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Examining the moderating role of regulatory fit on stereotype threat among Ugandan adolescents

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ABSTRACT

Prior research in Western contexts has tested the hypothesis that stereotype threat induces a prevention focus and that in contexts where both prevention focus and stereotype threat are simultaneously activated, members of stereotyped groups experience a performance boost due to the fit between one's goal orientation and the task demands (i.e. regulatory fit or stereotype fit). The present Study tested this hypothesis with high school students in Uganda, East Africa. Study findings revealed that in this cultural context where high-stakes testing fosters a predominantly promotion-focused testing culture, individual differences in regulatory focus interacted with the broader cultural, regulatory focus test culture to impact student performance.

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Africa; culture; mathematics; regulatory focus; stereotype fit; stereotype threat

Introduction

A significant number of studies show that negative stereotypes can inhibit the performance of members of marginalized groups in domains where stereotypes, disparaging the ability of their social groups, exist. Stereotype threat (ST) refers to the deleterious effect of such stereotypes on the performance of individuals from marginalized groups in domains where the intellectual competence of their social group is questioned (Steele & Aronson, 1995). Studies show that ST degrades women's performance on quantitative tasks when negative gender stereotypes regarding quantitative ability are salient (Picho & Schmader, 2017; Schmader, 2002; Spencer et al., 1999). Gender-related ST is moderated by several psychological and contextual factors like sex composition (Inzlicht & Ben-Zeev, 2003; Sekaquaptewa & Thompson, 2003); interactions with sexist males (Logel et al., 2009), gender identification (Schmader, 2002) and stigma consciousness (Brown & Pinel, 2003), to name a few.

Emerging studies also show that ST effects can be reversed when one's motivational state and the reward structure of the task align (Grimm et al., 2009; Seibt & Förster, 2004). This phenomenon is called stereotype fit (SFit). SFit is rooted in regulatory fit (RFit) theory, which posits that stereotypes activate a prevention focus, that is – heighten vigilance to avoid making mistakes or errors on the task (Stahl et al., 2012), which can create a sense of “fit” or alignment between task goals and personal goals among individuals who already are chronically oriented toward avoiding mistakes. When achieved, this sense of fit improves task engagement and performance, despite the negative stereotypes (Grimm et al., 2009). Although SFit offers promise in counteracting ST, the construct has been relatively understudied compared to other ST moderators.

The current investigation attempts to address the lacuna of research in this domain by examining SFit among high school females exposed to gender-related ST in Uganda, East Africa. To our knowledge, this is the first study to investigate how SFit impacts ST in an African cultural setting.

Adolescents and non-Western societies constitute understudied sub-populations in ST research. By age 10 most children have developed knowledge of broadly held cultural stereotypes (Quintana, 1994, 1998; Verkuyten et al., 1997) — a pre-requisite for ST (Steele, 1997). Despite this, research on adolescents has been limited with equivocal findings. This is mainly because the psychological variables critical to ST activation e.g., stereotype awareness and group identification (Steele, 1997) are developmental and likely to vary widely in this group, consequently increasing heterogeneity in ST effects (Flore & Wicherts, 2015). Studies show that ST is moderated by stereotype awareness among children in elementary (McKown & Strambler, 2009; Wasserberg, 2017), middle (Huguet & Régner, 2007; 2009), and high school (Picho & Brown, 2012; Picho & Schmader, 2017).

Similarly, 96% of psychological research (Arnett, 2008) comes from Western societies, constituting only 12% of the world's population (Henrich et al., 2010). These societies are also global outliers on several key psychological processes and variables (Henrich et al., 2010). Therefore, findings from these societies might not generalize to other parts of the world, particularly for phenomena as highly contextual as ST. Specific to ST, emerging theories assert that cross-cultural differences in the psychological processes involved in ST might attenuate its effects in non-Western, collectivist cultures (Schmader et al., 2015).

ST research in the West has been conducted with mostly college students because they are convenience samples (see Henrich et al., 2010). Research in non-Western societies has been limited, possibly because of the logistics of accessing study samples from these societies. For example, the research enterprise in Africa is underdeveloped and curtailed significantly by inadequate (and in some cases, subpar) infrastructure and resources (Mushemeza, 2016; Teferra & Altbach, 2004). To our knowledge, only three ST studies have been conducted on the continent, specifically in Uganda, East Africa (Picho & Schmader, 2017; Picho & Stephens, 2010) and Nigeria, West Africa (Uguanyi & Nwagbo, 2013).

The present investigation contributes to the much needed but limited literature on two understudied populations: adolescents and individuals from non-Western cultures. Mathematics is the gateway to the sciences, and gender stereotypes have been cited as possible contributors to the gender gap in mathematics, which begins to widen in elementary school (Robinson-Cimpian et al., 2014). Thus, research on how negative stereotypes might contribute to these gender performance gaps in adolescent populations is warranted. ST Research in hard-to-access cultures that vary distinctly from the cultures where theories about the phenomenon originated makes it possible for researchers to test the boundaries of ST theory, which is critical for theory development. The present investigation adds to this small but significant body of literature. It extends the literature by investigating how SFit operates to mitigate the ST effects in Central Uganda in two separate studies.

