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Striving for Education: The Impact of Perceptions of Inequality on Students' Educational Aspiration and its Interaction with Locus of Control

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Abstract

In an educational setting, every individual may not have equal access to opportunities (such as educational or financial resources) or outcomes (such as grades or evaluations), which could create a sense of inequality in the individual. Individuals may then attribute these inequalities to their personal efforts and abilities or to their circumstances. Past studies have focused on associations between inequalities (such as social or gender inequality) and educational aspirations (e.g., Guyon & Huillery, 2017; Chen et al., 2022). The present study assesses the main effects of perceived inequality and the attribution of outcomes to internal or external factors (also known as locus of control) on educational aspirations. The study also assesses whether the academic locus of control significantly moderates the impact of perceived inequality on educational aspirations. Utilizing a 1 (continuous measure of academic locus of control) x 3 (inequality: control vs. perception of inequality of outcome vs perception of inequality of opportunity) study design, participants' aspiration scores were assessed. The participants included $N=190$ students enrolled in an undergraduate program. The results from a moderated multiple regression analysis indicated that perceived inequality did not significantly affect educational aspirations. Academic locus of control significantly positively affected aspirations. Academic locus of control also has a significant moderating effect on the impact of inequality. Specifically simple effects analysis indicated that perceived inequality has a significant positive effect on educational aspirations when there is an external locus of control. The study provides an understanding that inequality in an educational context may not impact every individual in the same manner and may differ according to specific factors (such as locus of control).

Keywords; Perceived Inequality; Opportunity; Outcome; Locus of

Control, Educational Aspirations

Layman's Abstract

Although education is significant for individual and societal growth, not everyone has access to equal educational opportunities (e.g., educational resources or funding) or outcomes (e.g., grades). This would then create a sense of inequality that may also affect students' beliefs regarding their abilities to achieve their goals or desired outcomes in an educational context. Additionally, some students may view the outcomes as being caused by their own efforts or skills, while others may regard the outcomes as having been caused by external circumstances or fate. The present study assesses how this perception of inequality can affect aspirations in an educational setting. The study also assesses whether the way one observes their outcomes as being caused by external or internal factors (known as their locus of control) impacts one's aspirations. Finally, the study observes whether the locus of control can strengthen or weaken the effect of one's perception of inequality on educational aspirations. For instance, having an internal locus of control could enable one to view themselves as being more in control of their outcomes, which could potentially mitigate the effects of perceived inequality on aspirations. Although the study did not find an impact of perceived inequality on aspirations in an educational context, the results indicated a positive effect of internal locus of control on aspirations. The results show that viewing external factors as causes for one's outcomes can strengthen the effect of perceived inequality on increasing aspirations in an educational setting. The study demonstrates that inequality is not perceived in the same manner by every individual, and its impact can change in intensity according to one's locus of control.

Keywords: Perception of Inequality; Opportunity; Outcome; Locus of Control

Introduction

“The power of education extends beyond the development of skills we need for economic success. It can contribute to nation-building and reconciliation.” - Nelson Mandela

Education is important in several ways for each individual and for society in terms of its functioning and growth. For instance, education has been observed to enable and promote the cohesion of social groups (Camilleri & Camilleri, 2016) and increase engagement in civic life (Lochner, 2011), which in turn can prevent conflict, enable societal growth (e.g., Lochner, 2004; Collier & Hoeffler, 2004), and decrease inequality (Kyllonen, 2018). Education has also been observed to promote well-being and enhance mental health in specific populations (Chevalier & Feinstein, 2006; Courtin et al., 2019; Kondirolli & Sunder, 2022). For instance, a decreased probability of anxiety (9.8%) and depression (11.3%)-related symptoms resulted from an additional year of education, according to a study by Kondirolli and Sunder (2022). However, not every individual in society may have equal access to educational opportunities and outcomes. For instance, in the United States, it was observed that in American public schools, one out of two students were from households with relatively lower incomes (Southern Education Foundation, 2015; Noguera, 2017). Individuals with lower incomes may not have equal access to educational resources and opportunities as those with higher incomes (e.g., Mayer, 2010).

Past research has indicated that there has been an increase in the diversity and variety of students studying at universities, with regard to their socio-economic background, nationality, gender, and age, among other factors (Morlaix & Suchaut, 2014; Rodríguez-Hernández et al., 2019). Based on all these factors, some students may have more access to educational materials or resources as compared to other students. (e.g., Dynarski, 2000; Mullainathan & Shaffir, 2013). Individuals experiencing inequality in a social or educational context may not obtain the benefits of education to the same extent as individuals who have access to quality education. When one experiences inequality, it can have negative or even

harmful repercussions or consequences on different dimensions of one's life (e.g., Brown, 2013). On a societal level, it is observed that reduced social trust and increased social strife result from inequality with regard to income (Kawachi et al., 1997; Wilkinson and Pickett, 2009; Gustavsson and Jordahl, 2008). Poverty and deprivation are also seen to result from inequality (Wilkinson and Pickett, 2009; Cramer, 2003). Income inequality was also found to have detrimental effects on one's psychological health (Ribeiro et al., 2017; Sommet et al., 2018) and levels of happiness (Oishi, Kesebir, & Diener, 2011).

Inequality has also been observed to be detrimental to individuals' expectations regarding their mobility (Browman et al., 2019), which refers to movements within a distribution of socio-economic circumstances or the economic wellbeing of individuals (Galiani, 2007). Inequality has also been negatively associated with aspirations (e.g., Corneo and Jeanne, 2001; Genicot & Ray, 2017; Posel & Rogan, 2018; Chen et al., 2022). Aspirations have been associated with attainment in an academic setting (Webb, Lubinski, & Benbow, 2002; Shapka & Keating, 2006) and significantly predicting socioeconomic mobility or success later in life, during adulthood (Sewell & Hauser, 1975; Staff et al., 2010). Although several studies in the past focused on the negative impact of inequality on various factors, such as psychological health (Ribeiro et al., 2017) and aspirations (Chen et al., 2022), there have also been prior findings that focused on the positive effects of inequality (Albrecht & Albrecht, 2007; Rözer & Kraaykamp, 2013; Cheung, 2016). For instance, Cheung (2016) indicated that in rural areas of China, higher inequality was associated with greater life satisfaction and that this association was explained by hope (Cheung, 2016). Lower levels of hopefulness were explained to be caused by the view that one's life and outcomes are controlled by factors outside of oneself (Brackney & Westman, 1992).

While observing the positive effects of inequality through its interaction with factors such as hope (e.g., Cheung, 2016), it could also be possible that certain factors may mitigate

the impact of inequality on aspirations. For instance, prior research has shown that a feeling of powerlessness can result from limited access to resources and opportunities (Lachman and Weaver, 1998), and that one's sense of control is shown to be lowered by inequality (To, Wiwad & Kouchaki, 2023). When one believed that their outcomes were determined by internal factors (such as effort or ability), it was shown to increase their aspirations (Cellini & Kantorowski, 1984; Gordon & Steele, 2015). It could, therefore, be possible that attribution of one's outcome to internal factors may mitigate the impact of perceived inequality on aspirations.

When one experiences inequality, one may view their outcomes as resulting from their own efforts or due to external factors. The impact of perceived inequality on aspirations can depend on the extent to which individuals feel these situations are within their control or outside their control. Building on past research and findings, the present study focuses on the impact of perceived inequality on aspirations in the educational context. The present study also aims to understand how having an internal or external locus of control affects aspirations and whether locus of control significantly moderates the relationship between perceived inequality and educational aspirations.

Although studies have previously indicated that inequality can hinder aspirations and that an internal locus of control can enhance aspirations, the present study additionally observes the effects in an educational context and observes the moderating effects of locus of control, which enables a comparison between perceived inequality as well as their interactions with locus of control in assessing their effect on educational aspirations. This leads us to our primary research question: How do perceptions of academic inequality of opportunity and outcome affect students' educational aspirations, and what role does locus of control play in the relationship between the two?

Theoretical Background

Educational Aspirations

Aspirations regarding one's education have been explained as objectives or targets that are educational in nature that one sets for oneself based on the evaluation of one's own capabilities or skills (Bandura, 1991; Seginer and Vermulst, 2002; Fraser & Garg, 2011). Individuals start envisioning their long-term goals and opportunities for the future during their adolescence (Chen and Hesketh, 2021). Educational aspirations have been observed as significant in determining not only educational outcomes but also aspects such as achievement (Sewell & Hauser, 1980; Marjoribanks, 2005; Rothon et al., 2011), life satisfaction (Ferrante, 2009), and self-efficacy beliefs (e.g., Uwah et al., 2008), by recent research. For instance, Sewell and colleagues, in their model observed that achievement and occupation attainment, are significantly impacted by individuals' aspirations, which they found to be the most significant predictor among various other social-psychological predictors (Sewell & Shah, 1968; Sewell & Hauser, 1980; Rothon et al., 2011).

Educational aspirations are not only observed to have a significant impact on these variables, but they are themselves impacted by determinants such as parental involvement, culture or ethnicity, and personality factors (Rothon et al., 2011). Accordingly, the determinants of academic aspirations are categorized into two distinct dimensions (Strand and Winston, 2008). One's environmental or familial settings were associated with their 'social dimension' and one's personal factors, such as efforts or traits, were associated with their 'personal dimension' (Strand & Winston, 2008; Rothon et al., 2011). A large body of research has also focused on socio-economic factors (e.g., Sewell and Hauser, 1980), such as the learning environment (Jia et al., 2021) or the levels of income (Teachman, 1987; 1998).

