competence, and autonomy (see Reis et al., 2000). Additionally, gifted students from low socioeconomic status may not have the opportunity to focus on their academic needs if their most basic needs are not met thus inhibiting the motivation needed for goal achievement (Peterson, 2015).

Basic Psychological Needs and Well-being

Our findings are consistent with prior research on SDT and well-being (Ryan & Deci, 2006). While fulfillment of all three basic psychological needs is important to

well-being, autonomy may be particularly important for its role in whether individuals feel they are living authentically. Autonomy, or self-regulation according to SDT theorists (Ryan & Deci, 2006), involves an individual who is ruled "by the self" (p. 1562) and not by outer forces. Motivation is fostered by meaningful work and meaningful connections and is associated with positive self-perceptions when engaging in social comparison, ability to have choice and voice in pursuing academic interests, perceptions of living up to one's potential, and maintaining a sense of belonging (Baumeister & Leary, 1995; Pollet & Schnell, 2017; Siegle et al., 2010). Additionally, Gagné (2003) described agency, ability to choose or self-select, as foundational to establishing intrinsic motivation and finding enjoyment in a particular activity of choice. In a study that examined prosocial behaviors via SDT, Gagné found that autonomy orien-

tation and support for autonomy in a given context were most related to individuals' prosocial behavior. Considering this and our own findings that autonomy was the primary predictor of well-being, having choice and voice is essential in promoting well-being among undergraduates.

Honors Participation and Well-being

The findings of our analysis indicate that small differences exist between those undergraduates who participated in honors and those who did not. While our hypothesis that honors program participation would be related to higher levels of well-being was not strongly supported, there is insight to be gleaned from these results. As previous research has examined year in school, it is possible that students' year in school is a potential moderator of the relationship among honors participation, motivation, socioeconomic status, and well-being (Plominski & Burns, 2018; Rinn, 2005). Additionally, Saylor et al. (2015) suggest that while differences among honors and non-honors students are negligible, this may be a result of having different paths to and/or perceptions of life satisfaction or well-being. If goal attainment or achievement is perceived differently among students with varied academic abilities, this may account for similarities in honors versus non-honors participation results, however, for different reasons. It is recommended that future studies examine these differences so that university administrators and counselors can best address the needs of honors program participants through their undergraduate journey. Additionally, future studies should examine honors and non-honors separately to check for any potential differences in patterns of relationships regarding predictors and outcomes.

Socioeconomic Status and Well-being

While socioeconomic status was used as a predictor in this study, limitations include that socioeconomic status in isolation from race/ethnicity was examined. As our findings are counter to the literature which supports an intersectionality of race and socioeconomic status with a disparity among minority populations having low socioeconomic status as compared to the majority population, different possibilities may explain our findings. First, considering the known disparity between socioeconomic status between minority and majority race membership, future research is needed to examine this intersection to gain a more holistic view of how socioeconomic status and race/ethnicity together are related to well-being in undergraduate students in honors programs. Secondly, there is the possibility of pure statistical chance by viewing socioeconomic status in isolation from other known intersectionalities. In which case, we caution against accepting the current results regarding socioeconomic status without further

analysis to include other variables. Those variables may directly correlate to socioeconomic status and provide a clearer picture of its relationship to the well-being of undergraduate students who belong to minority racial/ethnic groups. Additionally, the homogeneous socioeconomic demographic of the campus may have skewed students' perceptions if students are assessing their own socioeconomic status by engaging in social comparison with others with similar socioeconomic status backgrounds. In other words, if campus-wide socioeconomic status is similar, students may be less likely to perceive differences by social comparison.

Practical Implications

Honors programs can foster student interest and motivation by providing appropriate rigor, variation in course offerings, and differentiated instruction. Participation alone, however, does not facilitate motivation. Honors students can increase levels of autonomy, competence, and relatedness if they find meaning, purpose, and a sense of belonging within the context of an academically rigorous program with like-minded peers, facilitating meaningful interactions such as content-themed, high-level questioning, and discussions (Bowman & Culver, 2018).

College and university administrators can be more intentional about targeting areas that promote well-being by addressing basic psychological needs to foster motivation by monitoring highly selected courses, viewing attendance patterns in courses, and by facilitating interventions for students who may exhibit early signs of underachievement such as not feeling a sense of belonging in the community of learners. Sensitivity to early signs of loss of interest, decreased attendance, and change in grade point average may help universities address factors related to motivation that are limiting to basic psychological needs of autonomy, feelings of competence, and relatedness. Facilitating student interest will likely foster motivation as students seek intellectual experiences in which they are interested, feel appropriately challenged, and find their place among peers (Mammadov et al., 2018; Rinn & Plucker, 2019).