Literature review

Regulatory focus and RFit

Regulatory focus (RF) theory is a theory of goal pursuit that examines the mechanisms underlying how approach and avoidance motivation orientations operate. The theory postulates that individuals are motivated to embrace pleasure and avoid pain and regulate how they engage the pleasure/pain motivations through two distinct self-regulatory foci: promotion and prevention (T. E. Higgins, 1997). A *promotion regulatory focus* orientation is concerned with achieving gains (e.g., advancement and accomplishments). In contrast, a *prevention focus* prioritizes avoiding losses or errors and emphasizes security and safety by following the guidelines and the rules (E. T. Higgins et al., 2001). These modes of self-regulation can be activated situationally (e.g., due to the salience of gains or losses in a situation) or chronically (T. E. Higgins, 1997, 1998) Earlier work on RF linked positive outcomes with the promotion of RF and vice versa for prevention focus (Crowe & Higgins, 1997; Friedman & Forster, 2001). However, subsequent studies discovered that optimal performance and engagement outcomes were less related to RF goals more broadly than they were a function of the alignment between personal and regulatory task goals. Findings from this line of work provided preliminary

evidence of RFit by showing that individual performance was maximized on tasks where participants were encouraged to pursue strategies that matched their personal regulatory goals (Freitas & Higgins, 2002; Lockwood et al., 2002).

According to RFit theory (T. E. Higgins, 1997), individuals approach goals or desired outcomes with a sensitivity to the presence or absence of either (a) positive outcomes (i.e., a promotion focus or gains) or (b) negative outcomes (i.e., prevention focus or loss). Moreover, RFit theory posits that one's RF dictates using two primary strategies to attain desired outcomes: an eager or vigilant strategy. The eager strategy focuses on achieving positive outcomes or gains. Promotion-focused individuals often take an approach/eager strategy toward tasks because it facilitates the acquisition of positive outcomes. At the same time, those with a prevention focus are more inclined to use avoidance or vigilant strategies, which aim to avoid negative outcomes (T. E. Higgins et al., 2003). When individuals pursue goals that match their natural RF approach to goal pursuits, a fit (i.e., a state where one feels "right") between the task goal and their focus orientation results enhances task engagement (Higgins, 2000; T. E. Higgins, 2005) and subsequently, performance (Bianco et al., 2003; Förster et al., 1998). For instance, individuals with chronic prevention RF will experience fit when they pursue goals that emphasize avoiding errors (a vigilant strategy). By contrast, a regulatory mismatch occurs when individuals pursue goals at odds with their RF orientation e.g., when an individual with a chronic prevention RF completes a task with an eager strategy to achieve positive outcomes or gains.

SFit vs. ST

SFit draws from the broader theory of RFit (T. E. Higgins, 1997), which posits that individuals will experience RFit, and hence heightened engagement and performance when they perform tasks whose goals align with their own dominant RF orientation (T. E. Higgins, 2005). Negative stereotypes induce a prevention focus by framing outcomes in terms of loss/non-loss such that confirming the stereotype becomes a loss and dis-confirming it becomes a non-loss (Seibt & Förster, 2004). Because stereotyped individuals seek to disconfirm the negative stereotype (Steele, 1997), this negative frame of reference makes individuals more vigilant and motivated to avoid loss or errors (Seibt & Förster, 2004). Therefore, when negative stereotypes are activated in relation to tasks framed to motivate avoiding negative outcomes or loss, task and personal goals are oriented toward a prevention focus. This alignment in RF results in RFit called SFit, which enhances task engagement and, subsequently, performance. However, when task goals and personal goals conflict, the performance of stereotyped individuals declines in the face of negative stereotypes.

To that end, using the SFit framework, ST can be characterized as a case of regulatory mismatch between the RF induced by the negative stereotype (a prevention focus) and the testing environment. In typical ST experimental contexts, the activated negative stereotype induces a prevention focus, which motivates the use of a loss reward structure (i.e., avoiding loss or failure) (Brodish & Devine, 2009; Chalabev et al., 2008; Seibt & Förster, 2004). However, this focus often conflicts with additional instructions on experimental tasks, where participants are oriented either explicitly or implicitly toward a promotion focus. This conflict in RF lowers performance (Grimm et al., 2009). Empirical studies support this thesis (see Grimm et al., 2009; Stahl et al., 2012). Thus, for stereotyped individuals, the experience of ST or SFit in evaluative contexts will be contingent upon the match (or lack thereof) in RF induced by personal and task goals.

Experiments show that negative social stereotypes boost performance (Seibt & Förster, 2004; Stahl et al., 2012) when the RF activated by both the negative stereotype and the task goal are aligned (Grimm et al., 2009; Keller & Bless, 2006). In three experiments to test the SFit hypothesis, Grimm and colleagues (2009) paired ST manipulations with either a promotion focus (i.e., gain reward structure) or prevention focus (i.e., loss reward structure) prior to administering a task. In the former, participants gained more points for correct answers than for incorrect answers, and in the latter, they lost fewer points for correct answers than for incorrect answers. For both classification and math test performance, the authors found that when the ST prime was paired with the loss reward structure (and hence an induced avoidance strategy), participants performed better on the test compared to their

counterparts who were exposed to ST and had to perform a task in which a “gains” reward structure (or promotion strategy) was emphasized. Individuals experiencing ST performed better in RFit/SFit than in regulatory mismatch experimental conditions. The reverse was true for those primed with a positive stereotype; these participants performed better in a gains-reward structure relative to a losses structure. Therefore, the fit effects were obtained for both chronic and primed, positive and negative stereotypes. The current investigation focused on negative stereotypes regarding females’ math ability; we predicted that consistent with SFit, females would perform strongest in the SFit vs. control and ST conditions, leading to diminished sex gaps in math performance in the SFit but not ST condition (hypothesis 1a).

H1a: Math performance sex differences would be reduced in SFit as compared to ST due to an improvement in the performance of females in SFit.