Educational aspirations are also significantly determined, defined, and shaped by other significant individuals in a child's or adolescent's life, such as their parents, peers, or teachers, according to past research (Sewell et al., 1969), especially in high school students.

Research has also emphasized aspects such as ethnicity (Qian & Blair, 1999; Berrington, Roberts & Tammes, 2016) and gender (Berrington, Roberts & Tammes, 2016) that are also found to be significantly associated with educational aspirations. For instance, regarding gender, Rampino & Taylor (2013) indicated higher educational aspirations and positive attitudes towards education among females than among males (Rampino & Taylor, 2013). Similarly, Berrington and colleagues (2016) indicate that there are higher aspirations among females in an educational context. Berrington and colleagues (2016) also indicate that aspirations tend to differ among racial or ethnic groups, such that minority groups (such as Black-African and Indian) indicated higher aspirations than white students (Berrington, Roberts, & Tammes, 2016).

Research exploring another dimension, about personal factors, has focused significantly on self-efficacy beliefs (Bandura et al., 2001; Ansong et al., 2019), achievement (Saha, 1994; Seginer & Vermulst, 2002), and psychological health (Rothon et al., 2011), among others. For instance, Bandura and colleagues indicated that higher perceived efficacy enhances aspirations (Bandura, 1997; Locke & Latham, 1990; Bandura et al., 2001). Khattab (2015) indicated that individuals' aspirations are required to be considered along with their expectations while assessing their achievement or performance in an educational context.

Inequality and Aspirations

The various determinants among the social and personal dimensions of factors influencing aspirations (Strand and Winston, 2008), such as levels of income (Teachman, 1987; 1998), may also result in inequality of opportunities or outcomes. In other words, factors that impact aspirations can also affect inequality, and vice versa. For instance, self-efficacy has been associated with aspirations (Bandura, 1997; Locke & Latham, 1990; Bandura et al., 2001; Rottinghaus et al., 2002) and with inequality (Meilstrup et al., 2019). The resulting inequality could, in turn, lower aspirations. Similarly, among social groups that

are disadvantaged, there is a lack of availability or accessibility to resources, opportunities, and environmental factors, which negatively impact aspirations (Fruttero et al., 2021; Graham & Pozuelo, 2021).

Inequality could result from different sources based on class, income, ethnicity, gender, or other factors (e.g., Seguino, 2005). For instance, variations in income level (such as income inequality) based on gender (gender inequality) could impact individuals in distinct ways. An individual can experience inequality when they do not obtain the same job opportunities as others based on their gender. Inequality based on gender has also been observed to affect educational aspirations in the long term (Chen et al., 2022).

Based on previous research on inequality and aspirations, we hypothesize that perceptions of inequality (of outcome or opportunity) would have a significant negative impact on the educational aspirations of students. In other words, students' scores with regard to educational aspirations in the perceptions of inequality conditions are compared to their aspirations scores in the control condition to analyze the significant difference. The present study argues that inequalities in outcome and opportunity can both negatively impact educational aspirations. This hypothesis is also based on previous findings that indicate an inverse association between aspirations and educational outcomes (Ross, 2019; Graham & Pozuelo, 2021). Among social groups that were disadvantaged, fewer opportunities or a lack of resources and situational factors also negatively impact aspirations (Fruttero et al., 2021), which may also demonstrate inequalities in opportunities.

Thus, based on the prior findings, we expected that educational aspirations may be lower in participants who are exposed to perceptions of inequality of opportunities (such as an unequal probability of getting selected to study at specific universities or gaining access to educational materials) when compared to the control group. Similarly, when one's educational outcome is perceived as unequal (for instance, obtaining lower grades on a test),

this may lead students to believe that external factors (such as experiences of discrimination) that are not within their control could be the reason they received poorer grades or feedback compared to others and therefore could significantly reduce their educational aspirations.

The Role of the Locus of Control

Inequality has been observed to have both positive and negative effects in prior research. Prior research has, for instance, indicated positive and negative effects of inequality on life satisfaction and subjective well-being, due to the aspect of hope (Cheung, 2016). Hope has been associated with whether an individual perceives outcomes to be caused by personal efforts and actions or by external factors. As a result of experiencing inequality due to discrimination or unequal levels of income, for instance (e.g., Brown et al., 2017), they could also think that, despite experiencing inequality, they can still have control over their outcomes or opportunities. When individuals think that they have control over their situations or outcomes, they may believe that their goals and objectives are more reachable or accessible, as compared to when individuals think that the situation is outside their control (Rotter, 1966; Rotter et al., 1972).

Accordingly, researchers have indicated that the way students may attribute or explain situations or outcomes in their classroom predicts aspects such as their expectations or aspirations (Forsyth & McMillan, 1981). Weiner (1979) proposed a model that explains dimensions or types of attribution, which include locus of causality, stability, and controllability. *Stability* involves the consistency or changes in expectations regarding causes of events or outcomes following the feedback one receives (Weiner, 1979; Forsyth & Mcmillan, 1981; Flowers, Milner & Moore, 2003). For instance, when an individual attributes low grades to a lack of effort, the effort can change over time and would therefore be less stable than another cause, such as an inability, which could remain stable over periods of time. *Controllability* is the extent or degree to which an individual may perceive control or

have the ability to change the outcome or situation (Weiner, 1985; Forsyth & Mcmillan, 1981; Flowers, Milner & Moore, 2003). For instance, when one perceives unequal income, one may either believe that they are less likely to be able to change this situation, which may indicate lower controllability. *Locus of causality* is associated with the location or position of the attribution of one's behavior or actions (that are self-reported) to internal or external factors or causes (for instance, viewing that one's own efforts are the reason for good performance). According to Weiner (2010), locus of causality is similar to and strongly associated with the concept of *locus of control*, which was proposed by Rotter (1966).

While the aspects of stability, locus of causality, and controllability (Weiner, 1979; 1985) provide an understanding of how causes are attributed, the present study focuses on a similar aspect that describes one's perception of whether one attributes causes of their outcomes (such as the educational outcome of receiving a poor grade) to personal or external factors, which can interact with perceived inequality and can moderate the effects of inequality on their educational aspirations. Based on these prior findings, in terms of whether the students may explain educational inequalities in terms of internal or external factors, we hypothesize a significant positive impact of the internal locus of control on the students' educational aspirations.

Moderating effect of locus of Control

Past research has indicated that when one experiences inequality, the extent to which they perceive the situation in a positive or negative manner relies on their perceived control over the situation (Budria et al., 2012). The study by Budria and colleagues (2012) indicated that individuals who perceive personal efforts in situations to play a key role in their outcomes tend to endure or tolerate inequalities to a greater extent than those who believe in external factors determining their outcomes. Persons with an external locus of control were observed to be more aversive towards inequality (Budria et al., 2012). When individuals with

an internal locus of control can tolerate inequalities to a greater extent, this may also have a positive impact on aspirations (by minimizing the impact of perceived inequality on aspirations).

According to Brown, Rosnick, and Segrist (2017), when racial oppression or discrimination is experienced by individuals, it significantly results in a locus of control that is external, which also negatively impacts the way one values or regards education (Brown et al., 2017). Additionally, internal locus of control has been significantly associated with variables such as searching for advantageous or useful information (Phares, 1976) and greater achievement (Crandall, Katkovsky, & Crandall, 1965; Weiner, 1972), which have been positively associated with aspirations by past research (e.g., Khattab, 2014). Internal locus of control has also been linked to reduced anxiousness and increased self-esteem (Phares, 1976) which could also help cope with stressful situations (Cohen & Edwards, 1989), such as experiencing inequality. Although studies have observed the effects of locus of control on inequality and education-related expectations or goals separately, the present study argues that locus of control may strengthen or weaken the impact of perceived inequality on educational aspirations.

Since locus of control is seen to impact aspirations (e.g., Burlin, 1976) and plays a crucial role with regard to contextual and personal factors (e.g., Prihadi et al., 2012; Brown et al., 2017), we argue that there could be a significant interaction between perceived inequality and locus of control, which could significantly impact educational aspirations. We therefore analyze the impact of perceptions of inequality and locus of control (as moderators) on educational aspirations among students to address the gap in previous literature. Therefore, we finally hypothesize that there is a significant moderating effect of locus of control on the relationship between perceptions of inequality (in an educational context) and students' educational aspirations. For instance, the extent to which perceived inequality of outcome

(such as lower grades) impacts students' aspirations may depend on the extent to which they believe that the outcome is within their control (having the ability to change or control their outcomes) or whether outcomes are based on external factors (such as discrimination or luck).

The practical implications of the findings of the present study could potentially include applications within educational systems for dealing with perceived inequality among students or shaping their aspirations. Accordingly, based on the findings of this study with regard to locus of control, key efforts can be taken by the educational system to ensure practices and approaches to teaching that can enhance and shape students' locus of control.

Method

Study Design

A 1 (continuous measure of academic locus of control) x 3 (inequality: control vs. perception of inequality of outcome vs perception of inequality of opportunity) study design was utilized, in which students' aspirations (as the dependent variable), were evaluated based on three different treatment groups. In the current study a between-subjects design is employed.

Participants

The participants include only those students enrolled in an undergraduate (bachelor) study program at a college/university in the United States. An adequate sample size was calculated using G*power analysis for F tests: Linear Multiple Regression, with $\alpha = .05$, a power value of $1-\beta = .80$ and an effect size of $f = .05$ (indicating large effect sizes), which indicated a minimal sample size of $N = 196$. A large effect size was utilized to compute effects of the variables that are relevant and applicable in the real-world setting. A large effect size would also help prevent the risk of either overestimating an effect or underestimating the actual impact of the variables.

