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Author

Navarro, Joyce

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DIFFERENCE IN UNDERGRADUATE STUDENTS' ACADEMIC MOTIVATION AND CONSCIENTIOUSNESS AS A FUNCTION OF USING ONLINE GROUP MESSAGING APPS

By

Joyce Amper Navarro

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University of California, Riverside

Dr. Annie Stanfield Ditta
Department of Psychology

Dr. Richard Cardullo, Howard H Hays Jr. Chair
University Honors

Abstract

With the transition to virtual school during the COVID-19 pandemic, educators and students looked for ways to navigate the challenges of online education. One tool supporting this transition is the family of digital discussion platforms that are hosted outside of the course learning management system; for example, Discord and GroupMe. While unmonitored chat platforms have raised concern about academic dishonesty, it is possible that students created and used chats to foster community and support academic success. Indeed, prior research has demonstrated such beneficial effects of chat platforms. However, there are few studies that have considered how these platforms may be associated with undergraduates' academic motivation and conscientiousness. Higher levels of these traits have been linked to higher academic success; thus, if students who utilize these online chats show higher motivation and conscientiousness, it may have positive implications for pedagogy. To test the hypothesis that chat users would have higher levels of these traits than non-chat users, UCR undergraduates were asked to complete a survey that measured their GroupMe and/or Discord usage in a high school or college online course setting, their academic motivation, and their level of conscientiousness. Results revealed that chat users had significantly higher motivation than non-chat users, but there was no significant difference in their levels of conscientiousness. The results demonstrate that students who use such platforms may have higher academic motivation which may mean they are using the chats for beneficial purposes, though more research remains to be done.

Keywords: Discord, GroupMe, academic motivation, conscientiousness, academic achievement, undergraduate education

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1. Introduction

The COVID-19 pandemic threw many aspects of people's daily lives into disarray. In K-12 and higher education, remote learning became the norm. People were forced to continue their academic activity virtually and find ways to successfully navigate the sudden transition and the challenges that came along the way. Online group messaging platforms (e.g., Discord, GroupMe) were used by students and teachers alike as a supplement to online instruction by facilitating discussion about the course content. Many students proactively set up online chats and passed them around to peers without the guidance of the instructor, essentially creating an interactive environment in which students could communicate freely. Due to this lack of monitoring, these chats have raised concern about academic dishonesty; however, it is possible that students created and used chats to foster community and support academic success.

Previous research has examined how these chats have facilitated the learning process (Craig & Kay, 2022; Heinrich et al., 2022; Gronseth and Hebert, 2018), but there is still much ambiguity when it comes to the characteristics possessed by students who use chats. Two characteristics that are worth investigation are academic motivation and conscientiousness, as they are important factors in learning (Wagerman & Funder, 2007; Gangolu, 2019). Students with more motivation may be using the chats to boost their learning by having thoughtful discussions about the course content with their peers. They also may be more willing to help their peers study difficult content and to collaborate on assignments as allowed. However, less motivated students may be using the chats for dishonest reasons such as obtaining answers for assignments or discussing exam content. Similarly, more conscientious students may want to engage in chat use in order to take full advantage of the resources open to them so that they can thoroughly learn the course material, while less conscientious people may not feel that chats are

necessary tools to grasp concepts in their learning. This study aims to find out more about these characterizations and provide insight into the links between academic motivation, personality, and the use of group messaging apps.

