



Dr. Fatimah Aljuaid

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Among Undergraduate Students in the United States



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Dr. Fatimah Aljuaid

**college of Arts, Department: Psychology, Educational
Psychology**

Taif University - Saudi Arabia

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Abstract

Some undergraduate students demonstrate lack of academic motivation which negatively affects engagement and perseverance in higher education (Busse & Walter, 2017; Rizkallah & Seitz, 2017; Dresel & Grassinger, 2013). Amotivated students are more likely to drop out of school and disengage from learning activities or underachieve (Wang & Pomerantz, 2009). Although the lack of academic motivation is correlated with deficiency in self-efficacy, relatively little studies have been conducted to examine the impact of these factors on academic motivation particularly in the U.S. This study constructed a hypothesized model to investigate the role of self-efficacy in academic motivation. The sample consisted of 349 undergraduate students enrolled in U.S. universities. Participants were recruited via the online-tool QuestionPro. The students completed the Academic Motivation Scale (AMS) and Motivated Strategies for Learning Questionnaire (MSLQ) online providing input about their academic motivation, and self-efficacy. Structural equation modeling was used to evaluate the impact of self-efficacy on academic motivation. Analysis of the data indicated that the initial model did not fit the data. The Chi-square value was 271.569, $df = 40$, $p = .000$, and poor fit indices were found (GFI = .875, NFI = .874, CFI = .889, RMSEA = .129. SRMR = .090). Therefore, an exploratory analysis was conducted, and modifications made based on modification indices and theory in order to improve the fit indices. The adjusted model showed acceptable fit between the theoretical covariance matrix and the empirical covariance matrix (GFI = .918, NFI = .913, CFI = .928, RMSEA = .108, and SRMR = .072) indicating that the data fit the hypothesized model. The overall adjusted model explained



41% of the variance of academic motivation, in which self-efficacy ($\beta = .45$; $p < .01$) was a predictor of academic motivation. Self-efficacy can predict students' academic motivation. Self-efficacy was the best predictor of academic motivation. Students who reported high beliefs in their capabilities showed high levels motivation. Further research should be conducted to determine other factors that may contribute to students' academic motivation. This study offers recommendations for future research and professional practice.

دور الكفاءة الذاتية في تعزيز الدافع الأكاديمي لدى طلاب الجامعة في الولايات المتحدة الأمريكية

مستخلص

يُظهر بعض طلاب الجامعة نقصًا في الدافع الأكاديمي، مما يؤثر سلبيًا على مشاركتهم ومثابرتهم في التعليم العالي (Busse & Walter, 2017; Rizkallah & Seitz, 2017; Dresel & Grassinger, 2013). ويزداد احتمال تسرب الطلاب غير المُحفّزين من المدرسة والانسحاب من أنشطة التعلم أو تدني تحصيلهم الدراسي (Wang & Pomerantz, 2009). ورغم ارتباط نقص الدافع الأكاديمي بضعف الكفاءة الذاتية، إلا أنه لا توجد دراسات كافية لدراسة تأثير هذه العوامل على الدافع الأكاديمي، لا سيما في الولايات المتحدة الأمريكية. وقد وضعت هذه الدراسة نموذجًا افتراضيًا لدراسة دور الكفاءة الذاتية في الدافع الأكاديمي. تكونت العينة من ٣٤٩ طالبًا جامعيًا مُسجلين في جامعات أمريكية. وتم اختيار المشاركين عبر أداة QuestionPro الإلكترونية. أكمل الطلاب مقياس الدافع الأكاديمي (AMS) واستبيان استراتيجيات التعلم المحفزة (MSLQ) عبر الإنترنت، مقدمين مدخلات حول دافعهم الأكاديمي وكفاءتهم الذاتية. واستُخدمت نمذجة المعادلات الهيكلية لتقييم أثر الكفاءة الذاتية على الدافع الأكاديمي. وأشار تحليل البيانات إلى أن النموذج الأولي لم يُطابق البيانات. بلغت قيمة مربع كاي ٢٧١.٥٦٩، ومعامل القدرة = ٤٠، وقيمة الاحتمالية = ٠.٠٠٠٠، ووُجدت مؤشرات توافق ضعيفة ($GFI = 0.875$ ، $NFI = 0.874$ ، $CFI = 0.889$ ، $RMSEA = 0.129$ ، $SRMR = 0.090$). لذلك، أُجري تحليل استكشافي، وأُجريت تعديلات بناءً على مؤشرات التعديل والنظرية لتحسين مؤشرات التوافق. أظهر النموذج المُعدّل توافقًا مقبولًا بين مصفوفة التباين النظري ومصفوفة التباين التجريبي ($GFI = 0.918$ ، $NFI = 0.913$ ، $CFI = 0.928$ ، $RMSEA = 0.108$ ، $SRMR = 0.072$)، مما يشير إلى أن البيانات تتوافق مع النموذج المُفترض. فسّر النموذج المُعدّل الإجمالي ٤١٪ من تباين الدافع الأكاديمي، حيث كانت الكفاءة الذاتية ($\beta = 0.45$ ؛ $p < 0.01$) مؤثرًا على الدافع الأكاديمي. يُمكن للكفاءة الذاتية أن تُؤمّن الدافع الأكاديمي للطلاب. كانت الكفاءة الذاتية أفضل مؤشر على الدافع الأكاديمي. أظهر الطلاب الذين أفادوا بإيمانهم القوي بقدراتهم مستويات عالية من الدافع. توصي الدراسة بإجراء المزيد من الأبحاث لتحديد العوامل الأخرى التي قد تُسهم في الدافع الأكاديمي للطلاب. وقد قدمت هذه الدراسة مقترحات للأبحاث المستقبلية.

INTRODUCTION

Motivation is a significant psychological concept and plays a crucial role in education. Psychologists illustrate motivation through various perspectives—humanistic (Maslow, 1943), behaviorist (Skinner, 1953), and social-cognitive (Bandura, 1991). Generally, motivation implies that an individual's drive, desire, and willingness play a significant role in functions. Social involvement and personal responsibility are promoted by motivation (Tabernero & Hernandez, 2011). A high level of motivation increases the likelihood of an individual behaving and responding to fulfill particular standards (Bandura, 1991).

Motivation is one of the significant influences on educational outcomes. Motivated students are more likely to value learning activities and produce positive performance (Zimmerman, 2008; 2000b). Motivation leads individuals to choose a systematic and deep approach to learning (Prat-Sala & Redford, 2010).