There is a dearth of literature on SFit, even in Western contexts, with most studies conducted in Germany and the United States using predominantly White samples. The small body of literature has conflicts, however. Findings from studies by Keller and Bless (2008) and Brown and Josephs (1999) provide strong evidence contrary to SFit whereby inducing a prevention focus degraded rather than boosted the performance of the stereotyped group.

Findings from Keller and Bless (2008) also contradict prior work (Keller & Bless, 2006), where the researchers found evidence for RFit. Two experiments reported in the latter study found that test performance was enhanced when situationally induced regulatory focus matched test takers’ chronic regulatory focus orientation. The experiments were conducted in stereotype-free environments, though. Nevertheless, we see no reason why Rfit theory should operate differently in stereotype-free and stereotype-laden contexts. Keller and Bless (2008) assert that their findings do not oppose but rather shed light on boundary conditions of Rfit theory. They argue that the underlying assumptions of RFit theory are limited because they assume that negative (or positive) stereotypes or expectancies elicit prevention (or promotion) focused regulatory foci but fail to account for the alternate but plausible assumption that under certain conditions, positive stereotypes can elicit the opposite – a prevention focus, and consequently degrade performance. The latter scenario is more likely when positive stereotypes raise performance-related concerns or worries about living up to the positive stereotype (i.e., *What if I do not live up to this expectation?*). Keller and Bless (2008) contend that positive (negative) stereotypes do not always elicit promotion (prevention) regulatory focus. Instead, the connotation of negative and positive stereotypes, the types of regulatory focus they activate, and subsequently, their impact on performance is heavily context-dependent and moderated by individual differences in chronic regulatory focus orientation. To date, neither of these postulates has been independently tested by other researchers, nor have additional replication studies been conducted.

Moreover, the Brown and Josephs study departed significantly from the other stereotype priming studies, which could explain deviations in study results. Brown and Josephs assigned participants to control and experimental groups where individuals learned that the math test they were about to take was designed to evaluate whether they were exceptionally strong or especially weak in their math abilities. This study did not directly link their stereotype priming to either RF orientation- leaving it open to interpretation. To support their hypothesis called the moderation of expectancy effects by RF (MERF hypothesis), Keller and Bless (2008) interpreted the strong and weak ability primes in the Brown and Joseph’s study to denote priming for promotion and prevention focus, respectively. However, it is also plausible and probable that the weak ability condition corresponded to the performance concerns of women, and the exceptional condition corresponded to the performance concerns of men. That is, women would want to avoid not appearing weak in the weak abilities condition, and men would want to avoid not appearing exceptional in the strong ability condition. Framed this way, these primes could have created a prevention focus paired with a promotion task testing context, resulting in regulatory mismatch states, which would support SFit theory.

The current research

The current research examined whether, consistent with extant research, SFit could moderate the impact of gender stereotypes on the math performance of young, adolescent, Ugandan women. Although very few ST studies have been conducted in Africa, preliminary evidence suggests that ST might negatively affect the quantitative performance of African women. Generally, *math = male* stereotypes exist, and quantitative subjects are associated with both intelligence and males.

Gender norms and stereotypes in Uganda

Uganda is a highly patriarchal country that, like most African nations, ascribes to the traditional sex/gender binary model that biological sex dictates gender; gender is defined in binary terms, and cisgenderism is normative (Uganda Bureau of Statistics (UBOS), 2019). Males are considered boys and men, and females, girls and women (UBOS, 2019). In 2016, Uganda ranked 111 out of 159 on the gender inequality index (UNDP, 2020) and gender discrimination against the participation of females in labor markets and civic duties persists.

Ugandan gendered social norms influence the differential advancement of men and women in all life sectors. Relatively few women occupy technical and professional occupations like law and politics compared to men (UBOS, 2017). Ugandan social norms place a high value on girls' reproductive capabilities and boys' formal education (Nabuunya et al., 2021), leading to gender disparities in educational attainment. Girls are groomed to be married at the earliest opportunity and are socialized to be good wives and mothers (Odaga, 2020). In contrast, boys are encouraged to pursue formal education and professional vocations. Agentic traits and "masculine" behaviors are encouraged in boys from an early age, and girls are socialized to be docile, subservient and to take on gender stereotypical roles and values, e.g., homemaking, and nurturing others (Ninsiima et al., 2018). Preference is given to educating males over females. In 2016, some 69% of Ugandan adolescent females had never attended secondary school (starting at grade 8), and 40% were married off by age 18 (MoES, 2016). In North America, 94% of females were enrolled in secondary school in 2018 (The World Bank, 2022).

Ugandan gendered social norms shape children's beliefs regarding men's and women's occupational and social roles. Ugandan adolescent boys express a desire for masculine professions (e.g., doctors, engineers, pilots, mechanics), while girls express a desire for female roles (e.g., nurses and teachers) (Ninsiima et al., 2018). Most adolescents endorse the belief that it is more critical for adolescent males than females to do well in school and that males are more competent academically (Nabuunya et al., 2021). Stereotypes that males excel in mathematics also exist (Kahwah, 2012; Kakooza, 2004) – a stereotype endorsed by Ugandan adolescent males more than females (Picho & Schmader, 2017). Therefore, sex roles and stereotypes exist concerning academic competence in mathematics and science, influencing children's beliefs. Also, testing is highly competitive and intense in countries like Uganda, with limited resources and access to higher education. With few universities, many applicants, and few enrollment slots, the high-stakes testing is conducive for ST.

