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SELF-EFFICACY, ACHIEVEMENT GOALS, AND ACHIEVEMENT: ACADEMIC HELP-SEEKING TENDENCIES AS MEDIATORS

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Abstract

This study investigated how students' academic help-seeking tendencies mediate motivation and subsequent achievement. A large sample of Singapore Secondary 2 students took a survey on math self-efficacy, achievement goals (mastery and performance), and help-seeking tendencies (adaptive, expedient, and avoidant), followed by a math achievement test about 3 months later. We conducted structural equation modeling and found that after controlling for gender and previous math achievement, students' help-seeking tendencies fully mediated the predictive relationship from math self-efficacy and achievement goals to subsequent math achievement. More specifically, math self-efficacy was associated positively with adaptive help seeking, mastery goals were associated positively with adaptive help seeking and negatively with

avoidant help seeking, and performance goals were associated negatively with adaptive help seeking and positively with both expedient and avoidant help seeking. Adaptive help seeking in turn positively and expedient help seeking negatively predicted subsequent math achievement. Through the mediation of help-seeking tendencies, math self-efficacy and mastery goals positively and performance goals negatively predicted subsequent math achievement. The importance of help seeking in learning and implications for classroom teaching are discussed.

Keywords

Helpseeking, Self-efficacy, Achievement goals, Achievement

1. Introduction

Help seeking is a strategy of self-regulation that plays an important role in students' learning (Karabenick, 2011; Ryan, Hicks, & Midgley, 1997; Zusho & Barnett, 2011). At some point in learning, students will encounter difficulty or challenge in their study and need assistance from others. However, research has shown that many students do not actively seek necessary help with their academic study (Karabenick, 2003; Ryan, Patrick, & Shim, 2005). Early research that focused on understanding why some individuals do not seek help suggested that seeking help could be regarded by students as a public disclosure of low ability or failure. For example, perceived threat to self-worth was found to be a primary reason for avoiding help seeking (Karabenick & Knapp, 1991; Newman & Goldin, 1990). More recent research has identified that when students do seek help, they may have different reasons or goals. More specifically, distinction has been made between adaptive (or instrumental) help seeking—seeking help to further understanding and promote independent learning in the future, and expedient (or executive) help seeking—seeking help to avoid work or expedite task completion (Karabenick, 2003, 2004; Ryan & Shim, 2012; Zusho & Barnett, 2011).

Students' help-seeking tendencies have also been related to their motivational beliefs, primarily self-efficacy and achievement goals. In general, research has found that students with higher self-efficacy were more likely to seek adaptive help seeking. For example, junior high school students' perceived math competence was positively associated with adaptive help seeking and negatively with avoidance of help seeking in math (Ryan & Pintrich, 1997). A longitudinal study reported that primary school students' sense of competence predicted the

increase of help seeking over time (Marchand & Skinner, 2007). A study with early adolescents found that after controlling for previous achievement, students' academic self-efficacy predicted positively adaptive help seeking and negatively avoidant help seeking (Ryan & Shin, 2011). In college chemistry classes, students' self-efficacy was found to be associated positively with adaptive help seeking, but not with perceived threat of help seeking, help-seeking avoidance, or expedient help seeking (Karabenick, 2003).

Achievement goal theory has been an important framework for understanding help seeking behavior. In this study, we focused on two primary goal orientations, mastery and performance (Ames, 1992; Dweck & Leggett, 1988). The aim of students pursuing mastery goals is to develop competence through mastering new knowledge and skills, whereas students pursue performance goals to outperform or demonstrate competence relative to others. Achievement goals create a framework for how individuals approach, experience, and react to achievement activities, including help-seeking behavior. Pursuing mastery goals may orient students to seek more adaptive help for increasing learning. In contrast, pursuing performance goals may orient students to perceive help seeking as a short cut for achieving high performance or a public admission of low competence, which in turn may lead to the tendency to avoid seeking help. Research findings have generally supported the theoretical link between achievement goals and help-seeking tendencies. For example, fifth graders' task-focused goals (mastery goals) were associated negatively and relative ability goals (performance goals) were associated positively with both perceived threat associated with help seeking and avoidance of help seeking (Ryan, et al., 1997). A study with college students found that mastery goals were associated positively with adaptive help seeking, but not with perceived threat of help seeking, help-seeking avoidance, or expedient help seeking, while performance goals were positively associated with perceived threat of help seeking, help-seeking avoidance, and expedient help seeking (Karabenick, 2003). A recent study reported that in both English and math, high school girls' mastery goals were associated positively with help-seeking approach, while performance goals were associated positively with help-seeking avoidance (Zusho & Barnett, 2011).