One group messaging platform that rose in popularity over the pandemic is Discord. Discord is a platform that allows people to communicate through voice, video, and text. It is accessible through a web browser or can be downloaded as an app on a smartphone. In higher education contexts, students and educators positively perceive Discord's easy-to-use features since they enable course communication and enhance social presence—the quality of interactions with others and the building of a sense of community (Craig & Kay, 2022). Although not a perfect platform to use alone for teaching a course, Discord has been shown to increase information exchange and communication (Heinrich et al., 2022). It is recommended to supplement Learning Management Systems (LMS) and support the various needs of students by lowering barriers to learning (e.g., providing a more anonymous platform for shy students to ask questions), connecting peers by decreasing distance, and allowing for increased contribution from all types of students (Heinrich et al., 2022). GroupMe—another platform that allows people to communicate through text via a web browser or smartphone—has also been shown to have positive influences on learning. Like the Discord application, GroupMe allows for students to connect with each other from anywhere at any time. In higher education contexts, GroupMe allows for an increase in engagement and social presence (Gronseth and Hebert, 2018). The goal of the current study is to determine what kinds of students use these chats and compare them to students that do not use them in order to gain possible insight into why students choose whether or not to use chats in an educational context.

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Consciousness is one trait that may relate to a student's decision to use chats for their learning. It is recognized as one of the Big Five personality traits and encompasses several facets including competence, order, dutifulness, achievement striving, self-discipline, and deliberation (McCrae & Costa, 2002). Conscientious people have high levels of these factors, which is argued to contribute to their success in life. Several studies present conscientiousness as a strong indicator of occupational performance (Wilmot & Ones, 2019). In the same line as this research, previous studies have established relationships between personality traits and academic achievement. Consciousness has been shown to be a reliable predictor of academic achievement in college students, in addition to traditional factors such as GPA and standardized test scores like the SAT (Wagerman & Funder, 2007). Consciousness is a trait that can provide us with some understanding of what makes a student successful. Chats may allow students to express this trait sufficiently in a virtual learning environment. With less face-to-face interaction in online courses, conscientious students may find it hard to thoroughly complete their studies as they would normally and may seek to use the chats as a stand-in for face-to-face learning interactions.

Academic motivation is another trait that may influence whether or not students choose to use chats for their learning. Such motivation stems from what students want in an educational setting. This can include a particular grade, self-appraisal, or appraisal from peers, professors, and family members. It is one of the reasons why a person chooses to do a particular task (Pintrich, 2002). It is another characteristic that has been shown to be linked to academic achievement. Motivation has been shown to have a significant positive correlation with academic achievement (Gangolu, 2019), and has additionally been shown to mediate the impact of consciousness on GPA (Richardson & Abraham, 2009). Chats may be being used by

motivated students to reach their academic goals by helping them develop professional peer networks or providing a forum for discussing and studying the course content.

Based on this prior research on individual differences in conscientiousness and academic motivation, this study sought to explore differences in these traits in undergraduates as it is related to the use of online messaging apps like Discord and GroupMe. We hypothesized that students who indicated they used these online group messaging apps would have higher levels of academic motivation and conscientiousness given the research about the link between academic success and these traits as discussed above. We speculated that students with high academic motivation and high conscientiousness would want to take advantage of these chats as an additional tool to help them succeed in their courses, which is a goal aligned with both of those traits.

2. Methods

2.1 Participants

The participants consisted of 215 undergraduate students from the University of California, Riverside. All years and majors were encouraged to participate and as a result there was a diverse sample of students involved in the study. The ages of the participants ranged from 17 to 29 and represented a variety of majors on campus. Students could sign up through the UCR SONA system for partial course credit in certain psychology courses ($N = 200$). No other compensation was offered to participants. The survey was also circulated through public UCR Discord and GroupMe servers ($N = 15$). This study was approved by the University's Institutional Review Board and all procedures involving human participants agreed with their ethical standards and guidelines.