According to the inclusion criteria of the present study, students had to be enrolled in an undergraduate program or an associate degree program at a college/university, to take part in the study. The study considered the students who had given their consent to take part in the study. The study, therefore, excluded students enrolled in a postgraduate program and those who were not enrolled in a bachelor study program at a college/university. The study also excluded students who did not provide their consent.

Accordingly, the study was conducted on 202 participants. After an initial screening 12 participants had to be excluded from the study as they did not meet the inclusion criteria. The students were not enrolled in an undergraduate or associate degree program. They were instead enrolled in a master's program or a specialization or professional study program. Therefore, the remaining number of participants was $N=190$ and their responses were analyzed for the study. The statistical power of the study is now, therefore, slightly lower than expected.

Measures

Perceptions Of Inequality (Opportunity and Outcome)

To manipulate perceptions of inequality (to assess its effects), the study presented informational videos on inequality of outcome and inequality of opportunity in the educational context and a neutral educational information-related control video. Participants were randomly assigned to the treatment conditions ('outcome condition,' 'opportunity condition' or a control condition), where they would then watch one of the three videos. Accordingly, one of the three videos was presented to participants. The 'inequality of opportunity' video demonstrated educational inequality of opportunity, such as accessibility to educational materials or schools of choice. An outcome video demonstrated inequality of outcome in an educational context (such as lower grades or performance feedback in comparison to others). The control video consisted of neutral facts regarding an academic

year at a university in the US (consisting of general timings and durations of each semester or activities within each semester). The contents of the control video were kept as neutral as possible to ensure that it did not have any depictions of inequality (of opportunities or outcomes) or related aspects.

Following the presentation of the videos, three attention-check questions in each group (outcome, opportunity, and control group) were provided to note if the participants were paying attention to the videos. The multiple-choice questions were related to the content of each video presentation. For instance, questions such as “Which factor influencing educational opportunities was not mentioned in the video?” were included in the opportunity group. Questions such as “What cause(s) of inequality in educational outcomes were mentioned in the video?” were included in the outcome group.

Manipulation Check

The purpose of providing manipulation check questions was to check if the respective videos presented had an impact on participants' perceptions as intended. The purpose of the manipulation-check questions was therefore to check for the effectiveness of the manipulation of perceived inequality, so that the impact of perceived inequality on aspirations can then be analyzed appropriately. Statements related to ‘perceived inequality of outcome’ such as “Some students get unequal educational outcomes compared to their peers, regardless of their efforts, knowledge, and skills” or related to ‘perceived inequality of opportunity’ such as “Some students encounter unique challenges that create unfair educational inequality in opportunities” were presented. Participants responded to these statements on a 7-point scale (0 = *strongly disagree* to 6 = *strongly agree*). This measure included five items each for inequality of opportunity and inequality of outcome. Reliability analyses were performed to assess the overall reliability of the measures. The scales measuring perceptions of inequality of opportunity and inequality of outcome, containing five

items each, had high reliabilities of Cronbach's $\alpha = .844$ and Cronbach's $\alpha = .818$, respectively. The data indicated a higher mean sample score in perception of inequality of opportunity as compared to perception of inequality of outcome. The data resulting from the assessment of perceived inequality of opportunity indicated a mean sample score of $M = 4.49$, $SD = 1.17$. Perceived inequality of outcome indicated a mean sample score of $M = 4.39$, $SD = 1.12$.

Educational Aspiration

The use of questions to measure educational aspirations in the study assessed students' aspirations regarding their performance or achievement in an educational setting. For instance, questions such as "How important is achieving good grades to you?" and "How driven are you to perform well in the upcoming exam?" were assessed on a 6-point scale (1 = *not at all* to 6 = *very much*). These questions were developed in accordance with the population (undergraduate students) and the context of this study. The measure assessing educational aspirations, which contained 15 items, also had high reliability (Cronbach's $\alpha = .868$). The data resulting from the assessment indicated a mean sample score of $M = 3.40$, $SD = .60$.

Academic Locus of Control

In the present study, the measure to assess locus of control included 15 items associated with internal or external locus of control. The items included questions regarding both 'personal feelings of control' and 'general feelings of control'. Statements such as "I consider myself capable of achieving success in life because I can rely on my efforts" or "I think that academic opportunities are available and accessible to those who seek them regardless of one's socio-economic background and income" were assessed on a true-false scale (1 = *true* and 0 = *false*), with eight items (items 1, 3, 4, 6, 8, 10, 11, and 12) scored in reverse. The measure was utilized to explore the extent to which individuals may feel that a

particular situation or experience is within their control. Some items included were referred to in Trice's (1985) Academic Locus of Control Scale. The data resulting from the assessment indicated a mean sample score of $M = .56$, $SD = .17$. The locus of control measure in the present study, however, had a relatively low reliability of Cronbach's $\alpha = .611$.

Procedure

Firstly, informed consent was obtained from participants regarding their willingness to take part in the study. Once the participants provided their consent and checked the audio, videos related to the perception of inequality of opportunity or outcome, or a control video were presented to the participants. The survey then included the following: 1) Attention-check questions to make sure participants paid attention to the videos. 2) Next, questions related to educational aspirations were presented, after which 3) manipulation-check questions related to the videos on inequality (in the educational context) were presented. Here, manipulation-check questions related to inequality were utilized to analyze perceived inequality and to check for their manipulation by minimizing the time gap between the two as much as possible. 4) Then participants were presented with questions related to the academic locus of control. This was followed by questions regarding the demographic and socio-economic background details of the participants.

The demographic details of participants were obtained at the end, to be analyzed further in our study and discussions (details related to age, level of education, income, and ethnicity). This was done at the end to ensure that these questions do not influence the students' responses and that the effect of the videos associated with perceived inequality accurately impacts the responses as required for the present study. If questions regarding demographic details are mentioned at the start of the survey, the students' responses can, as a result, be primed in such a way that they may think about their identity or background during the assessment, which could result in their response. As a result, the effectiveness of the intended

manipulation (of perceived inequality) could be diminished or could potentially lead to bias. This was followed by a debriefing by the researchers regarding the study and, finally, payment to the participants for their participation. Ethics approval was obtained for the present study.

Statistical Analyses

Prior to the analysis, an initial screening of the data to check for outliers or cases of missing data was performed.

A moderate multiple regression analysis (MRA) is utilized to analyze the effect of 'perception of inequality' and 'locus of control' on educational aspiration (a dependent variable). A moderated multiple regression analysis was performed utilizing SPSS's PROCESS Macro (Hayes, 2013). The analysis is used to indicate the significant main effects of perceived inequality and locus of control on educational aspiration. The analysis also assesses the moderating effect of locus of control regarding the impact of perceptions of inequality on educational aspirations. The test was, therefore, used to indicate whether there is a significant moderating impact of locus of control on the impact of perceptions of inequality on educational aspirations, in addition to the main effects of perceived inequality and locus of control.

Simple effects analysis would be used in addition to the moderated MRA if the analysis found a significant moderation effect of the academic locus of control (refer to the results section). Apart from examining the impact of locus of control on the relationship between the independent variable (perception of inequality) and the dependent variable (educational aspiration), the simple effects analysis assesses the impact of perceived inequality on educational aspirations in accordance with specified levels of the moderator. For instance, the analysis can study the impact of perceived inequality on aspirations with high and low levels of internal locus of control. The analysis would, therefore, examine the extent to which the

impact of perception of inequality on educational aspiration could be significant, in accordance with the specific levels of locus of control (internal or external). The analysis would also assess the effects of locus of control on educational aspirations within the perceived inequality condition and the control condition.

Results

Data Screening

Prior to the analysis, an initial screening of the data to check for invalid entries, outliers, or cases of missing data, was performed. Accordingly, out of the 202 participants, 12 needed to be excluded as they were not enrolled in an undergraduate program and hence, did not meet the inclusion criteria. Furthermore, the data was checked for any significant outliers that may influence the findings. The case-wise diagnostics indicated the presence of one outlier, which had a negative standardized residual of -3.075. This case had an educational aspiration score of 26, which was significantly smaller than other scores on the variable and can be considered an outlier. However, the largest cook's distance of this outlier was .065 (much smaller than 1), indicating that the outlier was not influential on the rest of the data, and therefore need not be removed. Thus, the remaining number of participants was $N = 190$, and their responses were included in the study. The results from the analyses are elaborated below.

Randomization Check

Randomization checks were performed to check whether the categorical (such as gender or socio-economic status) and continuous variables (such as age) within the data are distributed equally across the treatment groups. For instance, the chi-square test was utilized to compare the means of categorical variables in the data. No statistical significance was found, indicating that the data was randomized sufficiently.

Manipulation of Perceptions of Inequality of Opportunity

Firstly, the effect of the treatment groups (outcome group, opportunity group) and

control group on perceived inequality of opportunity was analyzed using *ANOVA*. The results from the analysis revealed that the *F* test was significant (see Table 1). The post-hoc comparisons, indicated a significant mean difference in perception of inequality of opportunity between the opportunity group and the control group (mean difference = 2.678, $p = .023$). There was also a significant mean difference in perception of inequality of opportunity between the outcome group and the control group, mean difference = 3.911, $p < .001$, which was unexpected. Additionally, there was no significant mean difference between the outcome group and the opportunity group, mean difference = 1.233, $p = .432$.

