A Qualitative Study of Self-Validation among First-Year Undergraduate Students in STEM and Arts Programs

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Abstract

A positive foundational experience within one's faculty is crucial for first-year undergraduate students, as lower self-validation is found to lead to dissatisfaction, lower self-confidence, lower academic success, and higher dropout rates (Harrison, 2007; Hurtado et al., 2011; Shapiro & Sax, 2011). This research focuses on the differences in self-validation among first-year undergraduate STEM and Arts students. It aims to explore if students are more validated in STEM or Arts faculties and what variables contribute to an unequal distribution of self-validation. Nine participants (four Arts and five STEM) were interviewed in-depth over the course of five months. The research finds that STEM students are more validated in comparison to Arts students due to variables such as greater perceived prestige and value, sense of community and belonging, and academic efficacy and confidence. Other variables are also explored. This research can be used to foster a strong sense of self-validation among first-year undergraduate students and in turn, a more positive academic and social university experience.

Introduction

Background Information

Beginning university can be an exciting, nerve-racking, and weary experience for students. It often involves moving to a new place, meeting new people, and exploring different avenues of life; all while trying to learn new information in an unfamiliar area of study (Yomtov, 2015). While trying to navigate the first year and become familiar with their program of study, students may get involved in different on-campus activities such as faculty events or clubs; they may also develop relationships with like-minded peers (Buote et al., 2007; Yomtov, 2015), professors, and/or other faculty members in order to develop a sense of belonging in their program of study (Hurtado et al., 2018; Baker & Griffin, 2010).

However, different faculties offer different levels of involvement for first-year students, providing them with a variety of diverse experiences throughout their first year. For

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instance, STEM programs (i.e., Science, Technology, Engineering, and Mathematics) and Arts programs (i.e., Social Sciences and Humanities) often differ in the experiences and opportunities they provide their students (Komarraju et al., 2010; Harrison, 2007). This ranges from the availability of faculty merchandise, events, and clubs to the various professors and allocated funding within their faculty. These unique experiences can contribute to a different sense of self-validation (i.e., recognition or affirmation that one's feelings or opinions are valid) among first-year students who belong to different faculties (Hurtado et al., 2011; Hyde & Gess-Newsome, 2000; Newton et al., 2009; Shapiro & Sax, 2011). A positive foundational experience within one's faculty is crucial for first-year undergraduate students, as lower self-validation is found to lead to dissatisfaction, lower self-confidence, lower information retention, lower academic success, and higher dropout rates (Harrison, 2007; Hurtado et al., 2011; Shapiro & Sax, 2011).

Social Psychological Context

Our research works to confirm and expand on previous social psychological work done on the undergraduate student population in relation to their overall university experience. Our research is situated in and adds to social psychological themes including but not limited to: the development of self and identity, in-group and out-group interaction, the predictors of a strong sense of community and belonging – including meaning making and its relation to community building among first-year undergraduate students – and upward and downward social comparisons in relation to faculty of study (STEM vs. Arts). These themes are positioned in social psychological theories such as Symbolic Interactionism (SI), Social Identity Theory (SIT), Interpersonal Contact Theory (ICT), and Schema Theory. The combination of these theories provides a unique lens to evaluate and understand the first-year university experience.

Our research adds to previous work by looking at the differences in experiences of undergraduate students in STEM and Arts faculties. By examining the differences between faculties, we are able to compare the university experience of students who form specific academic identities (i.e., as a STEM student and Arts student). While this allows us to gauge the current experiences of these students, doing this research qualitatively (i.e., using semi-structured interviews) has also provided insight into the changes students would employ to their faculty to improve the experiences of incoming first-year students.

Our research process also employs the researcher experience aspect of qualitative social psychological work as it has allowed us, as outgoing social psychology students, to reflect on our own experiences as first-year individuals. As a result of our academic background, we formed a connection to this project that allowed us to understand the first-year undergraduate university experience from a unique perspective. This allowed us to achieve our goal of giving first-year undergraduate students a voice in the contribution to improving the experiences of future, incoming students.

Purpose of Research

At McMaster University, there are various faculties that future students may decide to go into. To specify, the six faculties are Business, Engineering, Health Sciences, Humanities, Sciences, and Social Sciences. The issue we analyzed is whether first-year undergraduate students feel more validated in certain faculties in comparison to others at

McMaster University. Specifically, our study focused on comparing self-validation among first-year undergraduate students belonging to STEM and Arts faculties at McMaster University. We chose this comparison because STEM and Arts faculties are often understood as very different from one another in terms of curriculum and the opportunities they offer their students outside of the classroom (Komarraju et al., 2010; Harrison, 2007). In addition, we believe first-year students are not always given a voice when it comes to their experience within their faculty of study. We believe McMaster University is a very progressive institution, and will benefit from the direct input of first-year students.

We believe this research is extremely beneficial as previous studies confirm that self-validation heavily impacts the university experience of students. Specifically, self-validation is found to be an important measurement of self-esteem (i.e., feeling good about one's self) and self-confidence (i.e., belief in oneself) (Buote et al., 2007; Harrison, 2007; Yomtov et al., 2015). It has also been linked to the likelihood of students continuing their education and getting a degree in their field of study (Chemers et al., 2001; Wright et al., 2012). Previous research also reveals that strong self-validation and related measures (i.e., self-efficacy, esteem) is linked to information retention, persistence, engagement, and academic achievement (i.e., higher grades) (Marra & Bouge, 2007; Marra et al., 2009; Marra et al., 2012; Komarraju et al., 2010; Nora et al., 2011; Zimmerman et al., 2014; Hyde & Gess-Newsome, 2000; Huang & Brainard, 2001; Brainard & Carlin, 1998; Shapiro & Sax, 2011).

We observed this problem by dividing the Arts and STEM faculties from one another. Our main area of inquiry was self-validation. We measured self-validation based on faculty of study by inquiring about variables like social validation from outside sources (i.e., approval from friends, parents, siblings, or professors), and internal variables such as self-confidence (i.e., belief in oneself), self-efficacy (i.e., the perceived ability to attain a set course of action), perceived prestige (i.e., student's perception of their own faculty as having a high status), and the students' sense of connection to their faculty. Sense of connection was measured based on the students' sense of belonging in their field of study (i.e., does the student feel like they belong in their faculty), student-faculty relationships, and the students' sense of community within their faculty of study (i.e., does the student feel like they fit in with other members of the faculty, do they feel welcomed).

With the data we receive, we were able to compare these two faculties of study in order to observe whether there were noticeable differences in these variables. This information has allowed us to understand how one's faculty of study (STEM or Arts) impacts self-validation among first-year undergraduate students at McMaster University. Investigating these variables have also helped advance our understanding of the experiences of first-year undergraduate students in their specified faculty. By examining students' experiences, we were able to explore what impacts a student's sense of self-validation within their faculty of study. For instance, we found there is a stronger sense of community within smaller faculties, which is linked to experiences such as adequate symbols of belonging (i.e., faculty merchandise) and greater connectedness among members, leading to a better ability to develop interpersonal relationships with peers and professors. Whereas, in larger faculties, there is a greater anonymity among students, leading to less developed relationships.

Overall, we believe these findings provide information that can be used to foster a strong sense of self-validation among first-year undergraduate students and in turn, a more positive experience for first-year students at McMaster University.

Research Questions

The primary questions of our research include: "are students more validated in STEM or Arts faculties?" and "what variables contribute to an unequal distribution of self-validation?" We believe this will provide a lens into how these mechanisms of self-validation contribute to the first-year undergraduate university experience. Our research team composed these questions during the beginning of the 2019 school year after observing advertisements for faculty merchandise, located at the McMaster University campus. These advertisements led us to critically think about the sense of connection and belonging that faculty merchandise tends to create for students in certain faculties. From here, we began to wonder whether the students involved in certain faculties (that do not provide much faculty merchandise) feel less connected to their faculties. As Social Psychology students, we believe that we have a strong sense of connection to our program, which encourages us to feel validated in the Honours Social Psychology program. We wanted to further explore why we felt this way. For instance, is it because we are fourth-year students who have spent a lot of time in our faculty? Or, is it because there are many faculty events and opportunities for us to bond with our peers?

These questions led us to ask ourselves if other students feel the same way about their faculties, especially if first-year students feel the same sense of validation, given that they are new to McMaster University and have not had the same amount of time as upper-year students to experience what their faculty may have to offer. After doing preliminary research on this topic, we found many studies that look at self-validation focused on the experience of STEM students. However, we found that there were limited studies that look into the self-validation of Arts students. We then became interested in whether there is a difference between self-validation in first-year undergraduate students enrolled in STEM faculties versus Arts faculties. From here, our specific questions developed.

For our research study, we conducted semi-structured interviews in order to give the participants leeway to answer questions regarding their beliefs, opinions, and experiences during the interview process. We asked various questions in order to better understand the general experience of first-year undergraduate students based on their faculty of study, while also seeking if self-validation differs among STEM or Arts students. We asked various questions that investigate self-validation by further examining the areas of social validation, students' sense of self-confidence, self-efficacy, student's perception of their own faculty, and students' sense of connection to their faculty of study.

Regarding the social validation that students receive from outside sources, we inquired about approval from others such as friends, parents, siblings, and professors. In terms of this variable, we discovered the impact that social validation has on a student's sense of self. We chose this question because we wanted to understand if/how outside sources like family, friends, and other social groups impact student's self-validation. Prior research also reveals that social-validation may lead to increased self-validation (Colbeck et al., 2001; Hurtado et al., 2011; Shapiro & Sax, 2011). Under this topic of inquiry, we asked participants how they chose their faculty of study and if they plan on continuing in their faculty of study for the rest of their undergraduate careers. During the interview process,

we received answers about how one's friend(s) and family feel about their faculty of study. These questions provided us with a general understanding on whether these individuals receive social validation from significant others regarding their area of study.

In terms of self-confidence, we were interested in exploring the impact of self-confidence and what it has on a student's sense of self-validation. We chose this question as previous research states that self-confidence has a large impact on how validated students feel in their faculty of study (Shapiro & Sax, 2011; Huang & Brainard, 2001; Hyde & Gess-Newsome, 2000). Inquiring about self-confidence also provided insight into how faculties may be able to increase this variable among first-year students, which was found to increase their sense of belonging, persistence, and academic success (Hyde & Gess-Newsome, 2000).

For inquiry on self-confidence, we looked at whether first-year undergraduate students believe in their ability, judgement, and qualities. One question we asked under this topic of inquiry is, "if you were thinking about taking a bird course (i.e., an easy elective), which faculty would you consider?" The data from this question displayed the perceptions that others have based on the difficulty of different faculties. For instance, if they were to consider a bird course in the Social Sciences or Humanities, this indicates that they perceive these faculties as easier than others. We also prompted the participant by asking them which course they would stay away from, as responses indicated whether they view certain faculties as too difficult/challenging. Additionally, we asked how often the participant participates in required lectures and tutorials (i.e., attends, asks questions, gets involved in group discussions). This helped us gain awareness about their confidence level regarding the lectures and tutorials within their faculty of study. By telling us to what extent they get involved in their classes, we were able to see how connected they felt to their faculty.

We also inquired about self-efficacy. In terms of self-efficacy, we were interested in finding out the impact self-efficacy had on a student's sense of self-validation. We chose this question because previous research often uses self-efficacy and self-confidence as synonymous variables (Marra et al., 2009; Marra & Bogue, 2007; Komarraju et al., 2010). However, we believe that by separating these variables, we were able to find additional insights into self-validation in first-year students in regard to goal setting and goal achievement. For this topic, we attempted to see whether these individuals are confident in their ability to achieve their goals by asking them how heavy their course workload is, and what their plans are after graduation. We also prompted the participant by asking them if they believe their faculty of study will help them achieve these goals. This helped us understand the participants current sense of self-efficacy and their belief in their ability to achieve future goals, including if they believe their current faculty of study will aid them in achieving these goals.

Another significant topic that we examined were student's perceptions of their faculty. In terms of this topic, we were interested in learning about the impact of the perception of one's faculty, and what it had on a student's sense of self-validation. We chose this question because research shows that perception of academic validation (i.e., faculty member's interest in students learning and success) within one's faculty improves the university experience (Hurtado et al., 2011). Based on this research, we believe that personal perceptions of one's faculty (i.e., perceived prestige) may also impact self-validation and in turn, the university experience. A question that falls under this topic of

inquiry, is "do you feel like your faculty is valued by McMaster University?" This question inquires about the participants' perception of prestige regarding their faculty of study. This question provided insight into the participants' perceptions of prestige based on funding allocation within different faculties, student's awareness of any research projects occurring in their faculties, and/or if they believe others view their faculty as prestigious.

Finally, we looked at students' sense of connection to their faculty. Specifically, we were interested in discovering if a student's sense of connection to their faculty of study impacts their self-validation. We chose this question because a sense of community, connection, and belonging is shown to impact the university experience, especially when other identity markers such as ability and ethnic identity are taken into account (Gormally & Marchut, 2017; Syed, 2010). Furthermore, we hoped to expand on this research by examining how a connection to one's faculty impacted their sense of self-validation, if at all. Sense of connection was measured using three areas of inquiry: students' sense of belonging in their field of study, student-faculty relationships, and students' sense of community within their faculty of study. A students' sense of belonging in their faculty refers to how welcomed a student feels in their faculty, and whether there is a sense of community within their faculty of study. Under this subtopic, we asked if students felt welcomed by others in their faculty. This allowed us to gauge if students felt connected to their faculty or if they felt disengaged and why.

In terms of student-faculty relationships, we asked what students generally think of the professors in their faculty, and what the relationship with their professor(s) in their faculty is like. We prompted participants by asking them how often they spoke to their professors, as well as how often they attended office hours. This gave us insight into the relationships between students and faculty members, which is shown to improve a student's sense of engagement, retention, belonging, academic success, and motivation to pursue a degree in that field of study (Komarraju et al., 2010; Nora et al., 2011; Zimmerman et al., 2014).

In regards to the students' sense of community within their faculty of study, we inquired about whether participants felt as if they fit in with their peers and faculty. To do so, we asked participants if their friend group consists of mainly people in their faculty and whether they attend faculty events (i.e. Welcome Week, Meet the Prof Night). This gave us a sense of student's involvement in their faculty and the different types of opportunities/experiences offered by various faculties at McMaster University.

Overall, we asked many questions in order to develop better insight into whether certain faculties lead to different levels of self-validation among first-year undergraduate students at McMaster University. By measuring self-validation through variables such as social validation, self-confidence, self-efficacy, students' perceptions of their own faculty, and students' sense of connection to their faculty, we were able to find that STEM and Arts students experience different levels of self-validation based on their faculty of study. This also provides insight into the contribution of self-validation to the first-year undergraduate experience. For more information on the interview guide.

Overview of the Paper

In the remainder of this thesis paper, we will provide an overview of the literature that has previously been done on our area of inquiry and what gaps still exist in this data, including how our current study fills these gaps. We will then outline the theoretical frameworks we have used in our research study including Social Identity Theory,

Interpersonal Contact Theory, Symbolic Interactionism, and Schema Theory. We will include a detailed explanation of each theoretical body and a discussion of the theoretical assumptions along with their connection to our research. After, we will discuss our methodology including our research questions, why we chose them, and how we measured them. We will also provide an outline of the ethical methodological concerns for our research. We will then outline the methods we used for our research study including a step-by-step overview of our research process from recruitment to data collection. We will also include our timeline including data collection and analysis. We will also outline the stages of data analysis. Next, we will provide the results of our research. We will then discuss our results including our analysis and interpretation of the results and comment on the broader significance of our research. Finally, we will conclude by providing a summary of our results. We will also discuss the limitations of our research study. In addition, we will discuss our significant insights and contributions our research provides to the experience of first-year undergraduate students at McMaster University.

Literature Review
Identity Development in Students

There are sparse qualitative research studies that examine self-validation among first-year undergraduate students in STEM and Arts programs. A large portion of related studies focuses on student identity development both generally and by field of study. Studies in this area have found that junior and senior students in majors like marketing, acquire a role-identity throughout their undergraduate career based on their program of study (Kleine, 2002). This study finds that a student's program helps to define him or her because it influences the classes they take, their behaviours, their aspirations, and the people they associate with (Kleine, 2002). Enhancing role-identity is associated with social commitments that relate to the program of study, creating face-to-face connections with those involved in the program, and increasing symbols and rituals around the program (i.e., clubs, merchandise). These findings are especially significant for female marketing students (Kleine, 2002).

Although this study is quantitative (based on survey data from 142 students), and does not look at the experiences of first-year students, we predict that our study will produce similar findings in regards to students identifying heavily with their faculty of study and developing certain role-identities based on variables like faculty-student connections and faculty symbols and/or rituals. However, we believe these factors will contribute heavily to first-year students' sense of self-validation based on their faculty of study rather than role-identity.

Some quantitative longitudinal studies look at student's identity development and motivation as a predictor of leaving STEM programs (Perez et al., 2014). Factors that may make students leave STEM programs include perceived costs vs. benefits of STEM, such as stress, anxiety, and lost opportunities (Perez et al., 2014). Although this study looks at the impact of identity development and motivation in leaving STEM programs, rather than self-validation within STEM programs, we believe these variables may also come forth in our study as measures that could contribute to decreased self-validation in first-year STEM students. 62% of this study population are first-year undergraduate STEM students, which increases our confidence that we may yield similar results (Perez et al., 2014). If so, using qualitative data analysis will allow us to probe further to

understand why students experience a decreased sense of self-validation and what can be done to improve it.

Additional studies find that other identity markers such as ability and ethnicity also play a role in a student's sense of belonging in their program of study. For instance, Syed's (2010) study on identity development in ethnically diverse students finds that student majors – a variety of STEM, Humanities, Commerce, and the Arts – impact their ethnic identities and are related to how they understand themselves and negotiate their identity throughout their college experience. However, ethnic identity negotiation is found to be more prevalent in later years compared to first-year (Syed, 2010).

Other identity markers like hearing ability are also found to impact student's recruitment into and experience in science programs (Gormally & Marchut, 2017). These studies find that groups of differing abilities are often underrepresented in science majors because science programs are perceived to be non-communal and thus hindering to the integration of people with disabilities (Gormally & Marchut, 2017). Both of these studies use a mixed methodology approach and show the intersectionality of interpersonal variables that impact identity development in various fields of study. Although our study will focus on a qualitative methodology, we believe we may also find that interpersonal variables will have an impact on students' sense of belonging and community in STEM and Arts faculties, which may, in turn, impact their self-validation in their field of study.

Many studies that focus on identity development explore identity development in nursing students. For instance, Goodolfe (2018) looks at how nursing students develop a professional identity. This study finds that developing a professional nursing identity is impacted by support networks and unanticipated expectations including self-doubt, confidence, sacrifice, rigor, and relevance. Adaptation to the nursing climate is also a predictor of successful progress through the program (Goodolfe, 2018). Identity development in the nursing field is also found to be impacted by doing activities related to nursing, learning how to be a nurse through on the job experiences, speaking like a nurse (i.e., using nursing terms), and knowing how to respond in certain situations (Williams & Burke, 2015). These measures impact if a student identifies with their program (i.e., feels like a nurse) and may also be a predictor of their success in the program (Williams & Burke, 2015). Because these studies analyze upper-year nursing students, we do not believe that the development of a professional identity will impact first-year undergraduate students' sense of self-validation because of their lack of experience in their faculty of study. We do, however, believe that first-year students will develop an academic identity (i.e., a sense of being a student), which may increase their self-validation and foster a sense of belonging within their field of study.