Past ST research in Uganda has also found some evidence of its effects in this culture (Picho & Brown, 2012; Picho & Schmader, 2017). Picho and Stephens (2012) found that women performed less well when exposed to negative gender stereotypes in co-ed but not same-sex (females-only) schools. Picho and Schmader (2017) found that young women and men underperformed on a mathematics task when gender differences were referenced if they assumed that the researchers expected their gender to perform worse than the other gender. They also found that students' perceptions of the stereotypic expectancies of authority figures (i.e., researchers) mattered more for predicting their math performance than did students' own endorsement of stereotypes. Moreover, we believe these studies induced regulatory mismatch in their experimental primes by asking participants to take the test seriously, make a genuine effort to do well, and answer questions to the best of their ability. Accordingly, ST effects were observed. Taken together, we

predicted that females would experience ST and hence lower performance relative to males on a math test in a setting where negative stereotypes denigrating females' math ability were also implied (hypothesis 1b).

H1b: Females would perform worse than males on a math test when the test is framed as diagnostic of ability and one that demonstrated gender differences in the past.

Given prior evidence of ST in this cultural setting and no empirical work on SFit, we examined whether the latter phenomenon would replicate in the same cultural context. Two studies were conducted to examine ST and SFit effects on the performance of females exposed to negative gender stereotypes regarding math ability. The first study examined whether SFit would positively influence the performance of adolescent females on a math task after exposure to gender stereotypes regarding math ability. Here, the first experimental condition induced regulatory mismatch through classic ST priming where prevention and promotion of RF from stereotypes and task goals conflict. In the second experimental condition, SFit was situationally activated by aligning task goals with RF activated by stereotypes (prevention focus). A second exploratory study was conducted to examine possible interplays between chronic RF and situationally induced prevention focus.

Methods

Study 1

The Study was approved by the institutional review board (IRB) at the first author's institution. A priori power analysis conducted with G-Power 3.1 (Faul et al., 2009) recommended a minimum sample size of 85 participants to achieve a power of 0.8, assuming a medium ST effect for a multiple regression model of one covariate and four independent variables. Participants were 285 senior three (10th grade) high school students, ages 15–16, from Uganda, East Africa, recruited from mathematics classes. 52.6% of the sample was female.

Measures

Math performance

The dependent variable was math performance, assessed using items adopted from pre-SAT (PSAT) practice tests.¹ It consisted of 23 test questions (18 multiple-choice and five structured questions).

Math identification

Math identification was assessed as participants' average responses on the math-identification subscale of Picho and Brown's (2012) Social Identities and Attitudes Scale (SIAS). The five-item subscale, anchored on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), included items like *I value math*, *Doing well in math matters to me*, and *My math abilities are important to my academic success*. The scale demonstrated adequate reliability ($\alpha = .73$). Scores were averaged such that higher scores on this scale indicate stronger math identification.

Procedures

An independent researcher unaffiliated with the high school solicited the participation of 300 students for the Study. Two hundred and eighty-five child assent and parental consent forms were collected two weeks later, resulting in a 95% response rate.

Participants were randomly assigned to one of three conditions: a control/non-threat condition, a ST condition, and a SFit condition before completing a math identification survey. The ST

experiment was conducted one week afterward. The spacing between the preceding activities was intentionally done to minimize measurement reactivity as a threat to internal validity.

Experimental procedure

The experiment was conducted in one session, in a mixed sex group setting, and facilitated by a native male research assistant unaffiliated with the school. All measures and tests were administered in English, the official language of Uganda. Each experimental condition was assigned a separate classroom. Upon arrival (at the Study location), students were assigned to one of three classrooms based on the experimental condition to which they had been previously assigned. The research assistant visited each classroom and stated the purpose of his visit to the school, which varied based on the prime to be activated in each experimental condition. While the research assistant was unblinded to the experimental conditions, the math test itself was proctored by teachers in the school who were blind to each experimental condition.

Priming

Control group. Participants in this condition were told that the Ministry of Education was developing a new national math assessment for students at their grade level, which was being piloted in schools throughout the country. They were also told that their school and students in their grade, particularly, had been selected to assess these items. Thus, the math test was presented as a problem-solving exercise.

ST group. Participants in the classic ST condition were told that the Ministry of Education was piloting a new math test, which had been used in other East African countries in recent years. The assistant presented the test as a robust and accurate measure of mathematics ability, and a reliable predictor of students' ability to excel in future advanced mathematics courses. Participants were also told that results from previous pilot studies at other Ugandan schools had shown differences between boys and girls on the test. They were encouraged to make a genuine effort on the task, because their results would be used to establish performance norms for boys and girls. These instructions were also reiterated in writing on the first page of the math test.

SFit group. Participants in the ST + prevention focus (SFit) condition also received the above-mentioned ST prime, but in addition, they were primed for loss reward structure as follows:

Loss/regulatory focus manipulation. We adapted a task-framing procedure that has been applied successfully in previous research to induce the different regulatory foci (e.g., Grimm et al., 2009; Shah et al., 1998). Prevention focus was activated by telling participants that they would receive one point for each item solved correctly but that two points would be deducted from their test scores for every wrong or missing test item. They were also encouraged to avoid losing more than 16 points on the exam. Specifically:

“This exam consists of 23 questions. You will lose 2 points for each wrong answer. Your goal should be to lose NO MORE than 16 points (i.e., fail no more than eight questions).”

All students were given 35 minutes to complete the test, after which they were debriefed.

Results

Scores on the math test were obtained by taking the sum of the number of items each participant got correct on the test (i.e., total correct). Participants attempted all items. General descriptive statistics are presented in Table 1.

Table 1. Study 1: mean math scores by sex and ST condition.