2.2. Study Measures

2.2.1. Academic Motivation. The Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich et al., 1991) was used to measure undergraduate students' academic motivation. This 62-item scale consists of two parts: motivation and learning strategies. For study purposes, only the 31-item motivation subscale was used. These items assessed aspects of motivation including intrinsic goal orientation, extrinsic goal orientation, task value, control of learning beliefs, self-efficacy for learning and performance, and test anxiety. Intrinsic goal orientation is an individual's own perception of why they are doing something whether it be curiosity, mastery, or something else. Extrinsic goal orientation is an individual's concern for what they can get out of doing something. This could be a physical reward such as a good grade in an educational context, or a reward such as praise from others. Task value is how "worth it" a task is to an individual, which concerns an individual's view on how useful or rewarding a task can be. Control of learning beliefs refer to a student's notion of how much control they have over their learning and is dependent on the belief that their own effort will get them what they want, rather than needing to rely on an external source like a teacher. Self-efficacy for learning and performance alludes to one's competence and confidence in their skills needed to complete a task. Test anxiety is one's negative emotions that can affect test performance and the cognitive and physiological effects that can result from anxiety. In the survey, participants were presented with a series of short sentences and asked to rate themselves on a seven-point Likert scale, where one corresponded to "Not at all true of me'' and seven to "Very true of me," meaning that the higher the student scored, the more academically motivated they were. An example of an item from the MSLQ is "I believe I will receive an excellent grade in this class."

2.2.2. Conscientiousness. The Big Five Inventory (John et al., 1991) was used to measure undergraduate students' conscientiousness. This 44 item scale measures all of the Big Five

personality traits including extraversion, agreeableness, conscientiousness, neuroticism, and openness. For study purposes, only the conscientiousness subsection was used which consisted of nine items, four of which used reverse scoring. These items assessed aspects of conscientiousness including competence, order, dutifulness, achievement striving, self-discipline, and deliberation. Competence is an individual's ability to complete a task through their skill, knowledge, and judgment to do so. Order refers to one's organization in what they do, helping them to be efficient in completing a task. Dutifulness is one's responsibility and tendency to adhere to moral principles. Achievement striving is the inclination to pursue excellence and complete something to the highest quality possible. Self-discipline is one's ability to regulate themselves effectively so that they can accomplish certain goals. Deliberation is when an individual carefully thinks and plans before they perform an action. In the survey, participants were presented with a series of short phrases in which they were asked to indicate how much they agree or disagree with the statement on a five-point Likert scale, where one corresponded to "Disagree strongly" and five to "Agree strongly," meaning the higher the students scored, the higher their conscientiousness. Examples of some of these items include "Does a thorough job" and "Can be somewhat careless" (reverse-scored).

2.3. Procedure

Participants were asked to complete an anonymous online survey regarding their Discord and/or GroupMe usage in recent high school or college course settings, their academic motivation, and their levels of conscientiousness. The survey was circulated through public Discord and GroupMe servers and word of mouth. Chat use was measured by asking students to rate how much they checked, reacted, or posted messages to the servers (lowest being "Never" to highest being "Always"), though these data about intensity of chat use were not used in the

current study—we instead used a binary categorization of users versus non-users. This was based on how students answered the survey question, "Have you taken at least one high school/college class that used a Discord and/or GroupMe?" If they indicated yes, they were classified as a chat user. Additionally, they were asked if the professor of the course was involved in those chats or not; This data was also not utilized in the current study. If they indicated no, they were indicated as a non-chat user and then were also asked an additional question, "If you haven't taken a class that utilizes Discord and/or GroupMe, would you use one if it were available?" Academic motivation and conscientiousness were measured using the MSLQ and BFI scales respectively as specified above in section 2.2. Participants were able to take the survey with a technological device and wherever they had internet access were able to take breaks during completion of the survey as needed. They were also able to skip any questions they did not feel comfortable answering. The entire survey took approximately 10 minutes to complete.