Research in this area shows that a student's program of study and their sense of belonging within that program does impact their identity development. These studies are a mix of both qualitative, quantitative, and mixed methodologies, which allows for an overview of the research that is generalizable, valid, reliable, inductive, and humanistic. However, none of these studies measure self-validation by program of study. In addition, although many of these studies look at specific programs of study (i.e., STEM, nursing), they examine a wide range of students, not only first-year students, which may yield different results. These studies also lean towards STEM students (Perez et al, 2014) and Nursing students (Goodolfe, 2018; Williams & Burke, 2015); largely ignoring students majoring in Arts programs like Humanities and Social Sciences. Finally, while some

studies look at variables such as sense of connection to the program, perception of community (Gormally & Marchut, 2017), belonging, and confidence in the field of study (Goodolfe, 2018), they ignore other important factors like self-efficacy, perceived program prestige, and faculty-student relationships; all of which our study will use to measure self-validation among first-year undergraduate students at McMaster University.

Faculty-Student Interactions
    Studies that measure variables related to self-validation like confidence and self-efficacy, focus on how faculty-student interactions (i.e., extent of interactions between professors and other faculty members and students) impact these variables. For instance, Komarraju et al. (2010) conducted survey research to examine the importance of faculty-student interactions. Komarraju et al. (2010) finds that faculty-student interactions improve academic self-concept, academic achievement, and motivation to continue their studies. This study also finds that formal (i.e., in class) and informal (i.e., out of class) interaction with faculty members adds to college culture. This interaction fosters student attitudes, interests, and values, creating a strong sense of belonging within the institution, which leads to greater academic success and motivation to pursue a degree (Komarraju et al., 2010).
    Further mixed methods studies confirm that validation from professors increases engagement, persistence and academic achievement (i.e., graduation rates), especially in low-income students (Nora et al., 2011). Communication and discussion between students and professors about course feedback are also found to increase student engagement and information retention across multiple programs (Zimmerman et al., 2014). Based on these findings, we believe our study will show the importance of student-faculty interactions in a student's sense of self-validation. Although these studies use many of the internal and external variables our study will use to measure self-validation, these studies do not specifically measure self-validation and do not control for faculty of study (i.e., STEM or Arts). These studies also do not focus on first-year students and mainly use a quantitative survey method. By using a qualitative semi-structured interview method, we believe our study will yield unique, inductive information about the experience of first-year undergraduate students that quantitative data cannot.
    Other studies that examine the impact of faculty-student interactions examine students who come from minority backgrounds. Most of these studies look at how validation from faculty-student interactions increase minority student's sense of belonging in their institutions (Hurtado et al., 2018; Baker & Griffin, 2010). Studies find that faculty-student interactions that create an inclusive environment for students amplify their sense of belonging, especially for students that may face racial or ethnic discrimination on college campuses (Hurtado et al., 2018). Faculty-student interactions may also increase student's degree aspirations and knowledge retention, especially in students from minority groups. However, these results are mainly applicable to science programs (Baker & Griffin, 2010), largely ignoring arts programs. Some studies also suggest that planned mentoring between minority students and faculty members, can reduce college dropout rates among this group by improving academic retention and thus, academic success (Redmond, 1990).
    Although these studies outline the importance of faculty-student interactions, most do not look at faculty-student interaction based on program of study (i.e., STEM or Arts);

those that do only focus on science programs (Baker & Griffin, 2010), ignoring Arts programs. Furthermore, these studies do not measure self-validation in students; most only look at related variables like self-efficacy and self-confidence. These studies also focus on interactions between faculty and students in upper years. However, we believe interactions between faculty and students will be especially important for first-year students because they are new to the college environment and thus often do not have an established connection to the faculty or community, which may impact their sense of self-validation. Based on these studies, we also believe faculty-student interactions will be especially validating for students who come from minority backgrounds.

By asking questions specifically about faculty-student interactions and its relation to self-validation, we believe our research will expand on current studies to confirm if faculty-student interactions differ in first-year students who are in STEM or Arts faculties and what impact this may have for their sense of self-validation. Based on these studies we believe that if faculty-student interactions are found to increase self-validation among first-year students, it may increase students' sense of faculty belonging, and in turn, academic success.

First-Year Students

Studies that look specifically at first-year students focus on self-efficacy. Some quantitative longitudinal studies find that first-year students' expectations of university achievement (measured based on previous grades, self-efficacy in academics, and optimism for future academic attainment) and their adjustment to university (measured based on one's expectations of their academic achievement and one's perception of their ability to cope in a given situation) directly impacts their performance in first-year university (Chemers et al., 2001). Optimism along with self-efficacy are strong predictors of stress, health outcomes, academic satisfaction and achievement, and adjustment to university life. These factors directly and indirectly, impact if students continue to pursue a degree (Chemers et al., 2001). Further studies confirm that increased self-efficacy in first-year undergraduate students is a strong predictor of academic success and persistence decisions (Wright et al., 2012). Because this study focuses on first-year students, we believe our study will yield similar results. However, we believe our study will find that these factors are linked to students' sense of self-validation rather than self-efficacy. We also believe that because our study is qualitative (semi-structured interviews), it will be more humanistic, revealing more detail about why these factors affect students and how they interpret these impacts.

Mixed methods studies that look further into university adjustment find that friendship development is crucial to the adjustment process, especially among first-year students (Buote et al., 2007). Friendship with others leads to a better adjustment to new social environments outside of the classroom, which increases self-validation and self-efficacy in university students (Buote et al., 2007). Field of study, settling into the university community, financial issues and financial support, expectations, course-related experiences, and developing early support systems all impact first-year students' decisions to continue their field of study (Harrison, 2007). Additional factors that impact the first-year undergraduate experience include programs like peer mentoring, which is found to increase students' sense of belonging and adjustment at the first-year level, which leads to increased academic success (Yomtov et al., 2015). Yomtov et al. (2015)

finds that peer mentoring is not only beneficial for the mentees first-year experience, but also for the mentor's sense of belonging and accomplishment.

Although these studies consider interpersonal variables like self-efficacy and outside variables such as friendship and peer-based support systems, they do not control for program of study. The majority of research on first-year students also measure self-efficacy rather than self-validation. Although self-efficacy and self-validation are often associated measurements of esteem, we believe that measuring self-validation in first-year undergraduate students in STEM and Arts faculties will yield different results. However, because self-efficacy and self-validation are closely related, these studies outline possible variables we may encounter in our study such as the importance of student's friends' perceptions of their program of study, academic expectations, and optimism when entering the university environment.

Longitudinal research that focuses on first-year students and is program specific looks at self-efficacy in female engineers, finding that a sense of belonging in their program of study (i.e., feeling like they are welcomed by peers and faculty) increases their sense of self-efficacy (Marra et al., 2009). Self-efficacy is also found to be a predictor of persistence in the field and is found to be especially low among females of colour when compared to their male counterparts (Marra et al., 2009). Further studies confirm that factors related to leaving engineering programs include poor teaching/advising, difficulty of the material, and sense of belonging (Marra et al., 2012). These factors are not strongly linked to gender differences but sense of belonging is strongly linked to ethnicity (Marra et al., 2012). Contrasting longitudinal studies find that there are no gendered differences between male and female engineering students when it comes to self-efficacy and suggests that self-efficacy is more so related to participation in extracurricular activities and student persistence plans (i.e., if students plan to continue their studies) (Marra & Bouge, 2007).

Although these studies focus on self-efficacy and not self-validation, these two variables are very similar. These studies are also program specific and control for additional variables like gender and ethnicity, which makes us believe that a sense of belonging in our study will impact self-validation among first-year female students of colour in STEM faculties. However, these studies also lead us to believe that we may find contrasting results regarding self-validation in Caucasian male and female students. We believe that using qualitative semi-structured interviews will allow us to understand why these relationships between gender, ethnicity, and sense of belonging in engineering exist.

Self-Validation

Studies that examine self-validation measure both interpersonal validation (i.e. self-validation) and students' perceptions of academic validation (i.e., faculty member's interest in students learning and success) (Hurtado et al., 2011). Using survey-based data, Hurtado et al. (2011) find that a strong sense of validation increases information retention, academic success, and improves students' university experience (Hurtado et al., 2011). This is especially true for students of colour, who may feel underrepresented in the college environment (Hurtado et al., 2011). This research reiterates previous findings that interpersonal variables like race also impact self-validation among students. It shows that perceived academic validation also impacts rates of academic success,

which may be an additional variable we find in our research. However, this research does not control for program of study, does not focus on first-year students and is survey-based, leading us to believe that our study will yield different results by studying a different population of students.

Studies that look at self-validation in specific programs of study acquire various findings. Newton et al. (2009) use interview data, finding that self-validation is a strong reason why nursing students enter the nursing field. The study also finds that self-validation in nursing students and practicing nurses is a strong reason they maintain their studies and their careers (Newton et al., 2009). For those in programs such as engineering, survey data shows that teaching practices such as frequent and detailed feedback, collaborative learning, and clear expectations, all lead to a greater sense of responsibility, motivation, self-confidence, self-validation, and intention to complete an engineering degree (Colbeck et al., 2001). Although these studies do not focus on first-year students and do not include information on Arts programs, our study will be using similar variables to measure self-validation and may therefore yield similar results.

Most other studies focus specifically on women in STEM. Survey-based studies find that the persistence of women in STEM programs is influenced by self-confidence (measured through self-validation), sense of belonging in STEM culture, the extent of peers and social connections, and family influences and expectations (Shapiro & Sax, 2011). Other studies find that women in science programs with higher self-validation generally evaluate their experiences more positively, which is associated with academic success in the program (Hyde & Gess-Newsome, 2000). Factors associated with self-validation include strong support systems (i.e., friends and family), study groups, peer mentors, self-confidence, and faculty encouragement, all of which lead to greater persistence of women in STEM programs (Hyde & Gess-Newsome, 2000). Further studies confirm that males generally have more internal self-confidence (measured through self-validation) when it comes to STEM programs, whereas self-confidence and self-validation in female students often come from outside sources such as friendships networks (Huang & Brainard, 2001). Academic self-confidence is also found to drop in women in first-year STEM programs, which is linked to a sense of belonging in the program (Brainard & Carlin, 1998).

Studies that focus on self-validation measure many variables our study will be focusing on such as self-validation, confidence, faculty-student interactions, and a sense of belonging in the program of study (Brainard & Carlin, 1998; Colbeck et al., 2001; Shapiro & Sax, 2011; Hyde & Gess-Newsome, 2000; Huang & Brainard, 2001; Hurtado et al., 2011; Newton et al., 2009). However, these studies largely ignore students in Arts programs and do not focus on first-year students, which may yield different results. Many of the studies also control for gender (Shapiro & Sax, 2011; Hyde & Gess-Newsome, 2000; Huang & Brainard, 2001; Brainard & Carlin, 1998), which may provide interesting results about self-validation in women in STEM programs and self-validation in men in Arts programs, as these genders are often underrepresented in these programs of study, which may impact their sense of belonging and community (Rotter, 1982).

Concluding Remarks

Most of the previous studies look at student self-validation or a variation of self-validation (i.e., self-efficacy, self-confidence) as a predictor of classroom performance

and/or sense of belonging. However, most studies do not consider the academic year of the student, or factors related to the student's field of study (STEM or Arts) such as sense of community/belonging in their faculty of study, perceived prestige of their faculty, social validation from others, and connectedness to their faculty, all of which may impact a student's sense of self-validation based on their faculty of study. Most of these studies also focus on a quantitative methodology or a mixed methodology. Our study will expand on and combine aspects of previous studies to qualitatively examine first-year undergraduate students' sense of self-validation based on their academic field of study (STEM or Arts). We will be examining if self-validation is impacted by factors specific to the field of study such as sense of community, confidence, perceived prestige of their faculty of study, connection to their faculty, and faculty-student relationships. Although our study does not seek to measure or improve the academic achievement of first-year undergraduate students, previous studies have shown that it may uncover helpful information that can be used to achieve this goal.

Theory

Introduction

Prior to beginning our research, we selected five social psychological theories to explain our findings; Interpersonal Contact Theory (ICT), Social Identity Theory (SIT), Symbolic Interactionism (SI), and Schema Theory. These theoretical frameworks provide us with the foundation to explain our research findings. We chose these theories, as they provide a framework to interpret and understand how individuals and groups develop perceptions concerning their own, and other faculties. Additionally, these theoretical frameworks allow us to understand how different faculties of study shape an individual's sense of self-validation. This section will discuss each theory in more detail and how it relates to our research of inquiry.

Interpersonal Contact Theory

ICT was developed by Gordon Allport in 1958 (Allport, 1958). ICT states that individuals develop in-group and out-group mentalities based on similarities and differences between group members and tend to have negative attitudes — such as prejudice and discrimination — towards out-groups due to lack of contact and interaction between groups (Allport, 1958; Lytle, 2018). Allport (1958) defines prejudice as "an avertive or hostile attitude toward a person who belongs to a group, simply because he (or she) belongs to that group, and is therefore presumed to have the objectionable qualities ascribed to the group" (p. 8). According to Allport (1958), prejudice may be sensed or conveyed, and is typically aimed towards a group or an individual due to their group membership. Prejudice may be detrimental to one's self-concept, as it typically fosters low self-esteem (Allport, 1958). Due to this, individuals may discriminate against others to exhibit power, improve their self-esteem, and mitigate individual and group problems by using stereotypical categories as scapegoat (Allport, 1958; Lytle, 2018).

Allport (1958) theorized that under the right conditions, contact and interaction between groups is the best strategy for lowering hostility, prejudice, and negative stereotypes of the out-group. The theory states that both groups must have equal status, similar/superordinate goals and interpersonal contact that allows them to work together to achieve these goals, and the contact must be supported by legitimate authoritarian

figures. Allport (1958) also entails that interpersonal contact must be informal in nature and must not be forced by outside sources in order to operate successfully.

In terms of our research, we predicted that in-group and out-group mentalities would be reflected in the two populations we studied — first-year STEM and Arts students. We presumed that students identify heavily with their faculty of study (i.e., they will have the feeling of being a STEM or Arts student) and thus, would feel some sort of prejudice towards the opposing out-group (i.e., those not in their faculty of study). We believed that this sense of identity within the in-group and prejudice towards the out-group would impact students' sense of self-validation within their faculty of study.

We thought this framework would also be useful in our study in order to understand where cross-faculty prejudices come from. For instance, we predicted there would be differences in perceived prestige between STEM and Arts students, which would impact the element of equal status. Using this framework along with further research may also help us understand how to integrate STEM and Arts faculties across campus to negate and lower possible cross-faculty prejudice, as well as promote positive contact. Positive contact may also promote greater self-validation among both in-group and out-group members by reducing prejudice.

Social Identity Theory

SIT is a theoretical framework developed by Henri Tajfel and John Turner that looks at identity development based on group membership (Tajfel & Turner, 1979). This theory understands social groups as a main factor in individual identity formation and maintenance. SIT holds that an individual's identity is categorized based on in-groups (i.e., groups individuals belong to) and out-groups (i.e., groups individuals do not belong to), where belonging fulfills and maintains one's self-esteem and pride as a member of the in-group (Tajfel & Turner, 1979). In-group and out-group membership involve three cognitive processes: categorization (i.e., sorting of characteristics or traits into groups), social identification (i.e., a sense of belonging in the in-group), and social comparison (i.e., weighing one group against another).

Tajfel & Turner (1979) establish that group membership solidifies an individual's sense of belonging within society. As a result, individuals will emphasize the positive traits of their in-group and the negative traits of the out-group to increase their sense of self-esteem and solidify their identity based on in-group membership. This results in prejudice and/or discrimination towards the out-group, which solidifies and emphasizes the positive position of the in-group (Tajfel & Turner, 1979).

SIT allowed us to explore if/how individuals develop a sense of group membership or identity within STEM or Arts faculties. In other words, do individuals have a sense of *being* a STEM student or an Arts student? It also allowed us to understand if/how individuals categorize themselves as STEM or Arts students (i.e., what makes a student a STEM student or an Arts student). This framework allowed us to interpret if/how self-validation is developed based on group membership (i.e., does membership in a certain faculty of study lead to greater self-validation?). We predicted that our research would show that students would feel more validated in their faculty if they have higher self-esteem, self-efficacy, a stronger sense of connection to their faculty (i.e., belonging, community), greater perceived prestige, stronger student-faculty relationships, and stronger social validation (i.e., approval from friends, parents, siblings). Finally, this theory helped us

explore if/how individuals emphasize the positive traits of their faculty and the negative traits of other faculties to increase their sense of self-validation within their faculty of study (the in-group).

Symbolic Interactionism

George Herbert Mead introduced the concept of SI into the world of American Sociology in the early 1920s (Dingwall, 2001). However, Herbert Blumer, a student of Mead, coined the term in 1937 (Dingwall, 2001). SI is a micro-level theoretical framework that focuses on social interaction, language, and the use of symbols as key tenants in the construction of social reality. SI understands humans as active agents in meaning making behaviour — they interact in their social worlds to create shared meanings and definitions (Blumer, 1969). SI also views meaning as fluid and relative — changing across time and place. In this regard, by interacting with others, individuals are able to create definitions of social reality. These definitions are internalized, repeated, and recreated in social interactions with others over time (Blumer, 1969).

SI was useful to use in our research study because it allowed us to see patterns in social interaction between different groups of students (i.e., STEM students and Arts students). It allowed us to see if/how these students construct their social realities differently based on different levels and/or different kinds of social interaction and how this may impact their sense of self-validation within their faculty of study. SI gave us insight into how different symbols are used in different faculties (i.e., faculty merchandise) and how this contributed to a students' sense of connection (i.e., belonging, community) within their faculty of study. For example, having an item of merchandise, or multiple items indicates a high symbolic connection to one's faculty, whereas having a low number, or no merchandise at all may indicate a low symbolic connection to one's faculty, and in turn, may impact their self-validation. Not having any faculty merchandise available to students may also symbolize a low sense of community within the faculty and may also lower individual students' sense of self-validation. Thus, SI was useful in our research study as it helped us understand the symbolic experiences and social realities of first-year students.

Schema Theory

Schema Theory was first introduced by Sir Frederic Bartlett in 1932 (Bartlett, 1932). Schema theory is a theoretical framework based on schematic development (Bartlett, 1932). Schemas are cognitive concepts that organize information into mental categories. This process is based on the presentation of an object, which in turn creates prototypes (i.e., cognitive representations of categories that rely on previous experiences with objects belonging to each category); making it easier for new information to be stored and organized according to previous experiences with an object (Bartlett, 1932). Schemas are developed in three stages: encoding, which includes the process of storing a memory trace based on perceptions of previous experiences, storage – preserving a memory in cognition to be available for retrieval in the future – and retrieval – recovering the memory trace from cognitive storage to be used in cognitive action (Bartlett, 1932). Additionally, schemas are social, meaning that information is interpreted in social interactions and experiences, ultimately contributing to the formation of one's schemas. An individual may also have schemas about the self (i.e., who they are). Self-schemas refer to "cognitive

generalizations about the self, including the processing of information about the self" (Fong & Markus, 1982, p. 191). Self-schemas are reflective of what individuals perceive about others (Fong & Markus, 1982) and can also be applied to factors such as school faculty and stereotypes.

