



First-year Students' Self-regulation Process through Self-report at a Minority Serving Institution (MSI)

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Authors' contributions

This work was carried out in collaboration among all authors. Author BK designed the study, managed the analyses of the study, wrote the protocol and wrote the first draft of the manuscript. Author LH performed the statistical analysis and Author CJ managed the research work and assisted with the design of the study. All authors read and approved the final manuscript.

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ABSTRACT

First-year college students face a difficult task of self-regulating in a formal academic environment, especially those lacking the fundamental skills to do so. The purpose of this study is to assess the self-regulated processes of first-year students at a Minority Serving Institution, or MSI. Participants consisted of 822 freshmen (519 females; 303 males) enrolled in an orientation course at a Minority Serving Institution in the United States. Collection of data included using the Self-Regulation Questionnaire designed to assess self-regulatory processes through self-report. The questionnaire was administered through Taskstream system and analyzed through version SPSS 23 for continued analysis of data. The data were analyzed using a regression analysis to determine whether correlations existed within or between variables. The self-regulation score was calculated by totaling all the items.

Analysis of data from this study indicated that females ($r = -.12, p < .001$) and transfer students ($r = .14, p < .001$) had significantly higher SRQ scores. The data also revealed that for self-regulation, more transfer students (41.5%) placed in the high (intact) category than did non-transfer students (24.7%). A stepwise regression model predicting the SRQ total score were based on six candidate demographic variables. The final two variable model was significant ($p = .001$) and accounted for

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3.2% of the variance in the SRQ total score. Specifically, SRQ total scores were higher for transfer students ($\beta = .13$, $p = .001$) and for females ($\beta = -.11$, $p = .001$). Among 822 participants, 306 fell into the low self-regulation range; 293 were in the mid-level self-regulation range; and 223 ranked in the high self-regulation range. Results stemming from the dataset revealed that thirty-seven percent of first-year students have low self-regulatory scores. Nearly 50% of the male students were less favorable to self-regulate than female students during their experience in post-secondary education.

Keywords: Good student; minority serving institution (MSI); self-regulation; self-regulation questionnaire (SRQ); meta-cognition; strategic actions; motivation; self-regulatory awareness plan (SRAP).

1. INTRODUCTION

Self-regulation is defined as the ability to control and regulate one's impulses to set and reach long term goals [1]. First-year college students face a difficult task of self-regulating in a formal academic environment, especially those lacking the fundamental skills to do so. Although teaching self-regulated learning is a skillset college and university professors are not obligated to teach students in higher education, it would be helpful for students in dire need to undergo self-regulatory therapy. The Gestalt theory is a self-regulatory therapy founded by Frederick (Fritz) and Laura Perls in the 1940s. One of the goals of this therapy is to enable individuals to become "aware" of what they are doing, how they are doing it, and how they can change themselves [2].

Zimmerman's [1] case study provides an ideal illustration of a student's inability to self-regulate. In this study, a high-school student, "Tracey," listens to music on MTV as she prepares for an upcoming midterm mathematics examination. The study revealed that "Tracey has not set any study goals for herself--instead she simply tells herself to do as well as she can on the test. She uses no specific learning strategies for condensing and memorizing important material and does not plan out her study time, so she ends up cramming for a few hours before the test." Like many students who possess "only vague self-evaluative standards," she "cannot gauge her academic preparation accurately." Rather, she "attributes her learning difficulties to an inherent lack of mathematical ability and is very defensive about her poor study methods." The study showed further that because "Tracey" fears "looking stupid," she fails to seek assistance and does not look for library resources independently because, in her words, she "already has too much to learn." Moreover, according to the study, "Tracey" exhibits a

number of self-defeating attitudes: She "finds studying to be anxiety-provoking, has little self-confidence in achieving success, and sees little intrinsic value in acquiring mathematical skills." (p. 64).