3. Results

The data was categorized into two groups: students who indicated they used Discord and/or GroupMe in a recent college or high school course (chat users; $N = 159$), and those who indicated they did not (non-chat users; $N = 56$). For every participant, an average academic motivation score and an average conscientiousness score were calculated. An independent-samples t-test showed that chat users ($M = 5.21$, $SD = 0.68$) had significantly higher motivation scores than non-chat users ($M = 4.95$, $SD = 0.65$), $t(213) = -2.55$, $p = 0.012$, $d = -0.40$. Figure 1 below shows the average academic motivation scores for chat users and non-chat users. However, there was no significant difference in conscientiousness between chat users ($M = 3.48$, $SD = 0.62$) and non-chat users ($M = 3.46$, $SD = 0.64$), $t(212) = -0.201$, $p = 0.841$, $d = -0.03$. Figure 2 shows the average conscientiousness scores for chat users and non-chat users. Further

independent samples *t*-tests were run on chat users vs. non-chat users to determine if there were differences in specific aspects of motivation. The results showed that there was a significant difference in extrinsic aspect of motivation where chat users ($M = 5.65$, $SD = 0.89$) had higher extrinsic goal orientation than non-chat users ($M = 5.37$, $SD = 1.00$), $t(213) = 1.99$, $p = 0.048$, $d = 0.31$. Additionally, there was a significant difference between chat users' self-efficacy such that chat users had higher self-efficacy ($M = 5.14$, $SD = 0.92$) than non-chat users ($M = 4.77$, $SD = 0.94$), $t(213) = 2.54$, $p = .01$, $d = 0.39$. However, no significant differences were found for the other subscales of academic motivation between chat users and non-users': intrinsic motivation, $p = 0.14$; task value, $p = 0.16$; control of learning beliefs, $p = 0.13$; and test anxiety, $p = 0.54$.
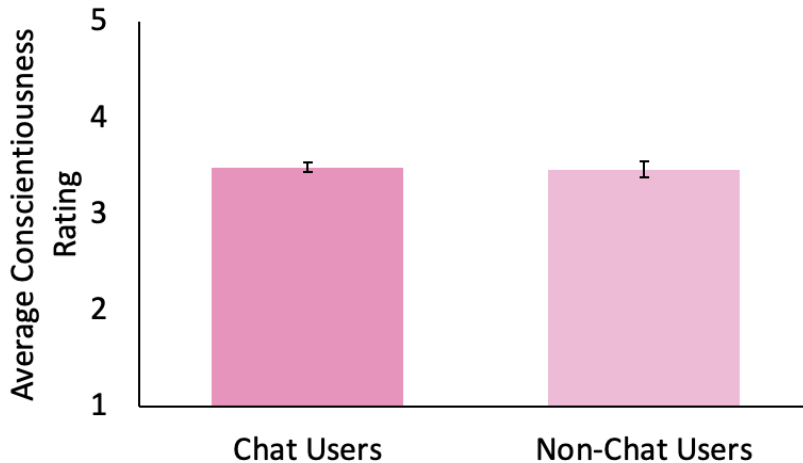
Figure 1

Average of academic motivation for chat users and non-chat users
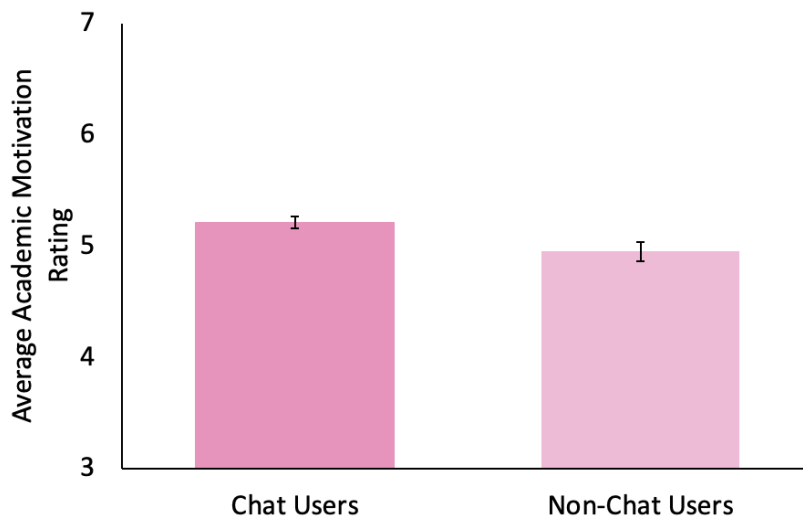
Note: Chat users have more academic motivation than non-chat users. Error bars represent standard error.