Schema Theory was a useful framework to integrate in our research because it allowed us to understand how students store schemas related to their faculty. For example, do they store cognitive classifications based on the category of a STEM student or Arts student? This allowed us to understand if they see themselves as holding a unique identity due to being a certain type of student and if/what other characteristics, behaviours, values, and/or beliefs are categorized alongside this identity to create a certain type of student. This also helped us understand what other students, who belong to different faculties, classify as a STEM student or an Arts student. In other words, do they hold certain prototypes of what it means to be a STEM student or an Arts student? In this sense, Schema Theory was used similarly to Social Identity Theory but on a more micro, individual level. Group schemas also allowed us to understand if certain faculties hold perceptual stereotypes of "other" out-group faculties. For instance, do Arts students hold the stereotype that all STEM students are "stuck up," or "smart"?

We were also able to determine if students internalized schemas about how others judge their faculty. For example, are they aware of any stereotypes that exist for STEM or Arts students and how does this impact their self-validation within their faculty, if at all? We were also able to determine to what extent self-validation is impacted when schemas do not match others judgements. For instance, is self-validation lowered or negatively impacted when schemas do not match others expectations of that student (i.e., if others believe one's faculty is not prestigious)? Similarly, is self-validation higher when schemas do match others expectations of that student (i.e., if others believe one's faculty is very prestigious). Therefore, Schema Theory is useful in the sense that we can understand the cognitive processes of individual students and how they develop perceptions of others.

Concluding Remarks

In sum, ICT, SIT, SI, and Schema Theory are relevant to our research, as each of these theories demonstrate how self-validation contributes to the overall first-year undergraduate experience. These theories are integrated into our research, as we compare the experiences of both STEM and Arts students, and how they differ based on group membership and cross-faculty prejudices. This enables us to relate various theoretical frameworks to the results of our study, to gain further insight into how one's faculty of study contributes to their sense of self-validation.

Methodology

The research was approved by the McMaster Research Ethics Board (MREB#: 0327, 2012 67).

Aim of Research

The purpose of this study is to understand how faculty of study impacts self-validation among first-year undergraduate students in STEM and Arts faculties. We investigated whether or not first-year undergraduate students are more validated in STEM or Arts

faculties at McMaster University. Additionally, we explored what processes contribute to these students' sense of self-validation.

Ethical Considerations

Ethics is a major concern and was greatly considered throughout the entirety of the research process. It was crucial to minimize the risks that could have potentially caused psychological and social harm. Potential psychological and social risks that the research may have produced was intercepted through implemented preventative measures which allowed the participants' dignity to be safeguarded.

Psychological Risks

Potential psychological risks include interview questions leading to possible dissatisfaction with one's faculty (i.e., confusion about one's faculty of choice, realization of a lack of belonging and/or community) and/or one's self (i.e., feeling inadequate in one's faculty, doubting their academic and/or social capabilities. Reflecting on one's experience as a first-year student could have triggered psychological discomfort (i.e., memories of traumatic university experiences). Participants may have been apprehensive or anxious to be interviewed in-person. They also may have also been apprehensive or anxious about being recorded. Researchers understood that this could have been the first time students participated in a research study and may, therefore, have required additional support and/or accommodations to ensure they felt comfortable and safe.

To minimize psychological risks, we provided example questions on recruitment scripts to ensure potential participants knew what to expect during the interview. When asked, we forwarded the complete list of interview questions prior to the interview which assured our participants to feel comfortable. We also ensured our questions were worded neutrally (i.e., ungendered, unbiased, inoffensive) to avoid any triggering language. The more sensitive questions were asked in the middle of the interview once rapport had been established to ensure the participants felt comfortable relaying information to researchers. During interviews, individuals were able to skip any questions they felt uncomfortable answering with no repercussions from researchers. Participants were assured before the interviews that they could withdraw from the study at any time during the interview and may withdraw their interview data seven days after the interview has taken place. This ensured that participants had ample time to reconsider their participation.

Participants were instructed before the interview began on how to voice their desire to withdraw. If the interview had already taken place, participants were instructed to send an email with the subject line: "Research Withdrawal" to withdraw their interview data. Participants were also instructed to provide the date and time of their interview to ensure the correct data was destroyed (as pseudonyms were assigned directly after the interview). This information was relayed to all participants in emails before scheduling and at the beginning of the interview. To further minimize any psychological distress, the letter of information included contact details for the McMaster Student Wellness Centre and was relayed again when the interview had been concluded. This ensured that participants could access the appropriate resources if necessary.

Social Risks

Potential social risks included involuntary participation, breaching confidentiality (i.e., participants' data being revealed in association with their personal information), anonymity (i.e., keeping participants' identity unknown), and informed consent. These potential social risks may have resulted in negative feedback or backlash from peers and/or other faculty members if participants' responses were viewed as inconsistent with faculty and/or peer views. This may have resulted in the loss of relationships with peer/social groups or negative attitudes towards the participant.

To minimize the social risk of involuntary participation, we conducted our recruitment through posters and Facebook pages where individuals were able to voluntarily contact the research team to schedule an interview. We did not actively recruit people we were in affiliation with. We minimized social risk on our initial recruitment scripts (including posters posted on the McMaster University campus, student-run Facebook groups, social media pages for student-run clubs, and services that focus on first-year undergraduate students) by reminding participants that they would remain anonymous throughout the recruitment and interview process. We also reminded potential participants not to comment, like, or share posts if they wanted to remain anonymous.

The interviews were conducted in private study rooms at McMaster University where the participant's answers could not be overheard. Following the interviews, we assigned pseudonyms to protect the identity of the participants. We stored data in a secure, password-protected file that ensured that participants' identities remained anonymous throughout the data transcription, analysis, and presentation process. Only researchers had access to these documents and audio recordings. The audio recordings were destroyed no more than seven days after the interview had taken place. Any email correspondence with participants or those reaching out to participants were deleted after they were sent a thank-you email after the interview had taken place.

All remaining research (i.e., interview transcriptions) will be deleted by April 30, 2020 to ensure there are no discrepancies within the research while the final thesis project awaits grading. At this time, the files and documents will no longer be (potentially) needed for review (i.e., grading). This will ensure participants' information remains confidential and inaccessible to the researchers and others.

Verbal and written consent was also established before the interview took place to ensure the participants' were adequately informed about the research study and that the information they shared would be used towards our research.

Research Process

For our research study, we took a qualitative approach to study self-validation among first-year undergraduate students in STEM and Arts faculties at McMaster University by conducting semi-structured in-person interviews. Our research team received ethics approval on November 1, 2019 and started the recruitment process on November 4, 2019.

We chose semi-structured interviews because they contain more open-ended questions, which allows for flexibility and greater discussion between the interviewer(s) and interviewee. Using semi-structured interviews was advantageous to our research study as it provided us with the ability to collect and analyze intricate data from the personal experiences of our participants. Semi-structured interviews generated greater

flexibility which allowed the research team to probe for additional information, a stronger ability to develop rapport among participants and the interviewer(s), and allowed new ideas and themes to surface amid interviews. This approach is inductive and humanistic, which ensured that we grasped the experience of the student and inferred patterns from this information. We were not seeking to prove a hypothesis, rather, we aimed to understand the experience of the student.

Semi-structured interviews provided us with greater knowledge of first-year students' sense of self-validation within their faculty of study. Qualitative interviews also allowed elaborate personal experiences to be shared through the participants' perspectives, which provided a rich and detailed data set. By using this methodology, we were able to understand how first-year undergraduates develop a sense of self-validation through acquiring insight into their individual opinions, thoughts, and experiences. Semi-structured interviews contained considerable flexibility, which allowed the interviewer to probe for additional information. If there was any uncertainty regarding a question, the researcher(s) would give examples of potential themes that could be discussed within their answer which allowed participants to gain clarity on the question(s) administered. Amidst interviews, the researcher(s) and participants created professional relationships that allowed solidified rapport to be established between them. The rapport established between the researcher(s) and participants allowed both parties to feel comfortable in an interview setting.

We recruited specific participants from the McMaster University population (i.e., first-year undergraduate students 18 years of age and older from STEM and Arts faculties). The sample population was gathered through convenient and purposive sampling techniques. Our participants were also recruited through snowball sampling if information was released about our study through word of mouth from other participants who took part in the study. However, we did not encourage or ask previous participants to act as recruiters. This ensured that no breaches in confidentiality or anonymity would occur. This also ensured that previous participants did not feel obligated to discuss our study.

The in-person interviews took place in private study rooms at McMaster University in L.R. Wilson Hall. Conducting interviews from this location minimized the risk for breaches in anonymity since the participants answers could not be overheard. This location also mitigated potential risks for both the interviewer(s) and interviewee by being private, but not completely isolated. We attempted to recruit participants through posters on campus, the McMaster class of 2023 Facebook page, social media pages directed at certain faculties such as the McMaster Social Sciences Society, Humanities Society, Engineering Society, Biology Society, Science Society, Health Science Society, and Math and Stats Society; each of which we attempted to gain permissions through the McMaster Student Union and page administrators. We also reached out to first-year focused services such as MSU Spark and recruited through their Facebook page. This ensured that we reached an ample amount of potential first-year undergraduate students in both STEM and Arts faculties.

Unfortunately, our ability to recruit participants were limited because our access to certain groups were restricted by gatekeepers. We were unable to reach most page administrators except for the McMaster University class of 2023 Facebook page which granted us permission to upload our poster to their page. We advertised our recruitment posters around campus as soon as it was approved by the MSU Underground Media +

Design Center. Active recruitment occurred between November 4, 2019 and February 1, 2020.

Our recruitment processes allowed us to obtain a total of nine participants. This sample was primarily female (N = 7), five of which were STEM students and two of which were Arts students. The remaining participants were male (N = 2), both of which were Arts students. Of this, four participants were Caucasian, three South Asian, one East Asian, and one Multiethnic.

Participants received compensation for their participation by being given a drink of their choice during the interview. This small compensation was advertised in recruitment scripts as an incentive to participate in our study and as a form of appreciation to participants for their time. If the participant chose to withdraw before the scheduled interview, they did not receive the beverage provided. If the participant chose to withdraw at any time during the interview or while still in the interview room, they were given the choice to take their beverage with them, finish it in the interview room, and/or dispose of the beverage as they wished to do so. All research was conducted through voluntary participation. We remained in close touch with the Dr. Clancy who acted on behalf of the McMaster University Research Ethics Board to verify that our plans for the research study received ethical approval.

Once potential participants contacted the research team about the study, the research team immediately sent the potential participant a letter of information to determine if they would like to continue with the study. Upon request, we were willing to provide the full list of interview questions to ensure they felt comfortable in their decision to participate in the study. Participants were given the ability to choose the date and time of their interview. Once an interview had been scheduled, the research team would send the participant an email reminder the day before the interview with the time and place of their interview. An interview team (one researcher to conduct the interview and one researcher to ensure proper audio recording) was then selected based on their availability and affiliation to the participant (only those with no prior or current affiliation were selected to interview the participant). The interviews took place in private study rooms at McMaster University in L.R. Wilson Hall. Although, since one interview was unable to be held at this location, we resorted to utilizing a private study room in the Health Sciences Library. The interviews were administered by two researchers and took approximately 15-30 minutes to complete. The interviews included 15 questions and 5 demographic questions.

Once in the interview room, the interviewer went through a series of steps before the questions were administered. First, the interviewer thanked the participant for their interest and involvement in our study and offered them compensation for their time (a beverage of their choice) which they had the option to drink whenever they pleased or decline for any reason. We then gave the participant time to review the letter of information and consent form. Next, we reviewed the letter of information and consent form with them and outlined the steps involved in the interview process such as how long it would take, how many questions we would ask them, if they were comfortable being audio recorded, and how and when they could withdraw from the study. We then obtained their signature on a hard copy of the written consent form. Participants were assured that they could withdraw from the study at any time during the interview and could withdraw their interview data for up to seven days after their interview took place.

In order to withdraw during the interview, the participant was instructed to verbalize a statement such as "I would like to withdraw" or "I would like to stop." In this case, the audio recording would be stopped immediately, the participant would be directed out of the interview room, and all of their data (i.e., corresponding emails, audio recordings) would be destroyed within 24 hours. If the interview had already taken place, participants were instructed to send an email to the research team using the same email on the recruitment poster with the subject line: "Research Withdrawal." They were also instructed to provide the date and time that their interview was conducted to ensure the correct data would be destroyed as interviewees were given pseudonyms directly after the interview took place. Although we did not have any withdrawals, if a participant were to withdraw, their corresponding data would have been destroyed within 24 hours of the email being received.

We then allowed the participants to ask any questions and ensured that the participants were ready to start the interview. After these steps were completed, the interview and audio recording began. After the interview ended, we thanked the participants for their interest and involvement in our study. We then reiterated the withdrawal process and ensured they had the contact information for the McMaster Student Wellness Centre. This ensured participants had access to the appropriate resources if necessary.

No more than 24 hours after the interview, participants were sent an appreciation email thanking them for their participation and how they can obtain the study results. Due to the COVID-19 pandemic, our study results were displayed virtually rather than in-person. Thus, participants' were emailed about the alternative presentation format and directed to the virtual location.

All audio recordings were assigned a pseudonym after the interview was concluded and were transcribed within seven days of the interview. Audio recordings of the interview were not transcribed verbatim. Rather, edited transcriptions were used where we omitted parts of the audio recording such as pauses, background noises, and body language without changing the words spoken by the participant. This allowed for a cleaner and easier to read version of the interview for data analysis and presentation.

Data Analysis

Our steps for data analysis included establishing a set of questions and collecting, organizing, analyzing, and interpreting our dataset. We began our interview process by establishing a set of clear and concise questions. The interview questions exhibited lay terminology so that participants were able to effectively understand and answer each question. The questions reflected our research question, and were not biased, misleading, or overwhelming. Before data collection, we determined what type of information could potentially be collected from our interviewees by examining previous literature. A filing and naming system was established ahead of time to help keep all data organized and easily accessible to all group members through shared documents and files. An interview template was created to ensure consistency among each interview as well as to save time.

After data collection, we analyzed our data by manipulating it in several ways. Pseudonyms were used to replace the names of our participants to ensure anonymity. A table in Excel was created to sort data and find correlations between variables and to identify themes and sub-themes. While reviewing and interpreting interview

transcriptions, we used content analysis to analyze the meanings of certain statements and comments made by participants. This analysis process helped us to find trends, correlations, and irregularities that were present in our data and helped us to better answer our initial research question and discuss any discrepancies that may be present. Once our data was analyzed, we interpreted our results. While interpreting our results, we asked ourselves if the data answered our original questions, if the data helped us to defend against any objections to our research, and if there were any limitations to our conclusions. Once our results were interpreted, we were able to find correlations between our research findings and previous literature on this topic. After interpreting our results, we believed our data displayed a clear and accurate representation of our research questions and its relation to previous literature.

Challenges

Conducting semi-structured interviews brought some challenges to our study which included having a small sample size, issues acquiring participants, limited information, reliability of our research findings, authenticity of participants, and researcher bias. We had a relatively small sample size because of our choice of qualitative methodology, which may not prove generalizable to all first-year undergraduate students in STEM and Arts faculties at McMaster University. We also did not have a very diverse sample population which created difficulties surrounding generalizability. Our participants were predominantly female which caused a lot of our findings to be representative of the female population. The male participants who we interviewed were from Arts faculties so our findings did not possess the first-year undergraduate experiences of males in STEM faculties. Finding students that were inclined to discuss their personal opinions and experiences during a face-to-face 30-minute interview was extremely difficult. Since interviews were between 15-30 minutes long, it was hard to gather detailed information from the participants. Some interviews were shorter than others which restricted us from gaining more in-depth information. Another challenge is the reliability of our research. Researchers who wish to repeat our study on self-validation may not generate similar findings, which may be a barrier in regards to the advancement of our research in the future.

It was hard to recognize if participants were answering our research questions authentically. Participants may have been inauthentic when answering questions, especially if they were STEM students because of our research team's faculty affiliation in the Arts. As a result, there could also have been a researcher bias that stemmed from our thoughts and opinions of faculties that differ from our own. There may have been a researcher bias stemming from beliefs of existing literature related to our topic of study. Since we were interviewing participants in faculties other than Social Sciences, it was perhaps difficult for our research to not be influenced through bias towards faculties other than the Social Sciences. Being in a Social Sciences faculty gave us a clear bias towards our own faculty because we chose to pursue it for the entirety of our undergraduate career. Participants may have also carried a bias towards us due to our age and gender because we are all fourth-year undergraduate students who identify as female. Participants may not have taken our research seriously due to our age and gender, which could have jeopardized the authenticity of the participants' answers.

To overcome these challenges, we employed strategies which allowed us to conduct successful and unbiased interviews. For instance, although we did not specifically ask interviewees to recruit additional potential participants, some specified their own desire to do so, leading to an indirect snowball sampling technique. We refrained from comparing the experiences of our participants to the experiences of other students in the literature we reviewed to eliminate researcher bias. Rather than relating our participants' experiences to students studied in other research, we rejected any presumed thoughts we may have possessed and searched for new ideas that emerged from the data. Participants could have carried a personal bias in regards to us as a collective group enrolled in an Honours Social Psychology program, however, we were aware that their impressions of us and our program/faculty may not change.

Unfortunately, we were unable to overcome all the challenges we faced while conducting this study. Despite an indirect snowball technique, the sample size of participants recruited was small, which limited our research findings and generalizability of our research study. Although we were able to prompt interviewees for a more in-depth answer to our questions, it would be unethical to pry them for more information. Since it was infeasible to definitively determine the authenticity of participants' answers to the interview questions, it was critical to create a sense of trust and rapport between interviewers and interviewees. To completely replicate this study is unrealistic since participants involved in other studies may possess dissimilar first-year undergraduate experiences. However, by clearly outlining our methodology and research process, similar studies may be conducted at other universities and may yield similar results to aid in improving the self-validation of first-year undergraduate students.

Timeline

Description	Date
Soft Deadline for Research Project Proposal and Ethics Protocol	October 9, 2019
Deadline for Research Project Proposal and Ethics Protocol	October 23, 2019
Group Meeting with Dr. Clancy	November 1, 2019
Soft Deadline for Outline of Class Presentation of Research Plan	November 15, 2019
Deadline for Revisions of Research Project Proposal and Ethics Protocol	November 15, 2019
Tentative Recruitment Start Date (put up posters around campus, email faculty societies, and MSU Spark)	November 16, 2019
Class Presentation of Research Plan	November 22, 2019
Deadline for Recruitment	February 1, 2020
Deadline for Data Collection	February 7, 2020

Deadline for Interview Transcriptions (we will transcribe within seven days of each interview)	February 14, 2020
Deadline for Participants to Withdraw from Study (they will be able to withdraw within seven days of their scheduled interview)	February 14, 2020
Start Data Reduction, Coding and Analysis	February 15, 2020
Deadline for Data Reduction, Coding and Analysis	February 22, 2020
Start Date to Compile Findings	February 23, 2020
Deadline to Compile Findings	February 28, 2020
Start Date to Assemble Poster Content	February 29, 2020
Hard Deadline to Assemble Poster Content	March 4, 2020
Submit Rough Draft of Poster to Dr. Clancy	March 4, 2020
Conduct Poster Revisions	March 4-9, 2020
Deadline for Final Poster Edits	March 9, 2020
Deadline for Poster to be Ready to Print	March 10, 2020
Preparing for Virtual Poster Presentation	March 11 – 19, 2020
Virtual Poster Presentation	March 20, 2020
Soft Deadline for Final Thesis Paper	March 25, 2020
Read-through of Final Thesis Paper	April 8, 2020
Deadline for Final Thesis Paper	April 13, 2020

Weekly meetings occurred every Thursday from 3:00PM – 6:00PM from October 10, 2019 to March 12, 2020, excluding the month of December 2019. Due to COVID-19, our in-person meetings were suspended on March 15, 2020 and conducted virtually until April 8, 2020.