If honors programs are focused on what is deemed best by a university without considering student input, this may lead to decreased motivation due to lack of meaning in work-related areas such as academic environments (Wirthwein & Rost, 2011). Colleges and universities may need to periodically evaluate the students' motivation to maintain relevance to students' sense of purpose and belonging in the honors program. Rigor for the sake of rigor may fall short in retaining students in honors programs (Pollet & Schnell, 2017). Student-driven topics may help to foster a sense of agency, and therefore feelings of competence in directing one's educational experience and academic/life goals.

Figure 2: Raincloud plot of Honors College Membership and Well-Being

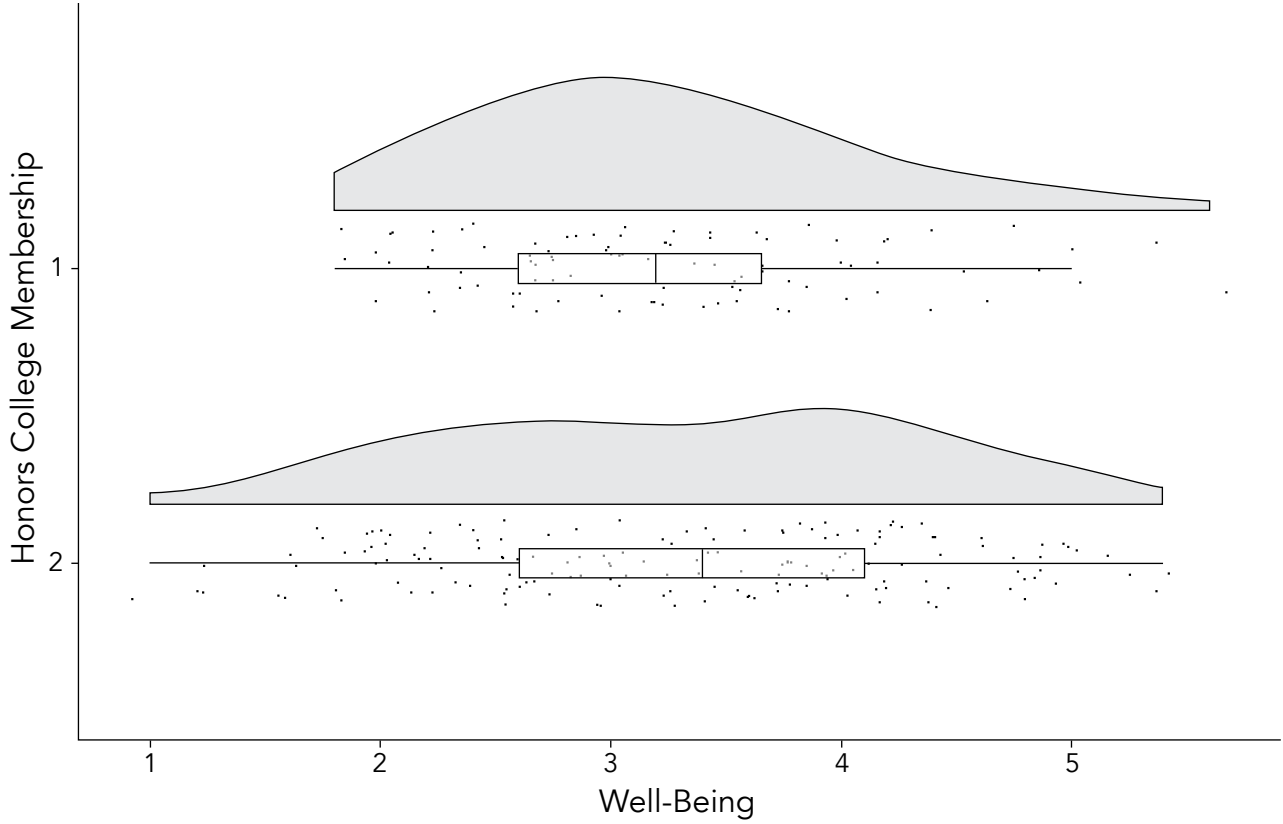
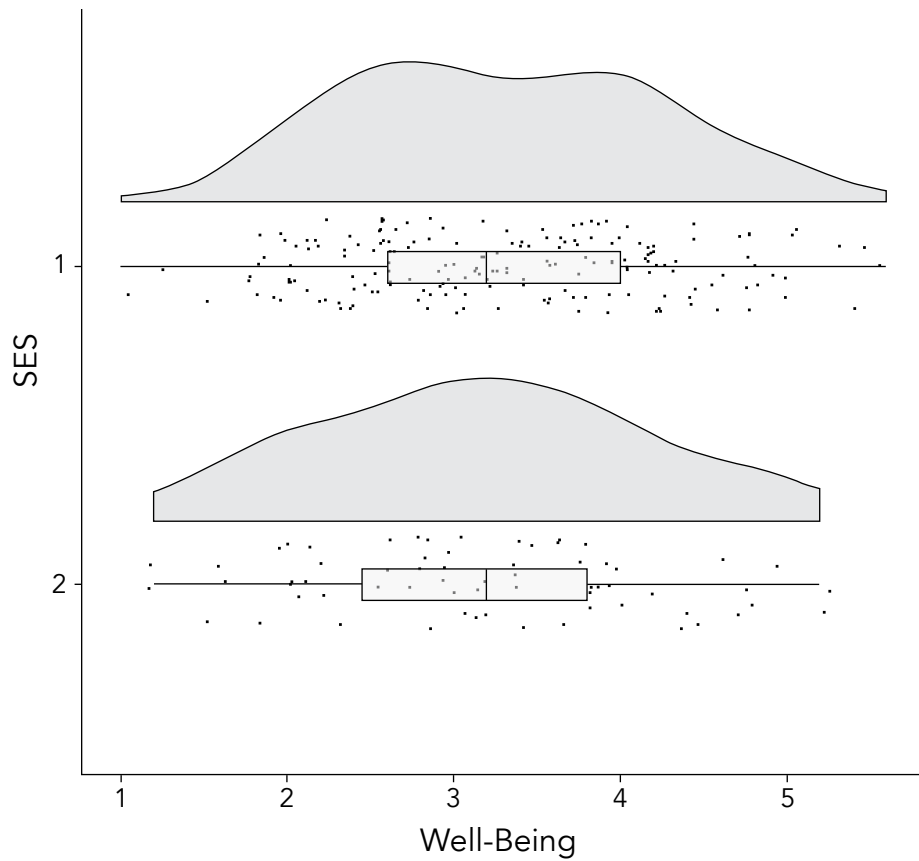