	Control	ST	SFit	Cohen's <i>d</i> (ST)	CI ₉₅ (ST)	Cohen's <i>d</i> (SFit)	CI ₉₅ (SFit)
Males	10.46 (3.08)	11.21 (3.22)	13.53 (3.93)	-.24	-.65, .17	-.91	-1.35, -.47
Females	10.48 (3.38)	9.15 (2.97)	13.03 (3.45)	.41	.02, .80	-.75	-1.16, -.34
Sex differences within condition							
Cohen's <i>d</i>	-.01	.67	.14				
CI ₉₅	-.33, .32	.20, 1.14	-.35, .62				

The effect size for within-sex differences in performance computed on the top row as (Control-ST) and (Control-SFit) for classic ST and SFit conditions, respectively. Effect size representing sex differences within condition computed on the bottom row as (mean scores for males- mean scores for females).

Does SFit replicate in Uganda?

A three-block hierarchical regression model, which included one covariate (math identification, mean-centered), two independent variables: (Sex, Stereotype conditions), and two-way interactions between the independent variables, entered successively, was fitted. Math identification was included in the model as a covariate because previous studies show that when domain identification is low, confirming the stereotype is not necessarily represented as a loss; therefore, a prevention focus is less likely to be induced (Seibt & Förster, 2004). Math performance was regressed onto the foregoing variables.

Results of the full regression model, shown in Table 2, yielded a significant main effect for the SFit condition ($\beta = .37, t = 4.29, p < .001$), qualified by a statistically significant Sex by Threat interaction effect for the classic ST condition only, ($\beta = -.21, t = -2.27, p = .024$). Thus, males outperformed females in the classic ST condition ($\beta = -.21, p < .001$) but not in the SFit condition ($\beta = -.05, p = .57$). No other main effects or interactions were significant. The lack of a Sex X Stereotype interaction effect for SFit supported the hypothesis that a prevention-focused context could improve the math performance of females and attenuate sex differences in mathematics when ST was activated. The moderating effect is depicted in Figure 1.

Simple effect analyses

Tests of simple effects comparing sex differences in performance across experimental conditions revealed no sex differences in math performance in the control/non-threat ($t = .11, p = .91, \text{Cohen's } d = -.01 [\text{CI}_{95} -.33, .32]$) and SFit ($t = -.60, p = .55, d = .14 [\text{CI}_{95} -.35, .62]$) conditions. However, males outperformed females in the classic ST condition ($t = -2.70, p = .007, d = .67 [\text{CI}_{95} .20, 1.14]$).

Analyses of male performance across experimental groups revealed no performance differences between males in the control and ST conditions $t = 1.09, p = .28, d = -.24, [\text{CI}_{95} -.65, .17]$ but the significantly stronger performance of males in the SFit vs. the control ($t = 4.29, p < .001, d = -.91, [\text{CI}_{95} -1.35, -.47]$) and ST² ($t = 2.80, p = .005, d = .65 [\text{CI}_{95} .15, 1.15]$) groups.

Table 2. Study 1: moderated hierarchical regression.

Variable	B	SEB	β
Math identification	-.10	.18	-.03
Sex	.06	.55	.01
Classic ST	.76	.69	.09
SFit	3.07	.72	.37**
ST* Sex	-2.16	.95	-.21*
ST Fit* Sex	-.56	.99	-.05
R ²	.15		
R ² (adjusted)	.13		
F for ΔR^2	2.58		

Only the final model results are shown. * $p = .00$. ** $p < .001$.

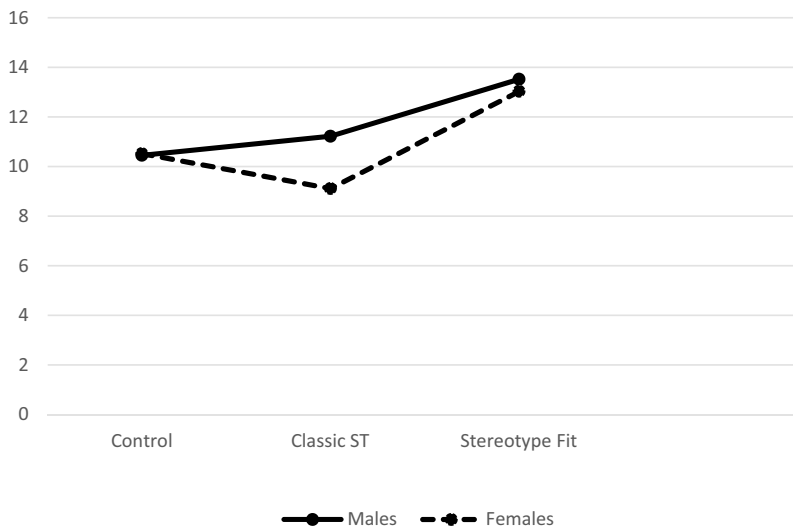


Figure 1. Study 1: math performance by sex and stereotype conditions.

Females exposed to ST performed significantly less well than their control counterparts ($t = -2.14$, $p = .03$, $d = .41$, [CI₉₅ .02, .80]), denoting classic ST effects. On the contrary, and consistent with SFit theory, females in the SFit condition outperformed their control ($t = 3.69$, $p < .001$, $d = .75$, [CI₉₅ .34, 1.16]) and ST counterparts ($t = 5.07$, $p < .001$, $d = 1.21$ [CI₉₅ .72, 1.70]).