Research on help seeking has found that achievement is both an important predictor and outcome of help-seeking tendencies. For example, fifth graders' previous achievement predicted negatively perceived threat associated with help seeking and avoidance of help seeking (Ryan, et

al., 1997). In college classes, adaptive help seeking was associated positively with chemistry achievement, while perceived threat of help seeking, help-seeking avoidance, and expedient help seeking were associated negatively with chemistry achievement (Karabenick, 2003). More recently, a longitudinal study reported that prior achievement of early adolescents predicted positively adaptive help seeking and negatively avoidant help seeking, which in turn predicted subsequent achievement positively and negatively, respectively, after controlling for previous achievement (Ryan & Shin, 2011). However, in most of these studies, the relationship to achievement was examined separately for different help-seeking tendencies. There is little evidence on the joint prediction of students' achievement by different types of help-seeking tendencies.

Most research on help seeking has been carried out in Western cultures that value individualism. Questions have been raised regarding cultural differences in help seeking as a social interactive self-regulated learning strategy (Zusho & Barnett, 2011). In this study, we expand research on help seeking to Singapore, an Asian culture where both traditional collectivism and modern individualism coexist (Luo, Hogan, & Paris, 2011). We aimed to examine whether and how three types of help-seeking tendencies (adaptive, expedient, and avoidant) jointly mediate the relationship between motivation (self-efficacy and achievement goals) and achievement. Based on the analysis above, we hypothesized that math self-efficacy and mastery goals would be associated positively with adaptive help seeking, but negatively with expedient and avoidant help seeking. We predicted that adaptive help seeking would in turn predict subsequent math achievement positively, and expedient and avoidant help seeking would predict subsequent math achievement negatively. Gender difference has been reported in math self-efficacy, achievement goals and help-seeking tendencies. For instance, male students tended to show higher performance goals, help-seeking avoidance, and expedient help seeking (e.g., Ryan, et al., 1997; Ryan, et al., 2005; Ryan & Shim, 2012). Therefore, we would control for gender and previous achievement to examine the mediational role of help-seeking tendencies between motivation and subsequent achievement.

2. Method

2.1 Participants and Procedure

A sample of 2181 Singapore Secondary 2 students from 100 classes (16 schools)

participated in this study. They were 13.75 ($SD = 0.46$) years old on average, including 1407 girls (64.5%). Ethnically, they were composed of 1526 Chinese (70.0%), 377 Malay (17.3%), 142 Indian (6.5%), and 136 others (6.2%). As part of a larger project on students' self-regulated learning, they first took an online survey that measured math self-efficacy, achievement goals, and help-seeking tendencies in learning math. After about 3 months, they took an online math assessment. All the online survey items were rated on a 1-5 Likert scale (1= strongly disagree; 5 = strongly agree).

2.2 Measures

2.2.1 Math Self-Efficacy

Math self-efficacy was measured as students' confidence in doing their math work well. Four items adapted from the Patterns for Adaptive Learning Scales (Midgley et al., 2000) were used to measure math self-efficacy, such as "I can do almost all the work in my math class," and "Even if the work in math is hard, I can learn it." The internal consistency reliability was .84.