Table 1

Means, Standard Deviations and One-Way Analyses of Variance Indicating the Effect of the Manipulation on Perception of Inequality of Opportunity and Outcome

Measure	Opportunity Group		Outcome Group		Control Group		<i>F</i> (2,187)	η^2	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Perception of Inequality (Opportunity)	4.582	1.255	4.828	.997	4.046	1.119	7.786***	.076	<.001
Perception of Inequality (Outcome)	4.656	1.059	4.578	1.095	3.908	1.101	8.916***	.087	<.001

*** $p < .001$

Manipulation of Perceptions of Inequality of Outcome.

The significant difference in perceptions of inequality of outcome was assessed by comparing its significance between the treatment groups and control group. The results indicated that the *F* test was significant (refer to Table 1). Further, post-hoc comparisons

revealed that, there was a significant mean difference between the outcome group and the control group, mean difference = 3.350, $p = .002$. There was also a significant mean difference between the opportunity group and the control group, mean difference = 3.736, $p < .001$, which was again unexpected. There was no significant mean difference in perception of inequality of outcome between the opportunity group and the outcome group, mean difference = .386, $p = .914$.

The manipulation was not effective for both variables (opportunity and outcome) in their respective treatment conditions. It can be observed that even though there was a significant difference in perception of inequality (of outcome or opportunity) between their respective treatment groups and the control group, there was no significant difference between the two groups themselves with regard to the perception of inequality. To understand further, a correlation analysis was performed between the measures of perception of inequality of outcome and perception of inequality of opportunity. It was identified that the two measures had a significantly high correlation, $r = .871$, $p < .001$. This suggests that the effect of perceived inequality of outcome and opportunity is similar, and there is no good way to distinguish between them. Furthermore, highly correlated variables can result in multicollinearity-related issues during regression and model interpretation. The issues include a lack of stability in coefficient computation, and decreased accuracy in the interpretation of the effect of each variable. To avoid this problem, the effects of perceptions of inequality of outcome and opportunity on educational aspirations are grouped together as perceptions of inequality. This is compared with the control group in order to assess the overall impact due to the perception of inequality.

Confirmatory Analysis

The assumptions for the regression analysis were tested. To test the assumption of normality, the Kolmogorov–Smirnov test was utilized. The test was significant with regard to

educational aspirations, $D(190) = .076, p = .009$, perceptions of inequality of opportunity, $D(190) = .110, p < .001$, and perceptions of inequality of outcome, $D(190) = .090, p < .001$, indicating that the sample distribution is significantly different from a normal distribution. However, the F -test is fortunately robust against this violation of normality since the sample size is large enough with $N > 15$ in each group. The other assumptions, such as linearity and homoscedasticity, were also checked and sufficiently met (refer to Figure 1 in the appendix).

Next, a moderated regression analysis was performed to test the effects of perceptions of inequality and the academic locus of control. The test was also used to assess whether locus of control significantly moderated these interactions between perceptions of inequality and educational aspirations. Moderation analysis was conducted using SPSS's PROCESS macro (Hayes, 2013).

The analysis indicated that the effect of perception of inequality (the contrast variable referring to experimental groups vs. control groups) on educational aspirations was not significant (as indicated by the values in Table 2). Therefore, the results of analyzing the effects of perceptions of inequality contradict the initial hypotheses that perceptions of inequality (of outcome and opportunity) would have a significant negative impact on educational aspirations.

The impact of academic locus of control on educational aspirations was also analyzed. The results indicated that there was a significant effect of academic locus of control on educational aspirations (see Table 2). These results therefore confirm with the second hypothesis that internal locus of control has a significant positive effect on educational aspirations.

Table 2

Moderated Multiple Regression Analysis

Measure	<i>B</i>	<i>SE B</i>	<i>t</i>	<i>p</i>
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Constant	53.238 [51.942] [54.534]	.656	81.061	<.001
Perception of Inequality	.986 [-.409] [2.381]	.707	1.394	.164
Academic Locus of Control	1.054 [.563] [1.546]	.249	4.236	<.001
Perceived Inequality x Academic Locus of Control (Interaction)	-.550 [-1.088] [-.012]	.272	-2.017	.045

Note $R^2=.103$

The interaction between the perception of inequality (contrast) and the academic locus of control (moderator) was significant (as indicated in Table 2), indicating that the impact of the predictor (perception of inequality) on educational aspiration was moderated significantly by academic locus of control. Although perceptions of inequality did not have a significant main effect on educational aspirations, it did have an interaction effect with academic locus of control.

An analysis of the interaction between locus of control (as the predictor) and perception of inequality (as a moderator), indicated that perception of inequality also had a significant moderating effect on the impact of locus of control on educational aspirations ($b = -.550$, $SE = .272$, $t = -2.017$, $p = .045$). The nature of these effects is explored using simple slope and simple effect analysis.

Simple effects analysis

As mentioned before, the nature of the moderating variable is studied through two techniques, namely simple slope, and simple effect analysis. The former is generally used

when the independent variable is a continuous while latter is used for a categorical independent variable. To understand the interaction effect between locus of control and perception of inequality, we consider two cases: a) the effect of perception of inequality on educational aspirations, moderated by academic locus of control; and b) the effect of academic locus of control on educational aspirations, moderated by perception of inequality.

For the first case, a simple effect analysis was performed to check the significance of the moderation. The simple effects analysis utilizing an *ANOVA* indicated that perception of inequality has a significant effect on educational aspirations when there is an external locus of control, $F(1, 186) = 5.264, p = .023$. The analysis shows that when there is an external locus of control, there is a significant difference between perceived inequality condition and the control condition with regard to the effect of perceived inequality on aspirations, mean difference = 4.886, $p = .023$. Perception of inequality does not have a significant effect on educational aspirations when there is an internal locus of control, $F(1, 186) = .243, p = .622$.

To quantify the nature of this moderation effect, a simple slope analysis was utilized using multiple regression. The aim is to analyze the effects of perceptions of inequality on educational aspirations for more internal locus of control (or external locus of control). The results reiterated that there is a significant effect of perceived inequality on educational aspirations only for an external locus of control. Furthermore, this effect is significantly positive when there is an external locus of control ($b = 2.443, SE = 1.065, t = 2.294, p = .023$). Moreover, with an internal locus of control, the perception of inequality did not show a significant effect on educational aspirations ($b = -.470, SE = .954, t = -.493, p = .622$). Thus, the impact of perceived inequality on increasing aspirations is significant, when individuals view their outcomes as being caused by external factors rather than internal factors.

Similar analyses were performed for the second case to study the effect of locus of control on educational aspirations. The effect of locus of control on aspirations was found to be significant for all cases of perception of inequality, pertaining to both the experimental group ($F(1, 186) = 3.932, p = .049$) and control group ($F(1, 186) = 13.146, p < .001$). To study the nature of this effect, a simple slope analysis was employed with the continuous centered value of locus of control for two levels of perception of inequality (-1 for control group and 1 for treatment group). The results indicate that the internal locus of control has a significant positive effect on education aspirations with the impact being higher in the control group ($b = 1.802, SE = .458, t = 3.932, p < .001$) than the treatment group ($b = .702, SE = .296, t = 2.371, p = .019$). Thus, the effect of locus of control on education aspirations is significantly positive with or without perceived inequality, with the impact being higher in the latter than the former.

Exploratory Analysis

Further exploratory analysis was utilized to explore whether the level of income of individuals has a significant moderating effect on the impact of perceived inequality on educational aspirations. The reason why this analysis was performed was that prior studies indicate that income is positively associated with higher aspirations (e.g., Lee et al., 2012) and that socially disadvantaged groups experience lower aspirations than socially more advantaged groups (Khattab, 2003; Appadurai, 2004; Lee et al., 2012). The present study assesses whether the level of income strengthens or weakens the impact of perceived inequality on educational aspirations.

Accordingly, a moderated multiple regression analysis was used to assess the moderating effect of income on the impact of perceived inequality. The analysis indicates that income does not have a significant moderating effect on the impact of perceived inequality on aspirations, ($b = -.536, SE = 1.023, t = -.524, p = .600$).

Discussion

Firstly, the analysis indicated that there was no significant main effect of perceptions of inequality (of outcome and opportunity) on educational aspirations among the undergraduate students. Regarding the impact of inequality on aspirations, there are two distinct lines of research that are opposing in nature (Posel & Rogan, 2018). One line of research indicates that inequality has a negative impact on aspirations (Corneo and Jeanne 2001; Halleröd 2006; Ray 2006), especially for socially disadvantaged groups, while another line of research indicates that inequality can enhance aspirations (e.g., Stark 2006). While the former approach argues that unequal outcomes can result in lower aspirations when the situations or conditions of living for those in higher socio-economic classes can seem inaccessible (Halleröd 2006), the latter approach researchers argue that when the success or mobility of others (in an upward direction) can be viewed as advantageous to an individual, their aspirations for better outcomes can increase. The indications here differ from previous studies that indicated that inequality has an impact on educational aspirations. A study by Chen et al. (2022) also stated that gender inequality experienced by adolescents has a negative impact on their educational aspirations for an extended period of time. There is, however, a limited number of studies indicating the impact of perceived inequality (or equality) on educational aspirations (e.g., Baker et al., 2014).

The finding that perceived inequality does not have a significant main effect on aspirations can be explained by the fact that there may be other factors impacting aspirations in the educational context, which in turn could reduce the impact of perceived inequality, making it insignificant or buffering its effects. For instance, other determinants such as personality, culture, or ethnicity and the involvement and support of parents can also be significant in influencing aspirations (e.g., Teachman & Paasch, 1998; Strand & Winston, 2008; Rethon et al., 2011) and could mitigate the impact of perceived inequality or how

individuals deal with and cope with it. However, the present study is restricted in its ability to include different variables (such as parental support and involvement) due to the lack of availability of data and resources and the possible confounding effects of these variables.