The Gestalt theory suggests that Tracy, and students like her, can benefit from an action plan consisting of an awareness of one's inability to self-regulate, which is the initial step in a self-regulation plan. For this research study, awareness has been defined as the ability to recognize the state of a condition or identify a problem that is based on information or experiences that presently exists. Therefore, a Self-Regulation Questionnaire (SRQ) was used as the instrument to determine first-year students' self-regulation processes through self-report at a Minority Serving Institution (MSI). Brown, Miller, & Lawendowski [3] developed The Self-Regulation Questionnaire (SRQ) as a first attempt to assess self-regulatory processes through self-report.

No current publication has presented research on assessing first-year students' abilities to self-regulate at a Minority Serving Institution; neither has research fully identified determining factors of students' abilities or inability to self-regulate. The purpose of this manuscript is to assess self-regulatory processes of first-year college students at a Minority Serving Institution (MSI).

This study is significant because as mentioned earlier, first-year college students confront the difficult task of self-regulating in a formal academic environment, especially those lacking the fundamental skills to do so. Therefore, the purpose of this quantitative correlational study was to measure the level of self-regulatory skills in a sample of first-year college students enrolled at a Minority Serving Institution as measured by the SRQ total score; and to determine if their self-regulatory skill levels were related to their demographic characteristics.

1.1 Research Questions

What is the level of self-regulatory skill in a sample of first-year college students enrolled at a Minority Serving Institution as measured by the SRQ total score?

Are those self-regulatory skill levels related to the student's demographic characteristics?

2. METHODOLOGY

2.1 Participants

Study participants were 822 students (519 females and 303 males) enrolled in an introductory freshman orientation course at an MSI in the United States. The MSI in this study is a comprehensive urban public university. Sample representation based on race was coded as Black or African American ($n = 742$), Hispanic or Latino ($n = 50$), Whites or Caucasians ($n = 19$), American Indians ($n = 3$), Alaskan Natives ($n = 1$), Asian ($n = 3$), and Pacific Islanders ($n = 8$). These 822 students included transfer, summer-bridge, and first generation students'. A transfer student is someone who has earned credits for study from another institution. First-generation student, according to the United States Department of Education [4], is someone whose parents' highest level of education is a high-school diploma or less (p. 9). Finally, a summer bridge student could be defined as an individual who participates in an orientation program designed to provide college freshmen with academic support while acclimating them to university life.

Forty-six percent of the students were first-generation college students, and 18.5% attended the Summer Bridge Program. The number of females (63.1%) in the sample exceeded the number of males (36.9%). Fourteen percent were transfer students. The most common racial or ethnic background was Black/African-American (90.3%). Family income ranged from less than \$10,000 per year (16.3%) to \$100,000 or more per year (8.9%) with the median family income of $Mdn = \$34,500$ (see Table 1).

2.2 Procedures

The Self-Regulation Questionnaire (SRQ) was used to assess students' abilities to develop, implement, and flexibly maintain planned behavior to achieve specific goals. Brown, Miller, & Lawendowski [4] developed the Self-Regulation Questionnaire (SRQ) as a first

attempt to assess self-regulatory processes through self-report. Building on the foundational work of Frederick Kanfer [5], Miller and Brown formulated a seven-step model of self-regulation [6,7]. In this model, behavioral self-regulation may falter because of failure or deficits at any of these seven steps. The seven rationally-derived subscales are the following: (1) Receiving relevant information, (2) Evaluating the information and comparing it to norms, (3) Triggering change, (4) Searching for options, (5) Formulating a plan, (6) Implementing the plan, and (7) Assessing the plan's effectiveness of first and second subscales. The recommended use of the instrument in this study was adhered to, thus avoiding a separate interpretation of the subscales.

The Institutional Research Board (IRB) approved the study to ensure ethical treatment of subjects. Adequate provisions were monitored to ensure the safety of the subjects and maintained the privacy and confidentiality of the data. As a result, there were no ethical implications culminating from the study.