Self-efficacy is at the core of motivation. It refers to people's belief that they can achieve and master tasks (Bandura, 1991; Schunk & Pajares, 2002). It affects their drive to set goals, develop plans, and control environmental factors to accomplish tasks. Self-efficacy enhances students' academic performance (Komarraju & Nadler, 2013).

Similarly, Yusuf (2011) explained the meditational role of self-efficacy on achievement motivation, learning strategies and academic achievement. However, relatively little research has been done to analyze the complex relationships between the two variables, self-efficacy, and academic motivation. This study investigated a hypothesized model that describes the complex relationships between these variables within the framework of SCT. The hypothesized model suggested that self-efficacy predict academic motivation.

Rationale for the Study

Enrollment in higher education is viewed as a transition point when students experience difficulty in adapting to a new system of education in addition to dealing with other occupational and social responsibilities (Busse & Walter, 2017; Wang & Pomerantz, 2009). Students experience massive maladaptive changes in their motivation to learn which in turn affect their academic success, retention, effective engagement in learning, and occupational training activities (Dresel & Grassinger, 2013).

Several factors impact academic motivation among university students. They are related to faculty assessments and feedback, campus activities, and educational environment (Rowell & Hong, 2013); as well as to self-esteem, self-confidence, expectancy, and goal commitment (Zimmerman, 1998). Self-efficacy contributes to academic motivation (Bandura, 1991; Deci & Ryan 2008). Few studies have been conducted to determine the impacts of self-efficacy on academic motivation among university students, particularly in the United States. The majority of studies reviewed were conducted in cultures such as Iran, Africa, and Hong Kong (Alafgani & Purwandari, 2019; Lavasani et al., 2011; Ning & Downing, 2010).

Statement of the Problem

There is evidence that students' motivation to learn and level of self-efficacy decreases over their academic years (Busse & Walter, 2017; Dresel & Grassinger, 2013; Rizkallah & Seitz, 2017). Lack of motivation negatively impacts students' academic performance and tend to lead students to disengage from learning activities, underachieve, or drop out of school (Wang & Pomerantz, 2009). During the first year of university students show a significant decrease in academic motivation, self-concept, mastery-approach goals, and the subjective value of their course of studies. (Dresel & Grassinger, 2013; Wang & Pomerantz, 2009).

Purpose of the Study

The purpose of the study was to test a theoretical model of the influence of self-efficacy on academic motivation. In particular, a hypothesized model of the relationship between these variables was created and data measuring self-efficacy and academic motivation of undergraduate students was collected and analyzed through Structural Equation Modeling (SEM).

Conceptual Framework

The conceptual framework for this study is based on Bandura's SCT (1986) and the Self-Determination Theory (SDT) proposed by Deci and Ryan (1985).

Social Cognitive Theory (SCT)

According to SCT, humans learn within a social context. Social interactions influence the initiating and attainment of behaviors. The triadic reciprocal determinism of SCT assumes that behavior, internal factors, and the environment interact during the process of learning. Therefore, self-efficacy abilities affect academic motivation. Individuals observe a

model that scaffolds a particular behavior, then form a belief to perform this behavior successfully. Hence, they tend to set goals and plan and they become motivated to engage in task performance. However, observation alone is not enough to perform effectively. Bandura emphasizes the role of experience which involves monitoring one's performance and cognitive functions. Mastering a wide range of experiences increases individuals' belief in their abilities, which in turn improves their motivation (Bandura, 1991).

SCT and Self-Efficacy

Self-efficacy influences individuals' thoughts, affects, motivation, and actions, which impact directed and organized purposeful behaviors. The system of beliefs, including self-efficacy of competence and beliefs of the changeability or controllability of the environment, improves people's motivation to achieve goals. Hence, people with high levels of self-efficacy and beliefs in their abilities to control environmental factors are more likely to use their personal competencies and abilities to adapt to environments to produce successful performance (Zimmerman, 2000b). Therefore, they enhance their self-efficacy and motivation to set challenging goals. Individuals' engagement in self-reflective processes leads to perceived capabilities to perform a particular task; and such beliefs enhance the processes of internal motivation (Bandura, 1994). According to SCT, humans build self-efficacy beliefs through four major resources: mastery experience, vicarious experience, social persuasion, and emotional and physical reaction (1994). The integral impact of personal factors and environmental influences was clear among students who believe themselves competent in mathematics (Schunk & Usher, 2019). Those students tend to engage in class activities, make an effort to learn, and persevere. When teachers recognize their performance and environmental influence, the students' self-efficacy improves and encourages motivation. Environmental influences and personal factors are incorporated in the formation of self-efficacy beliefs. Self-efficacy can be developed by observing a successful model (Bandura, 1994). Also, productive feedback and persuasive comments from significant models increases the sense of efficacy (Bandura, 1997; Schunk & Usher, 2019). Social and cognitive influences are significant predictors of self-efficacy. They include model observation, self-monitoring, goal settings, self-evaluation, and comparison with social standards (Schunk & Usher, 2019).

One of the most important personal influences for developing self-efficacy is achieving goals. Success then develops beliefs in one's capabilities. Emotional arousal that individuals experience while engaged in behavior also affects self-efficacy. Low-level anxiety increases self-efficacy whereas high-level anxiety decreases self-efficacy (Bandura, 1994;

Schunk & Usher, 2019). In terms of behavioral influences, individuals who believe that they are efficacious in performing a task, usually get involved in activities, persist in difficulties, and perform well (Schunk & Usher, 2019; Zimmerman & Moylan, 2009).

SCT and Academic Motivation

According to SCT, the ability to regulate motivation, affect, and action is significant in developing motivation. Therefore, setting goals and planning is not enough to perform effectively (Bandura, 1991). However, the engagement in self-evaluative processes where one compares outcomes of actions to personal standards will produce self-reactive influences (Bandura & Cervone, 1986). Self-reactive influences consist of self-satisfaction, perceived self-efficacy, self-set goals. The effective use of self-reactive influence motivates a person positively, whereas using self-incentive because of self-reactive influence enhances one's motivation to accomplish the desired behavior. Zimmerman (1998) demonstrated that people who tend to reward themselves after attainment differ in their ability to regulate their motivation and action from those who did not use self-incentive. Self-evaluation and self-incentive lead to self-satisfaction which in enhances motivation to pursue performance. For instance, when individuals evaluate their performance based on specific standards and reward themselves when they are satisfied with the outcome, their motivation to accomplish more increases. Bandura (1991) indicated that self-evaluation, whether based on personal standards or social comparison, improves self-satisfaction when goals are met, which enhances academic motivation. SCT posits behavioral and environmental influences impact motivation and they in turn are affected by motivation (1991). For instance, observing a successful model who has relatively similar characteristics and abilities improves motivation (Bandura, 1986).