The findings can also be explained by the fact that individuals enrolled in an undergraduate program may already have clear-cut or decisive goals, which may be less responsive to influence by external factors such as perceived inequality, as compared to children or adolescents (who may have less defined goals) who may be more subjective to change or influence by environmental factors. For instance, according to Arnett (2004), uncertainty is experienced by adolescents as an important factor in the growing-up years or the developmental period. According to prior findings, a lack of certainty about educational goals at the age of 16 or later can have a more negative consequence for individuals than uncertainty at a younger age (for instance, at age 13), where they do not have to meet critical turning points regarding significant decisions to be made. Accordingly, their educational goals may change as they grow older or at the point of graduating high school (Arnett, 2004; Gutman et al., 2012; 2014).

Next, the results indicate that there is a significant effect of the academic locus of control on educational aspirations. This is specifically in line with prior studies that indicate significant positive associations between internal locus of control and greater career-related goals (Cellini & Kantorowski, 1984) and education-related goals (Gordon & Steele, 2015). Flowers, Milner, and Moore (2003) found that a greater internal locus of control was positively associated with educational aspirations among high school students. Similarly, internal locus of control was found to have a significant positive effect on aspirations in the career context (Burlin, 1976; Al-Bahrani et al., 2021). The positive association between internal locus of control and aspirations can be explained by the fact that individuals with higher internal locus of control may experience more confidence or higher self-esteem

(Saadat et al., 2011), such that they may feel more confident regarding their skills or abilities, which may enable them to believe that education-related goals are accessible or are within their reach.

The present study indicates that locus of control also significantly moderates the impact of perceptions of inequality on educational aspirations. Specifically, there is a significant positive effect of perceptions of inequality on educational aspirations when there is an external locus of control. The results were unexpected in terms of their effects on the impact of perceived inequality. For instance, it was initially expected that a greater internal locus of control would weaken the impact of higher perceived inequality on educational aspirations (therefore increasing aspirations).

The reason for the expectation is that internal locus of control would weaken the impact of higher perceived inequality because internal locus of control is significantly related to aspects such as higher self-esteem (Phares, 1976) and the ability to cope with stress (Cohen & Edwards, 1989), which could mitigate the impact of perceived inequality and may increase aspirations as a result. Additionally, individuals with an external locus of control were found to show higher levels of aversion towards inequality (Budria et al., 2012).

The results of the present study indicate that the effects of external locus of control are unexpected. However, they can be explained by the fact that an external locus of control could result in individuals perceiving that the unequal situation is not their fault or because of their own lack of skill or ability. The belief that they do not lack skill or ability could enhance self-esteem and enable them to continue believing that the goals are within their reach and to have higher aspirations. To explain further, prior findings have indicated positive aspects of the external locus of control (Organ & Greene, 1974; Spector, 1982), especially as a protective aspect for coping (e.g., Specht et al., 2010). For instance, studies have also indicated that individuals with an internal locus of control are more likely to engage in self-

blame or take responsibility over unfavorable consequences or actions than those with an external locus of control (Abdallah, 1989; Koekse & Kirk, 1995). In this manner, an external locus of control could mitigate the effects of inequality.

On the other hand, individuals with an internal locus of control may have beliefs that result in expectations that are not sufficiently met, which may reduce their self-esteem, and can also result in frustration among the individuals (Schorr & Rodin, 1982). Individuals with an internal locus of control are observed to engage in self-blame during situations that are problematic (Koekse & Kirk, 1995) or in which they experience inequality. These factors could, in turn, negatively impact educational aspirations. However, the results in the present study indicate that when there is an internal locus of control, it does not significantly moderate the interaction between perceived inequality and educational aspirations.

Strengths and Weaknesses

The study has different strengths based on its methodology and design. a) Having a control group enabled the study to establish a baseline or benchmark against which a comparison could be made between the experimental groups and the control groups. As all three groups (both experimental groups and the control group) are comparable and similar from the beginning regarding specific characteristics (such as age, gender, and socio-economic status), any variation or differences caused in their results could be explained by the intended manipulations by the experimental conditions. The participants were assigned randomly to the conditions (experimental or control conditions), enabling a better procedure to control for specific extraneous or confounding variables, make sure that the groups are comparable, and eliminate possible biases. b) Additionally, the scales measuring perceived inequality and educational aspirations were found to have high reliabilities, ensuring greater internal consistency and precision in the findings regarding the variables. c) The statistical tools that were utilized to test the hypotheses, such as moderated multiple regression analysis,

enabled an assessment of the multiple factors in a simultaneous manner, including their interaction and their impact on educational aspirations. d) Finally, utilizing a 1 (continuous measure of academic locus of control) x 3 (inequality: control vs. perception of inequality of outcome vs. perception of inequality of opportunity) between-subjects design enabled a shorter period of study as opposed to a within-subjects design since every student was provided only with one treatment (such as outcome, opportunity, or control). In contrast, in a within-subjects design, every individual would be provided with several treatments, which can increase the duration of the study.

Although the study has strengths and positive aspects, as discussed above, there are a few limitations. Firstly, the manipulation check showed that perceptions of inequality (of outcome or opportunity) were significantly different between treatment groups and the control group, but not between experimental groups, indicating that the manipulation was not completely successful.

Further analysis shows that perceptions of unequal outcome and opportunity are significantly correlated and that their effects had to be studied jointly as ‘perceptions of inequality’ to avoid multicollinearity. Jointly assessing perceived inequality was necessary because their lack of differentiation could also result in an increase in the standard error of the regression coefficient, which could negatively impact the precision of the study. Apart from its negative impact on assessing population parameters, multicollinearity could also result in misleading evidence about the significance of predictors (by underestimating their significance or overestimating their value). Conceptually, a lack of differentiation can also result in a diminished understanding of the distinct impact of the variables (unequal outcomes and opportunities) on aspirations. These issues could be solved by combining the subcategories of the highly correlated variables.

Another limitation was that the study observed the effects of perceptions of inequality

and its interaction with locus of control, at one point in time. There are, however, possibilities that the effects of inequality or the levels of aspirations can be changed over time (e.g., Arnett, 2004; Giasson et al., 2019) or could exist due to other factors in the environment, such as parental support (Sewell and Shah, 1968; Teachman and Paasch, 1998), which cannot be captured by the present study. By assessing these factors over time and keeping track of these relevant socio-economic factors or intervening variables, this can provide a more comprehensive assessment and understanding of how the impact of perceived inequality may vary across time or situations (Binatli, 2012; Gugushvili et al., 2019). For instance, according to Gugushvili and colleagues (2019), individuals may perceive changes in inequality in several ways (such as personal interactions or observations). An increase in perceived inequality was seen to result in poorer health and well-being (e.g., Gugushvili et al., 2019). This can help assess the long-term impact of exposure to inequality, which may also be closely linked to real-life situations (individuals could be dealing with inequality over long periods of time or across contexts).

Finally, the study examines the effects on aspirations among undergraduate students in the United States. However, at this point, students may already have an idea about their educational or career-related goals (at least to some extent). Although this could be helpful in assessing aspirations with more clarity and reliability, since participants may have a clearer understanding regarding their aspirations, assessing the variables among children or adolescents could also be helpful, as it could indicate more variation and responsiveness to change due to factors such as perceived inequality as compared to older college-going participants (Arnett, 2004; Gutman et al., 2012; 2014). This could be because aspirations among children and adolescents could still be developing as compared to older participants (Arnett, 2004; Gutman et al., 2012; 2014).

Implications

The present study has several implications. In terms of its theoretical implications, this study helps understand the consequences of perceived inequality in an educational context, especially when we also consider whether an individual attributes his or her outcomes to personal effort or to external circumstances. For instance, the study indicates that inequality does not have significant effects on educational aspirations, especially when there is more internal locus of control. When there is an external locus of control, however, perceived inequality significantly positively affects educational aspirations.

The main effects of locus of control on aspirations were found to be positive, like those found in other studies (Flowers, Milner, and Moore, 2003; Gordon & Steele, 2015). However, the effects of perceived inequality and how it interacts with locus of control were different from those found in other studies (Budria et al., 2012; Chen et al., 2022). This gives us a new way to think about the variables. The findings can provide an understanding of factors that may mitigate the impact of perceived inequality or reduce its negative impact on aspirations. For instance, the findings indicated that when perceived inequality interacts with an external locus of control (luck or fate), it has a significant positive effect on aspirations. In a similar vein, another finding by Cheung (2016) suggested that hope was responsible for the positive association between inequality and life satisfaction and well-being. In this situation, an external locus of control seems to mitigate the negative impact of perceived inequality on educational aspirations, which may be the reason the interaction leads to an increase in aspirations. Similarly, the study provides an understanding of factors (such as external locus of control and hope) that could mitigate the impact of perceived inequality on different variables (such as aspirations or life satisfaction).

The findings also indicate there can be differences among individuals regarding the impact of perceptions of inequality on their educational context. In other words, perceived

inequality may not impact every individual's aspiration in a similar manner. The extent to which it has a positive or negative impact on aspirations may differ according to whether an individual has an internal or external locus of control in an educational context.