2.2.2 Achievement Goals

Mastery and performance approach goals were measured by adapting items from the Achievement Goal Questionnaire (Elliot, Murayama, & Pekrun, 2011). Students were asked to rate how well each item matched the goals they wanted to achieve in their math study. Three items tapped mastery goals, including, "To completely master the material presented in this class," "To understand the content of this course as thoroughly as possible," and "To learn as much as possible of what is taught in this class." The three items tapping performance goals were, "To do well relative to other students," "To outperform many other students," and "To perform better than other students." The internal consistency reliability was .80 and .82, respectively, for mastery and performance goals.

2.2.3 Help-Seeking Tendencies

Items adapted from existing measures (Karabenick, 2003; Zusho & Barnett, 2011) were used to measure three types of help-seeking tendencies in this study. Adaptive help seeking was measured by 4 items, such as "I would ask for help to learn how to solve math problems so that I could then find answers by myself," and "If I could not solve a math problem by myself, getting

help would be one of the first things I would do in order to understand how to do it.” Expedient help seeking was measured by 3 items, such as “I would ask somebody for help in math to succeed without having to work hard,” and “If I encountered difficult questions in math, I would ask for help to save my own effort.” Avoidant help seeking was measured by 3 items, such as “I would avoid asking help even if I had problems in learning math,” and “I would not want anyone to find out that I need help in math, even if the work were too hard to do on my own.” Internal consistency reliability was .79, .74, and .76, respectively, for adaptive, expedient, and avoidant help seeking.

2.2.4 Math Achievement

A short online math test with 15 multiple-choice items was used to assess student subsequent math achievement near the end of their Secondary 2 year. The items were adopted from a longer math achievement test designed and validated in a previous project to measure students’ math ability at the very beginning of Secondary 3. In addition, previous math achievement was measured by asking students to report their math scores in Primary School Leaving Examination. As evidence of convergent validity for the 15-item math test, the correlation between the two math achievement scores was .61.

2.3 Statistical Analysis

Before testing the hypothesized mediation model, we first conducted some preliminary analyses with the raw composite scores to explore the data, including t tests for gender differences, zero-order correlations and intra-class correlations (ICC). We then did confirmatory factor analysis (CFA) with the 7 continuous variables: math self-efficacy, mastery and performance goals, adaptive, expedient, and avoidant help-seeking tendencies, and subsequent math achievement. For subsequent math achievement, items were grouped according to the four content domains: number, algebra, geometry & measurement, and statistics & probability. With the measurement model supported, we then moved on to examine the hypothesized mediation model. Due to the large sample size ($n = 2181$), we used $p < .01$ as the criterion of significance.

3. Results

As shown in Table 1, boys were higher than girls in math self-efficacy, performance goals, expedient help seeking, and avoidant help seeking. Math self-efficacy was correlated

positively with adaptive help seeking and both previous and subsequent math achievement. Mastery goals were correlated positively with adaptive help seeking and both previous and subsequent achievement, and negatively with avoidant help seeking. Performance goals were correlated positively with all the three types of help-seeking tendencies. Adaptive help seeking had a modest positive correlation with expedient help seeking and a small negative correlation with avoidant help seeking. Expedient and avoidant help-seeking tendencies were positively correlated with each other, and both of them were negatively correlated with previous and subsequent math achievement. The values of ICCs are shown in Table 1. The two achievement scores had over 50% of variance due to variation at class level, which is related to the streaming practice in Singapore secondary schools. Expedient and avoidant help seeking tendencies had 8% and 13% of their variance at class level, respectively. For adaptive help seeking and the three motivational variables, less than 5% of the variance was at class level. Therefore, in the following CFA and mediational analysis, we set Type = complex in Mplus 7.3 to get more accurate standard errors by taking into account the hierarchical nature of the data (Kruell & MacKinnon, 2001).