Comparative analyses of Cohen's d effect sizes for male-only and female-only performance data in the SFit vs. ST conditions also showed that the mean effect size for males in SFit and ST conditions (Cohen's $d = .65$) lay outside the 95% confidence intervals of the same comparison for females. This result would suggest that although both males and females in the SFit condition experienced improved performance, the performance boost was significantly larger for females than for males.

Study 1 discussion

The current investigation examined whether RFit could alleviate the negative impact of gender stereotypes on the performance of young Ugandan females in an African cultural setting. As predicted, when a prevention focus was induced in the SFit condition, classic ST effects (i.e., sex gaps in math performance) were negated. That is, young females exposed to SFit (i.e., ST paired with a prevention focus) performed better than their counterparts in both the classic ST and control conditions. In fact, females in the SFit condition performed 17% better than females in the classic ST condition and 10.9% better than females in the non-threat condition, which is a meaningful performance improvement. Females in the SFit condition also performed 7.9% better than males in the classic ST condition and 11.2% better than males in the control (non-threat) condition. The trends observed in these analyses corroborate Grimm et al.'s theory – that traditional ST priming induces regulatory mismatch, which degrades the quantitative performance of females.

That said, the SFit hypothesis was partially supported in this Study. Although the performance of females corroborated findings from previous empirical studies examining ST and RFit (e.g., Grimm et al., 2009), the reverse was true for males in the SFit condition. Based on RFT and findings from prior work (Grimm et al., 2009; Seibt & Förster, 2004), individuals for whom positive stereotypes apply should experience a performance boost in gains (but not loss) reward structures because positive stereotypes foster a promotion focus, which fits with the task goal (i.e., gains structure). The positive male stereotype, paired with a prevention focus (losses), should have resulted in a regulatory mismatch for males. Instead, we found that males performed well under both ST and SFit (i.e., loss rewards)

conditions. The improved performance under ST is consistent with *stereotype lift* (Walton & Cohen, 2003) effects whereby positive stereotypes improve performance, but it is unclear why males performed well under SFit. We conjectured that this finding was either a result of substantive psychological variables not assessed in the current Study or potential limitations in research design that could have added experimental noise.

Regarding the latter, the ST prime applied in this Study did not specify the direction of stereotyped sex differences in math, leaving it open to the participant to decide the direction of the sex difference, with a possible interpretation also being a sex difference in favor of adolescent females. As such, any heterogeneity in interpreting the direction of sex differences could have yielded variable results, which might have added noise to the Study findings. Regarding unassessed psychological variables, we identified two unmeasured variables that might have impacted the Study results: (a) individual differences in RF orientation and (b) the culture surrounding high stakes testing in Uganda.

To understand the potential influence of these two variables, one needs to appreciate the large variety of instantiations of RFit. As discussed in Study 1, RFit can be obtained by considering the interaction between the RF state and the task context. In our Study, we used primes to highlight stereotypes activating a situational (i.e., task-based) RF, which resulted in a positive stereotype/promotion state for males and a negative stereotype/prevention state for females. We then created a losses task context as part of the SFit condition. This losses task context fits with the negative/prevention state for females, and we found performance improvements consistent with SFit. However, priming is one of many ways to manifest a RF state.

RF states can be chronic. In fact, much of the early work on RF considered how to make environmental conditions salient enough to override a person's chronic regulatory state (Shah et al., 1998) and focused on the development of questionnaires, such as the Regulatory Focus Questionnaire (E. T. Higgins et al., 2001), to measure chronic focus. It was broadly recognized that an individual could generally be prevention-focused and enter most situations with a focus on losses and employing vigilance strategies to avoid negative outcomes. T. E. Higgins (1997) emphasized that early interactions with caretakers start the development of chronic regulatory orientations to either approach pleasure or avoid pain and that socialization continues into adulthood as people interact with others at work and in personal relationships. Therefore, there can be a cultural component to creating RF states.

Returning to our results from Study 1, we posited that individual differences in chronic RF could have moderated the impact of SFit effects, such that the findings from the stereotype conditions were partially driven by an individual's chronic focus orientation or by cultural context. In Uganda, the culture surrounding high-stakes standardized national exams emphasizes achieving success (passing exams) and is highly promotion-focused (Oboko, 2017; Odama, 2018), which might have further influenced the results observed in this Study. Uganda conducts high-stakes standardized national exams in the 7th, 11th & 13th grades, which determine whether students can proceed to the next level of education, i.e., the 7th-grade exam determines entry from elementary to secondary education, 11th-grade exam determines whether students will pursue a STEM focus for the last two years of high school (12th & 13th grade), and the 13th-grade exam determines who gets admitted to the University and to which discipline (students are assigned majors at university level based on their performance on these exams). All schools are ranked nationally based on their student's performance, with results published in national newspapers. These standardized exams are high stakes for schools because ranking affects the quality of students who elects to attend these schools at the next educational level.

As a result, schools are under pressure to sustain or improve their national rankings to attract and retain a talented student body. Accordingly, schools focus on maximizing student performance to ensure that students pass (i.e., strong promotion focus), creating a cutthroat culture promoting high success rates, which trickles down to students (Oboko, 2017; Odama, 2018). Such an academic climate is motivationally intense, with many high-performance expectations which, we theorized, could orient students toward promoting success and hence activate a promotion focus on any academic testing context. Thus, merely being given any test, regardless of the test, might induce a promotion focus in adolescent males and females due to the broader social implications of performing well on high-stakes

exams. Furthermore, the performance of both males and females in the SFit condition was likely contingent upon the strength of the cultural (promotion-focused) prime and its ability to override the situationally induced SFit prime.