Figure 2

Average conscientiousness for chat users and non-chat users

Note: There is no difference in conscientiousness between chat users and non-chat users. Error bars represent standard error.

4. Discussion

This study examined possible characterizations of undergraduate students who use online chats like Discord and GroupMe. This research may offer insight into how online group messaging platforms are being used as educational tools by students and instructors. We examined traits of academic motivation and conscientiousness since these two traits are linked to higher academic performance (Gangolu, 2019; Wagerman & Funder, 2007). Specifically, we looked at levels of academic motivation and conscientiousness as a function of whether students used or did not use online chat platforms separate from the designated course LMS, and hypothesized higher levels of both of these traits for students who used chats compared to those who did not.

As predicted, the results showed that our sample of chat users had significantly higher levels of academic motivation than non-chat users. Based on the motivation components that were measured via the MSLQ, this could be due to a number of contributors; thus, we investigated the subscales of the survey. Per the results from the independent-samples t-tests run on chat users versus non-chat users in the different areas of academic motivation, extrinsic goal

orientation showed a significant difference between chat users and non-chat users. In other words, chat users are more extrinsically goal oriented than non-chat users. Thus, motivated students' extrinsic goal orientation may be a driving force in their decision to engage in chats. This may indicate that more academically motivated students may be using these chats to reach an academic goal such as a particular grade, self-appraisal, or appraisal from peers, professors, and family members. They may see chats as a helpful resource that can help them reach those goals. Additionally, students who used chats reported higher self-efficacy for learning and performance than those who did not use chats which may be another big factor in students' decision to use chats or not. This may mean that motivated students are using these chats because they feel confident that they are high in competence and can help their peers learn the course content. Chat users may be more willing to engage in assisting other students by answering their questions or helping out with assignments while feeling confident that they are capable of doing so with their own knowledge.

On the other hand, the results showed that there were no significant differences between chat users and non-chat users in the motivational areas of intrinsic motivation, task value, control of learning beliefs, and test anxiety. Though these comparisons did not reach the traditional cutoff for statistical significance, these factors may contribute to motivated students' choice to either use chats or not. Motivated students' intrinsic goal orientation may influence their choice because of their individual perceptions of why they should engage in chat use. Their participation in course activities—in this case Discord and/or GroupMe activity—could be a result of wanting to learn the material for reasons such as the desire for challenge, curiosity, mastery, grades, rewards, performance, evaluation by others, and competition. Motivated students may use chats depending on if they think it is a task with value or not, for example how

important, useful, or interesting using the chats will be. Questions they may ask themselves are "Is it worth it to use these chats to reach my academic endeavors?" or "How will these using these chats benefit me in my learning?" They may believe that using these chats is worth it in the sense that they can reach their academic goals through engagement by having meaningful discussions about difficult course content or helping each other with homework assignments. Assuming the students' goal to be satisfactory grades, they may see checking, posting, and reacting to messages to be tasks that will support their learning and lead them closer to that goal. By contrast, they may think using chats are not worth it for reasons such as accuracy of answers from other students or the variable waiting time it may take to receive a response for their questions once posted. With regard to control of learning beliefs, motivated students may feel that they have more control with their learning such that their own efforts will help them succeed, and that they do not need the help that can be obtained from other students in these chats. Or they may feel that they need an external factor to help them reach their academic goals, such as academic assistance from other students, or the professor if they are active in the chats. Finally, motivated students' test anxiety may affect their decision to use chats or not. Instead of dwelling on negative thoughts and worrying about test performance, their levels of higher motivation may help them think more positively about taking exams and lead them to not use chats; alternatively, high test anxiety may push them to use chats to help them be as prepared as possible for these high-stress situations. More work remains to be done to examine these factors in detail.