Additionally, the findings indicate that the main effects of the variables (perceived inequality and locus of control) differ from their interaction effects. While perceived inequality does not have a significant main effect on aspirations, when it interacts with an external locus of control, however, the variable has a significant positive effect on educational aspirations. On the other hand, these have significant implications regarding the interaction effect of the variables. This provides an understanding that the impact of perceived inequality on individuals would differ when assessed together with other variables in comparison to being assessed by itself.

Finally, the findings also indicate that perceived inequality in opportunity and perceived inequality in outcome have a significant correlation. This suggests a similarity between the two types of inequality and their impact on educational aspirations. The study therefore emphasizes the importance of assessing the correlation between different types of inequality to prevent multicollinearity issues, while assessing its impact. These indications may also demonstrate the similarities or association between educational opportunities and outcomes.

Future Directions

The present study examines how perceptions of inequality can impact aspirations and how locus of control can moderate these effects. Prior studies indicate that academic achievement, expectations, and performance were observed to be associated with self-esteem, self-regulation, and academic self-perception (Saadat et al., 2012; Chen and Hesketh, 2021). It could be useful to assess the interaction of these factors with perceived inequality and their impact on aspirations. For instance, previous literature has indicated a positive association

between self-esteem and internal locus of control (e.g., Saadat et al., 2012). When including self-esteem as a moderator in assessing the relationship between perceived inequality and aspirations, the initial expectations of researchers could be that higher self-esteem could weaken the negative impact of perceived inequality on aspirations. The findings of the present study indicate that an external locus of control and higher perceived inequality can increase educational aspirations. Future studies can also explore the role of self-esteem among the interactions between locus of control and perceived inequality, to assess whether self-esteem involves possible protective mechanisms that help increase aspirations.

Although locus of control (Rotter, 1966; Rotter et al., 1972) and controllability (Weiner, 1985) both assess perceived control, their effects on perceived inequality and aspirations can also be compared by future studies to indicate if there is any difference in their impact. For instance, the findings of the present study indicate that when there is an external locus of control, perceived inequality increases aspirations. Studies can also assess whether controllability has a moderating effect on the impact of perceived inequality on other relevant dependent variables. For instance, prior studies have indicated that controllability has a significant positive effect on stress (Miller, 1979; Cutrona & Suhr, 1992). A further study could explore the moderating effect of controllability on the impact of perceived inequality on stress, in an organizational context. The findings can further improve our understanding of the underlying mechanisms of the two variables and their interactions with perceived inequality. This exploration can, hence, further enhance the robustness of the findings.

The variables of the present study can also be analyzed among different age-groups (such as children or adolescents). It could be useful and interesting to note differences in the impact of perceived inequality and locus of control on education aspirations (since aspirations would be developing at this stage, and possibly more responsive to change). For instance, an

adolescent may still be deciding or exploring various educational goals (Arnett, 2004; Gutman et al., 2012; 2014), which may be more readily changed or influenced by environmental factors such as inequality, than an older participant who is already enrolled in a field of study and has more clear-cut educational goals and expectations that may be less responsive to change (e.g., Gutman et al., 2012; 2014). Comparing the findings with this study can help assess whether the interaction between variables can differ according to the age of an individual.

Conclusion

The present study indicates that there are no significant effects of perceptions of inequality on educational aspirations, especially for those with an internal locus of control. This can be explained by other factors that may be mitigating the effect of inequality on educational aspirations, such as parental support, which may positively affect aspirations (e.g., Sewell and Shah 1968; Teachman and Paasch 1998). This can also be explained by the negative effects of internal locus of control, especially during problematic situations when the internal individuals may resort to self-blame or may assume responsibility for unfavourable consequences (Abdallah, 1989; Koekse & Kirk, 1995). There is also a significant positive effect of academic locus of control on educational aspirations, which is in line with previous research (Flowers, Milner, and Moore, 2003; Gordon & Steele, 2015). This could be because individuals may feel more confident regarding their abilities, which may enable them to believe that educational goals are more accessible. The locus of control has a significant moderating effect on the impact of perceived inequality on educational aspirations. Specifically, when there is an external locus of control, it strengthens the positive impact of perceived inequality on educational aspirations, which could be explained by the positive aspects of the external locus of control (Organ & Greene, 1974; Spector, 1982), especially as a protective factor for coping (e.g., Specht et al., 2010). There are several potential

implications for this study. For instance, this finding can help provide an understanding of how there can be some factors (such as an external locus of control) that may mitigate the negative impact of perceived inequality. Further research can build on the findings of this study by addressing the limitations of the present study in terms of its methodology and measures and comparing the findings with relevant variables.

References

- Abdallah, T. M. (1989). Self-esteem and locus of control of college men in Saudi Arabia. *Psychological Reports*, 65(3, Pt 2), 1323–1326. <https://doi.org/10.2466/pr0.1989.65.3f.1323>
- Albrecht, D., & Albrecht, S. (2007). The Benefits and Costs of Inequality for the Advantaged and Disadvantaged. *Social Science Quarterly*, 88, 382-403. 10.1111/j.1540-6237.2007.00463. x.
- Ansong D, Eisensmith SR, Okumu M, Chowa GA. (2019). The importance of self-efficacy and educational aspirations for academic achievement in resource-limited countries: Evidence from Ghana. *Journal of Adolescence*. Doi: 10.1016/j.adolescence.2018.11.003. Epub 2018 Nov 22. PMID: 30471622.
- Arnett, J. J. (2004). Emerging adulthood: The winding road from the late teens through the twenties. *Oxford University Press*.
- Baker, W., Sammons, P., Siraj-Blatchford, I., Sylva, K., Melhuish, E. C., & Taggart, B. (2014). Aspirations, education, and inequality in England: insights from the Effective Provision of Pre-school, Primary and Secondary Education Project. *Oxford Review of Education*, 40(5), 525–542. doi:10.1080/03054985.2014.953921
- Bandura, A. (1991). Social Cognitive Theory of Self-Regulation. *Organizational Behavior and Human Decision Processes*, 50, 248-287. [http://dx.doi.org/10.1016/0749-5978\(91\)90022-L](http://dx.doi.org/10.1016/0749-5978(91)90022-L)
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1–26. <https://doi.org/10.1146/annurev.psych.52.1.1>

- Berrington, A., Roberts, S., & Tammes, P. J. R. (2016). Educational aspirations among UK Young Teenagers: Exploring the role of gender, class, and ethnicity. *British Educational Research Journal*, 42(5), 729-755. DOI: 10.1002/berj.3235
- Binatlı, A.O. (2012). Growth and Income Inequality: A Comparative Analysis. *Economics Research International*, 2012, 1-7.
- Brackney, B. E., & Westman, A. S. (1992). Relationships among hope, psychosocial development, and locus of control. *Psychological Reports*, 70(3, Pt 1), 864–866. <https://doi.org/10.2466/PRO.70.3.864-866>
- Browman, A., Svoboda, R &., Destin, M. (2019). A belief in socioeconomic mobility promotes the development of academically motivating identities among low-socioeconomic status youth. *Self and Identity*. 21. 1-19. 10.1080/15298868.2019.1664624.
- Brown, P. (2013). Education, opportunity, and the prospects for social mobility. *British Journal of Sociology of Education*, 34(5/6), 678–700. <http://www.jstor.org/stable/43818794>
- Brown, D. L., Rosnick, C. B., & Segrist, D. J. (2017). Internalized Racial Oppression and Higher Education Values: The Mediation Role of Academic Locus of Control Among College African American Men and Women. *Journal of Black Psychology*, 43(4), 358–380. <https://doi.org/10.1177/0095798416641865>
- Budria, S., Ferrer-i-Carbonell, A., & Ramos, X. (2018). Life satisfaction, income comparisons and individual traits. *Review of Income and Wealth*, <https://doi.org/10.1111/roiw.12353>
- Burlin, F.-D. (1976). Locus of control and female occupational aspiration. *Journal of Counseling Psychology*, 23(2), 126–129. <https://doi.org/10.1037/0022-0167.23.2.126>
- Cellini, J. V., & Kantorowski, L. A. (1984). Locus of control and career decidedness: Some methodological notes. *Psychological Reports*, 55(2), 613–614. <https://doi.org/10.2466/pr0.1984.55.2.613>
- Chavous, T. M., Rivas-Drake, D., Smalls, C., Griffin, T., & Cogburn, C. (2008). Gender matters,

too: The influences of school racial discrimination and racial identity on academic engagement outcomes among African American adolescents. *Developmental Psychology*, 44, 637-654. doi:10.1037/0012-1649.44.3.637

Chen, X., Hesketh, T. (2021). Educational Aspirations and Expectations of Adolescents in Rural China: Determinants, Mental Health, and Academic Outcomes. *International Journal of Environmental Research and Public Health*.

Chen, L., Li, T., King, R.B. *et al.* (2022). Gender Inequality Lowers Educational Aspiration for Adolescent Boys and Girls: A Multi-Level and Longitudinal Study in China. *Sex Roles* 86, 320–333(2022). <https://doi.org/10.1007/s11199-021-01272-z>

Cheung, F. (2016). Can Income Inequality be Associated with Positive Outcomes? Hope Mediates the Positive Inequality–Happiness Link in Rural China. *Social Psychological and Personality Science*, 7(4), 320-330. <https://doi.org/10.1177/1948550615619762>

Cohen, S., & Edwards, J. R. (1989). Personality characteristics as moderators of the relationship between stress and disorder. In R. W. J. Neufeld (Ed.), *Advances in the investigation of psychological stress* (pp. 235–283). John Wiley & Sons.