Table 1: *Descriptive Statistics, Gender Differences, Correlations, and ICCs*

Variables	Total <i>M (SD)</i>	Boy <i>M (SD)</i>	Girl <i>M (SD)</i>	2)	3)	4)	5)	6)	7)	8)	ICC
1) Previous achievement	4.85 (1.35)	4.94 (1.38)	4.80(1.33)	.12*	.09*	.02	.01	-.17*	-.19*	.61*	.55
2) Math self-efficacy	3.50(0.81)	3.65(0.80)	3.42(0.80)*	--	.39*	.24*	.35*	.01	-.03	.14*	.03
3) Mastery goals	3.88(0.81)	3.91(0.82)	3.87(0.81)		--	.45*	.38*	.01	-.11*	.13*	.04
4) Performance goals	3.26(1.02)	3.46(0.99)	3.15(1.02)*			--	.14*	.10*	.14*	-.00	.04
5) Adaptive help seeking	3.55(0.73)	3.56(0.76)	3.54(0.71)				--	.31*	-.07*	.04	.02
6) Expedient help seeking	2.95(0.85)	3.13(0.89)	2.85(0.81)*					--	.47*	-.25*	.08
7) Avoidant help seeking	2.56(0.88)	2.81(0.93)	2.43(0.83)*						--	-.27*	.13
8) Subsequent achievement	8.77(3.51)	8.55(3.52)	8.89(3.50)							--	.61

Note. * $p < .01$.



In CFA, we found that the measurement model had a good fit: $\chi^2 (231) = 752.91, p = .00$; Comparative Fit Index (CFI) = .96; Tucker-Lewis index (TLI) = .96; Root Mean Square Error of Approximation (RMSEA) = .032; Standardized Root Mean Square Residual (SRMR) = .034. To examine whether help-seeking tendencies fully mediate the relationship between motivational beliefs and subsequent achievement, we first tested a more complex mediation model that included the remote direct effects from motivational variables to subsequent achievement. We also controlled for the two covariates, gender and previous math achievement. The model showed a good fit: $\chi^2 (271) = 1101.77, p = .00$; CFI = .950; TLI = .940; RMSEA = .037; SRMR = .044. In this model, we found that all the three remote direct paths from motivation to achievement were not significant, and thus they were removed. The obtained final model also had a good fit: $\chi^2 (274) = 1104.96, p = .00$; CFI = .950; TLI = .941; RMSEA = .037; SRMR = .045.

The standardized path coefficients in the final mediation model are shown in Figure 1. Math self-efficacy was associated positively with adaptive help seeking; mastery goals were associated positively with adaptive help seeking and negatively with avoidant help seeking; performance goals were associated negatively with adaptive help seeking and positively with both expedient and avoidant help seeking. Adaptive help seeking in turn positively predicted subsequent math achievement and expedient help seeking in turn negatively predicted subsequent math achievement. In addition, boys tended to report higher expedient and avoidant help-seeking tendencies than girls. Previous math achievement negatively predicted both expedient and avoidant help-seeking tendencies and also positively predicted subsequent math achievement.