Figure 3: Raincloud plot of Honors Socioeconomic Status (SES) and Well-Being



Limitations and Future Research

A limitation of the current study includes the reliance on self-reported levels of income based on participants' perceived family income. Also, examining socioeconomic status in isolation from potential intersectionalities, such as race/ethnicity may skew the impact of SES by not fully capturing the potential influence. Future research is needed to examine such intersectionalities to potentially make the outcomes more meaningful regarding the influence of socioeconomic status on well-being. Another limitation of the current study is that it is a correlational rather than a causal design. More time to collect data would allow for additional information about participants' responses regarding well-being and motivation thus providing further insight into the long-term perceptions in these areas. Additionally, the sample used in this study was collected from a large public institution within a specific region. Future studies could broaden the sample by including participants from different regions and both public and private institutions for a more comprehensive understanding of participants' responses.

Future research is also needed to understand the relationship between participation in specialized programming and well-being of undergraduate students. In examining effects of well-being on gifted students who participated in early college entrance programs or honors college programs, Sayler et al. (2015) questioned whether or not quality of programming impacted the permanence of personal well-being for participants. They found that a more refined assessment of well-being is needed to capture the influences on the well-being of gifted and talented students and the role of educational interventions, specifically for this group. Additionally, our sample did not account for students who met eligibility requirements but opted not to participate in the honors program thus making the effect of honors versus non-honors participation more difficult to detect or interpret.

We also recommend studying how students' identity as gifted relates to well-being in a follow-up study. Understanding the pre-college academic background of undergraduate students may provide insight into perceived well-being for students dependent on prior academic experience. Including pre-college identification for gifted services may help administrators, counselors, and researchers better understand well-being of undergraduate students participating in college honors programs. Furthermore, these investigations may provide insights into how to support students who have earned a spot in a college honors program based on aptitude, but who may have gaps in background knowledge and/or rigor to maintain success in the program.

Conclusion

In this study, the strongest predictor variable was autonomy followed by competence and relatedness, respectively. While honors membership did not have a large effect size, honors programs are designed to provide opportunities for students to self-select courses. The impact of autonomy, competency, and relatedness on well-being of undergraduate students suggests the importance of students being able to make their own academic choices. Finding ways to improve basic psychological needs, particularly autonomy or self-regulation (Ryan & Deci, 2006), may improve the overall well-being of undergraduate students. Focusing attention beyond academic rigor to include addressing social and emotional characteristics of undergraduate students may increase present and future well-being of students. Administrators may consider incorporating an affective curriculum into their undergraduate honors program to facilitate ways to improve student motivation by addressing basic psychological needs and ultimately well-being.

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