Corneo, G. & Jeanne, O. (2001). On relative-wealth effects and long-run growth. *The Scandinavian Journal of Economics*. Elsevier, vol. 55(4), pages 349-358

Cramer, C. (2003). Does Inequality Cause Conflict? *Journal of International Development*, 2003, vol. 15, issue 4, 397-412. John Wiley & Sons, Ltd. 10.1002/jid.992

Crandall, V. C., Katkovsky, W., & Crandall, V. J. (1965). Children's belief in their own control of reinforcements in intellectual-academic achievement situations. *Child Development*, 36(1), 91–109.

Cutrona, C. E., & Suhr, J. A. (1992). Controllability of stressful events and satisfaction with spouse support behaviors. *Communication Research*, 19(2), 154–174. <https://doi.org/10.1177/009365092019002002>

- Dupriez, V., Monseur, C., van Campenhoudt, M., & Lafontaine, D. (2012). Social Inequalities of Post-Secondary Educational Aspirations: Influence of Social Background, School Composition and Institutional Context. *European Educational Research Journal*, *11*, 504 - 519.
- Dynarski, Susan. (2000). Hope for Whom? Financial Aid for the Middle Class and Its Impact on College Attendance. *National Tax Journal*. *53*. 10.17310/ntj.2000.3S.02.
- Ferrante, F. (2009). Educations, Aspirations and Life Satisfaction. *Kyklos. International Review for Social Sciences*, 10.1111/j.1467-6435.2009.00450.x
- Flowers, L. A., Milner, H. R., & Moore, J. L. (2003). Effects of Locus of Control on African American High School Seniors' Educational Aspirations: Implications for Preservice and Inservice High School Teachers and Counselors. *The High School Journal*, *87*(1), 39–50.
<http://www.jstor.org/stable/40364312>
- Forsyth, D. R., & McMillan, J. H. (1981). Attributions, affect, and expectations: A test of Weiner's three-dimensional model. *Journal of Educational Psychology*, *73*(3), 393–403. <https://doi.org/10.1037/0022-0663.73.3.393>
- Fraser, M., Garg, R. (2011). Educational Aspirations. In: Levesque, R.J.R. (eds) *Encyclopedia of Adolescence*. Springer, New York, NY. https://doi.org/10.1007/978-1-4419-1695-2_147
- Friedrich, J. R. (1988). The influence of locus of control on students' aspirations, expectations, and information preferences for summer work. *Journal of College Student Development*, *29*(4), 335–339.
- Galiani, S. (2008). Social Mobility: What is it and Why Does it Matter? *SSRN Electronic Journal*. 10.2139/ssrn.2225960.
- Genicot, G., & Ray, D. (2017). Aspirations And Inequality. *Econometrica*, *85*(2), 489–519.
<http://www.jstor.org/stable/44955127>
- Giasson, H. L., Liao, H. W., & Carstensen, L. L. (2019). Counting down while time flies:

implications of age-related time acceleration for goal pursuit across adulthood. *Current opinion in psychology*, 26, 85–89. <https://doi.org/10.1016/j.copsyc.2018.07.001>

Gordon, V. N., & Steele, G. E. (2015). *The Undecided College Student: An Academic and Career Advising Challenge*. USA: Charles C Thomas Publisher, Ltd. ISBN: 978-0-398-09067-8

Graham, S. (1991). A review of attribution theory in achievement contexts. *Educational Psychology Review*, 3, 5-39. doi:10.1007/BF01323661

Graham, C., Pozuelo, J.R. (2023) Do high aspirations lead to better outcomes? Evidence from a longitudinal survey of adolescents in Peru. *Journal of Population Economics* 36, 1099–1137. <https://doi.org/10.1007/s00148-021-00881-y>

Gugushvili, A., Bulczak, G., Zelinska, O., Koltai, J. (2021) Socioeconomic position, social mobility, and health selection effects on allostatic load in the United States. *PLoS One*. 16, e0254414. <https://doi.org/10.1371/journal.pone.0254414>

Gustavsson, M., & Jordahl, H. (2006). Inequality and Trust in Sweden: Some Inequalities are More Harmful than Others. *Journal of Public Economics*. 92. 348-365. [10.1016/j.jpubeco.2007.06.010](https://doi.org/10.1016/j.jpubeco.2007.06.010).

Gustavsson, M., and Jordahl, H. (2008). Inequality and Trust: Some Inequalities are More Harmful than Others (January 17, 2006). Published as "Inequality and trust in Sweden: Some inequalities are more harmful than others", *Journal of Public Economics*, 92 (1-2), 348-365, Uppsala University Economics Working Paper No. 2006:3, Available at SSRN: <https://ssrn.com/abstract=933978> or <http://dx.doi.org/10.2139/ssrn.933978>

Gutman, L. M., Schoon, I., & Sabates, R. (2012). "Uncertain aspirations for continuing in education: Antecedents and associated outcomes": Correction to Gutman, Schoon, and Sabates (2011). *Developmental Psychology*, 48(6), 1718. <https://doi.org/10.1037/a0028594>

Hahn, R. A., & Truman, B. I. (2015). Education Improves Public Health and Promotes Health Equity. *International journal of health services: planning, administration, evaluation*, 45(4),

657–678. <https://doi.org/10.1177/0020731415585986>

- Halleröd, B. (2006). Sour Grapes: Relative Deprivation, Adaptive Preferences and the Measurement of Poverty. *Journal of Social Policy*, 35(3), 371-390.
doi:10.1017/S0047279406009834
- Hewitt, L. S. (1975). Age and Sex Differences in the Vocational Aspirations of Elementary School Children. *The Journal of Social Psychology*, 96(2), 173–177. doi:10.1080/00224545.1975.9923282
- Högberg, B (2019) Educational policies and social inequality in wellbeing among young adults, *British Journal of Sociology of Education*, 40:5, 664-681, DOI: 10.1080/01425692.2019.1576119
- Jia L, Lim CH, Ismail I, Tan YC. (2021). Stunted upward mobility in a learning environment reduces the academic benefits of growth mindsets. *Proceedings of the National Academy of Sciences of the United States of America*. U S A;118(10): e2011832118. doi: 10.1073/pnas.2011832118. PMID: 33649210; PMCID: PMC7958232.
- Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American journal of public health*, 87(9), 1491–1498.
<https://doi.org/10.2105/ajph.87.9.1491>
- Khattab, N. (2003) Explaining Educational Aspirations of Minority Students: The Role of Social Capital and Students' Perceptions. *Social Psychology of Education* 6, 283–302 (2003).
<https://doi.org/10.1023/A:1025671617454>
- Koeske, G. F., & Kirk, S. A. (1995). Direct and Buffering Effects of Internal Locus of Control Among Mental Health Professionals. *Journal of Social Service Research*, 20(3-4), 1–28. doi:10.1300/j079v20n03_01
- Kondrilli, F., & Sunder, N. (2022). Mental health effects of education. *Health economics*, 31 Suppl 2(Suppl 2), 22–39. <https://doi.org/10.1002/hec.4565>

- Kyllonen P. C. (2018). Inequality, Education, Workforce Preparedness, and Complex Problem Solving. *Journal of Intelligence*, 6(3), 33. <https://doi.org/10.3390/jintelligence6030033>
- Lachman, M. E., & Weaver, S. L. (1998). The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology*, 74(3), 763–773. <https://doi.org/10.1037/0022-3514.74.3.763>
- Lee, J. O., Hill, K. G., & Hawkins, J. D. (2012). The Role of Educational Aspirations and Expectations in the Discontinuity of Low-income Status Between Generations. *Social work research*, 36(2), 141–151. <https://doi.org/10.1093/swr/svs025>
- Locke, E. A., & Latham, G. P. (1990). A theory of goal setting & task performance. *Prentice-Hall, Inc.*
- Locke, E. A., & Latham, G. P. (2013). Goal setting theory, 1990. In E. A. Locke & G. P. Latham (Eds.), *New developments in goal setting and task performance* (pp. 3–15). Routledge/Taylor & Francis Group. <https://doi.org/10.4324/9780203082744>
- Marjoribanks, K. (2005). Family background, academic achievement, and educational aspirations as predictors of Australian young adults' educational attainment. *Psychological Reports*. 2005 Jun;96(3 Pt 1):751-4. doi: 10.2466/pr0.96.3.751-754. PMID: 16050634.
- Mayer, S. E. (2010). The relationship between income inequality and inequality in schooling. *Theory and Research in Education*, 8(1), 5-20. <https://doi.org/10.1177/1477878509356346>
- Meilstrup, C., Thygesen, L.C., Nielsen, L., Koushede, V., Cross, D., Holstein, B.E. (2016). Does self-efficacy mediate the association between socioeconomic background and emotional symptoms among schoolchildren? *International Journal of Public Health*. 2016 May;61(4):505-12. doi: 10.1007/s00038-016-0790-3. Epub 2016 Feb 3. PMID: 26841894.
- Miller, S. M. (1979). Controllability and human stress: Method, evidence and theory. *Behaviour Research and Therapy*, 17(4), 287–304. [https://doi.org/10.1016/0005-7967\(79\)90001-9](https://doi.org/10.1016/0005-7967(79)90001-9)