Academic motivation is affected by factors such as internal beliefs, cognitions, and social interactions. Outcome expectancies and value affect motivation to act; and expecting positive results develop the desire to engage in productive behaviors (Schunk & DiBenedetto, 2020) Students who acknowledge the significance of learning tasks and value learning outcomes, are more likely to be motivated and to engage in learning activities. Individuals' beliefs in their abilities significantly affect motivation (Schunk & DiBenedetto, 2020). Social interactions, where positive comments and feedback from significant others imply the effective abilities to perform well, improve a sense of efficacy and increases one's motivation for further functions. In addition, social comparison as a personal influence has a significant effect on motivation in which comparing oneself with an observed model facilitates building motivation to perform a

task (Bandura, 1986; Schunk & Usher, 2019). Motivation is affected by behavioral influences such as choosing to engage in activities, making an effort, and persisting when difficulties occur (Schunk & DiBenedetto, 2020).

Self-Determination Theory (SDT)

SDT, developed by Deci and Ryan (1985), demonstrates human motivation. Their theory suggests that humans develop and change by satisfying three main psychological needs competency, relatedness, and autonomy. Competency is knowing how to obtain external and internal outcomes and the ability to perform effectively. Relatedness is connecting thoughts and behaviors with social norms and acting accordingly. (Deci et al., 1991; Ryan & Deci, 2020).

SDT suggests three types of motivation that energize and direct human behaviors and activities. (1) Intrinsic motivation—which leads to volitionally engaging in a behavior because of a sense of satisfaction and pleasure without any interest in external contingencies. (2) Extrinsic motivation—which refers to integrating the behavior's value into the sense of self (Deci & Ryan, 2008; Ryan & Deci, 2020). The theory also distinguishes between autonomous motivation (individuals become self-determined; it consists of both intrinsic motivation and extrinsic motivation) and controlled motivation (Ryan & Deci, 2020).

An autonomy continuum explains the processes of internalization where humans integrate the external contingencies into internal processes (Deci et al., 1991). The internalization processes emphasize the role of fulfilling the needs of relatedness, competence, and autonomy. Even though personal experiences and outcomes are important in the process of internalization, social factors have significant impacts in which the engagement of extrinsically motivated behavior can be attributed to fulfilling the sense of belonging because such behavior is valued by significant others. Promoting competence assists internalization; hence enhancing self-efficacy is a key to people tending to engage in a valuable performance through relevant social groups only when they believe it is efficacious. Also, the experience of autonomy is essential to facilitate internalization (Deci et al., 1991; Ryan & Deci, 2000).

SDT and Self-efficacy

SDT emphasizes the satisfaction of psychological needs (autonomy, relatedness, and competence) to enhance human behaviors. Competence as a psychological need is related to self-efficacy. Competence is a broader concept that illustrates how much people believe they have

an effective role in their society. Self-efficacy within SDT is called perceived competence which is a significant factor for motivation (Ryan & Deci, 2006). SDT is about the level of beliefs and the quantity of one's motivation and why one holds such a belief. SDT also explains how such a distinction of motivation affects the consequences of behavior. This concept facilitates the differentiation between autonomous and controlled actions.

Students who have an internal locus of causality (or control) believe that they have control over their learning processes and thus engage in self-determined behavior. Students who have an external locus of control believe they have little control over their learning outcomes and are more likely to perform controlled behavior (Deci et al., 1991). Perceived competence mediates the relationship between positive feedback and intrinsic motivation. The integration of feeling competent and autonomy, particularly the locus of control, significantly affects intrinsic motivation (Ryan & Deci, 2000).

There is evidence that fulfilling the needs of competence will foster a sense of self-efficacy (Ryan & Deci, 2020). There are four sources of self-efficacy: mastery experience, vicarious experience, social persuasion, and physiological and emotional states (Bandura, 1997). Therefore, feedback from teachers and parents plays a significant role in constructing students' beliefs in their capabilities and control over their actions. Negative feedback undermines students' sense of competence while positive feedback promotes perceived competence which in turn influences intrinsic motivation (Deci et al., 1991).

Perceived autonomy is associated with self-efficacy (Ryan & Deci, 2020). An educational environment that supports autonomy and treats students as active learners is imperative to encourage competency. When students have opportunities to be responsible for their learning processes and the freedom to make decisions and have unique perspectives, they then will be motivated to regulate their learning, utilize effective strategies, and evaluate their progress. As a result, successful outcomes will increase belief in one's capabilities to perform well. Satisfying the needs for autonomy promotes self-determined behavior which then constructs self-efficacy (Ryan & Deci, 2020).

Girelli et al. (2018) constructed a model that predicts undergraduate students' intention to drop out by examining their perceived autonomy support from teachers and parents; and how this autonomy support influences their motivation and self-efficacy. Students who perceive autonomy support from teachers and parents develop greater levels of autonomous

motivation and self-efficacy. In addition, students who attend university because of intrinsic motivation and beliefs in their capabilities were less likely to want to drop out of school and more likely to experience academic adjustment (Girelli et al., 2018)

SDT and Academic Motivation

The theory identifies several types of motivation: intrinsic motivation, which promotes self-determined functions. Self-determined students tend to engage in learning activities and produce positive academic performance compared to students who are less self-determined (Vallerand et al., 1992). Students who report high levels of intrinsic motivation show advanced academic progress. Those who learn to attain knowledge and implement information were compared to those who learn materials to do well on a test. The findings demonstrated that students with intrinsic motivation show greater conceptual learning than extrinsically motivated students (Deci et al., 1991). Students with intrinsic motivation demonstrated high levels of enjoyment in academic settings, positive emotions, and satisfaction with academic activities (Deci et al., 1991; Vallerand et al., 1992)

An autonomous-supportive approach enhances academic motivation. This approach helps students in the process of internalization which in turn becomes part of intrinsic motivation (Deci & Ryan, 2008; Ryan & Deci, 2020). Graduate students involved in practical learning activities show greater levels of intrinsic motivation compared to undergraduate students where the focus was on attaining theoretical knowledge (Koludrović & Ercegovac, 2015). A study was conducted to investigate the role of psychological needs fulfillment—autonomy, relatedness, and competence. The researchers suggested a motivational model for examining what factors may predict academic motivation. The path analysis results indicated significant correlations between autonomy and academic motivation as well as competence and academic motivation. Competence was a better predictor of intrinsic academic motivation than autonomy which was mediated by identity development. Relatedness was not a significant predictor of academic motivation (Faye & Sharpe, 2008).