Given the intense promotion-focused climate and individual differences in RF orientation, a second Study to explore the relationships between these variables and the SFit was conducted. Methodological limitations in the first Study were also addressed in Study 2 in the following ways: First, the ST prime was strengthened by explicitly stating that males were better than females in mathematics. Second, chronic prevention focus orientation was measured and included as a moderator to determine which students would have the strongest fit with the SFit condition. Lastly, the nature of the math test was changed. Study 1 used practice problems from the pre-SAT math test that might not have been appropriate for students from this population. Floor effects were observed on the PSAT math test, leading to restriction of range which tends to attenuate the relationship between the independent and outcome variables (Shadish et al., 2002). This implies that potentially stronger relationships might have been observed in Study 1 with a test that had heterogeneity. This problem was resolved by adopting a challenging grade-appropriate test used locally in Uganda for Study 2. Hence, the test used in Study 2 included practice problems from the high-stakes grade 11 national exams developed and administered by the Uganda National Examinations Board (UNEB).

Study 2

Study 2 examined the extent to which individual differences in chronic RF would moderate SFit effects. Also, given the promotion-focused testing culture in Uganda, we explored possible effects of contextual regulatory mismatch resulting from the interplay between the promotion focus inherent in Uganda's high-stakes testing culture and the experimentally induced prevention focus on the performance of Ugandan high school students. These effects would have been present but unassessed in Study 1.

Hypotheses

Earlier, we speculated that chronic RF orientation (unassessed in Study 1) might have moderated SFit effects, possibly explaining the anomalous finding of stereotype lift among males in the SFit condition. Thus, Study 2 introduced a measure of chronic prevention focus orientation as a moderator variable to address whether individual differences in prevention RF would moderate SFit effects. Since RFit occurs when one's approach to a task matches specified task goals, we anticipated differential performance for participants based on the strength of their orientation toward a prevention focus.

Moreover, high-stakes tests in Uganda are perceived to be diagnostic of ability and they are associated with the motivation to excel (i.e., a promotion focus). The promotion-focused culture surrounding high-stakes exams is pervasive in Ugandan schools, making it likely to be accessible in contexts that mirror high-stakes testing. This means a cultural promotion-focused prime is "*in the air*" whenever students take on assessments. We theorized that this cultural RF "*in the air*" would exert a differential impact on student performance depending on (a) whether ST was activated or not and (b) the strength of one's chronic prevention-focus orientation. More specifically, we predicted sex differences in math performance consistent with ST for low chronic prevention participants in the SFit condition (hypothesis 2a).

H2a: Math performance sex differences consistent with ST would be found for low chronic prevention participants in the SFit condition.

Our rationale was that individuals with a low chronic prevention focus would not experience the losses frame as highly salient, thereby exhibiting a low tendency to avoid loss. So, for this

group, the cultural promotion prime “*in the air*” would exert greater influence on mathematics performance and create performance trends akin to classic ST effects where males would perform better than females.

In contrast, the SFit condition would be highly salient for individuals with a high chronic prevention focus, making the cultural promotion frame less relevant. Therefore, regarding stereotype effects, we hypothesized that sex differences within this group would be consistent with SFit theory: In comparison to low chronic prevention males, high chronic prevention-focused males in the SFit condition would experience performance declines due to a mismatch between their chronic prevention focus and the positive (i.e., promotion inducing) stereotype prime (hypothesis 2b). On the other hand, high prevention-focused females should experience RFit and perform better, given the regulatory fit between the experimental condition and high chronic prevention focus (hypothesis 2c), effectively narrowing the sex performance gap.

H2b: High chronic prevention males in SFit would experience performance declines relative to low chronic prevention males.

H2c: High chronic prevention females in SFit would experience performance improvement consistent with the effects found in Study 1.

Sample

Using the same parameters in Study 1, power analysis recommended a minimum of 94 participants to achieve a power of 0.8. Participants were 263 students, ages 15–16, from a different coed school in central Uganda. The sample was 52.5% female. Participants were randomly assigned to control and SFit groups. Randomization and experimental procedures for these conditions were identical to Study 1.

Measures

Math identification

The same math identification scale used in Study 1 was administered in this Study. For this sample, the scale reliability $\alpha = .71$.

Prevention focus

Prevention focus was measured using a RF questionnaire which has been used in cross cultural studies (Lockwood et al., 2002; Lockwood et al., 2005). The questionnaire has 18 short items measuring prevention and promotion focus; it is anchored on a 9-point Likert scale with response options ranging from 1 (not very true of me) to 9 (very true of me). Examples of prevention focus items include “*In general, I am focused on preventing negative events in my life,*” “*I often worry that I will fail to accomplish my academic goals,*” and “*My major goal in school right now is to avoid becoming an academic failure.*” A prevention focus subscale was created by averaging items assessing the construct with reported reliability $\alpha = .68$ for this sample.³

Statistical analysis

Descriptive statistics

The means and standard deviations of students’ scores on prevention focus and the math test are presented in Table 3. Prima facie, a look at average math scores in Table 3 suggests that males

Table 3. Study 2: descriptive statistics by sex and treatment.

	Treatment				Cohen's <i>D</i> (Control- SFit)	Effect Size C_{95}
	n	Non-Threat M (SD)	n	SFit M (SD)		
Math Scores						
Males	52	13.35 (4.00)	73	14.07 (4.74)	-.16	-.52, .19
Females	76	13.72 (4.05)	62	13.63 (4.05)	.02	-.31, .36
Mean Prevention Focus Scores						
Males	52	5.65 (1.09)	73	5.57 (.86)	.08	-.27, .44
Females	76	5.46 (1.03)	62	5.60 (1.15)	-.13	-.46, .21

experienced a small performance boost in the SFit condition while females' performance remained relatively unchanged. However, as statistical analyses later show, when math identification is adjusted for and mean math scores are decomposed by individual chronic prevention focus orientation, the moderation of prevention focus on math performance under ST becomes evident.