Soft Deadline: flexible deadline which allows for further revisions and edits.

Concluding Remarks

This section discussed the qualitative methodological approach we took to our research study. It outlined the research questions and the ethical considerations such as psychological and social risks along with the preventative strategies for these risks. It discussed the research process and data analysis procedures accompanied by a timeline and described the many challenges we experienced throughout the research study and means of mitigating them.

Results

Summary of Results

Variables	STEM students	Arts students
Social Validation	Mixed reasoning for faculty Majority reside on campus High external support from parents and peers	Mixed reasoning for faculty Majority reside on campus High external support from parents and peers
Efficacy in academics and confidence	High efficacy in STEM and Arts courses High confidence in future career paths	High efficacy in Arts courses & Low efficacy in STEM courses Moderate confidence in future career paths
Students' perception of faculty	High perceived prestige High sense of value	Low perceived prestige Low sense of value
Sense of connection	Moderate sense of community and belonging	Low sense of community and belonging
Changes to faculty	Desire moderate changes	Desire moderate changes
Overall university experience	Good (high) first-year experience	Mediocre (moderate) first year experience

Social Validation

Social validation is associated with why students choose their faculty of study, whether they plan on remaining in this faculty of study, parental and peer support for their faculty of study, and their level of independence – which is associated with their housing situation (i.e., proximity to campus from September - April). Overall, STEM students reported a high sense of social validation and Arts students reported a moderate sense of social validation in relation to these variables.

Choosing A Faculty of Study

The respondents in STEM chose their faculty of study based on personal interest, generalizability, and desired career path. For instance, Betty (STEM) explains, "I've always been interested in STEM and engineering. I was actually on my high school's robotics team and I wanted to go into the sciences, something in STEM." Similarly, Veronica's (STEM) high-school teacher recommended Veronica (STEM) to enter the Health Sciences due to enjoying "problem-based learning."

However, it is evident that those in STEM also had external influences that led to their decision to enter their faculty. For instance, Maria (STEM) and Betty (STEM) were both encouraged by their parents to enter their faculty due to the perception that it results in a direct career path. Specifically, when Betty (STEM) was asked about what her parents think of what she is studying, she explains:

Uhm, they like it. They think that engineering is a good strong undergraduate degree. My dad is in fact an engineer, I have a lot of engineers in the family, so they do think that it's a strong career to be in.

Additionally, Sarah (STEM) explains that her family liked her decision to pursue a general sciences degree because it would help her grades/GPA throughout university. She discloses, "they also didn't want the whole general science thing cause like physics brings down your GPA and stuff so, but other than that they are okay with it." In this sense, along with interest, outside influences also played into the faculty decisions of STEM students.

All STEM students revealed that they plan to remain in their faculty of study and most desire to specialize in upper years. Some STEM students also chose their faculty based on generalization with the specific goal of specializing in upper years. As Lilac (STEM) explains:

Yeah so like first-year it's obviously pretty general and then the second-year you choose your specialization and from there it's like, like I'm probably going to choose x-ray so from there it's like really specific to x-ray and then in the summer of second-year I would go to a hospital and then start practicing.

When asked if she would stay in her faculty for the remainder of her undergraduate career, Maria (STEM) also states, "I guess as part of the sciences so, yeah, I'll still be in that, but I'm planning to like apply to bio, different bio programs next year instead of staying in chem phys." She later specifies her interest by explaining that she would like her specialization to be molecular biology and genetics. Going into a general program is, therefore, seen as temporary since most STEM participants planned to specialize in upper years.

Many first-year students who entered the Arts also chose their faculty based on interest, generalizability, and desired career path. Rob (Arts) expresses:

I chose social sciences because it's pretty broad. I wasn't 100% sure what I wanted to do. I really wasn't, I didn't feel certain enough to make that, you know, decision right away to go into business or engineering or anything like that. So, it's more broad I guess, to try a lot of different things.

Victor (Arts) indicates that he chose his faculty to help with his desired career path by saying, "I wanna go to law school so I feel like philosophy would help." Moreover, Cherry (Arts) clarified that her choice was based on interest by stating, "I'm in Poli-Sci and I've always been interested in Poli-Sci." Thus, the Arts faculty was appealing due to the ability to choose from a variety of pathways rather than a specific career path.

Despite the finding that the majority of Arts students plan on staying in the Arts for the remainder of their undergraduate career, they did not mention any plans to specialize in upper years. Outside influences and the ability to specialize is thus more strongly associated with how STEM students choose their faculty of study.

External Support

All STEM students reported receiving a high level of parental and peer support for their faculty of choice. As mentioned earlier, Betty (STEM) and Veronica (STEM) communicated that many members of their families were in STEM fields. With regard to support for school of choice, Sarah (STEM) mentioned that she received a high level of support from her parents for her decision to attend McMaster University explaining, "well they wanted me to go to like Waterloo or something but they like the campus here and they like the program here better than like the overall environment at other places." This indicates that both school of choice and faculty of study are important deciding factors for first-year undergraduate students.

In comparison to Arts faculties, Maria (STEM) explains, "my parents were, thought that like maybe like something like that which had more lab components and stuff like that could be better coming out of school than like maybe an arts program or something." Also, Lilac (STEM) disclosed:

> I kind of told my parents that I wanted to be a doctor, and I do, but uhm when I chose Med-Rad they were like 'well like how are you going to become a doctor through that?' because you come out an x-ray tech.

With that said, parental support is associated with career and job opportunities, which is viewed as more abundant with STEM degrees as opposed to Arts degrees. STEM degrees are also perceived to lead to direct career paths, rather than broader Arts degrees. The ability to go into a direct career path may thus explain why STEM students prefer to specialize in upper years.

STEM students also received high levels of support from their friends for their faculty of choice. Veronica's (STEM) friends support her interests, but acknowledge the difficulty of getting into the faculty as she tells interviewers, "they're pretty supportive, they knew that I really liked science from the start, so when I applied for the program, they were like 'oh, well I hope you work hard on your sup app and everything goes well." Similarly, Lilac (STEM) indicates that the subject she's studying is seen as positive among her friends saying, "well my friends actually think it's really cool, and so do I."

Most Arts students also reported receiving plenty of support from their parents when deciding their faculty. Although Rob (Arts) did not specify, he did mention that his parents supported his decision to further his education in general. Of the students who expressed receiving high levels of support from their parents, Cherry (Arts) indicated that she specifically received high support for her particular school of choice. However, she hesitated before telling interviewers, "Uhm, they're (her parents) happy with it uhm because I might go into law after so they're happy I'm getting a degree… yeah." In this sense, Cherry's parents are supportive of her getting an Arts degree as long as she has a specific career path in mind after graduating.

Although Lola (Arts) similarly reported that her parents and high school teachers supported her choice of faculty, she expressed that others assumed her parents would not be supportive. Lola (Arts) stated, "A lot of people around me, they were like 'how could you be doing Arts?' or 'how do your parents allow it?' and all those things, but I was very lucky to have supportive family and friends." In this regard, others perceived that her parents would not be supportive of her choice of schooling because she is pursuing an

Arts degree. When probed further, she indicated this was due to the perceived lack of job opportunities available to those with Arts degrees.

Although the majority of Arts students reported receiving support from their friends for their faculty of choice, their friends were uncertain about future careers that could be obtained with Arts degrees. As Cherry (Arts) explains, "most of them [her friends] are like pretty supportive, some people are like "uhhh, what are you going to be, a Political Scientist?" Like no haha, overall, it's okay but, yeah." On the other hand, other Arts students state that they are unsure if their friends are supportive of their faculty, but do believe they support the furthering of one's education. Specifically, Rob (Arts) says, "I'm not sure. I think they probably have respect for anybody who is in school and most of my other friends are students here as well so...." Therefore, Arts students reported a more mixed and moderate sense of support from their friends and parents in comparison to STEM students.

Housing

Most of the students in STEM and Arts faculties reside on campus (in residence), revealing that they are required to adjust to living on their own – many of them for the first time. For instance, Betty (STEM) travelled from Alberta to attend McMaster University. She reported that her parents were nervous at first about her moving far away, as she mentions, "I'm from Alberta, and they were worried about me going across country and that kind of stuff, but in regards to the program they think it's great." In this regard, our participants gained a sense of independence, as they began to learn to live and take care of themselves without parental supervision. We found that this variable was consistent across both STEM and Arts students.

Nevertheless, this transition is also perceived as difficult and stressful due to significant environmental changes. Most participants reported stressors including lower grades, moving from home, and the high expenses involved with being a university student. As Lola (Arts) explains:

> A lot of my friends feel like it's very hard to uhm afford… doing a part time job and also managing expenses for textbooks, food, finding a place for next year when you don't have a residence to live in. It's very hard.

She further expresses, "I feel like as a first year it's already very hard to transition into university …. especially being away from home, changing your whole environment… you feel that." Moreover, Sarah (STEM) denotes that her choice of school was based on proximity to home. Despite her desire to live in residence, she states, "I think I chose McMaster because I really like the campus and it was like close to home." Hence, while university may be a source of independence, all of our participants reported feeling difficulty with this transition. This variable was consistent across STEM and Arts students.

Self-Confidence and Self-Efficacy

Interviewers inquired about confidence by asking about the potential bird courses (i.e., easy electives) students would choose and classes they would avoid to gauge the area(s) of study they have a strong sense of efficacy in (i.e., something they have control over or is achievable). Additionally, they were asked about their future career plans and their

perception of their degree aiding them in these career paths. Overall, STEM students reported a high sense of self-confidence and self-efficacy in relation to these variables and Arts students reported a moderate sense of self-confidence and self-efficacy.

Bird Courses

Upon asking respondents about potential bird courses, it is evident that STEM students have a strong sense of efficacy within Arts faculties. For instance, when asked about the bird course she would take, Lilac (STEM) explains, "I would ask other people but probably not Science, because that's not going to be easy… so I would probably go for Humanities." This indicates that Arts courses are perceived to be easy.

Certain Art courses that require previous knowledge or certain skill sets are also viewed as difficult. As Betty (STEM) explains, she would stay away from "visual arts and media, that kind of stuff. I'm not good at painting, I'm not good at drawing so that would not be a course I'd be taking." Veronica (STEM) also indicates she is a poor writer and would stay away from any course with heavy writing. In this sense, although Arts courses are generally thought of as 'easy,' this perception varies by each student's ability and technical skills.

All the respondents in the Arts had efficacy in their faculty of study. Particularly, Rob (Arts) mentioned that the Humanities faculty has a lot of bird courses, explaining, "I took a class [in Humanities] last year and it was pretty easy." Lola (Arts) also made a statement about how others perceive Arts courses in general in terms of respect:

> Uhm no they don't respect our faculty as much because one thing, how I know this is people say 'I'm taking a bird course, it's a geography course it's supposed to be easy and I'm taking sociology, it's supposed to be easy, I'm taking this… that'. No it's not supposed to be easy, you're supposed to work hard and that's the only way you're supposed to work hard and that's the only way you'll receive a good grade if that's what you're looking for but I don't think they see it as prestigious because I hate the title 'it's easy'…. It's not. Come to the real world and you'll see how hard it is to tackle these problems.

In this regard, perceived ease of a course may result in less respect for the adjacent faculty.

As STEM courses are perceived to be more difficult, many of the respondents chose to stay away from them when choosing a bird course. Specifically, the natural sciences are seen as most difficult. For instance, Cherry (Arts) explains that she would stay away from math and biology courses. Rob (Arts) also indicates that he stays away from, "anything chemistry, physics, one of the sciences, and if there was something related to engineering probably something like that."

Thus, while the majority of STEM and Arts students prefer to take bird courses in Arts faculties, the perception of Arts as easy varies by student ability. Despite this, Arts students in our study believed that STEM students think all Arts courses are easy, which is not the case.

Future Career Plans

In regards to career plans, while most STEM students did not have a specific plan for a future career, Betty (STEM) and Veronica (STEM) mention that they believe their faculties and degrees will help them in the job market. Betty (STEM) explains, "so with the career co-op services, especially in eng [engineering], there's a great amount of resources we have, so I really feel strongly supported in getting those co-op opportunities and getting into the workforce." Veronica (STEM) desires to pursue a career in medicine and when asked if there were resources available to assist in achieving this, Veronica (STEM) responded quickly "oh definitely." When asked if she believes her degree will help her in the future Sarah (STEM) proudly says, "oh ya for sure cause literally every single second in your specialization is like research intensive and helping you get out of classroom experience and stuff so I think that's good."

Although no participants were set on a specific career, many STEM students had a general understanding of the path they would like to pursue including, doctors, laboratory technicians, and radiologists. As mentioned above, many STEM students choose their faculties with a specific career path in mind. In this sense, there is a strong association with STEM faculties and perceived career opportunities, where STEM degrees are perceived to lead into more specific careers. There is also a large amount of resources readily available at McMaster University to assist STEM students in achieving their career goals.

Similarly, most Arts students also did not have a specific career in mind. For instance, when asked if he has any potential careers or career paths in mind Rob (Arts) explains, "uhm, not really, no. I'm sort of figuring it out, I guess." Others are exploring different avenues like Cherry (Arts) who explains she might switch her major "because I still don't know what I want to do after. I'm kind of interested in like working with like criminally insane people at the moment so I might switch it, but overall I do like Poli-Sci right now."

Lola (Arts) and Cherry (Arts) both believe that their faculty will help them to achieve some sort of career – although they are not certain what these are specifically. Lola (Arts) explains:

> I really like where I am and I have a bunch of things in mind, but I keep telling my parents that 'is it okay if I don't have a career because I love what I do' I want to just keep getting educated, more education, more education.

While none of our Arts participants discussed co-op or placement opportunities, some Arts students do have a set career path in mind and, like STEM students, believe their degree will help them achieve this. As Victor (Arts) explains, "I wanna go to law school so I feel like philosophy would help." In this sense, while Arts faculties are not generally understood as leading to a specific, set career, they are desired because of the ability to explore a variety of broad topics and develop general skill sets that can contribute to a wide variety of careers.

Students' Perception of Faculty

Students perception of their faculty is measured based on the perceived prestige of their faculty (i.e., if they believe others see their faculty as prestigious) and perceived value (i.e., if they feel their faculty is valued at McMaster University), which will be

analyzed in terms of perceived competition within faculty, allocation of funding, and research opportunities. Overall, STEM students reported a high sense of value and prestige and Arts students reported a low sense of value and prestige.

Perceived Prestige

General Perception of Prestige. In terms of prestige of one's faculty, those in STEM believe that their faculty is significantly more prestigious in comparison to others at McMaster University. With the presumptions in relation to how prestigious a faculty is, there is a perceived hierarchy at McMaster University. For instance, Sarah (STEM) explains that the natural sciences are more prestigious than arts.

Betty (STEM) further agrees by explaining that those in the Engineering faculty displayed overconfidence in their faculty as they stated that Engineering is more prestigious and difficult than other sciences. She also admits to a hierarchy of perceived prestige saying:

> You know engineering is pretty, uh, cocky, and others know that I think. But I also think, my roommate is in sciences, and I have another friend in humanities and they kind of had viewed eng [engineering] as a sort of a cocky, kind of overbearing faculty, but you know, talking one on one, they're fine with it. There's a balance I guess. (Betty, STEM)

Thus, Betty (STEM) understands STEM faculties as prestigious and acknowledges that others also perceive her faculty as prestigious.

Furthermore, Maria (STEM) and Lilac (STEM) explain that prestige is associated with difficulty and competition in one's faculty. Thus, the more difficult and competitive one's faculty appears to be, the more prestigious the faculty is perceived to be. As Betty (STEM) and Sarah (STEM) equated heavy workloads to prestige, they also believe that the sciences are more prestigious than Arts faculties. They also reveal an inter-STEM hierarchy as Sarah (STEM) explains:

> Other faculties, other like science-y faculties maybe not as much like I know there's that ongoing feud with like the health sci vs. the life sci or like the health sci people think they are all that and whatever but and then also engineers tend to take a lot more courses and stuff so I feel like in the science-y part maybe not as much but then with like commerce or the other programs I think people have mentioned like 'oh life sci is pretty hard' and stuff like that.

In this sense, the majority of STEM students were also highly self-aware in regards to how prestigious their faculty is. Perceived prestige is also attributed to the perceived difficulty of one's faculty which was attributed to a heavier workload. This variable will be discussed further below.

Maria (STEM), Lilac (STEM) and Veronica (STEM) also believe their faculty is perceived as prestigious to others, especially to those at McMaster University. For instance, Veronica (STEM) revealed:

During welcome week, whenever I talked to somebody and they were like 'what program are you in?', and I said 'health sci', they were like 'wow, so you must be smart'. Like uhh, um I guess?

As Veronica (STEM) is a member of the Health Sciences faculty, this quote reveals that others are impressed by those who are in Health Science as they equate STEM faculties with greater intelligence.

Allocation of Funding. Perception of allocated research funding is also linked to perceived prestige of one's faculty. For instance, Sarah (STEM) mentions McMaster University's science research reputation saying, "like every single time our professors or TAs talk about the science program they are like "McMaster is the most research-intensive program in all of Canada." In addition, although Betty (STEM) was not sure of the details, she assumes there is a lot of funding for STEM faculties based on the ample amount of resources, as well as the new buildings being built on campus. She states, "I think there's a fair amount, I would assume. Uhm, we have a lot of buildings and that kind of stuff. I'm not aware of the actual numbers but yeah." Although Maria (STEM) and Lilac (STEM) were unaware of funding within their STEM faculties, they also assumed there was a lot. For instance, Maria (STEM) says, "I'm not really aware of any funding or anything like that but I feel like it is pretty valued." This displays the ample amount of perceived funding in STEM faculties.

When asked about research opportunities Veronica (STEM) agrees by saying, "Yeah! Yeah, um, within my faculty, I don't know, cause, um, I'm not sure within the faculty, but I know within science in general there's a lot of research opportunities and grants, like NSRC." Betty (STEM) also indicates, "I actually came in with an undergraduate scholarship which came with a research grant for the summer, so I'll actually be working here at the university, doing research with a prof over the summer." The other three STEM participants were unaware of research opportunities in their faculty.

Participants in Arts faculties such as Lola (Arts) and Victor (Arts) view their faculty as prestigious. However, these respondents acknowledge that others do not view their faculty as prestigious due to certain presumptions. For instance, Victor (Arts) reveals that those higher up on the perceived hierarchy tend to look down on those who are on the lower end, revealing, "my friends in Life Science always make fun of Humanities." When probed further he indicated that this is because Humanities are not "science-y."