Contrary to our predictions, the results showed that our sample of chat users were not significantly more conscientious than non-chat users. As there were several facets of conscientiousness that were measured via the BFI, there may be several reasons for why this is.

Conscientious people may feel that they are competent enough to succeed in their courses without getting involved in an outside course supplement aside from the LMS. They may believe that they have enough organization (i.e. keeping track of due dates themselves without reminders from peers) on their own to thoroughly achieve their academic goals. Their sense of dutifulness may steer them away from the use of chats in order to stay clear of potential academically dishonest situations where cheating and plagiarism may occur. Their self-discipline may lead them to believe that they can regulate their own needs and desires as a student and still be successful. Finally, their deliberation may also contribute to their sense of planning and avoidance of dishonest peer collaboration that could get them in trouble. Conversely, conscientious students may be using chats to thoroughly do a task which could be studying for an exam, completing an assignment, or simply learning a concept. They may feel that chats are a tool that could aid them in doing so. Conscientious students may be deciding to use or not use chats based on other factors such as academic motivation. Again, more work—perhaps qualitative—is needed to investigate these possibilities.

5. Limitations and Future Research

One limitation of this study was the reliance on retrospective self-reported responses. Students were asked to approximate the amount of chat use they were involved in during previous high school and/or college classes. While answering survey questions about chat use, students were asked to think about a recent high school or college course in which they used these chats. They were not asked to provide the amount of time it had been since they took that class. Depending on the time gap from when they took the course and when they filled out the survey, the accuracy of some responses may be variable. Future studies could adopt an experimental approach in which there is manipulation of chat use. Setting up courses in which

some implement online group messaging apps and others do not could help determine if chat use can directly affect (i.e., increase or decrease) students' levels of academic motivation and conscientiousness.

While we did have a large sample, it consisted only of undergraduate students. It would be interesting to explore different levels of education. Undergraduate students may have higher motivation and conscientiousness than primary and secondary students since they are nearer to entering the workforce once they obtain their degree. Also, there may be differences as younger populations tend to use these same chat servers mainly for gaming, rather than educational, purposes.

This study's findings consider the characteristics of students who use online group messaging apps for their courses in higher education contexts. It offers an initial look into what kinds of students use chats, but further research is needed to discover the exact purposes for which students use them. Future studies may want to investigate how undergraduate students' conscience and morality relate to group messaging app use. Unmonitored chats have raised concern about academic dishonesty such as cheating or plagiarism. Without professor involvement or continued monitoring in these servers, students essentially have free reign to discuss whatever they want including homework assignments and exam content. Professor inclusion/exclusion in a chat may influence how students interact within these chats. Students may feel the temptation to be academically dishonest without a professor's presence. Non-chat users may have a higher sense of morality and not want to get involved in potentially problematic chats. Chat users may have a lower sense of morality and feel more comfortable in actively chatting about the course material with peers and not worry as much non-chat users about freely messaging peers about course content.

6. Conclusion

Although the COVID-19 pandemic dramatically transformed the way people lived their everyday lives, there were some lessons that can be learned from the global experience. As the world is slowly returning back to normal, some practices that were put into place to address the challenges that the pandemic presented may be convenient to continue using moving forward. This includes the deep integration of technology in daily routines. Technology was already used widely pre-pandemic but became even more intertwined with our daily activities as people were forced to social distance. Virtual learning became the norm, but students and faculty found ways to navigate the challenges that came their way. Online group messaging apps came to the rescue as they allowed 24/7 classroom access and connectivity. The present study provides some insight into the characterizations of undergraduate students who use these chats, finding that students who used chats were more academically motivated than those who did not use them. The data may provide some insight into how and why these chats are being used in an educational context. Further investigation about this topic can equip students and instructors with the knowledge of how to use online group messaging apps to their full potential and enhance the learning experience for all.

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