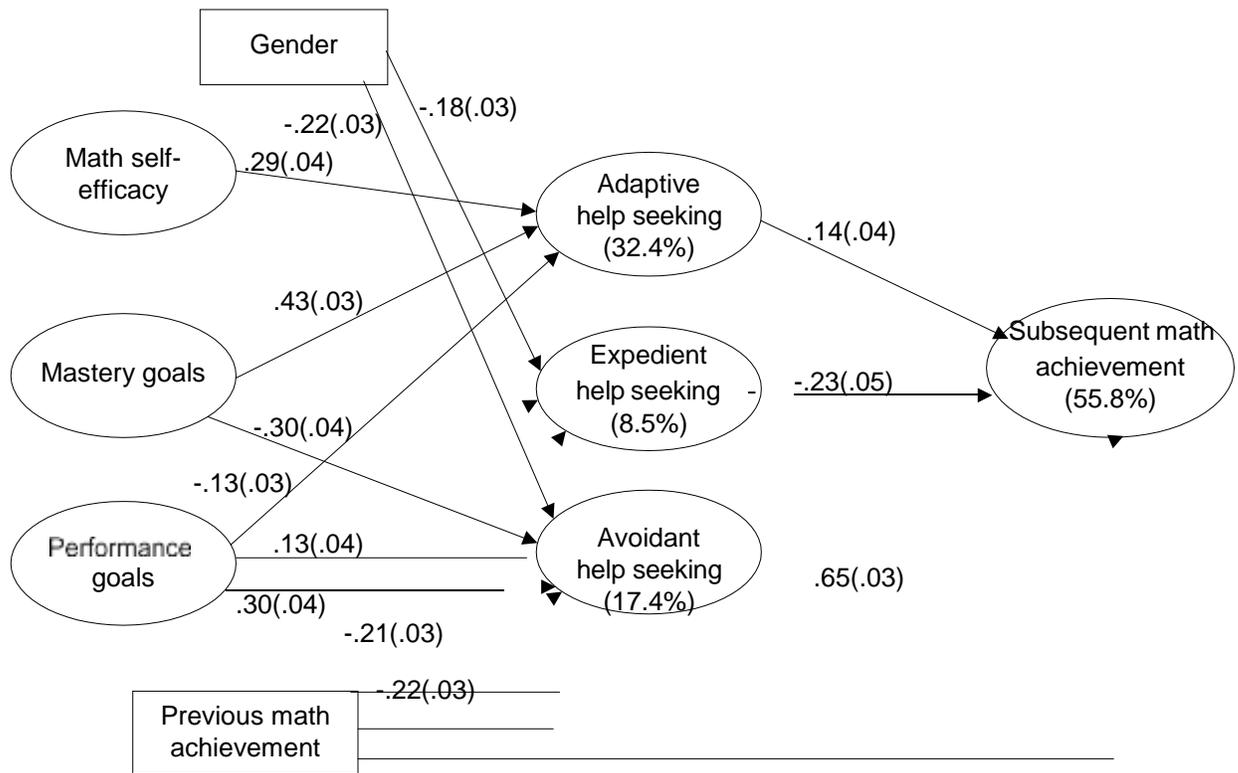


Figure 1: The mediation model of help-seeking tendencies

Note. Only significant paths are shown in the figure. Percentage variances explained are shown under each mediator and outcome variable. Gender: 0 = male, 1= female.

The total indirect and total effects from motivation, previous math achievement, and gender to subsequent math achievement are shown in Table 2. Through the mediation of help-seeking tendencies, math self-efficacy and mastery goals predicted positively subsequent math achievement, and performance goals predicted negatively subsequent math achievement. Previous math achievement predicted positively subsequent math achievement both directly and indirectly through help-seeking tendencies. In addition, after controlling for previous achievement and motivation variables, gender also predicted subsequent math achievement, girls achieving higher than boys.



Table 2: Total Indirect Effects and Total Effects on Subsequent Math Achievement

Variables	Total indirect effects	Total effects
Math self-efficacy	.04 (.01)*	.04 (.01)*
Mastery goals	.09 (.01)*	.09 (.01)*
Performance goals	-.06 (.01)*	-.06 (.01)*
Gender	.06 (.01)*	.09 (.03)*
Previous math achievement	.05 (.01)*	.70 (.03)*

Note. * $p < .01$

4. Discussion and Conclusion

In this study, we found that help-seeking tendencies fully mediated the relationship between motivational beliefs and subsequent achievement, supporting the important role of help seeking in student learning. Consistent with previous studies (Karabenick, 2003; Ryan & Pintrich, 1997; Ryan & Shin, 2011), students with higher self-efficacy and endorsing higher mastery goals were more likely to seek adaptive help; students endorsing higher mastery goals were also less likely to avoid seeking help when needed; students endorsing high performance goals tended to avoid seeking help or seek help for avoiding hard work. The possible explanation is that when students are confident in their ability and want to master new skills, they tend to see help seeking as a way to enhance their learning, rather than a threat to their self-worth. Therefore, they tend to seek adaptive help to improve understanding and learning (e.g., asking for clarification and hints). However, when students pursue performance goals, they are concerned with interpersonal comparison of ability, and thus they might consider help seeking as a public admission of low competence or as a way to perform well without hard work. Therefore, they tend to avoid help seeking, and when they do seek help, they also aim to be able to perform without hard work (e.g., asking for answers).