In terms of improving academic motivation through satisfying competence and relatedness needs, positive feedback and interpersonal involvement of teachers and parents were effective in enhancing intrinsic motivation. Autonomy-supportive teachers consider students' perspectives and provide them with a rationale to implement activities, as well as the opportunity to choose learning activities and to take initiative for their academic work. Supporting autonomy leads to supporting relatedness needs and competence, specifically when teachers provide constructive feedback (Ryan & Deci, 2020).

Research Questions

This paper examined a hypothesized model of the role of self-efficacy on enhancing academic motivation among undergraduate students in the United States. The primary research question was, “Are the theoretical covariance matrix and the empirical or observable covariance matrix equal?” This main question addressed the following research question, was the hypothesized theoretical model a good fit to the sample? (Did self-efficacy affect academic motivation?)

Research Hypotheses

The main hypothesis of this study was that the reproduced covariance matrix proposed in the theoretical model and the observed sample covariance matrices were equal. In simple terms, this meant that the structural model would be a good fit with the observed data. Using the conceptualized model depicted in Figure 2, this study hypothesized Self-efficacy had a significant, direct effect on the endogenous variable academic motivation.

Significance of the Study

The significance of this study is girded by the fact that the demand for higher education has grown in different societies. Higher education aims not only to provide knowledge but also to offer vocational training to prepare qualified members of society. However, current statistics indicate that the number of enrolled students in higher education has declined. Researchers found that university students tend to underachieve or drop out of school as a result of an inability to adapt easily during the transition period from secondary education to higher education (Wang & Pomerantz, 2009). One reason underlying this phenomenon is students' lack of motivation to learn and self-efficacy (Busse & Walter, 2017; Dresel & Grassinger, 2013; Rizkallah & Seitz, 2017). Hopefully, my findings can benefit society and governments by offering information regarding critical variables that influence the motivation of students in higher education. This information may enhance knowledge of academic motivation, which will lead to a decrease in the number of students who drop out of school and an increase in the number of graduate students who will serve in different fields to improve society.

The outcome of the current study can help policymakers and personnel of higher education to improve students' academic motivation by emphasizing the role of enhancing students' beliefs in their capabilities and integrating effective processes in higher education learning and curriculum. The findings of the study can contribute to increasing the understanding of critical factors that impact students' motivation to learn. Such significant

knowledge is going to provide faculty and students with important strategies and techniques related to developing motivation to learn. For instance, instructors can focus on planning lectures to incorporate self-efficacy strategies. Students who enroll in higher education can also concentrate on developing their beliefs in self and practicing self-efficacy strategies whenever their motivation to learn abates. Even though many studies have investigated academic motivation, very few were conducted with the higher education population.

Although previous studies have investigated the correlation between self-efficacy and academic motivation (Bandura, 1991; Cerino 2014), there is a lack of studies that focus on predicting the role of self-efficacy on enhancing academic motivation. This justified the existence of this study. This study can serve as a guide for researchers to investigate the combination of the study's variables among different populations and to detect other factors that may predict academic motivation among university students.

Definition of Terms

Academic motivation refers to the intrinsic or extrinsic orientation that drives one to set goals and prepare plans to perform in a particular way. Thus, motivation is the interest or the will that drive students to accomplish academic goals (Ryan & Deci, 2000; Vallerand et al., 1992).

Amotivation refers to the concept of describing individuals' tendency to disengage in activities or actions as a result of the absence of desire or to the lack of valuing an outcome (Vallerand et al., 1992).

Self-efficacy refers to the belief in one's capabilities to conduct the well-organized behavior needed to accomplish a task (Schunk & Pajares, 2002; Zimmerman, 2000a). It includes judgments about one's ability to accomplish a task as well as one's confidence in the skills to perform that task (Pintrich et al., 1993).

Self-efficacy for learning refers to both expectancy for success and confidence in one's ability to accomplish a task where expectancy for success is more related to the performance and expectations than the judgment of one's abilities and skills and how much confidence the students have in their capabilities (Pintrich et al., 1993).

Delimitations of the Study

This study was limited to undergraduate students 18–22 years old. Although academic motivation is influenced by a variety of psychological and social factors, the primary focus of this study was on the role of self-efficacy on academic motivation. A structural model was used to analyze and interpret the data, instead of a measurement model, because the researcher focused on the predictive roles of self-efficacy in enhancing academic motivation.

Literature Review Motivation

The concept of motivation is rooted in Ancient Greek philosophers, primarily Plato and Aristotle (Gollwitzer & Oettingen, 2001). Plato contemplated the idea of a hierarchy organized around emotional, rational, and dietary components. Aristotle believed that the components of the hierarchy could be used as motivators of human behaviors. He viewed the dietary and emotional components (pain or pleasure) as irrational motivators. The Ancient Greeks based motivational activities on three primary components—the body's desire, feeling pain or pleasure, and spiritual effort of will (Gollwitzer & Oettingen, 2001).

Later, Descartes declared the will to be a more effective motivator than the physical body, therefore, articulating the first theory of motivation (Gollwitzer & Oettingen, 2001). Descartes believed that the power of will is a strong motivator because the human mind has mental, moral, and intellectual mechanisms that induce will (Gollwitzer & Oettingen, 2001), whereas the body's needs are just physical and biopsychological forces that interact naturally with environmental factors to fulfill satisfaction (Gollwitzer & Oettingen, 2001).

In the early twentieth century, human behaviors were attributed to physiological needs. Sigmund Freud (1924) addressed the life instinct idea which suggests that human behavior is driven by instinct. He believed humans react to satisfy physiological needs which then reduces the levels of stress or anxiety because of deprivation. Some researchers (Lewin, 1936; Skinner, 1935) denied the idea of restricting motivational factors to instincts while ignoring other potential elements. Therefore, researchers such as Pavlov (1927) and Skinner (1935) conducted several studies and assessments to analyze human motivation from a variety of perspectives including behaviorism, humanism, and cognitive approaches.