Victor (Arts), Lola (Arts), and Cherry (Arts) indicate that they are aware that STEM is viewed as prestigious at McMaster University, indicating that others hold it above other faculties hierarchically. After describing how a faculty is established as prestigious, it is evident that those in Arts faculties possess similar views to those in STEM. For example, Cherry (Arts) explains that a heavier workload is equated with prestige. Rob (Arts) also pinpoints how admission into Arts faculties are easier, as the acceptance rate is generally high. He mentions, "it's one of the easier one's to get into and it's probably more broad than most others." Rob (Arts) also explains that competition is associated with prestige and the natural sciences are more competitive in terms of admittance. These assertions link the difficulty of a faculty with its perceived prestige.

Despite revealing his views and stating that Arts faculties are not typically viewed as prestigious by others, Rob (Arts) acknowledged the prestige of McMaster as a University explaining that because McMaster University is ranked number four in Canada, he

recognizes that one should feel accomplished by solely gaining admittance to the institution. However, in relation to prestige at the institutional level, Cherry (Arts) explains "uhm… cause people… people think that… people who are here for math or becoming a doctor, whatever that especially maybe at McMaster because it is like a medical school… that's more valued and prestiged." In this regard, prestige is associated with the faculty when considering the schools reputation. In other words, STEM faculties may be viewed as more prestigious at McMaster University because it has a strong reputation as a medical and science focused institution.

In relation to funding, Victor (Arts) and Lola (Arts) appear to be unaware of funding within Arts faculties although they believe they do exist. Lola (Arts) also said that she believes that there is a lack of funding in comparison to the natural sciences due to a political hierarchy. As Lola (Arts) explains:

> I love McMaster, it's great but I often hear people say that there's a hierarchy, and I know that there's a hierarchy everywhere but it shouldn't be like that, but it's always like the sciences and one science at the top.

It is thus apparent that those who are in Arts place themselves below STEM students on the perceived hierarchy.

It is important to note that there was an interesting outlier that was found in this area of our research. While Arts and STEM faculties tend to have similar views in regards to perceived prestige of one's faculty, these perceptions may not always be accurate. For instance, when asked if she believes others see her faculty as prestigious, Maria (STEM) says, "maybe people who like aren't in it or like don't know about it, but I wouldn't say it's like too, more difficult than anything else, but I guess if you don't know too much about it, it could be." As a result, Arts students' perception of STEM faculties as prestigious may not be fully representative of the STEM experience. This variable requires further inquiry.

Workload. It is evident that those in STEM faculties report having a heavier workload compared to those in Arts faculties but report that it is manageable. As Betty (STEM) explains:

> It's a lot. We have 6 classes and yeah, it's rough. But I'm managing. And not particularly the profs, but the TAs and the IAIs, I definitely go to their office hours and they're really helpful with homework questions and anything like that.

Sarah (STEM) confirms saying her workload is, "pretty heavy but it's like manageable." Maria (STEM) denotes that her workload is dependent by saying:

> Yeah, I guess it depends on the course. I wouldn't say it's like completely overwhelming to be honest. I think it's fine, like the ones that obviously like for me like calculus and the math for me takes like a lot more, but like I don't think it's too bad.

Despite STEM students reporting a heavier workload, it is important to note that none of the respondents stated that they have an easy workload. In other words, although first-year undergraduate students in Arts faculties reported a moderate and/or less intense workload compared to STEM students, they did not say it was easy. Rob (Arts) explains:

Uh, it seems to be less so than, I have a lot less in class hours, but I'm definitely, I spend a lot more time like writing and you know, doing time-consuming things like that, but I would think in comparison to other programs it is probably smaller, probably just a couple hours a night.

Victor (Arts) and Cherry (Arts) also mention that, although the readings are heavy, they are manageable as long as one keeps up with it. Lola (Arts) further explains:

I feel like obviously every student has a breakdown, like 'oh I'm dying, I can't.' Uhm, but I guess I think that's part of every faculty. I'm not gonna say it shouldn't be like that, it should be like that.

In this sense, although STEM students report heavier workloads while Arts students' workload is moderate, both are manageable as long as they keep up with it.

Perceived workload was found to be strongly associated with the perceived prestige of one's faculty of study. STEM and Arts students associated a heavier workload with greater perceived prestige because they believed more work is associated with a greater difficulty. However, while all participants perceived that STEM students have heavier workloads in comparison to Arts, in reality, neither workload was reported to be easy. In this sense, while more work is associated with greater difficulty and therefore, greater perceived prestige, a lesser workload did not necessarily mean an easier workload.

Perceived Competition Within Faculty. STEM students reveal that their faculty is highly competitive in terms of admission, research positions, and post-graduate studies. Sarah (STEM), Betty (STEM), Lilac (STEM), and Veronica (STEM) disclose the different aspects within their faculty that tend to be competitive. For example, Betty (STEM) and Lilac (STEM) explain that their faculty is difficult to get into, as a high grade point average (GPA) is required for admission. Particularly, Lilac (STEM) explains:

Going into my application I knew I didn't want to do Life-Sci because there is a lot of competition and it's not easy and like I kind of wanted to do something like medicine and I knew it would be kind of hard if I did it through Life-Sci.

Betty (STEM) also indicates that her decision of which STEM faculty to enter was based on competition saying:

I figured that engineering was probably harder to get into but easier to drop out of and harder to get into if I went into science, and it be easier to move from engineering to science than from science to engineering.

In this sense, certain STEM faculties are seen as more challenging to get into and remain in than others.

Veronica (STEM) also states that there is competition within her faculty in upper-years, as students are preparing for admission to graduate level education, such as medical school. Veronica (STEM) explains:

Um, so I've heard that a lot of people are pretty competitive, especially towards upper years. Because um, I guess the majority of the people in my program want to go to med school and they know that there's only a limited amount of spots there? So, it's like any person that I'm better than in my program is just like… "I'm ahead of the competition" something like that.

Sarah (STEM) also reveals that while getting into postgraduate studies is competitive, she believes most of the competition is mental saying:

People like to exude that confidence all the time so I think that part makes it just a little more competitive like just mentally when you think about it. It's probably not as bad as everyone is saying it is but I think it is very competitive.

Regarding research/placement opportunities, Sarah (STEM) and Veronica (STEM) indicate that receiving a research position is limited due to the excessive number of applicants. Lilac (STEM) also explains, "the only thing that seems to be competitive is where you would get your placements, that's limited." Conversely, Betty (STEM) believes that research in co-op is not competitive, as there are many opportunities in the Engineering faculty. In this sense, larger faculties are viewed as having an abundance of opportunities at the undergraduate level. In regards to smaller faculties and competition for specializations, Lilac (STEM) explains:

Well it's not a big program and from what I've heard, like within your specialization usually people get into the specialization they want to. The only thing that seems to be competitive is where you would get your placements, because that's limited.

In this regard, while getting a desired specialization is not competitive in smaller STEM faculties, placements are more limited compared to larger STEM faculties.

Within Arts faculties, competition was perceived as low in terms of admission but high in terms of post graduate and job opportunities. Victor (Arts) and Lola (Arts) explain that their faculty was not as competitive for undergraduate admission as the required percentage for admission is significantly lower in comparison to STEM faculties. As a result, many participants explain that there is a stigma towards Arts students as people assume, they do not work as hard as individuals in STEM. For instance, Lola (Arts) explains:

I wish that the admissions or averages for the faculties were a little higher and it wasn't seen as something very easy because I feel like that's not portraying what the social sciences are because what students usually think is 'oh it's an easy course' but in the real world, solving a problem, it can be very challenging. So, I'm not saying to increase averages for admission to just make the life of the students hard, but I definitely think that there could be a higher standard.

When asked about the faculties he views to be competitive, Rob (Arts) reveals, "Life sci, engineering, health sci, that kind of stuff." When probed further as to why, he states:

Uhm, I had a friend in life sci, and I don't know, it seemed like they are really, I don't know it just, I don't know whether it's the content or maybe just the type of people who go into those programs, that they seem to be, especially if they're aiming towards law or med school or something like that then they are more competitive.

In this sense, perceived competition is associated with the perceived difficulty of course content, competition of future careers, and postgraduate programs.

However, not all respondents reported the lack of competitiveness within Arts faculties. For instance, Cherry (Arts) believes that her faculty is very competitive, and that achieving research positions is rather difficult. Similarly, Victor (Arts) and Lola (Arts) indicated that there is competition for academic job positions at the undergraduate level. Specifically, Lola (Arts) pinpoints how difficult it is to become a teaching assistant and to gain admission into a Master's program explaining:

I know I mentioned earlier that it's not very competitive… but there are some parts that are still competitive at the same time. Like maybe getting into a Master's program or I really wanna become a TA in my third or fourth year.

In this regard, competition in Arts is associated with opportunities within one's undergraduate degree (i.e., research and teaching assistant positions), post graduate work (i.e., masters programs, medical school), and future job opportunities.

Perceived Value

Value and perceived prestige were strongly related with many participants discussing them synonymously or in relation to one another. The majority of STEM students indicated that they do feel valued by McMaster University. Lilac (STEM), Betty (STEM), Sarah (STEM), and Maria (STEM) all conveyed that they feel valued due to the perceived prestige of STEM. For instance, when asked about if she feels like her faculty is valued, Sarah (STEM) indicated, "ya well like every single time our professors or TAs talk about the science program they are like "McMaster is the most research-intensive program in all of Canada" or something." In this sense, prestige of a faculty is strongly associated with value, which is associated with research and innovation. When asked if she felt valued, Betty quickly replied, "certainly!" Veronica (STEM) also replied, "Yes!" When probed further, both girls indicated that there is a lot of funding and research in STEM, which they also associated with perceived prestige.

Maria (STEM) also discussed the intersectionality of value and community in relation to being a female STEM student. When asked if she feels valued, she says she feels valued:

Especially being like a girl though there is a lot of like STEM, like functions you can go to as a girl and things like that so that it's more like they push it that way a little bit more.

In this sense, Maria (STEM) indicates that value is associated with the availability of faculty specific events, which is associated with a greater sense of community.

In comparison, most Arts students indicated that they feel less valued. Specifically, Lola (Arts) expressed that she does not feel like her faculty is valued at McMaster University, which she attributes to low prestige of Arts faculties. When asked if she feels her faculty is valued Lola (Arts) explains:

> Not as much, there could be a lot done because we are just as important and I feel like if we have that attitude of telling everyone it's not important, it does affect because psychological influences of others do impact how you see the world around you. So, it could definitely be more valued. There shouldn't be a hierarchy but it could be valued, and it should be valued because it is important.

When probed further she says, "I feel like a lot of people put the sciences and engineering, health-sci, life-sci at the top, and then for arts, it's not as valued as it should be." When Lola (Arts) discloses that value is associated with STEM faculties due to the perceived importance of the field, she says, "it's the nature of how people think or becoming a doctor or going in medicine is more important." She is also confused as to why Arts students are not valued as she states, "I think that we literally talk about problems that are everywhere, in every little place in our society, so how could we not be valued?" This conveys a direct comparison between STEM and Arts faculties, where Arts students perceive STEM faculties to be more highly valued because of perceived prestige and perceived importance.

Although many Arts students did not say directly that they are not valued in relation to their faculty, they were more hesitant and unsure than STEM students when asked if they felt valued. For instance, when Cherry (Arts) was asked if she feels the Arts are valued, she explains, "Uhm… yeah? Yeah. I mean McMaster… yeah sure. It's not even by the school but I don't know like maybe some people think it's like a waste, you know of a course. I don't know, I don't know." Rob (Arts) also reveals that because Arts faculties are so large, the revenue he assumes it brings to McMaster University contributes to its value, although he does not feel valued as an Arts student. Rob (Arts) explains, "I mean it's a big faculty and there's a lot of different programs. So, there's probably, I don't know, I'm sure it brings in quite a bit of revenue so I'm sure it's valued."

In relation to available funding for research in the Arts, Victor (Arts) further adds, "I mean I'm not aware of any but I feel like there would be some." In this regard, STEM students had a strong sense of value, which they associated with perceived prestige. Arts students also associated value with prestige and indicated that their faculty was less valued.

Sense of Connection

Sense of connection is measured based on a sense of community and belonging, which is evaluated based on event availability/attendance, peer relationships, and student-faculty relationships. It is important to note that participants often asked for clarification about the word 'belonging.' Interviewees explained this referred to feelings of being welcomed within their faculty. The terms 'Welcome' and 'belonging' were, therefore, used by participants interchangeably. Overall, STEM students reported a moderate sense of connection whereas Arts students reported a lower sense of connection in relation to the above variables.

Availability of Academic and Social Events

With regard to faculty events, Veronica (STEM) reported that there are many events available for students in her faculty to attend. In particular, Betty (STEM) and Veronica (STEM) mentioned that there are faculty-related workshops available specifically for career building. When asked if she attends faculty events Veronica (STEM) exclaims, "yeah, those are really fun!" Sarah (STEM) also mentioned that there are faculty-related seminars available to help students explore potential career paths. Sarah (STEM) further explains that there are a lot of STEM specific club events that are geared towards future career paths explaining:

Some of the clubs like the pre-medical faculty or the club or pre-pharmacy club or whatever, they do big talks and presentations and stuff and meetings for people who are interested in that and then they will have like alumni come in and talk and teachers come in and talk.

Although Veronica (STEM), Sarah (STEM), and Betty (STEM) indicated that there are an adequate number of workshops and academically centred events, they also specified that there are limited social events. Sarah (STEM) explains, "it would be nice to have like a thing where you could connect with your professors more and then meet other people just not inside the classroom." This indicates that STEM faculties may place more importance on academic-related meetings rather than social events. While this increases the sense of community among students, social events are a necessary component of developing a strong sense of belonging (Araújo et al., 2014).

Event Attendance

In terms of attending faculty-specific events, the majority of STEM students attended those that were available or fit with their schedule. In terms of available events, Sarah (STEM) explains her faculty does "more symposiums and that kind of stuff, they are all like during really weird times so I haven't really gone to any of those" (Veronica, STEM).

Most STEM students also attended Welcome Week, which aided in the development of a faculty community and sense of belonging:

Yeah, during welcome week we had like faculty chants and those are really nice cause you get to bond with other people in your faculty. Even when somebody like, so, they start with bleed blue, cause that's like the colour of our program. And then when anybody ever mentions the colour blue, everyone is like 'haha, we bleed blue' or something like that (Veronica, STEM)

Betty (STEM) further explains, "I definitely came to welcome week, I've been to a few events... there's a lot of them but I'd say I'd go to about 25 to 30% of them." Having a variety of faculty events at different times may, therefore, aid in the development of a strong sense of belonging and community among STEM students.

An interesting finding in this area is that Veronica (STEM) mentioned that she attends faculty events, but not social events – the opposite findings for other STEM and Arts students. Sarah explains that she desires to attend more events, despite already being

involved in clubs, displaying the range in which students desire to be involved in their faculty. These variables require further inquiry.

Arts students did not report participating often in faculty centred events but desired to do so more, with the exception of Welcome Week. Most Arts students stated that they attended Welcome Week. For Instance, Rob (Arts) explains, "I did all the welcome week events, but I haven't gone to anything really since regarding my faculty." When the interviewer inquired as to the reason why Arts students did not attend more faculty events, Lola (Arts) said, "Uhm I did attend welcome week. I also attended one of my geography's faculty night. The other ones… I didn't really hear about them, but I would love to attend if they come."

Although the majority of Arts students attended Welcome Week, they tend to be less engaged in faculty-specific events in comparison to STEM students. Rob (Arts) and Victor (Arts) simply stated that they do not attend faculty events. On the other hand, Cherry (Arts) and Lola (Arts) desire to attend more events and mentioned that they are unaware of the events taking place in the Arts faculties. In this regard, both STEM and Arts students enjoy Welcome Week as it provides a greater sense of community and belonging among them. However, Arts related faculty events may require more advertisements to allow students the opportunity to attend, and to have a range of time slots to accommodate students' schedules.

Peer Relationships

The responses of STEM students varied greatly regarding whether these individuals had friends in their faculty. For example, Betty (STEM) and Veronica (STEM) explained that most of their friends are in their faculty. Betty (STEM) states, "I do find that I stick with my faculty for social groups outside of school. So, you know, if I'm going to a party, I'll go with a couple of eng [engineering] kids." Veronica (STEM) also explains her relationships are "really good! Everybody is pretty supportive of what I've seen in my program, but I've heard some pretty negative stereotypes that it can get pretty competitive, but I haven't experienced that personally." In this regard, perceived competition, which is closely related to perceived prestige, may lead to the development of negative stereotypes that may be a hindrance to the sense of community and belonging within one's faculty.

Although Lilac (STEM) also explained that she had friends in her faculty, she prefers to have a small group of friends. Sarah (STEM) also explained that she made friends in her faculty, but due to the size of her faculty, she sticks to a smaller group of people explaining:

> In the faculty, like I have my own group of friends but ya we don't really go out much like make the effort to talk to like a lot of other people cause there's like a thousand people in life science and then some of them you just you know don't vibe with.

In this regard, the size of faculty may hinder the development of large-scale connections within one's faculty, which may lower the overall sense of community.

Despite stating that her peers are friendly, Maria (STEM) did not make friends in her faculty explaining, "most of my friends aren't actually in my faculty, but I feel like everyone I talk to is pretty nice." STEM students also made friends outside of their faculty through extra-curricular activities and clubs, which are popular sources of student relationships.

As Sarah (STEM) says, "the friends I'm making, most of them are in life science but like I've done clubs and stuff so they are kind of all over the board." In this sense, STEM students displayed a range of responses regarding relationships with those in their faculties, which contributes to a moderate sense of community and belonging among them.

Similarly, Arts students displayed a variety of responses regarding whether they had friends in their faculty. Victor (Arts) stated that he has some friends in his faculty, whereas Cherry (Arts) and Rob (Arts) did not make many friends in their faculty, rather they made most of his friends in residence explaining, "I really don't know any of my peers. Most of my friends I've met through residence or from something else prior. I don't really know anybody in my faculty actually." Cherry (Arts) also explains, "I have like a few friends in most of my classes, but I usually hang out with people on my floor more, so yeah."

Rob (Arts) further states that he does not feel welcomed due to the challenges associated with connecting with others in his faculty. For instance, he explains that it is harder to connect with individuals because the Arts faculties are too broad, class sizes are too large, and peers tend to have different interests. Rob (Arts) explains "yeah, it's a little bit isolating I would say overall." When probed further he says this is because:

> Everybody in social sciences, there is such a broad range of things that everyone is doing so it's hard to, you know, find a group. Where my roommates in engineering, he's with the same people all the time between classes and they are almost all the same courses and what not.

When asked if he feels like he belongs (i.e., is welcomed), Rob (Arts) adds:

> Uhm, yeah I guess welcomed wouldn't be the word though, I don't see that, there's not really, there's not as much of a support system as there are for maybe smaller faculties, like I have a friend in art sci and if he doesn't show up, his professors, they know him by name. Or even in engineering, there is probably more like within peer groups there is more support than probably in social sciences.

In this regard, size of faculty is associated with a sense of community and belonging, as peer groups are perceived to be able to interact on a more individual level when classes are smaller. Smaller faculties are also associated with greater support, which Rob (Arts) attributes to the overall sense of community. Cherry (Arts) further indicates the lack of peer relationships, as she reveals that people in her faculty are not very good at socializing. Thus, she desires smaller class sizes to get to know peers on an individual basis. Lola (Arts) also indicates:

> I do feel welcomed in my faculty but I do understand that as a first year, it can be challenging to make friends no matter from where they come. But definitely in terms of how profs treat you, how your peers are, in terms of the course, and in terms of discussing stuff in the course, yeah. But I obviously feel like transitioning into university is a little bit of a challenge for everyone. But faculty, yeah.