Consistent with previous studies (Ryan, et al., 1997; Ryan & Shin, 2011), we also found that help seeking was associated with achievement. Previous math achievement predicted negatively expedient and avoidant help seeking, suggesting low-achieving students tend to avoid help seeking or when they do they seek maladaptive help. In addition, after controlling for each other and previous achievement, adaptive help seeking positively and expedient help seeking



negatively predicted subsequent achievement. An adaptive help-seeking action has the possibility to move a student past an obstacle to achieve increased knowledge or understanding (Ryan & Shin, 2011). Thus, with the tendency to avoid seeking help or seek expedient help, low-achieving students are placed at further disadvantage for future achievement. In addition, students pursuing performance goals are more likely to achieve lower over time due to maladaptive help-seeking tendencies, while students with high self-efficacy and pursuing mastery goals are likely to benefit from adaptive help-seeking interactions. In line with previous studies (e.g., Ryan, et al., 1997; Ryan, et al., 2005; Ryan & Shim, 2012), we also found that boys tended to avoid help seeking or ask for expedient help, even after controlling for math self-efficacy and performance goal orientations. One possible explanation is that compared with girls, boys might tend to attach less value to lengthy interpersonal exchanges in academic study, which is consistent with the finding that boys reported lower endorsement of cooperative social goals in learning (Luo, Lee, & Chong, 2015).

The findings of this study have important implications for classroom teaching. Help seeking is an important strategy of self-regulated learners. To encourage students to seek appropriate help, it is important to help students develop adaptive motivation in their learning. As suggested in this study, they need to be confident in their ability to learn well and set the goals of developing competence rather than outperforming each other. To this end, research on classroom goal emphasis suggests that it is important that classroom teaching should have a greater emphasis on mastery, rather than performance comparison (Friedel, Cortina, Turner, & Midgley, 2007, 2010; Luo, et al., 2011). In other words, through classroom practices (e.g., evaluation and recognition), teachers should communicate to students that understanding and improvement are the main purpose of learning, rather than performance comparison with each other. A goal emphasis on learning in the immediate classroom environment might be particularly important in a very competitive educational environment like Singapore, where performances in high-stakes examinations are critical for opportunities for further education and life success (Luo, Aye, Hogan, Kaur, & Chan, 2013). Furthermore, because help seeking is inherently a social interactive activity, to encourage help seeking behaviors, it is also crucial to make students, especially low-achieving students, perceive that teacher support is available and they have good relationship with teachers (Ryan, et al., 2005; Ryan & Shim, 2012).



This study has some limitations which suggest directions for future study. First, we only focused on help-seeking tendencies in general and did not differentiate different sources of help seeking, such as teachers and peers. It is possible that adaptive help seeking from teachers would be more important to subsequent achievement than adaptive help seeking from peers (Ryan & Shim, 2012). Second, we only examined two primary types of achievement goals, mastery and performance goals, both with an approach nature. However, the approach and avoidance distinction has been made for both mastery and performance goals (Elliot & McGregor, 2001). Based on previous research findings (Karabenick, 2004; Ryan, et al., 2005), it is possible that performance avoidance goals might be an important predictor of avoidant help seeking. Therefore, to have a more complete picture about the relations between achievement goals and help-seeking tendencies, future research needs to include both approach and avoidance types of achievement goals. In addition, this study focused on students' help-seeking tendencies in their math study. Due to domain specificity of help seeking patterns (Zusho & Barnett, 2011), future research needs to examine whether the findings of this study can be generalized to other subject domains.

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