SDT focuses on the quality rather than the quantity aspects (Deci & Ryan, 2008). The theory categorizes motivation into intrinsic motivation, extrinsic motivation, and amotivation.

Academic Motivation

It was clear from the historical overview that motivation is an interesting psychological phenomenon that has been studied for many years. Researchers tried to understand motivation in education to gain insight into why students who willingly engage in learning activities perform better in academic subjects (Deci & Ryan, 2008). Accordingly, the academic

motivation concept has developed through a variety of motivational dimensions including beliefs or perceptions, values, and goals (Rowell & Hong, 2013). The concept also advanced as a result of psychological components in SCT (Bandura, 1991) and SDT (Deci & Ryan, 2008; Ryan & Deci, 2000).

The components of individuals' beliefs or perceptions of motivation are self-efficacy, autonomy, and attributional beliefs. Self-efficacy refers to individuals' beliefs in their ability to accomplish a task (Bandura, 1991). Students who possess high levels of self-efficacy are more likely to be motivated when they engage in learning activities, make the effort to succeed, and persevere when difficulties occur (Schunk & Pajares, 2002). Students with low efficacy beliefs perform poorly, disengage in learning activities, and give up whenever they encounter difficulties (Wang & Pomerantz, 2009). The sense of autonomy, students' belief that they have control over their goals and behavior formation, is imperative. Autonomous learners tend to be active during learning procedures, engage in classroom and task performance, regulate time and effort toward learning, and become self-determined learners (Ryan & Deci, 2000). Attributional beliefs identify the way students attribute their learning outcomes which in turn affect their subsequent performance. There are three main components of attributional beliefs: locus of control, stability, and controllability (Rowell & Hong, 2013). Students who attribute their academic achievement to effort tend to be academically motivated because such attribution is based on internal locus of control, unstable cause, and controllable factors.

Goals are fundamental components of academic motivation. They assist students in forming plans and procedures that affect their cognitive, emotional, behavioral responses. Goal orientation consists of mastery goal orientation and performance goal orientation. Mastery goal-oriented students perform better than performance goal-oriented students because they believe abilities can be developed, and successful performance results from their effort. Hence, they utilize effective strategies and hold a positive attitude to their learning. Performance goal-oriented students tend to avoid challenging tasks and attribute their failure to the lack of abilities. Mastery goal orientation enhances students' sense of competency and their intrinsic motivation (Ames & Archer, 1988). Bandura (1991) believes that setting goals and planning motivate individuals to achieve their goal required actions and effective strategies.

Value is an essential component of academic motivation. Students who value the task tend to engage in learning activities and perform well. However, students who perceive the course/task as valueless, become unmotivated to participate effectively in learning. The value of learning a

task is derived from three elements of the course—intrinsic value (interesting), attainment value (important), and utility value (useful) (Eccles, 2005).

SDT differentiates between intrinsic motivation and extrinsic motivation. Intrinsically motivated students engage in learning activities because of experiencing pleasure and enjoyment. Conversely, extrinsically motivated students perform to obtain external rewards or grades and to avoid feelings of shame (Deci & Ryan, 2008; Vallerand et al., 1992).

Self-Efficacy

The study of self is traced back to the Greek philosophers such as Plato, Aristotle, and Socrates who defined self as a soul and spiritual entity (Remes & Sihvola, 2008). During the Middle Ages, Aquinas (1975) introduced the idea of mind and body duality in which soul and body are integrated to illustrate the concept of self. In 1659, Descartes (2008, trans.) established the philosophy of thinking. He believed that doubt proved one's existence because doubt is a form of thinking. Cartesian rationalism emphasized the inner process of self-awareness which is considered the foundation of metacognitive processes. However, belief during past eras was mostly attributed to religion (Descartes, 1659; trans. 2008).

In the twentieth century, the study of self and self-beliefs developed based on William James' (1890) publication, *The Consciousness of Self*, in which he distinguished between the self, *I*, and the self, *me*, as knower and known. This philosophy presented the concept of self-reflection which Bandura (1997) later explained. James was also the pioneer of the self-esteem concept.

In the 1900s Cooley (1902) explained the self through *The Looking-Glass Self Theory*. In 1923 Sigmund Freud advanced his Psychoanalytic Theory, which theorized that self comprises three components—id, ego, and superego. While behaviorist psychologists focused on external stimuli, humanistic psychologists focused on the study of self. For instance, Maslow's (1943) hierarchy of needs described human motivation as fulfilling different needs to achieve self-esteem and self-actualization. Although, initially, Bandura based his worldview on behaviorists' perspective, he rejected the idea of limiting human functions only by biological and environmental factors. He believed humans play an active role through their thoughts. Therefore, Bandura was a pioneer in the concept of self-efficacy (Schunk & Pajares, 2002).

The self-efficacy foundational concept emerged before the development of SCT. In the 1970s, Bandura explained

motivation in terms of outcome expectations. Later he conducted therapeutic techniques for people who have phobias. Even though the participants were motivated to apply the techniques regardless of their fear of outcome expectations, some could not implement the techniques in real-life situations. Bandura attributed these individual differences to self-efficacy. He believed that self-efficacy has a stronger effect on motivation than outcome expectations do (Zimmerman, 2000a).

In 1986, Bandura proposed the SCT which emphasizes the role of self-efficacy in cognitions, behaviors, emotions, and motivations. In the period 1991–1997, he concluded that people perceive beliefs in self through interaction with the environment in which they create beliefs of their capabilities. He conducted several studies to determine the power of self-efficacy and motivating human actions (Bandura, 1991; 1997).