Thus, while some participants discuss community and belonging as distinct variables, most understand and acknowledge them as synonymous.

Victor (Arts) believes that he belongs in his faculty, as he is pursuing his interests by studying philosophy. When asked about his sense of belonging Victor (Arts) replies, "yeah, I feel like it's a good match." Thus, Victor (Arts) possesses feelings of belongingness due to his interest in Humanities.

Lola (Arts) also recognized that there is a strong sense of belonging within Arts faculties, specifically Social Sciences, explaining:

I love my faculty because it's very open and I respect everyone for who they are and I think Social Sciences is one of those faculties where you can actually talk about the things that other faculties or people would avoid, like you can talk about your emotions. You can express your emotions, no one is going to judge you for who you are, everyone's welcome.

In this regard, Rob (Arts), Lola (Arts), and Cherry (Arts) associate belonging with peer relationships and faculty support as well as general feelings of acceptance within their faculty. In comparison to STEM students, Arts students reported having a moderate to low sense of community and belonging within their faculty.

Student-Faculty Relationships

After interviewing students in STEM and Arts faculties, it is apparent that, although all participants attend lectures and participate in tutorial regularly, the majority of STEM students do not have strong relationships with their professors. For instance, when asked what her relationships with her professor were like, Sarah (STEM) laughed and stated, "non-existent." When probed further, Sarah (STEM) adds:

Ya so a lot of the times after lectures [professors] will be bombarded with people lining up to talk to them but I know so that's like usually pretty good, but then I know a lot of my friends went to some professors' office hours to ask about some questions on our midterms and they just like they just didn't want to answer it, like they either didn't know the answer or like just were super closed-off about it.

Lilac (STEM), Betty (STEM), and Veronica (STEM) all agree, saying that their professors generally seem very busy and do not appear to be interested in developing relationships with students.

However, Betty (STEM) and Veronica (STEM) also explain that some professors were responsive and friendly. Veronica (STEM) states:

I see them walking around a lot between MDCL [Michael G. DeGroote Centre for Learning and Discovery] and HSC [Health Sciences Centre] and um, I see a lot of first years stop them sometimes and ask them some course related questions and they're always happy to chat.

Despite being available to talk, Veronica (STEM) explains that the relationships she has with her professors are not strong, she says, "I've talked to a couple of them in office

hours, or before or after class, but it's not like, it's not like they know my name." When probed further, Sarah (STEM) states that it is not about professors' personalities, rather, their teaching style is difficult. She explains, "they are great people, it's just really hard sometimes that they forget like we are literally new at this." In this sense, experience with professors is mixed among the respondents.

Maria (STEM) explains that large lectures may hinder the fostering of their relationships with professors, as having more students prevents the professor from getting to know students on an individual basis. Betty (STEM) agrees as she states, "I would say because of the size of the engineering classes, I don't have, uh, a very personal relationship with the professors, uh just because the class sizes are so large." Sarah (STEM) adds:

> I guess is kind of hard because literally everyone in first year has to take chemistry so give us more time to like talk in smaller groups, talk to upper years or something because like the material they teach is really hard and then it's kind of hard to like stick your hand up and talk to your fellow professors among 400 people.

In this sense, large lectures may be hindering the academic experience, as students are uncomfortable participating in this environment.

Although many students recognize that there are opportunities to connect with their professors during office hours, they do not attend. Rather, they prefer talking with teaching assistants about course related content. They explain that they only talk with professors if it is necessary. For example, when asked if she attends her professors office hours Sarah (STEM) says:

> Not my professors, but like my TAs I go and then I think for professors it's more like when I need something like if there was like a wrong grade on my midterm then I'll go to office hours, but like I don't go to them if I have a question or something.

When probed further she explains this is because:

> There are a lot of students in science and everyone says go make a relationship with your professor but some of them just get the vibe that like the professors don't really care that much or don't have the time so in first year I'm just kind of like whatever I'll just make them teach it to me and then I'll talk to my TAs and stuff more.

However, most students desire to develop stronger relationships in the future. For instance, when asked about developing relationships with her professors, Maria (STEM) explains, "Yeah, that's the goal. I always think I will and I try to go to office hours and stuff, but I don't. Yeah, like I would like to, but yeah, not at this point." As a result, students may attempt to develop stronger relationships with professors during their upper years rather than in first-year.

The relationships between students and professors vary for students in Arts faculties. Students disclose that many of the professors in Arts faculties are available during office hours, which provides students the opportunity to connect with them. As Cherry (Arts) explains, "My Poli-Sci prof, I met with him once to ask about an essay. He's a super funny guy to talk to. Other than that, though I don't really know any of my profs quite well."

However, despite their availability, many students, including Victor (Arts) and Rob (Arts), do not attend office hours. Rob (Arts) displays feelings of insignificance as he discloses, "I don't think they know that I am there. Like if I'm not, if I didn't show up, they wouldn't have any idea." He also adds that professors appear to be too busy to interact with students explaining, "yeah, most of them provide office hours, but I understand that their schedules are also, they are probably also really busy, teaching a lot of courses." Cherry (Arts) also explains her experiences with professors are mixed. She states, "I can tell that some of my profs are like "don't talk to me" and others are like "oh ask me anything!" so it depends." Rob (Arts) also solidified this saying, "I've had some good ones and I've had some bad ones. It's hard to, it's really case to case."

Yet, all Arts students explain attending tutorials as they give students an opportunity to interact and engage with teaching assistants. Teaching assistants are closely linked to professors, as they assist professors with teaching important content and grading. For instance, Rob (Arts) and Cherry (Arts) reveal that teaching assistants are extremely helpful, as they provide more support outside of the classroom. As Rob (Arts) explains, "I find the TA's, there is always something available if you do need, you know some kind of support." When probed further, Rob (Arts) reveals that larger class sizes may be the reason for poorly developed relationships with professors, explaining:

> I would try and find some way to have smaller lecture halls and smaller groups to work with more often cause that's really where I think probably most people do their best learning as opposed to when you, most of my classes have like three to five-hundred people so it's hard to feel like a personal connection with the professor or anything like that.

Cherry (Arts) furthers this sentiment when asked about participation in lectures explaining, "so I pretty much always attend my lectures. I don't really ever participate in my lectures but I participate in my tutorials so yeah." Smaller learning environments, like tutorials may, therefore, be the reason for stronger relationships with teaching assistants as opposed to professors.

However, an outlier in our sample was Lola (Arts) who expressed that she has a good relationship with professors, as she constantly attends office hours and engages in conversations with them. She explains, "sometimes I feel like I'm overdoing it but I just love what I do but yeah I take chances as much as I can to talk to the profs after lectures, in their office hours, whenever it's possible." She further states that she does this because:

> They are open to questions and that's why uhm I mentioned in the interview that I talk to my professors because they let me talk cause they're very passionate about it but sometimes I feel like there are certain issues.

In regards to furthering these relationships she explains, "I hope that I can build that relationship up as well." She also explains that these relationships are important in upper years, which may explain why first-year students have not taken a large initiative to develop strong relationships with their professors. Veronica (STEM) agrees explaining that these relationships are important in upper years as professors act as mentors and

become more impactful in terms of post-graduate opportunities (i.e., writing recommendation letters).

Outliers

An interesting outlier in terms of sense of connection was Maria's (STEM) association between faculty competition to feelings of connection, as she discusses that she does not have a strong sense of belonging to her faculty, as she does not believe that she is as academically driven as others. When asked if she feels like she belongs she explains:

> Sometimes, to be honest like not all the time. Like I feel like a lot of people, but this is probably every faculty maybe I'm just not like driven, I don't know, I feel like a lot of people, put a lot of pressure on themselves and their grades and stuff, I don't really feel the same.

In this regard, she perceives other individuals within her faculty to be more academically competitive, which she associates with feelings of belonging. Thus, while sense of value, perceived prestige, faculty events, peer relationships and student-faculty relationships are associated with a sense of community, they do not necessarily result in feelings of belonging, which may be driven more by internal mechanisms like perceived academic drive.

Changes to Faculty

Concerning what STEM students would like to change within their faculty, many opinions arose. Sarah (STEM) and Betty (STEM) express that they would like smaller class sizes, if feasible. Lilac (STEM) does not convey this concern, as she states that her class sizes are generally small as she is in a relatively small faculty. Sarah (STEM) would also like more community-building events to connect with professors and peers outside the classroom. This suggestion indicates that Sarah (STEM) would feel a greater sense of community and belonging if she had the opportunity to connect with her professors and peers in social settings. Maria (STEM), Betty (STEM), and Veronica (STEM) communicate their desire for a wider range of courses. These respondents would like more available courses outside of their major, to gain knowledge outside of their area of study. For example, Veronica (STEM) would prefer more specialized courses to choose from. She reveals that she would appreciate the opportunity to have courses that gage a psych-neuroscience background, rather than general science courses. She explains:

> Um, so they recently got rid of a uh, psycho-bio course, because I think that the professor that taught it left, but bringing that back would be nice, especially because we don't have that psychology or neuroscience background anymore, it's just straight cell bio? So, I guess I'm kind of just missing that aspect.

Similarly, Betty (STEM) also expresses the desire for more courses within the Engineering faculty, explaining:

> So eng [engineering] is very 'this is what you're taking, here you go' which I do like, I appreciate that because I had no idea what I wanted to do I got to university but I would

have appreciated maybe a difference between things, or maybe something more like one or the other so I could have a bit more options.

Betty (STEM) also makes an interesting suggestion, as she is dissatisfied with the professors in her faculty. She explains that most professors tend to be focused on one specific area rather than focusing on the broader aspect of a course. Lilac (STEM) stated that she would not change anything in her faculty, as she is quite satisfied with the Medical Radiation program. Therefore, while those in STEM express a variety of opinions regarding what they would like to change within their faculty, the main focus is surrounding class sizes, course options, and community events.

Similarly, respondents in the Arts request for a wider range of course selections within their faculty. Specifically, Victor (Arts) explains the lack of course selection for specialized courses in first-year, while Cherry (Arts) desires more courses outside of her major. Victor (Arts) states "I would probably add a few more courses in philosophy. I feel like there's not enough in first-year." Rob (Arts) would like smaller class sizes but does not believe that achieving this would be realistic due to how large the Social Sciences faculty is. Lola (Arts) expresses a unique concern, as she would like more opportunities to get involved within the faculty due to biased decisions. Particularly, she talks about her experience applying for a role in the McMaster Social Sciences Society. Lola (Arts) discloses:

I was someone who tried to achieve a role in the start of my first semester, to be a representative for social sciences in first year and I feel like… and I'm not the only one… I'm not going to name anyone else obviously, I definitely feel like the McMaster Social Sciences Society, the student one, is not very fair uhm from what I have observed. I feel like we see a lot of the same people and a lot of people might think that it might be those who are in charge, favouring their friends, which I feel like it's not fair … I feel like other people should also get an opportunity.

Lola (Arts) also makes other suggestions, as she would prefer more job opportunities on campus to be available due to the financial stressors that students experience when transitioning into university. She also proposes the idea of having more research opportunities for students in first year, as this will help them prepare for future research in one's academic career.

Although STEM and Arts students possess a wide range of opinions, they generally have similar concerns regarding their faculties and what they would like to change including those focused on class sizes, community building, and course selection.

Discussion

In this section, we will discuss the major findings of our study that contributed to substantial differences in self-validation among STEM and Arts students. We will discuss these variables, connecting them to our theoretical frameworks and previous literature developed in this area of inquiry. We will also comment on the broader significance of the research and how it contributes to the existing pool of data. While the other variables we discussed in our results are important, we did not find a great difference between STEM and Arts students' experiences in relation to them, nor did they have a substantial impact on students' level of self-validation and will therefore not be discussed further.

Overall, we found that self-validation is greater in STEM students in comparison to Arts students. We found that a greater sense of self-validation in STEM students is the result of greater perceived prestige and value of STEM faculties, a greater sense of community among STEM faculties, and stronger sense of academic efficacy and confidence in STEM students compared to Arts students. We will discuss each of these variables below in more detail.

Perceived Prestige and Value

Participants viewed STEM faculties as more prestigious than Arts faculties. This prestige was attributed to heavier workloads, greater assumed difficulty of academic material in STEM faculties, greater perceived competition for jobs, and research opportunities/post-graduate programs. STEM students were also found to have a greater sense of value in comparison to Arts students. Value was attributed to perceived allocation of funding and availability of research opportunities in one's faculty. Both prestige and value significantly contributed to a higher sense of self-validation in STEM students.

STEM faculties were perceived to be more prestigious than Arts faculties due to the perception of heavier and more difficult workloads in STEM courses. Our study found that the workload for STEM courses was perceived to be heavy by STEM and Arts students but it was reported as manageable by STEM students. Whereas the workload of Arts faculties was perceived to be low by STEM students and moderate – yet also manageable – but not necessarily easier by Arts students. Our findings thus indicate that STEM faculties are considered to be more prestigious than Arts faculties because the majority of STEM and Arts students associated heavier workloads with difficulty and thus more prestige. This finding is important as perceived prestige was found to impact students' sense of value within their faculty, which in turn, impacted their overall sense of self-validation.

Participants in our study linked the perceived difficulty of STEM courses to faculty prestige. They did so through their assessment of bird courses, which is discussed in more detail below. When asked about bird course selection, most participants reported that they would stay away from taking STEM courses, as these courses are perceived to be difficult. Participants also often linked difficulty with prestige, which is in line with previous research findings that relate the difficulty of courses taught in a particular program to higher levels of prestige (Euster, 1980). Specifically, this study outlines that natural science-based faculties – those more in line with STEM – are seen as more difficult and more prestigious than social work – an Arts based course. In short, findings indicate that the more difficult a faculty is perceived to be, the higher its prestige. Therefore, the findings of our study confirm and expand previous research by associating a greater level of perceived difficulty of STEM courses and faculties in general with a high level of perceived prestige in comparison to Arts courses and faculties.

In addition, Svalastoga (1975) finds that one of the most crucial factors in assessing occupational prestige is the difficulty of the job itself. Paired with job responsibility, job difficulty accounts for approximately 90% of the variance of occupational prestige (Svalastoga, 1975). This is in line with our findings as STEM and Arts students perceive STEM faculties as more prestigious because of the perceived difficulty of their workload. Although we did not account for responsibility felt by students in their programs, having a

heavier and more difficult perceived workload may relate directly to STEM students' perception of responsibility (i.e., they have more work to get done and thus more responsibility), which Svalastoga (1975) explains contributes to a greater level of prestige.

Our findings fill a void in current literature, as there are no recent research studies that link the perceived workload of *STEM and Arts programs* to the level of prestige associated with each faculty. Our study is, therefore, beneficial as it adds to the pool of existing literature by revealing how the prestige of academic faculties remains partially dependent on the perceived difficulty of the workload in these faculties. This perception is true for both STEM and Arts students.

In STEM faculties, prestige was also associated with perceived competition within one's faculty including competition for research opportunities, post-graduate programs, and jobs. In Arts faculties, prestige was also associated with competition for research and job opportunities but Arts faculties were seen as moderately competitive when compared to STEM faculties. Tucker and Sloan (1964) suggest that competition in undergraduate studies is due to limited space in graduate schools for students desired programs. Graduate schools recruit students based on their academic potential (i.e., publications, profits, recognition) (Tucker & Sloan, 1964). Competition for grades and research opportunities at the undergraduate level may, therefore, be explained due to limited spots at the graduate level (Tucker & Sloan, 1964). This is consistent with our study as most STEM and some Arts students reported a desire to continue on to the post-graduate level pursuing studies in mainly law and medical sciences. STEM students specifically reported that competition for medical school is high resulting in competition for research and grades. Although STEM students reported high competition even at the first-year level, they reported opportunities were readily available. This is likely the same mechanism associated with perceived competition for jobs – limited spots and recruiters desiring the most qualified candidates (Tucker & Sloan, 1964) – as graduate programs lead to additional job opportunities in the future.

Misra et al., (2000) find that that competition and stress varies in undergraduate students across academic years, typically increasing in upper years of study. Our research confirms this finding, discovering that while Arts students reported less competition for research opportunities at the first-year level, they also explained that they believed competition would increase in upper levels as people become more 'serious' about graduate school. In opposition to first-year STEM students, Arts students also explained that research opportunities were scarce, potentially leading to increased competition in upper years. A follow up study of fourth-year undergraduate students in STEM and Arts programs who are applying to postgraduate studies can confirm the actual rather than perceived increase in competition and stress in upper years.

While competition is perceived to be higher in STEM faculties, Arts students also report competition and both report stress related to this variable. Lola (Arts) specifically noted that stress is something she finds difficult to cope with in her transition to university. Stress was not a significant focus of our study, however, additional research into the impacts of stress in relation to competition in STEM and Arts students is required as academic stress related to grades and research positions in both undergraduate and graduate level studies is proven to lead to negative effects such as poor wellbeing, poor work/life balance, a breakdown of interpersonal relationships, and stimulant use to improve grades (Bruyn et al., 2019; Bergmann et al., 2018;). It is suggested that coping skills and stress

management need to be taught at the early undergraduate level to make the transition to post-graduate and work environments easier (Bruyn et al., 2019).

In terms of value, students were asked about their perceived allocation of funding in their faculty, which is found to be directly associated with the availability of research opportunities. Perceived prestige and value were also strongly related, often being discussed by participants interchangeably. As a result, we believe that prestige and value are seen as similar variables that, therefore, have a similar degree of impact on STEM and Arts students' sense of self-validation.

Although none of our participants knew exactly the amount of funding allocated to their faculties or specific programs, STEM students had the perception that funding for STEM faculties was high. They attributed this to the new and maintained buildings on campus and the availability of research opportunities for STEM students. In their responses, they were very quick to discuss funding and very sure that it was high. Whereas most Arts students reported that they did not know the exact amount of funding allocated to Arts faculties but believed there must be "some" funding available. Most Arts participants were unsure in their answers and one participant, Lola (Arts), reported that she believed the allocation of funding was low in Arts faculties.

The literature regarding the allocation of funding in STEM and Arts faculties aligns with our participants' perceptions as it suggests that Liberal Arts faculties are underfunded in comparison to STEM faculties (Jones and Hearn, 2018; Robbins, 2017). This has forced a lot of Arts programs to shut down because of a lack of funding (Jones and Hearn, 2018). In the United States where university program funding is heavily split between private and state level, STEM programs are typically more funded than Liberal Arts programs (Jones and Hearn, 2018; Robbins, 2017). Some studies find that 90% of government grants are allocated to STEM faculties (Miles, 2016). This displays the value and prestige allocated to STEM faculties in direct comparison to that of Arts faculties. These findings are consistent with the perceptions of participants in our study as they show that STEM and Arts students perceive that STEM faculties are more highly funded and thus valued in comparison to Arts faculties.

Many studies have found that the allocation of funding in universities can be explained by the increasing competition for prestige at the institutional level (Robbins, 2017; Miles, 2016; Jones and Hearn, 2018; Zerquera, 2018). Prestige is associated with research production status, which directly relates to the allocation of funding for different departments (Robbins, 2017; Miles, 2016; Jones and Hearn, 2018; Zerquera, 2018). In other words, the more research a department turns out, the more prestigious the institution becomes and the more funding is allocated to research intensive programs.