2.3 Research Design

Participants responded to 63 questions designed on a 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = uncertain or unsure, 4 = agree and 5 = strongly agree. The questionnaire was administered through Taskstream and transposed to an Excel data file for initial cleaning and recoding. The data were analyzed using a regression analysis to determine whether correlations existed within or between variables. The self-regulation score was calculated by totaling all the items. Then, ranges of low, medium, and high were established using the developers' guidelines. Data were imported into SPSS version 23 for analysis.

3. RESULTS AND DISCUSSION

Results of analyses are presented in two sections: the first reporting descriptive statistics and the second presenting a correlation analysis of demographic variables among the student participants. A total of 822 participants completed the survey (No missing data was recorded).

Of the 822 participants, 306 placed in the low self-regulation range; 293 in the mid-level self-regulation range; and 223 in the high self-regulation range (See Table 2).

Categories developed by Brown, Miller, & Lawendowski [4] were used. The results show that 27% of the sample had a high (intact) self-regulatory score based on the established criteria, while 37.2% of the sample had a low (impaired) self-regulatory score (See Table 2). The table below provides an explanation of the distribution of percentiles for the self-regulatory score. Overall, the mean SRQ score of the participants was $M = 223.29$ ($SD = 23.42$).

To determine whether a student's self-regulatory skill levels were related to the student's demographic characteristics, a series of chi-square tests were performed to compare the student's SRQ category with each of six demographic variables. The association between gender and SRQ category was found to be significant ($V = .15$, $p = .001$). Table 4 quantifies that association.

An analysis of Table 4 indicated that in terms of self-regulation, more males (46.5%) than females (31.8%) placed in the low (impaired) category. By contrast, 39.1% of the women and 29.7% of the men were represented in the intermediate (moderate) category. The association between transfer status and SRQ category was also significant ($V = .13$, $p = .001$).

Table 5 displays the Pearson correlations between each of the six demographic variables and the SRQ total score. Two of the six correlations were significant. Specifically, females ($r = -.12$, $p < .001$) and transfer students ($r = .14$, $p < .001$) had significantly higher SRQ scores. The data revealed that for self-regulation, more transfer students (41.5%) placed in the high (intact) category than did non-transfer students (24.7%). Also, a stepwise regression model predicting the SRQ total score were based on six candidate demographic variables (See Table 6). The final two variable model was significant ($p = .001$) and accounted for 3.2% of the variance in the SRQ total score. Specifically, SRQ total scores were higher for transfer students ($\beta = .13$, $p = .001$) and for females ($\beta = -.11$, $p = .001$).

The purpose of this study was to measure the level of self-regulatory skills in a sample of first-year college students as measured by the SRQ total score and to determine if their self-regulatory skill levels were related to their demographic characteristics. The findings revealed that there is an equal distribution among first-year college students at an MSI to self-regulate in ranges low, medium, and high. Of

the 822 participants, 306 placed in the low self-regulation range; 293 in the mid-level self-regulation range; and 223 in the high self-regulation range. Implication for future studies indicate a need to focus on the sample population which represents those students whose scores fell in the low self-regulatory range.

The researchers, therefore, recommend a comprehensive needs assessment to determine the self-regulation skill levels among incoming freshmen (pre- and post- freshman year). Implementing a needs assessment will guide university administrators and professors in designing effective self-regulatory strategies appropriate for their institution's demographics. Equally important, a needs assessment will crystallize the scope of the self-regulation issue among entering freshmen and guide the creation of innovations for desirable regulatory behaviors among them. Undoubtedly, an innovative model would include a self-regulatory awareness plan that will enhance student study skill habits and enrich the university-learning experience [8,9]. Such a plan would enable students to complete specific tasks, evaluate their performance, and reflect on their progress. The need for a specially tailored self-regulatory model for Minority Serving Institutions is supported by the previous research of Zumbrunn, Tadlock & Roberts [10], which recommended continuous research about self-regulation among students based on evidence that only a few students are fully or sufficiently self-regulated.