The Relationship Between Self-Efficacy and Academic Motivation

Bandura (1991) defined self-efficacy as an individual's belief in his/her ability to complete a task. He suggested four resources that affect the formation of self-efficacy. They are mastery experiences, vicarious experience (which refers to observing a model), social persuasion, and physiological response awareness. Self-efficacy enhances an individual's performance and creativity as well as the ability to deal with difficulties and obstacles (Zimmerman, 2000b). According to SCT, self-efficacy is a key to learning and gaining knowledge because people who believe in their capabilities tend to have high levels of motivation (Bandura, 1991). Regarding the correlation between self-efficacy and academic motivation, Ball and Edelman (2018) found that, for English students who believe that they had poor English literacy skills, their motivation to learn and use self-efficacy were moderate or below moderate even if they perceived English as very important. By the same token, learning motivation significantly correlated with self-efficacy among a group of medical science students (Hassankhani et al., 2015)

To examine a theoretical model that indicates a correlation between learning-oriented motivation, lifelong learning tendencies, and students' self-efficacy, Akyol (2016) studied a sample of 382 university students who were education majors in five different departments. Of the 382 students, 29.06% were studying information technology, 26.70% were studying the English language, 13.61% were studying history, and 8.38% were studying music. Also, 22.25% of the candidate teachers were involved in classroom teaching. Most of the participants (60.07%) were females and the rest (39.53%) were males. The analysis indicated that (1) students have high levels of learning-oriented motivation, a lifelong tendency to learning, and self-efficacy perception; and (2) the three

variables are significantly correlated. SEM demonstrated that the relationship between learning-oriented motivation and self-efficacy perception was mediated by lifelong learning tendencies.

Further investigation of self-efficacy and academic motivation and its effect on learning activities have been conducted regarding students' tendency to procrastinate. For instance, Cerino (2014) examined self-efficacy and academic motivation as an explanation of procrastination and found that self-efficacy, academic motivation, and procrastination were correlated among university students. Academic motivation was a strong predictor of procrastination while self-efficacy had no impact when controlling for academic motivation. The findings of this study were consistent with Malkoc and Mutlu's (2018) research which aimed to determine whether academic self-efficacy or academic motivation predicts academic procrastination. The results indicated a negative relationship between academic self-efficacy and academic procrastination and between academic motivation and academic procrastination. The analysis demonstrated that academic self-efficacy and academic motivation predict academic procrastination. The researchers also conducted a partial correlation to identify whether the correlation between academic self-efficacy and academic procrastination would change after controlling for academic motivation. They found that motivation has a mediating role in the relationship between academic self-efficacy and academic procrastination.

To improve university students' self-efficacy and academic motivation, Mantasiah and Yusri (2018) conducted an experimental study using the *Pay It Forward Learning Model*. The model is based on the idea that each individual has an effective role in making changes in his or her learning environment. Such an idea was assumed to increase students' self-efficacy and their academic motivation. The researchers utilized the experimental method, specifically the pre-posttest, to investigate the effectiveness of the model. After applying the *Pay It Forward Model* in four meetings, the researchers ran a paired sample t-test to detect any improvement in self-efficacy and academic motivation compared to the pre-test results. They found a significant increase in both self-efficacy and academic motivation among the students. Students who have low self-efficacy beliefs and who lack academic motivation are more likely to procrastinate in learning (Cerino, 2014; Malkoç & Mutlu, 2018).

SDT addresses the role of satisfying competence, relatedness, and autonomy needs to enhance academic motivation and efficacious beliefs (Deci & Ryan, 2008). According to this perspective, students who enrolled in the *Pay it Forward* program developed high levels of self-efficacy and

academic motivation because each student explained the materials to another group of two or three students. Thus, playing an active role in the class increases the sense of relatedness, competence, and autonomy (Mantasiah & Yusri, 2018).

The literature review revealed only one study of whether self-efficacy played a significant role in predicting both academic motivation and self-control and self-management. Other studies were well organized; they used a correlational method to investigate the relationship between self-efficacy and academic motivation among university students. Therefore, there is a lack of prediction methods for self-efficacy. The prediction method contributes to identifying the magnitude and direction of the relationship and it is currently recommended (Rensh et al., 2020) when investigating psychological phenomena.

Prat-Sala and Redford (2010) examined the correlation between intrinsic and extrinsic motivation, self-efficacy, and studying approaches. They found that intrinsic and extrinsic motivation influenced the selectiveness of study approaches. A high level of motivation drives systematic approaches to studying. In addition, students' self-efficacy influenced their approach to study—low self-efficacy leads students to avoid deep approaches to studying. In contrast, Arik (2019) suggested that self-efficacy is a core predictor of university students' academic motivation, self-control, and self-management.

To enhance self-efficacy and academic motivation, Yuka (2017) conducted an experimental study to identify the effect of goal setting (goal commitment, google difficulty, and goal specificity), intrinsic motivation, and self-efficacy in extensive reading among undergraduate students enrolled in the Business Administration and Economics departments. The study involved students in the extensive reading program (ER), which includes 170 books of both graded and leveled readers. The ER program consisted of 12 sessions each lasting twenty minutes during which students chose books independently. At the beginning of each session students filled in two sheets: ER record and self-evaluation. They wrote their goals, the number of words they expected to read, and commented on the content. On the self-evaluation sheet they wrote what they had accomplished compared to their goals and evaluated their progress, as well as what challenges or obstacles they encountered. The results revealed that goal difficulty and goal commitment have a direct effect on intrinsic motivation whereas goal specificity did not. The modified model demonstrated that goal specificity has no direct effect on both intrinsic motivation and self-efficacy. In addition, goal commitment was the only variable among goal setting variables that had a direct influence on self-efficacy. Thus, goal commitment can be considered an important factor or the best predictive factor of intrinsic motivation and self-efficacy.

METHODOLOGY

This study utilized a model based on SCT. The model hypothesized that self-efficacy (control for learning beliefs, self-efficacy of learning) predicts academic motivation (intrinsic motivation, extrinsic motivation, and amotivation).

Type of Study

A non-experimental quantitative methodology were used and deductively developed a theoretical model based on SCT and SDT and previous studies to determine the relationship between self-efficacy and academic motivation (Figure 2, p. 28). The correlation design was adopted because the study aimed to look at the relationship between these variables through predictive correlation design to examine the variance of one variable based on the variance of another variable. Specifically, model-testing design was adopted because the study examined a theoretical model which proposed that self-efficacy predicts students' academic motivation. To collect an adequate number of participants in a relatively short time, the survey method was chosen.

Population and Sample

For fall 2018, 16.6 million students—56% female and 44% male—were enrolled in institutions of higher education in the United States (Hussar et al., 2020). The students included 8.7 million White (not of Hispanic origin), 3.4 million Hispanic, 2.1 million Black, 1.1 million Asian, 0.6 million non-residents, and 0.6 million from two or more other races.