Funding is also shown to be allocated based on the "return" of the investment. In other words, programs that tend to make the state and the institution more money are seen as more valuable and, therefore, more highly funded (Jones and Hearn, 2018). While we, as researchers, do not have access to information regarding the actual allocation of funding, the above studies suggest that STEM faculties are more highly funded in comparison to Arts faculties. Although this research is based on American universities, funding in Canada is also based on provincial, federal, and private grants (Statistics Canada, 2017). This suggests that the allocation of funding to STEM and Arts faculties in Canada is similar and based on the profit these programs provide.

Collectively, these studies display the link between the allocation of funding and research – and thus research opportunities for undergraduate STEM and Arts students – as a mechanism to achieve institutional prestige. All of which results in an unequal distribution of value between STEM and Arts faculties. However, research that displays the impact perceived prestige and value has on self-validation in STEM and Arts students does not exist. Our study thus provides a link between perceived prestige, value, and self-validation as it relates to the allocation of funding and research opportunities. Our study also outlines the impact of self-validation on students' university experience, displaying the importance of equitable funding allocation and research opportunities for both STEM and Arts faculties in a Canadian context.

Although there are few specific studies that confirm/challenge or explain the mechanisms behind our findings regarding perceived prestige and value of STEM and Arts faculties, broader theoretical frameworks can be used to further interpret these findings. They can also be used to provide possible explanations for these findings, as well as the impact of greater perceived prestige and value in STEM faculties in comparison to Arts faculties.

In regards to Schema Theory (Bartlett, 1932), our study finds that students store general categorical schemas related to their faculty. In other words, they store cognitive classifications of others based on their position in a STEM or Arts faculty. We also found that students categorized themselves based on characteristics of their faculty that they have internalized based on both personal perceptions and assumptions made about them by others. This provides confirmation that participants use self-schemas as a means of developing self-concepts as STEM or Arts students (Fong & Markus, 1982).

In terms of STEM students, general schemas include characteristics like being "smart," which arise from the perception that they have a difficult workload – as previously discussed, STEM courses are seen as difficult courses that students tend to avoid – and a heavy school schedule. Both of which contributed to an increased perception of STEM as a prestigious faculty. However, although our STEM participants reported that others often referred to them as smart, STEM students did not refer to themselves as smart but were aware of the stereotype others held of them. STEM students also had a higher overall sense of value, which was associated with characteristics they attributed to themselves such as an ample amount of opportunities in terms of research, high allocation of funding, a lot of intra-group competition for postgraduate programs (i.e., medical school), and direct future career paths – discussed further below. Both perceived prestige and value contributed to STEM students' overall higher levels of self-validation.

In contrast, overall Arts participants reported a low sense of value and prestige. Although Arts students believed that their faculty should be viewed as more prestigious, they were aware of the perceptions of others, who they reported viewed their faculty as less prestigious in comparison to STEM faculties. They reported that their courses are seen as bird courses and that others view their workload as light and thus "easy." Although Arts students did view their workload as light in comparison to other programs, they asserted that this does not necessarily mean it is easy, rather it is challenging but manageable. Arts students also had a lower overall sense of value, which was attributed to lower allocation of funding and fewer research opportunities in comparison to STEM faculties. Both prestige and value contributed to Arts students' overall lower levels of self-validation. In this regard, both STEM and Arts students hold various prototypical

categories of themselves and their out-groups based on assumptions/stereotypes of their faculties.

This finding is in line with previous studies that report junior and senior students in majors like marketing, acquire role-identities throughout their undergraduate career based on their program of study (Kleine, 2002). In this regard, like STEM and Arts students in our study, they come to understand themselves as "marketing students" and internalize roles and identities around this category of self-conception (Kleine, 2002). Our study, therefore, confirms this finding, displaying that STEM and Arts students come to understand and internalize the characteristics attributed to the category of a STEM or Arts student, which is influenced by the courses they take, their behaviours, their aspirations, and the people they associate with (Kleine, 2002). Our study also adds to this research showing that STEM and Arts students also develop faculty-based identities in relation to their perception of prestige and sense of value within their faculty. This is important as previous studies have shown that positive identity development is a strong predictor of degree persistence, especially in STEM students (Perez et al., 2014).

In addition, because Schema Theory and Self-Schema Theory assert that the internalization of general categorical schemas impact the way individuals think, feel, and act (Fong & Markus, 1982), we assert that the internalization of positive categorical schemas in relation to prestige and value, therefore, increase their sense of self-validation. Whereas the perceived misrepresentation of Arts faculties leads to the internalization of negative categorical schemas of Arts faculties, leading to a lower overall sense of perceived prestige and value among Arts students. This in turn, lowers their sense of self-validation. As Perez et al. (2014) suggests, this may lead to lower degree persistence in Arts students. Although we do not know which participants will actually remain in their program of study, all STEM and Arts students report that they plan to persist in their studies for the remainder of their undergraduate careers.

When framed in terms of Symbolic Interactionism (SI), this finding suggests that the prototypical categorization of STEM and Arts students is given hierarchical meaning and value (Blumer, 1969). This attribution and internalization occur on an individual and social level as students in STEM and Arts faculties internalize the meanings attributed to their faculty, which are created and ranked hierarchically in social interactions (Blumer, 1969). This is displayed when STEM and Arts students report knowing how others view their faculty and what this means in terms of its perceived prestige. This perception of prestige is accompanied with variables that influence students' own perceptions of their faculty, which then becomes internalized and socially ranked, affecting students' sense of value and impacting their self-validation. In this regard, as an extension of SI, Cooley's (1902) concept of 'the Looking Glass Self' can be used to explain how STEM and Arts students internalize perceptions of others' perceptions of them, influencing their thoughts, feelings, and behaviours towards their faculty and, in turn, their self-validation.

As a result of the unequal perception of prestige and value among STEM and Arts students, our study found that inter-faculty hierarchies are developed, where STEM faculties are viewed as more prestigious and more highly valued than Arts faculties, resulting in a higher rank. Tajfel & Turner's (1979) Social Identity Theory (SIT) can be used to explain the mechanisms behind and impact of these inter-faculty hierarchies. For instance, in addition to categorization and social identification, SIT outlines the concept of social comparisons (i.e., weighing one group against another). Our study finds that the

categorization of STEM and Arts students into groups, results in the development of in-group and out-group mentalities (Allport, 1958; Tajfel & Turner, 1979). Along with this, because of the unequal perceived prestige and value among STEM and Arts faculties, students made upward and downward social comparisons between STEM and Arts faculties (Tajfel & Turner, 1979). As outlined above, some Arts students made downward social comparisons between Arts and STEM faculties, asserting that they had less research opportunities, lower allocation of funding, less competition, and fewer direct career paths. Yet, other Arts students reported believing that their faculty is prestigious but understood that others do not view it as such. As a result, although some Arts students believe their program is prestigious, they perceive others as making downward social comparisons between STEM and Arts faculties, which was internalized. The imbalance between perceived prestige of Art and STEM faculties was found to contribute to inadequate feelings of value among Arts students, which lowered their overall sense of self-validation.

In terms of STEM students, Tajfel & Turner (1979) suggest that feelings of superiority that result from upward social comparisons between the in-group and out-group result in prejudice and discrimination. However, although STEM students were aware of and internalized the perceived prestige and value of STEM faculties, only a few of our STEM participants outwardly reported making upward social comparisons between STEM and Arts faculties. While we assumed this was because the researchers are in an Arts faculty, leading to potential report bias, only one Arts participant in our study reported experiencing prejudice for being an Arts student, explaining that his friends made fun of him for being in an Arts faculty. While this finding may be the result of a low sample size, it suggests that our initial belief about upward social comparisons leading to a sense of superiority among STEM students and resulting in cross-faculty prejudice was incorrect. Therefore, while it is apparent that in-group and out-group mentalities exist among STEM and Arts students and some STEM students make upward social-comparisons while some Arts students make downward social comparisons between STEM and Arts faculties, there is little inter-group prejudice occurring between these groups.

However, as Lytle (2018) suggests, making upward social comparisons, and thus viewing one's in-group as superior, may be more beneficial on the individual/in-group level as a means of elevating one's self-esteem. This does not require outwardly prejudicial behaviours (Lytle, 2018). In other words, the internally held belief that the in-group is better than the out-group is substantial enough to sustain and maintain a positive view of the in-group without the need to be outwardly discriminatory (Lytle, 2018). This may explain why so few STEM students made overtly upward social comparisons between STEM and Arts faculties and why Arts students do not report experiences of prejudicial or discriminatory behaviour – as it is not required for STEM students to feel a sense of superiority or to maintain a positive view of themselves (Lytle, 2018). Yet, this does not explain why one Art student reported being discriminated against for being in an Arts faculty. The mechanisms behind this finding, therefore, require further research.

Despite requiring more research regarding the occurrence of inter-faculty hierarchies and their impact on STEM and Arts students, our study did find that there was an intra-faculty hierarchy with overt prejudice occurring within STEM faculties. Specifically, our study found that smaller speciality sciences (i.e., health sciences, engineering) were viewed as harder and more prestigious than general sciences (i.e., life science, biology).

STEM students in our study also reported that speciality STEM programs displayed an overt sense of superiority over general STEM programs. This displays the presence of an intra-faculty hierarchy with clear upward social comparisons being made between STEM programs.

While no research exists that looks specifically at the mechanisms behind intra-faculty hierarchies, a related study looks at the development of inter-faculty hierarchies among educators of different academic disciplines (Euster, 1980). This study finds that STEM programs are viewed as more prestigious due to variables such as perceived course difficulty, allocation of funding, and research opportunities (Euster, 1980). However, this study does not explain why these hierarchies exist nor does it explain the degree of prejudice displayed across faculties. In this regard, our study contributes to existing literature, revealing that inter-group hierarchies are carried out into the first-year undergraduate level and also exist between programs in the same faculty. Our study also provides an updated data set, confirming that inter-group hierarchies are still prevalent today.

There is no literature that we know of that focuses on the development of intra-faculty hierarchies. However, because of the known negative outcomes of prejudicial attitudes and perceived superiority in different contexts such as a breakdown of unity and group relationships, avoidance, and in extreme cases, violence towards the person and/or property (Allport, 1958; Lytle, 2018), we suggest further inquiry into the mechanisms that result in the development of intra-STEM hierarchies and the impact (if any) of these hierarchies on variables such as self-validation. If these results are found to have substantially negative impacts, additional studies to test intervention strategies based on theories such as Interpersonal Contact Theory (ICT) to lower their effects will be required. ICT states that both groups must have equal status, similar/superordinate goals and interpersonal contact that allows them to work together to achieve these goals, and the contact must be supported by a legitimate authoritarian figure (Allport, 1958). Allport (1958) also entails that interpersonal contact must be informal in nature and must not be forced by outside sources in order to operate successfully. Employing an intervention strategy based on ICT will likely decrease the sense of superiority felt by students in specialized STEM programs, improving the relationships and reducing the hierarchies within STEM faculties.

Sense of Community and Belonging

STEM students were found to have a moderate yet overall stronger sense of community and belonging than those in Arts faculties who had a low overall sense of community and belonging within their faculty. A strong sense of community and belonging was found to be significantly higher in speciality STEM programs because of smaller class sizes, as there is a better ability to develop interpersonal relationships with peers and professors. This finding is associated with a stronger sense of connection felt by STEM students to their faculty, which ultimately led to a greater sense of self-validation among STEM students in comparison to Arts students. Sense of connection was associated with event availability, event attendance, peer relationships, and faculty-student relationships. While we initially expected that event availability and attendance was linked to perceived value in one's faculty, with additional analysis, we discovered that this variable was more strongly associated with community and belonging.

In terms of faculty-student relationships, our research aligns with previous findings that show the importance of formal and informal interactions with peers and professors as they add to the university experience (Komarraju et al., 2010). STEM and Arts students in our study reported weak relationships with professors due to feelings of anonymity and discomfort in larger class sizes, which they reported hindered their overall sense of community and belonging in their faculty. However, both STEM and Arts students reported stronger relationships with TAs because of the more intimate setting of tutorials. A strong sense of community and belonging was especially true for the overall experiences of students in specialty STEM programs (i.e., Medical Radiation) as their core lectures are reported to be smaller than average first-year STEM classes, which works to facilitate the development of faculty-student relationships. Implementing smaller class settings into courses – such as having mandatory tutorial hours or multiple core lectures per week to lower class sizes – may, therefore, help foster the building of student-faculty relationships.

Previous research reveals that validation from faculty-student interactions are particularly beneficial for minority students (Hurtado et al., 2018; Baker & Griffin, 2010). For instance, faculty-student interactions that create an inclusive environment amplify students' sense of belonging within their institution, especially for students who are likely to experience racial and ethnic discrimination (Hurtade et al., 2018). Studies also suggest that planned mentoring between faculty members and minority students can help decrease college dropout rates among this group, as planned mentoring improves academic retention, and in turn, academic success (Redmond, 1990). In this regard, we assert that acknowledging barriers to integration in first-year will help both STEM and Arts students develop a stronger sense of community and belonging within their faculty, which will aid in academic achievement and degree persistence, especially for minority students.

While office hours are meant for one on one time to build relationships with professors and gain knowledge about course content, both STEM and Arts students reported that they did not attend their professors' office hours. We believe this is due to the perception students have of their professors. For instance, STEM students reported mixed experiences with professors – perceiving some as cold and distant and others as open and knowledgeable but busy. While Arts students perceived their professors as open and willing to help, similarly to STEM students, they perceived them to be intimidating and busy.

In alignment with the perception of professors, some studies suggest that low office hour attendance is due to misinterpretation or inaccurate meaning attached to the purpose of office hours among first-year students (Smith et al., 2017). Guerrero & Rod (2013) discover that this low engagement in office hours becomes a circular issue as both professors and students have a negative association with office hours. Students do not attend for internal and external reasons (i.e., not having questions, hours not fitting into their schedules, not understanding the purpose of office hours) (Guerrero & Rod, 2013). As a result, professors become discouraged by low turnout and do not reach out to students, who in return, develop poor perceptions of their professors and thus do not put effort into developing these relationships (Guerrero & Rod, 2013). In this regard, communicating the purpose of office hours and increasing engagement encouragement

may increase office hour attendance and help to build stronger faculty-student relationships.

We believe it is possible to increase the fostering of these relationships as both STEM and Arts students reported a desire to develop stronger relationships with their professors. This displays their willingness to form such relationships but a lack of action towards pursuing them. While our study reveals some mechanisms associated with the pursuit of these relationships for STEM and Arts students, there is a lack of literature that focuses on the internal and external mechanisms associated with pursuing such relationships. Thus, predictors of relationship formation among STEM and Arts students require further inquiry. We suggest a comparative study between the development of relationships with teaching assistants vs. professors to gauge the predictors of relationship pursuit, formation, and longevity as STEM and Arts students both reported stronger relationships with their teaching assistants.

This research is important as a large amount of literature has proven the benefits of faculty-student relationships, such as higher rates of information retention, academic success, sense of belonging, confidence, efficacy, community, degree persistence, and pursuit of future career goals (Komarraju et al., 2010; Lundberg & Schreiner, 2004; Araújo et al., 2014; Kift, 2009; Thomas, 2012; Redmond, 1990), especially among minority students and students with varying abilities (Hurtado et al., 2018; Baker & Griffin, 2010). Research shows that teaching habits demonstrating clear expectations, detailed feedback, and collaborative learning lead to a greater sense of motivation, self-confidence, responsibility, self-validation, and intention to complete one's degree (Colbeck et al., 2001). For these reasons, the lack of developed student-faculty relationships impact student attitudes, interests, and values, which leads to a weaker sense of belonging within the institution – findings that are all consistent with our results.

We propose that as well as improving faculty-student relationships in general, professors should also ensure they are providing clear expectations and detailed feedback to students as well as promoting collaborative learning, as this is found to increase student information retention and engagement (Zimmerman et al., 2014). As Colbeck et al. (2001) finds, among other things, these practices directly promote higher self-validation among students.

In terms of peer-to-peer relationships and event availability and attendance, STEM students reported higher levels of academic and social event availability and attendance in comparison to Arts students. STEM students also reported having more peer relationships in their faculty in comparison to Arts students, both of which negatively impacted their sense of belonging and community within their faculty and institution.

These results may be explained by the natural transitionary period first-year students report experiencing as they enter university. To explain this further, Araújo et al. (2014) propose the "Belonging Model" in which they assert that students develop a sense of community and belonging across their four years of undergraduate studies. The first year is categorized as program/academic specific where students integrate themselves in the curriculum rather than the social aspects of university. In the second year, they develop a grounded place in their community cohort. In the third and fourth years, they expand and apply their knowledge in a global context (Araújo et al., 2014). As a result, weak faculty-student and peer-to-peer relationships may be associated with this natural transitionary period.

As the model suggests, being a first-year student may explain why both STEM and Arts participants did not experience a higher sense of community and belonging, as they are becoming more situated in the academic aspect of university life, rather than establishing strong community ties and interpersonal relationships, which the model suggests does not occur until the second year of study (Araújo et al., 2014). As a result, as students move through their undergraduate career, they will likely develop stronger peer-to-peer and faculty-student relationships that will aid in a stronger sense of community and belonging.

Even so, STEM students experience a higher sense of community and belonging in their first-year, which they associate with the availability of many academic events that cater to future career paths and social events that foster peer-to-peer relationship development. These events were not as readily available to first-year Arts students. As the Belonging Model suggests, an important aspect in creating this strong sense of community and belonging is available social events, strong peer-to-peer relationships, and strong student-faculty relationships that work to build confidence and efficacy in one's interests and future career goals (Araújo et al., 2014; Kift, 2009; Thomas, 2012). As a result, the greater availability and attendance of social and academic events by STEM students may explain why their sense of community and belonging was overall higher than those in Arts faculties.

Consistent with the Belonging Model, our research finds that social events that encourage peer-to-peer relationships are important for first-year students as they ground students in the social community of their program and institution (Araújo et al., 2014). These events include things like Welcome Week and Meet the Profs Night, which both STEM and Arts students in our study reported that they attend, enjoy, and desire more of, as they allow them to develop strong social relationships outside of the classroom setting. Mixed method studies further confirm the importance of these events as university adjustment for first-year students is made easier when strong friendship networks are established (Buote et al., 2007). Buote et al. (2007) explain that social networks outside of a classroom setting increase students' self-validation and self-efficacy. Settling into the university community and developing early support systems also aid in degree persistence (Harrison, 2007). These social networks do not only include close friends but may also arise from programs like peer mentoring, which help to establish a strong sense of belonging and aid in the adjustment and, in turn, the academic success of first-year students (Yomtov et al., 2015). In this regard, our study confirms the findings proposed by the Belonging Model and related research on the degree of belonging among first-year undergraduate students as our participants' sense of community and belonging in our study was reflected by similar variables.

Our study also confirms the connection between faculty-student and peer-to-peer social networks and increased self-confidence. For instance, those with stronger reported relationships (STEM students) also had a stronger sense of self-confidence, while those with weaker reported relationships (Arts students) had a weaker sense of self-confidence in relation to relevant variables. This ultimately impacted their sense of self-validation (Hyde & Gess-Newsome, 2000). Overall, the factors associated with self-validation include study groups, peer mentors, faculty encouragement, support systems (i.e., family and friends) and self-confidence, all of which have been shown to lead to a greater degree of persistence, especially among female STEM students. Huang & Brainard (2001)

confirm this finding by stating that outside sources such as friendship networks greatly impact self-confidence and self-validation levels for female students. Self-confidence will be discussed further below.