Bembentutty's study [11] found that students who are unable to self-regulate are also unable to set goals and select learning strategies that are appropriate for specific tasks. Further, the study found that learners who are thoughtfully engaged and successful in completing academic tasks are motivated to do so, and, most importantly, can apply learning strategies that yield delayed gratification outcomes. The process of utilizing delayed gratification, according to Hoerger, Quirk, and Weed [12], refers to an individual's predisposition to delay instant gratification with the hope of gaining significant and long-lasting rewards. An initiative that cultivates academic awareness, informed by a recognition of the benefits of delayed gratification, can enable students to identify their academic characteristics and promote academic wellness. This innovative approach by MSI's will move minority students beyond the traditional norms toward efficacious solutions to complex learning challenges.

Table 1. Frequency counts for demographic variables

Variable	Category	n	%
First generation college student	No	448	54.5
	Yes	374	45.5
Summer Bride Program	No	670	81.5
	Yes	152	18.5
Gender	Female	519	63.1
	Male	303	36.9
Transfer Student	No	704	85.6
	Yes	118	14.4
Race/Ethnicity	Asian	3	0.4
	Black or African American	742	90.3
	Other Pacific Islander	8	1.0
	White/Caucasian	19	2.3
	Hispanic or Latino	50	6.1
Family Income ^a	Less than \$10,000	134	16.3
	\$10,000 to \$19,000	80	9.7
	\$20,000 to \$29,000	118	14.4
	\$30,000 to \$39,000	88	10.7
	\$40,000 to \$49,000	80	9.7
	\$50,000 to \$59,000	85	10.3
	\$60,000 to \$69,000	50	7.1
	\$70,000 to \$79,000	46	5.6
	\$80,000 to \$89,000	43	5.2
	\$90,000 to \$99,000	17	2.1
\$100,000 or More	73	8.9	

Note. N = 822

^a Income: Mdn = \$34,500.**Table 2. Frequency distribution for SRQ categories**

SRQ Category	n	%
Low (Impaired)	306	37.2
Intermediate (Moderate)	293	35.6
High (Intact)	223	27.1

Table 3. Distribution of percentiles for SRQ scores

Percentile	Score
1 st	181.00
5 th	189.00
25 th	204.00
50 th	223.00
75 th	241.00
95 th	263.00
99 th	278.77

Note. N = 822

Table 4. Chi-Square test for gender based on SRQ categories

SRQ Category	Female		Male	
	<i>n</i>	%	<i>n</i>	%
Low (Impaired)	165	31.8	141	46.5
Intermediate (Moderate)	203	39.1	90	29.7
High (Intact)	151	29.1	72	23.8

Note. $\chi^2 (2, N = 822) = 17.93, p = .001$. Cramer's $V = .15$.

Table 5. Pearson correlations between demographic variables and SRQ scores

Demographic Variable	Score
First generation ^a	.00
Summer Bridge Program ^a	.01
Gender ^b	-.12
Transfer Student ^a	.14
African-American ^a	.03
Family Income	.06

* $p < .05$. ** $p < .01$. *** $p < .005$. **** $p < .001$.; ^a Coding: 0 = No 1 = Yes.; ^b Gender: 1 = Female 2 = Male.
Note. $N = 822$.

Table 6. Stepwise regression model of SRQ score on selected variables

Variable	B	SE	β	p
Intercept	3.64	0.04		.001
Transfer Student ^a	0.14	0.04	.13	.001
Gender ^b	-0.09	0.03	-.11	.001

Note. Final Model (2, 819) = 13.40, $p = .001$. $R^2 = .032$. Candidate variables = 6.

^a Transfer Student: 0 = No 1 = Yes.

^b Gender: 1 = Female 2 = Male.

To encourage an understanding of self-awareness among their students, Brigham Young University's Center for Student Success designed an Academic Wellness Inventory [13] to enable students to assess their personal academic wellness. The inventory recommends that students self-evaluate themselves across nine areas based on their college experiences. These areas of experiences are time management, social activities, class preparation, study habits, reading and writing skills, test preparation, test-taking skills, feelings about learning, and values and goals.