A non-probability sampling method was used because samples were selected according to the researcher's subjective judgment. The study is based on convenience sampling, where participants were selected based on availability. The surveys were hosted online through QuestionPro, hence the sample was limited to those who had access to and were willing to use the internet. The scales of the study are as follows: (1) self-reported demographic information questionnaire; (2) 14 items measuring self-efficacy; and (3) 28 items measuring academic motivation. I chose the sample size by adding the number of items on the two surveys and multiplying that total by five (the number of participants for each item). Research suggested a sample size between 5-10 for each item (Hair et al., 2010). Accordingly, the suitable size for this study was 330 participants—349 students participated, which was adequate for conducting SEM.

Research Hypotheses

The main hypothesis of this study was that the reproduced covariance matrix proposed in the theoretical model and the observed sample covariance matrices were equal. In simple terms, this means that the

structural model would be a good fit with the observed data. Using the conceptualized model depicted in Figure 2 (p. 28), this study hypothesized: (1) self-efficacy has a significant direct effect on the endogenous variable academic motivation.

Instrumentation

The instruments utilized by this study comprised three sections. Section one elicited self-reported demographic information including age, gender, ethnicity, and employment. The other two sections assessed self-efficacy and academic motivation, respectively.

Academic Motivation was measured using the AMS college version (Vallerand et al., 1992). The scale, translated from a French measure of motivation developed based on SDT, totaling 28 items. It is a self-report questionnaire on a 7-point Likert scale from one (Does not correspond at all) to seven (Corresponds exactly). Researchers conducted confirmatory factor analysis (CFA), internal consistency, and test-retest of the seven subscales to investigate the psychometric properties. The internal consistency of the subscales was high, ranging from .83 to .86, except for the identification subscale ($\alpha = .62$).

Self-Efficacy was assessed using the MSLQ (Pintrich et al., 1993). This self-report questionnaire was developed based on a cognitive-social perspective, focusing on the dynamic correlation between motivation and the use of learning strategies. The MSLQ includes 81 items ranging from one (not at all true of me) to seven (very true of me) and can be scored on a 7-point Likert scale. The psychometric analyses showed good reliability and validity, with internal consistency for self-efficacy scales robust, having coefficients of .93. The motivational scales, including self-efficacy scales, were correlated with students' performance and final grades.

Data Collection

Before collecting the data, the researcher obtained approval from Andrews University's Institutional Review Board (Appendix A). QuestionPro hosted the surveys online. Participants were provided with an informed consent form (Appendix B) that explained the purpose of the study, assured them of their right to withdraw without penalty, and demonstrated that their data would be secure.

Analysis of the Data

SPSS and IBM SPSS Amos were used for statistical analysis. The research aimed to investigate if the hypothesized model, which suggested the role of self-efficacy in predicting academic motivation, fitted the data. Therefore, the null hypothesis stated that the structural covariance matrix was

equivalent to the empirical covariance matrix. SEM was conducted, particularly the maximum likelihood estimation (MLE), which explains the relationship between multiple independent and dependent variables.

The Advantages of Using SEM

SEM was suitable because of its ability to determine complex theoretical structures with multiple dependent variables. The technique allows for identifying correlations and explaining variance while accounting for measurement errors.

Creating a Data File

A data file was created in Excel and SPSS using the data from QuestionPro software.

Screening the Data

Before conducting SEM, SPSS was used to screen the data for outliers and missing values. Any case with missing values was deleted, as the sample was large enough, and the deletion did not affect statistical power.

Developing the Model Specification

The data were cleaned, and the hypothesized model was developed using IBM SPSS Amos (path diagram). Ovals or circles represent latent variables, while rectangles represent measured variables. The correlations and covariances are represented by bidirectional arrows.

Assessing Model Fit

First, the measurement model was tested using CFA to examine relationships between variables. Once a good fit was indicated, the structural model was tested. Path analysis was conducted to run the structural model, testing relationships among constructs represented by observed variables.

The null hypothesis was analyzed using absolute fit indices and relative fit indices. Common absolute fit indices, such as Model χ^2 , should be non-significant ($p > .05$) for a good fit. For RMSEA, acceptable fit is $< .10$; a good fit is $< .05$. For SRMR, values below .08 suggest a good fit (Keith, 2019). A Goodness of Fit Index (GFI) $> .90$ is considered a good fit.

Model Modification

If the model does not indicate a good fit, modifications can be made by checking the modification indices and logically correlating suggested errors.

RESULTS

The study hypothesized that self-efficacy predicts academic motivation among university students. The hypothesized model suggested that self-efficacy is a significant predictor of academic motivation. Self-efficacy was indicated by (a) control of learning beliefs (SEC) and (b) self-efficacy of learning and performance (SELP).

Data Screening

A total of 1,582 persons viewed the link to the survey. Viewers who were not undergraduate students aged 18–22 years old were excluded, and 352 participants completed the survey. After screening the data, three cases were eliminated due to missing data. The remaining 349 participants were included in the analysis.

Demographic Characteristics

The 349 participants were undergraduate students aged 18–22 years. The participants were 80.2% female (N = 280) and 19.8% male (N = 69) (Table 1). The majority of the students were Caucasian or White (62.2%), with 10.6% Black or African American, 10.6% Asian, 8.9% Hispanic or Latino, 3.4% Multiracial, and 1.4% American Indian or Alaska Native (Table 1). Among the participants, 73.3% were unemployed, 18.9% were employed part-time, and 7.7% were employed full-time (see Table 1).

Table 1 *Demographic Characteristics of Participants in the Data*

Variable	N	%
Gender		
Male	69	19.8
Female	280	80.2
Total	349	100
Employment		
Full-time employment	27	7.7
Part-time employment	66	18.9
Unemployed	7	2
Student	249	71.3
Total	349	100
Ethnicity		
Hispanic or Latino	31	8.9
American Indian or Alaska Native	5	1.4
Asian	37	10.6
Black or African American	37	10.6

Variable	N	%
Native Hawaiian or Other Pacific Islander	2	0.6
Caucasian or White	217	62.2
Multiracial	12	3.4
Other	1	0.3
Prefer not to say	7	2
Total	349	100

Observed Variables Description

Table 2 presents the descriptive statistics of the observed variables, including means and standard deviations. Control of learning beliefs (SEC) had a mean of 4.24 (SD = 1.04) and self-efficacy of learning and performance (SELP) had a mean of 5.03 (SD = 1.07).