- Morlaix, S., & Suchaut, B. (2015). The social, educational, and cognitive factors of success in the first year of university: A case study. *International Review of Education*, 60. 10.1007/s11159-014-9459-4.
- Mullainathan, S., & Shafir, E. (2013). Scarcity: Why having too little means so much. *Times Books/Henry Holt and Co.*
- Oishi, S., Kesebir, S., & Diener, E. (2011). Income Inequality and Happiness. *Psychological Science*, 22(9), 1095-1100. <https://doi.org/10.1177/0956797611417262>
- Organ, D. W., & Greene, C. N. (1974). Role ambiguity, locus of control, and work satisfaction. *Journal of Applied Psychology*, 59(1), 101–102. <https://doi.org/10.1037/h0035826>
- Phares, E. J. (1976). Locus of control in personality. Kansas State University, *General Learning Press*.
- Posel, D., & Rogan, M. (2018). Inequality, Social Comparisons and Income Aspirations: Evidence from a Highly Unequal Country. *Journal of Human Development and Capabilities*, 1–18. doi:10.1080/19452829.2018.1547272
- Prihadi, K., Hairul, N. I., & Hazri, J. (2012). Mediation effect of locus of control on the causal relationship between students' perceived teachers' expectancy and self-esteem. *Electronic Journal of Research in Educational Psychology*, 10(2), 713–736.
- Prihadi, K., Tan, C., Tan, R., Yong, P., Yong, J., Tinagaran, S., Goh, C & Tee, Y. (2018). Mediation Role of Locus of Control on the Relationship of Learned helplessness and Academic Procrastination among College Students in Penang, Malaysia. *International Journal of Evaluation and Research in Education (IJERE)*. 7. 87. 10.11591/ijere.v7i2.12597.
- Qian, Z., & Blair, S. L. (1999). Racial/Ethnic Differences in Educational Aspirations of High School Seniors. *Sociological Perspectives*, 42(4), 605-625. <https://doi.org/10.2307/1389576>
- Rampino, Tina; Taylor, Mark P. (2013). Gender differences in educational aspirations and

attitudes, *ISER Working Paper Series*, No. 2013-15. *Institute for Social and Economic Research*. <http://hdl.handle.net/10419/91703>

- Ray, D. (2006). Aspirations, poverty, and economic change. In *Understanding Poverty* Oxford University Press. <https://doi.org/10.1093/0195305191.003.0028>
- Ribeiro, W.S., Bauer, A., Andrade, M.C.R., York-Smith, M., Pan, P.M., Pingani, L., Knapp, M., Coutinho, E.S.F., Evans-Lacko, S. (2017). Income inequality and mental illness-related morbidity and resilience: a systematic review and meta-analysis. *Lancet Psychiatry*. 2017 Jul;4(7):554-562. doi: 10.1016/S2215-0366(17)30159-1. PMID: 28552501.
- Rodríguez-Hernández, C. F., Cascallar, E., & Kyndt, E. (2019). Socio-economic status and academic performance in higher education: A systematic review. *Educational Research Review*. 29. 100305. 10.1016/j.edurev.2019.100305.
- Rojewski, J.W., & Kim, H. (2003). Career choice patterns and behavior of work-bound youth during early adolescence. *Journal of Career Development*, 30, 89–108.
- Rojewski, J.W., & Yang, B. (1997). Longitudinal analysis of select influences on adolescents' occupational aspirations. *Journal of Vocational Behavior*, 51, 375–410.
- Rothon, C., Arephin, M., Klineberg, E. *et al.* (2011). Structural and socio-psychological influences on adolescents' educational aspirations and subsequent academic achievement. *Social Psychology of Education* 14, 209–231. <https://doi.org/10.1007/s11218-010-9140-0>
- Rözer, J., & Kraaykamp, G. (2013). Income inequality and subjective well-being: A cross-national study on the conditional effects of individual and national characteristics. *Social Indicators Research*, 113(3), 1009–1023. <https://doi.org/10.1007/s11205-012-0124-7>
- Saadat, M., Ghasemzadeh, A., & Soleimani, M. (2012). Self-esteem in Iranian university students and its relationship with academic achievement. *Procedia - Social and Behavioral Sciences*. 31. 10–14. 10.1016/j.sbspro.2011.12.007.
- Saha, L.J. (1997). Aspirations and Expectations of Students. *International Encyclopedia of the*

Sociology of Education, Ed. Lawrence J. Saha (pp.512-517). Pergamon Press

- Sandler, I. N., & Lakey, B. (1982). Locus of control as a stress moderator: The role of control perceptions and social support. *American Journal of Community Psychology*, *10*(1), 65–80. <https://doi.org/10.1007/BF00903305>
- Schorr, D., & Rodin, J. (1984). Motivation to control one's environment in individuals with obsessive–compulsive, depressive, and normal personality traits. *Journal of Personality and Social Psychology*, *46*(5), 1148–1161. <https://doi.org/10.1037/0022-3514.46.5.1148>
- Seginer, R., & Vermulst, A. (2002). Family environment, educational aspirations, and academic achievement in two cultural settings. *Journal of Cross-Cultural Psychology*, *33*(6), 540–558. <https://doi.org/10.1177/00220022102238268>
- Sewell, W., & Hauser, R. (1980). The Wisconsin longitudinal study of social and psychological factors in aspirations and achievements. *Research in Sociology of Education and Socialization*, *1*, 59–99.
- Shapka, J. D., Domene, J. F., & Keating, D. P. (2006). Trajectories of Career Aspirations Through Adolescence and Young Adulthood: Early math achievement as a critical filter. *Educational Research and Evaluation*, *12*(4), 347–358. <https://doi.org/10.1080/13803610600765752>
- Sommet, N., & Elliot, A. J. (2023). A Competitiveness-Based Theoretical Framework on the Psychology of Income Inequality. *Current Directions in Psychological Science*, *32*(4), 318–327. <https://doi.org/10.1177/09637214231159563>
- Sommet, N., Weissman, D., & Elliot, A. (2022). Income Inequality Predicts Competitiveness and Cooperativeness at School. *Journal of Educational Psychology*. [10.1037/edu0000731](https://doi.org/10.1037/edu0000731).
- Spada, A., Fiore, M., & Galati, A. (2023). The Impact of Education and Culture on Poverty Reduction: Evidence from Panel Data of European Countries. *Social indicators research*, 1–14. Advance online publication. <https://doi.org/10.1007/s11205-023-03155-0>
- Specht, J., Egloff, B., & Schmukle, S. C. (2011). Stability and change of personality across the life

course: The impact of age and major life events on mean-level and rank-order stability of the Big Five. *Journal of Personality and Social Psychology*, 101(4), 862–

882. <https://doi.org/10.1037/a0024950>

Spector, P. E. (1982). Behavior in organizations as a function of employee's locus of control. *Psychological Bulletin*, 91(3), 482–497. <https://doi.org/10.1037/0033-2909.91.3.482>

Staff, J., Harris, A., Sabates, R., & Briddell, L. (2010). Uncertainty In Early Occupational Aspirations: Role Exploration or Aimlessness? *Social forces; a scientific medium of social study and interpretation*, 89(2), 659–683. <https://doi.org/10.1353/sof.2010.0088>

Stark, O (2006). Status Aspirations, Wealth Inequality, and Economic Growth. *Review of Development Economics*,10(1),171–176,2006. UK: Blackwell Publishing Ltd.

Strand, S., & Winston, J. (2008), Educational aspirations in inner city schools. *Educational Studies*, 34:4, 249-267, DOI: 10.1080/03055690802034021

Tanner, J. L., Arnett, J. J., & Leis, J. A. (2009). Emerging adulthood: Learning and development during the first stage of adulthood. In M. C. Smith & N. DeFrates-Densch (Eds.), *Handbook of research on adult learning and development* (pp. 34–67). Routledge/Taylor & Francis Group.

Teachman, J. (1987). Family background, educational resources, and educational attainment. *American Sociological Review*, 52, 548–557.

Teachman, J., & Paasch, K. (1998). The family and educational aspirations. *Journal of Marriage and the Family*, 60, 704–714.

To, C., Wiwad, D., & Kouchaki, M. (2023). Economic inequality reduces sense of control and increases the acceptability of self-interested unethical behavior. *Journal of Experimental Psychology: General*, 152(10), 2747–2774. <https://doi.org/10.1037/xge0001423>

Trice, A. D. (1985). An Academic Locus of Control Scale for College Students. *Perceptual and Motor Skills*, 61(3_suppl), 1043–1046. <https://doi.org/10.2466/pms.1985.61.3f.1043>

- Uwah, C. J., McMahon, H. G., & Furlow, C. F. (2008). School Belonging, Educational Aspirations, and Academic Self-Efficacy among African American Male High School Students: Implications for School Counselors. *Professional School Counseling, 11*(5). <https://doi.org/10.1177/2156759X0801100503>
- Watt, H. M. G., Shapka, J. D., Morris, Z. A., Durik, A. M., Keating, D. P., & Eccles, J. S. (2012). Gendered Motivational Processes Affecting High School Mathematics Participation, Educational Aspirations, and Career Plans: A Comparison of Samples from Australia, Canada, and the United States. *Developmental Psychology. Advance online publication*. doi: 10.1037/a0027838
- Webb, R. M., Lubinski, D., & Benbow, C. P. (2002). Mathematically facile adolescents with math-science aspirations: New perspectives on their educational and vocational development. *Journal of Educational Psychology, 94*(4), 785-794. <https://doi.org/10.1037/0022-0663.94>.
- Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92*(4), 548–573. <https://doi.org/10.1037/0033-295X.92.4.548>
- Wilkinson, R. D., & Pickett, K. (2009). The spirit level: Why more equal societies almost always do better. *Allen Lane/Penguin Group UK; Bloomsbury Publishing*.

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Appendices

Figure 1

Relationship Between Predicted Values and The Residuals (To check for the assumptions of linearity and homoscedasticity).