Although both STEM and Arts students plan on staying in their program for the remainder of their undergraduate career, a sense of belonging is also a predictor of persistence, especially for minority students (Wright et al., 2012; Marra et al., 2009; Marra & Bouge, 2007; Hausmann et al., 2007). Persistence for women in STEM is also strongly associated with a sense of belonging in STEM culture and the extent of peer-to-peer and social connections (Shapiro & Sax, 2011). We found that female STEM students in our study had a moderate sense of community and belonging, and that increasing the variables that impact sense of community and belonging will likely aid in degree completion among STEM and Arts students, especially for minority students and women in STEM.

Furthermore, findings associated with community and belonging can be explained using Tajfel & Turner's (1979) Social Identity Theory. For instance, with regard to the cognitive processes that aid in the development of in-group and out-group membership, as discussed above, categorization (i.e., sorting of characteristics or traits into groups) was consistent with the experiences of STEM and Arts students as they often referred to themselves as members of their faculty. In other words, they saw themselves as a STEM or Arts student. Social identification (i.e., developing a sense of belonging to a group) was weak among STEM and Arts students but especially among those in Arts faculties, which decreased their overall sense of community. Specifically, Arts students reported that although they felt like they belonged, they did not feel welcomed in their faculty, resulting in lower identification in comparison to STEM students. This is consistent with a lack of social and academic events and poor faculty-student and peer-to-peer relationships among Arts students.

Tajfel & Turner (1979) establish that group membership solidifies an individual's sense of belonging within society. In line with this, Kleine (2002) also explains that a student's program helps to define him or her because it influences the classes they take, their behaviours, their aspirations, and the people they associate with. These variables thus explain the moderate community attachment felt by STEM students and the low community attachment felt by Arts students, as they have not developed strong social identification. In this sense, the experience of low self-validation among Arts students, may be the result of lower group ties in comparison to STEM students, which is caused by the various variables discussed above.

Moreover, consistent with SI (Blumer, 1969), our study also adds to research on community and belonging, suggesting that adequate physical and linguistic symbols of belonging (i.e., faculty merchandise and Welcome Week chants) also work to enhance a perceived sense of community and belonging among both STEM and Arts students. STEM students specifically reported that having and identifying with these symbols made them feel welcomed. Increasing physical and representative symbols may, thus, act as a means to enhance identity development among STEM and Arts students and increase their sense of community and belonging.

When framing these findings in terms of SIT, SI, and previous studies, we suggest that increasing the meaningful, representative symbols that promote identity development, increasing social events that promote a sense of community and belonging and confirm

one's in-group identity in the first-year – rather than waiting until this naturally occurs in upper years (Araújo et al., 2014) – may, therefore, aid in the university transition. This is because feelings of belonging in one's faculty and institution allow students to ground themselves in the university community.

Academic Efficacy and Confidence

Overall, STEM students were found to have higher levels of self-efficacy and confidence than Arts students. Both STEM and Arts students were found to have high efficacy in Arts courses, while only STEM students were found to have high efficacy in STEM courses, which increased STEM students' confidence. Our research also found that Arts students had low efficacy in STEM courses, which decreased their sense of confidence. A strong sense of efficacy in Arts courses from both STEM and Arts students contributed to the perceived ease of Arts programs. Although, STEM students reported having low efficacy in Arts courses that required previous knowledge or a certain skill set (i.e., drawing, painting, music), this did not impact their sense of confidence. As discussed above, a stronger sense of self-efficacy was also linked to a greater sense of community and belonging and prestige.

A strong sense of confidence among STEM students was attributed to future career paths, as STEM students were more certain about potential career options than Arts students. This is because STEM courses are perceived to lead directly to specific careers (i.e., doctor, medical radiation technician), which gives STEM students a greater sense of stability after their degree completion. Whereas Arts students have broader career options in mind, which results in a lower sense of stability. STEM students also expressed a strong belief that their degree would help them in the pursuit of their desired career, whereas Arts students expressed the belief that their degree would help them in the job market in general but most did not have a specific career path in mind. STEM students also reported having more co-op and placement opportunities in comparison to Arts students, which contributed to the higher level of confidence among STEM students as they reported that these experiences will aid in their future career paths. A stronger sense of self-efficacy and confidence ultimately indicates higher levels of self-validation among students in STEM faculties in comparison to those in Arts faculties.

Our study does not align with previous research that indicates a drop in self-confidence among female STEM students in the first-year of their program (Brainard & Carlin, 1998). This drop in confidence has been linked to a low sense of community and belonging as female STEM students have associated a lack of self-confidence with feelings of not being accepted in their faculties, which results in barriers to degree persistence (Brainard & Carlin, 1998). This lack of self-confidence has been consistently reported by more than one-fourth of first-year female STEM students, which is shown to increase over time (Brainard & Carlin, 1998).

In contrast to Brainard & Carlin (1998), we found that female STEM students experienced high levels of self-confidence despite experiencing a moderate sense of community and belonging. Instead, our research findings reveal that first-year female STEM students possess a high level of confidence due to a high level of certainty in future career paths, and more co-op/placement opportunities, which they reported will help them achieve their future career goals. As confidence is directly associated with high self-efficacy, STEM students also possess a high level of confidence due to efficacy in their

abilities to excel in both STEM and Arts courses. In this regard, due to a lack of literature in this area of inquiry, our study adds to the pool of data by outlining aspects of the first-year experience that contribute to STEM students' level of confidence, which we assert contributes to increased levels of self-validation among STEM students in comparison to Arts students.

Our research also fills the gap in current literature, as there are no similar research studies that link potential career paths of first-year STEM and Arts students to self-confidence. Our findings are, therefore, beneficial to the pool of existing literature, as they reveal how self-confidence among first-year students is affected by their anticipated career paths. We assert that having clear career goals increases STEM students' levels of self-confidence and leads to a rewarding outcome in the form of higher levels of self-validation. As reported in other studies, this will likely increase degree persistence (Marra et al., 2009; Marra et al., 2012). However, further longitudinal versions of our study are necessary to confirm the likelihood of degree persistence among STEM and Arts students.

With regard to self-efficacy, our research aligns with previous findings that indicate a high level of self-efficacy among STEM students (specifically female engineering students) is positively related to students' sense of belonging and community within their faculty and specific program (Marra et al., 2009). As discussed above, our study found that STEM students had a moderate yet greater sense of community and belonging than those in Arts faculties, which likely contributes to why they also experienced a greater sense of academic self-efficacy.

Our study also expands on the work of Marra et al., (2009) as it not only confirms that self-efficacy is associated with a strong sense of community and belonging among female engineering students, but also among STEM students more generally. Our study finds that this research is also applicable to Arts students as they reported having a lower overall sense of self-efficacy in comparison to STEM students, which is correlated with a low overall sense of community and belonging (Marra et al., 2009). As discussed above, community and belonging can be explained by various premises of SI (Blumer, 1969) and SIT (Tajfel & Turner, 1979). In this regard, feelings of being welcomed in one's faculty are linked to a greater sense of self-efficacy while lower levels of community and belonging are linked to lower levels of self-efficacy, which impacts self-validation.

Marra et al. (2009) conducted a longitudinal study, which holds that these findings are consistent overtime. As a result, we believe that increasing both STEM and Arts students' sense of self-efficacy via greater community and belonging in first-year will carry over into upper years of study. This is important to address as self-efficacy, which is also a measure of self-confidence, is found to be especially low among women of colour when compared to their male counterparts (Marra et al., 2009). Increasing self-efficacy is also important as it is a strong predictor of academic success, positive university experiences, and degree persistence (Hyde & Gess-Newsome, 2000; Marra et al., 2009; Marra et al., 2012; Marra & Bouge, 2007). Thus, the mechanisms discovered in our study may point to ways in which self-efficacy and confidence can be improved among Arts students and maintained in STEM students, which will likely result in positive outcomes in relation to the above variables.

Marra et al. (2012) also find that difficulty of material is a factor in leaving STEM programs. While STEM students in our study plan to remain in their program throughout

their undergraduate careers, this may influence their actual degree persistence, especially for women and minorities in STEM programs (Griffith, 2010). This also impacts women's persistence in future STEM careers (Buse et al., 2013). As a result, focusing on variables that foster a greater sense of self-efficacy is critical, especially in women and minority groups (Marra et al., 2009).

There is no literature that discusses the perceived ease of STEM courses in comparison to Arts courses and how this relates to academic self-efficacy and confidence. However, this finding aligns with Schema Theory and SIT, as it explains that certain faculties hold categorical schemas of students in other faculties (Bartlett, 1932). This leads to the development of stereotypes that result in in-group and out-group mentalities among STEM and Arts students (Tajfel & Turner, 1979). As mentioned previously, predominantly, our study found that Arts students hold the stereotype that STEM courses are more difficult and STEM students are thus "smarter." In line with this, our findings also show that students have internalized schemas about how others judge their program (Bartlett, 1932). For example, our study found that Arts students internalized the perceptions of others – predominantly that their courses are easy – which led to a lower sense of self-efficacy and prestige and thus, self-validation among them.

Our research also found that Arts students have low efficacy in STEM courses due to the perception that they are difficult. However, while Arts students were aware of the perception that Arts courses are seen as "easy" and did contribute to this perception by acknowledging that they would take Arts courses as easy electives, Arts students did not view their courses as easy; rather, they viewed them as "easier" in comparison to STEM courses. In this sense, although Arts students had high self-efficacy in Arts courses, because of the perception of their faculty as "easy" and their experience of lower self-efficacy in STEM courses, this led to a lower sense of self-validation among them in comparison to STEM students, who had high efficacy in both STEM and Arts courses. Thus, our research fills a void in current literature, as there are no similar research studies that link levels of self-efficacy among first-year STEM and Arts students to bird course choices. Furthermore, our research findings highlight how students possess varying levels of efficacy in courses both in and outside of their faculties.

Addressing lower self-efficacy in Arts students is important as it has been linked to predictors of stress levels, physical and emotional health, personal satisfaction, academic achievement, and adjustment to university life (Chemers et al., 2001). All of which impact whether students continue to pursue a degree (Chemers et al., 2001). Along with this, there is also substantial literature that displays the impact of low self-efficacy among STEM students (Hyde & Gess-Newsome, 2000; Marra et al., 2009; Marra et al., 2012; Marra & Bouge, 2007). As a result, we assert that these effects will likely also impact Arts students as they are similarly impacted by other variables such as community and belonging and perceived prestige and value.

Research is required to confirm the negative effects of low self-efficacy and confidence among Arts students in relation to STEM students. If the consequences are substantial, additional research into intervention strategies that raise the self-efficacy of Arts students will require further inquiry.

Concluding Remarks

More broadly, this research is important as the above variables intersect to impact the level of self-validation among STEM and Arts students. We found that STEM students had a better overall sense of self-validation in relation to relative variables in comparison to Arts students. Understanding the mechanisms that contribute to the occurrence of each variable and their relation to self-validation aid us in understanding how these variables impact the overall first-year undergraduate student experience. Although we did not look specifically at academic achievement, a better overall university experience is linked to higher academic achievement (Hyde & Gess-Newsome, 2000). In relation to these findings, we suggest subsequent research and further inquiry into intervention strategies that aid in reducing the unequal distribution of self-validation among first-year undergraduate students in STEM and Arts faculties.

Conclusion

Summary of Results and Findings

Overall, our research found that STEM students had a higher sense of self-validation in comparison to Arts students. This was the result of many intersecting factors that led to the uneven distribution of self-validation between students in STEM and Arts faculties. These variables include perceived prestige and value, sense of community and belonging, and academic efficacy and confidence. From our research we were able to conclude that STEM students tended to have higher levels of self-validation in comparison to those in Arts faculties.

Focusing on perceived prestige and value of one's faculty, these two variables were heavily intertwined and contributed to levels of self-validation. Prestige was attributed to heavier workloads, greater assumed difficulty of courses in STEM faculties, greater perceived competition for jobs, research opportunities, and post-graduate programs. STEM students were also found to have a greater sense of value in comparison to Arts students. Value was attributed to perceived allocation of funding, and the availability of research opportunities. Arts students acknowledged the perception that many believe their faculty is not prestigious but did report that their faculty should be viewed as more prestigious.

In terms of sense of community and belonging, our findings show that STEM students experienced a moderate sense of community and belonging whereas Arts students experienced a low sense of community and belonging. This was related to availability and attendance of academic and social events, the degree of faculty-student relationships, and peer relationships. All of which contributed to differing levels of self-validation.

Furthermore, our study found that self-validation is strongly related to self-efficacy and confidence in STEM and Arts students. STEM students were found to have higher levels of academic efficacy and confidence than Arts students, who experienced a low level of academic efficacy and a moderate sense of confidence. Significant predictors of self-efficacy were academic efficacy and the perception of Arts courses as easy, which contributes to the general perceived ease of Arts faculties. A strong sense of confidence was attributed to certainty in future career paths and the belief that students' degrees will help them achieve this. This was also linked to the availability of more research and co-op opportunities.

Overall, we found that the higher levels of perceived prestige and value, community and belonging, and self-efficacy and confidence were all strong predictors of self-validation among STEM and Arts students. Ultimately, the degree of self-validation was higher among STEM students in comparison to Arts students, which resulted in differing undergraduate university experiences.

Limitations

With designing and executing our research study, there were various limitations that we encountered. To begin, time constraints placed on this project for data collection ultimately limited our sample size. Since semi-structured interviews were conducted over a short window of time, we were only able to recruit nine participants for data collection. Considering our interviews were advertised as taking approximately a half an hour to conduct, this could have deterred more participants from joining due to the greater time commitment.

Furthermore, only having nine participants takes away from the generalizability of our sample population. While being limited to first-year undergraduate McMaster University students, there was a lack of ethnic diversity within our population as well as an overrepresentation of female participants. Of the nine participants, only two were male and both belonged to Arts programs. With the absence of male participants in STEM programs, we are unable to account for gender differences in self-validation within STEM faculties. Although all participants were first-year undergraduate McMaster University students, the data collected from this sample may not be generalizable or representative of the entire first-year cohort, especially those in faculties outside of STEM and Arts. This data may also lack generalizability as our results are specific to the McMaster University population and experience.

Moreover, an issue that we encountered during the recruitment process was gaining permission to post our recruitment poster in McMaster University affiliated Facebook groups. While we did reach out to various faculty specific groups such as McMaster Biology Society, the McMaster Social Sciences Society, and first-year oriented services like MSU Spark, we were limited in responses we received granting us permission to post. Although we attempted to gain permission from many different groups, only the McMaster University class of 2023 Facebook page responded and allowed us to post our recruitment poster. As a result, this likely hindered our ability to recruit more participants as we were only able to advertise on this single approved Facebook page in addition to posters displayed around campus.

All researchers involved in this research project belong to the faculty of Arts-based program of Honours Social Psychology. As a result, participants may have been influenced by social desirability bias when asked about potentially sensitive topics relating to their programs such as perceived prestige and value. There is also a potential researcher bias in favour of Arts participants. While those conducting interviews and coding actively sought to remain neutral, such bias may be unconscious, resulting in an inability to mitigate it. As a result, there is no means of confirming how this may have affected our research process and results.

Another limitation of our methodology is that due to the face-to-face nature of the interviews, participants may not have felt comfortable in answering certain questions honestly. As a result, negative opinions or perceptions may have been omitted from

participant responses in order to avoid potential judgement from the researcher. While crucial steps were taken to ensure participants privacy and anonymity, participants may still desire to adhere to social norms and expectations, limiting or altering their responses.

While steps were taken to avoid other potential limitations, those discussed were ultimately out of the researchers' control.

Significant Insights

We learned a substantial amount in conducting this research. Predominantly, we learned about our group members' interest in our research topic and overall process. We learned about the highs and lows of conducting qualitative research from start to finish. For example, the excitement of the interview process and getting to know the experiences and viewpoints of our participants – all of whom taught us valuable lessons about how to build a strong rapport and how to conduct ourselves in an interview setting. Although we learned that we all despise the transcription and coding process, it showed us the value of reflecting on the information we have been given to develop strong insights and connections between past research, theoretical frameworks, and new variables. All of which resulted in a deeper respect and admiration for the research process.

Having the opportunity to conduct a research study on students allowed us as researchers to look into the experience of first-year undergraduate students at McMaster University and highlight potential areas of their experience that can be improved upon. With previous research done on students in their first year of undergraduate study, we had expected similar outcomes that can be used to inspire change. It was found that STEM students experience a decreasing sense of self-validation as a result of the stress and demands of their program – which were often factors that increased dropout rates (Perez et al., 2014). Bringing awareness to factors that make students want to leave post-secondary education can potentially reduce the overall dropout rate if appropriate changes and support are established.

In general, we found that students belonging to STEM faculties have higher levels of self-validation than those in Arts faculties. Students in Arts faculties have often been ignored in research with more of an emphasis on students in STEM faculties and their experiences. Our research on the student experience of those in Arts faculties and how validated they feel within their faculty brings valuable insight into potential changes McMaster University can make. For example, we found that students in Arts faculties had a lower sense of community in comparison to STEM. McMaster University can improve on this particular issue by providing more arts-based workshops and facilitating more community events within arts faculties. Furthermore, providing material symbols of belonging, like faculty merchandise, could improve how connected arts students feel to their faculty and peers. In previous literature, programs such as peer mentoring were found to increase student's sense of belonging and aided their adjustment into university, overall increasing their academic success (Yomtove et al., 2015). For students struggling in their transition to first year and have little connection to their faculty and a lower sense of self-validation, implementing programs such as peer-mentoring can potentially increase their connection to their faculty and improve their overall university experience.

The overall goal of this research was to highlight any discrepancies in student levels of self-validation while trying to uncover potential factors leading to these results. By recognizing certain aspects of inequalities leading to differing levels of self-validation, it

provides valuable information that McMaster University can use to improve on any discrepancies and increase students' levels of self-validation. Because we conducted our study qualitatively, our results also allow us to propose solutions grounded in the first-hand first-year undergraduate student experience. As a result, we believe our findings and subsequent variables discovered in our study can lead to decreased dropout rates, an increased sense of community and belonging, self-confidence, self-efficacy, and academic success among first-year undergraduate students in STEM and Arts faculties.

In turn, we believe this will facilitate the adjustment of first-year undergraduate students to university life and better the overall experience of first-year undergraduate students.

Concluding Thoughts

Through our research, we were able to conclude that first-year STEM students at McMaster University tend to have higher levels of self-validation in comparison to Arts students. Overall, we believe this research is necessary because it provides significant insights into the self-validation of undergraduate students in STEM and Arts faculties. Increased self-validation is shown to decrease dropout rates, increase sense of community and belonging, self-confidence, self-efficacy, and academic success among first-year undergraduate students. This is also shown to improve the adjustment process to university life and the overall university experience. While our research reveals that STEM students have higher levels of self-validation, it is clear McMaster University must do more to facilitate self-validation within Arts students.

Implementing participant suggestions such as expanding the options of first year courses would overall be beneficial for both STEM and arts students. Conducting this research qualitatively provided humanistic and inductive insight into the experiences of first-year undergraduate students, allowing first-year students to have a voice in this process and influence change in their academic experience.

Acknowledgments

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