Zero-Order Correlations

Table 2 indicates that some variables have statistically significant correlations where p values were less than .05. The majority of the correlations between the observed variables were weak or moderate. Other correlations were not statistically significant

Table 2 *Measured Variables Correlation and Descriptive Statistics*

.	ExME	ExMN	ExMD	InMK	InMC	InMS	AMOT	SMR	SRTE	SREF	SEC	SELP
ExME		.473**	.580**	.332**	.246**	-0.01	-.287**	.120*	.296**	.185**	.162**	.344**
ExMN			.523**	.546**	.635**	.335**	-.230**	.285**	.256**	.263**	.156**	.420**
ExMD				.579**	.486**	.201**	-.521**	.298**	.458**	.323**	.133*	.515**
InMK					.733**	.534**	-.354**	.462**	.389**	.341**	.135*	.542**
InMC						.617**	-.224**	.485**	.275**	.281**	.266**	.490**
InMS							.111*	.418**	0.096	0.092	.188**	.262**
AMOT								-.134*	-.472**	-.490**	.191**	-.346**
SMR									.491**	.424**	.253**	.547**
SRTE										.678**	0.023	.543**
SREF											-0.036	.537**
SEC												.359**
Mean	5.31	5.17	5.53	5.01	4.59	3.95	2.77	4.25	4.48	4.15	4.24	5.03
SD	1.18	1.32	1.11	1.24	1.32	1.38	1.67	0.86	0.73	0.79	1.03	1.07
Skewness	-0.58	-0.56	-0.69	-0.19	-0.24	-0.01	0.52	-0.16	-0.39	0.3	-0.25	-0.31

These results indicate that while some correlations exist among the variables, many were weak, helping to avoid issues of collinearity.

Hypotheses Testing

To examine the null hypotheses, which indicate that the structural covariance matrix is equivalent to the empirical covariance matrix, SEM with Maximum Likelihood estimation (MLE) was conducted. The SEM configured for the present study, based on data from 349 undergraduate student participants, is shown in Figure 3. This model investigated the hypothesis that self-efficacy predicts academic motivation. The model specified a direct path from self-efficacy to academic motivation.

The latent variable of academic motivation was indicated by seven subscales of the Academic Motivation Scale (AMS). The predictor variable represented self-efficacy, indicated by two subscales—control of learning beliefs (SEC) and self-efficacy of learning and performance (SELP).

Fit indices demonstrated a statistically significant Chi-square with a value of 271.569, $df = 40$, $p = .000$, indicating that this hypothesized model did not fit the data because the Chi-square value was very large. Additionally, $GFI = .875$, $NFI = .874$, and $CFI = .889$ indicated a poor fit, as all values were less than 0.9. Most importantly, $RMSEA (.129)$ and $SRMR (.090)$ were greater than the optimal fit of .08 or less. Therefore, the dataset did not confirm the hypothesized model. Adjustments were made to the model after examining modification indices, estimated parameters, regression weights, and standardized regression weights.

The Adjusted Model

An adjusted model was developed considering modification indices and theoretical underpinnings. Significant correlations were observed between error terms of the same scale items. A significant loading of SEC and AMOT was noted, and the variance error for SELP was fixed to 0. An error term correlation between SEC and AMOT was included to account for shared variance not explained by the model. The adjusted SEM that fit the data better emerged (see Figure 4).

A Chi-square value of 187.547, $df = 37$, $p = .000$ was obtained. Given the sensitivity of Chi-square to sample size and model complexity, other fit indices were also considered (Schermelleh-Engel et al., 2003; Vandenberg, 2006). The GFI improved to .918, the NFI improved to .913, and the CFI improved to .928. RMSEA and SRMR dropped to .108 and .072, respectively, both values being well within an acceptable range. Therefore, this last model adequately fit the data, accounting for approximately 41% ($R^2 = .407$) of the variance in academic motivation.

In terms of the measurement model, all pattern coefficients linking the measured variables to their latent variables were statistically significant. The adjusted model revealed a significant path between self-

efficacy (SEC) and academic motivation, indicating that self-efficacy predicts academic motivation.

Limitations

The findings were limited due to the use of a convenience sampling method, affecting generalizability.

There was a gender imbalance, with 80.2% of participants being female. Other psychological factors that may influence academic motivation were not included in this study.

The reliance on self-report questionnaires and Likert scales may impact the interpretation of findings.

The results are specific to the sample of this study, and different results may arise in other regions or academic years.

1. The self-report questionnaires used imply a response bias because participants may have faked their responses to look good or to respond according to their socially desirable norm.
2. The Likert scales may have been subject to participants misinterpreting the meaning of the scale points. Thus, some may have responded around the midpoint areas of the scale, whereas others may have responded on the extreme edge points of the scale.
3. The convenience sampling method used in this study may have limited the generalization of the findings to similar populations.

Recommendations for Educational Practice

1. University curriculum committees should consider the role of self-efficacy in students' academic motivation. Curricula should facilitate self-reflection and include explicit metacognitive strategies, such as planning and assessing performance to enhance self-efficacy.
2. Faculty should clearly articulate course objectives and activities to enhance academic motivation. Developing organized syllabi with timelines for readings, assignments, and tests will help students plan and monitor their progress.
3. Create an autonomy-supportive environment in classrooms by providing constructive feedback, acknowledging students' perspectives, and allowing for decision-making. This will enhance students' sense of autonomy and self-efficacy.
4. Construct campus environments with events, workshops, and activities aimed at improving students' self-efficacy. Encourage engagement in clubs and community service to foster a sense of relatedness and enhance motivation.

Suggestions for Future Research

1. Investigate the impacts of additional psychological variables, such as students' attitudes toward higher education and attribution styles, on academic motivation.
2. Examine social factors—like learning environments, teaching methods, and peer relationships—that may affect academic motivation.
3. Conduct further studies to explore the predictive relationship between self-efficacy and academic motivation.
4. Replicate the study using randomized sampling methods to validate the hypothesized model.
5. Include additional subscales from the MSLQ to measure self-efficacy and related constructs.
6. Employ mixed-methods research designs to gain a comprehensive understanding of academic motivation.
7. Examine the hypothesized model specifically among male undergraduate students to support the generalizability of findings.
8. Conduct research among diverse ethnic groups to understand how these variables correlate across different cultural backgrounds.

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Dr. Fatimah Aljuaid

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