The Self-Regulatory Awareness Plan (SRAP) for incoming freshmen at Minority Serving Institutions should include strategic managerial procedures that monitors cognitive and behavioral changes, as well as, measure growth in the student(s) ability to self-reflect on their academic potential, and in long-term user in a sea-change in student achievement. The SRAP would be guided by three parts: meta-cognition (thinking about one's thinking), strategic actions (planning, monitoring, and evaluating personal progress against a standard), and an intrinsic motivation to learn [1]. It will also look closely at

designing measureable outcomes that evaluates the improvement of academic performance, social cognition; increasing levels of motivation, increased levels of self-confidence, self-efficacy and moral cognition, moral and behavioral conduct, and increasing healthier mental learning environments with lower levels of psychopathology (e.g., depression). In fact, self-regulated students achieve and maintain academic wellness by eliminating adverse behaviors and cognitive impediments and by increasing strategies that promote perseverance and performance [14,15]. Thus, integrating innovative academic initiatives for success, such as self-regulating strategies, for a diverse group of underprepared students is key to the sustainability of MSI's.

As mentioned earlier, "Tracey" exhibits the characteristics manifested in underprepared entering freshmen who are unaware of their self-regulatory deficiencies. The implementation of a self-regulation initiative (SRAP) will provide students like "Tracey" with a practical method to develop self-regulatory abilities and behaviors, establish study goals, create effective self-evaluative standards, gauge their level of

academic preparation, identify and develop intrinsic values that will increase academic grit and performance and will ensure academic and long-term success. The ultimate goal of a SRAP would be to transform underprepared students into “good” students-- those who, according to Mega, Ronconi and De Beni [16] are self-regulated.

Results of the dataset revealed that 37% of the first-year study participants had low self-regulatory scores. In addition, the data show gaps between male and female self-regulation. Minority males fall behind minority females in one of the seven self-regulatory sub-scales. Further, gender-gap percentages in the dataset widen because the regulatory skill level of first-year college males decreases by population-percent as the level of self-regulatory subscale increases. The existence of gender gaps in self-regulatory scores at various skill levels suggests a need for a qualitative investigation that supports the statistical findings.

The results from the study's dataset suggest that male students at MSI's are less likely to self-regulate than female students during their experience in post-secondary education. For this reason, the seven-dimensions-of-wellness model could serve as an innovative approach to help male students self-regulate to set and reach long-term goals. Higher education literature suggests summer bridge programs have the potential to prepare students for their first year of college and to enhance academic success [16,17,18]. Thus, program administrators should consider introducing the seven-dimensions-of-wellness model by developing mentoring initiatives tailored to the needs of individual male students to improve their general well-being. The main goal of the male mentoring initiative would be to encourage academic awareness among male students to help them develop realistic academic expectations. In sum, the initiative endeavors to assist male students in improving their academic skills, in preparing themselves psychologically for the challenge of college-level coursework, and in developing peer-to-peer camaraderie during their experience in post-secondary education.

4. CONCLUSION

Previous research suggests that self-regulation should begin during the early childhood stage of growth and become an ongoing process throughout adolescence and adulthood. The

underlying assumption is that external influences related to the acquisition of self-regulatory skills at an early stage have an impact on student proficiency in setting academic goals and completing tasks--behaviors that can positively impact academic performance in post-secondary educational experiences.

Evaluating students' ability to self-regulate highlights the fact that many students are unable to self-regulate and offers a means to reduce the number of freshmen students unable to set and meet short-term and long-term academic goals. Indeed, such evaluations and concomitant measures to remediate may increase the ability of students to use goals as a starting point to select and change learning strategies and behaviors that will facilitate their successful completion of academic tasks and afford them opportunities to travel new thinking pathways. As reported by the National Wellness Institute (NWI) [19], students' abilities to self-regulate and to determine impacts of their academic successes are pre-evaluative indicators of cultivating academic wellness which has been described as a conscious and *aware* state of a self-directed and evolving process of achieving one's full potential.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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