Testing statistical assumptions

We conducted tests to evaluate linearity, normality, and homoscedasticity assumptions of multiple linear regression for the continuous variables in the model. The Breusch-Pagan/White's test for heteroscedasticity indicated that no heteroscedasticity ($\chi^2(1) = .01, p = .91$), and the Shapiro-Wilk *W* test for normality suggested that the assumption of normality had been satisfied ($z = 1.52, p = .06$). To check for linearity analytically, quadratic and cubic terms of continuous predictors were added to the regression model predicting math scores from said predictors. None of the power terms were statistically significant ($p > .05$). Hence linearity assumption was met.

Model building

A moderated regression model was built to include covariates in the first block (math identification), independent variables (Prevention focus, Sex, and Stereotype condition), and two and three-way interactions. Table 4 shows the results for the hierarchical moderated regression reported here.

Results revealed a significant two-way interaction between stereotype condition and prevention focus orientation ($\beta = -.40, p = .007$), which was qualified by a significant three-way interaction between sex, stereotype condition, and prevention focus orientation ($\beta = .30, p = .037$). No other main effects or interactions were statistically significant.

To probe the interaction, we conducted a simple slopes analysis using the method outlined by Aiken and West (1991), where probing significant interactions at one standard deviation above and below the mean values of the moderator is suggested. These values are arbitrary, however (Aiken &

Table 4. Study 2: moderated hierarchical regression.

Variable	B	SEB	β
Math ID	.58	.39	.10
Treatment (SFit = 1)	1.16	.79	.14
Prevention focus (prev)	.94	.64	.23
Sex	1.36	.79	.16
Sex x Treatment	-1.71	1.08	-.17
Sex x Prev	-1.29	.80	-.24
Treatment x Prev	-2.32	.86	-.40**
Sex x Treatment x Prev	2.32	1.10	.30*
R^2	.05		
R^2 (adjusted)	.02		
F for ΔR^2	4.42*		

Only the final model results are shown. * $p < .05$. ** $p < .01$.

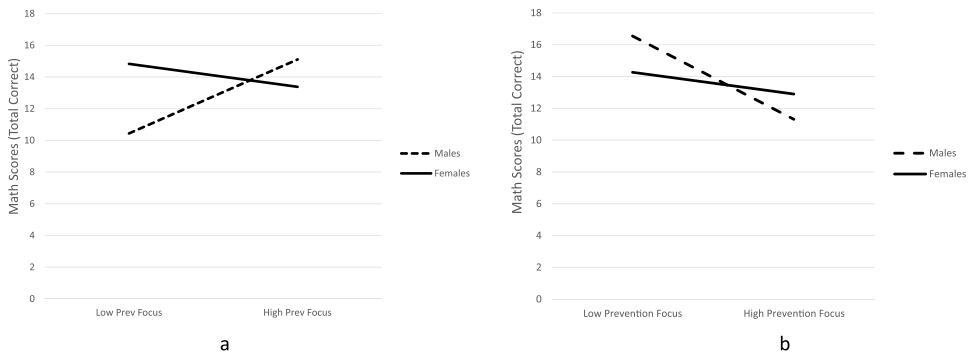


Figure 2. (a) Study 2: Sex differences in math performance in the control group. (b) Study 2: Sex differences in math performance in the SFit condition.

West, 1991; Dawson, 2014), and may not necessarily represent meaningful points for analyses on the moderator variable. For this reason, it is recommended that researchers choose meaningful points on the moderator at which to evaluate slopes (Dawson, 2014). In line with this recommendation, we probed the significant three-way interaction at values of 3.5 and 7.6, representing the bottom and top thirds of the prevention focus continuum, respectively, for which participants would have indicated low and high values of prevention focus.⁴ Results are graphically displayed in Figures 2a,b, split by stereotype condition. We also conducted slope difference tests (i.e., tests of whether the difference between a pair of slopes is significant (Dawson, 2014) to examine the relative performance of males (and also females, separately) in control versus SFit conditions at high and low levels of prevention focus.

Performance across SFit and control groups

We separately examined performance differences between SFit and control groups for males and females with chronic high and low prevention focus. Females chronically oriented toward a high prevention focus performed comparably across control and SFit conditions $b = -.55$ $t = -.35$, $p = .73$, as did their low prevention-focused counterparts, $b = -.55$ $t = -.35$, $p = .73$. High prevention focused males underperformed in the SFit vs. non-threat condition, $b = -3.48$ $t = -1.91$, $p = .05$. On the contrary, low prevention focused males performed much better in the SFit vs. non-threat condition $b = 5.80$, $t = 2.97$, $p = .003$. Slope difference tests revealed that the above-mentioned performance differences in control and SFit groups (for high and low prevention-focused males) were statistically significant $b = -9.61$, $t = -2.71$, $p = .007$.

Performance in the SFit condition

Earlier, we hypothesized that in the SFit condition, the cultural promotion focus *in the air* present in the testing environment would govern the performance of individuals with low prevention focus and result in performance trends typically indicative of ST. This hypothesis was supported [hypothesis 2a]. Results showed that among low prevention-focused participants, the SFit prime (situationally inducing a prevention focus) had a far more positive effect on the performance of males than it did for females ($b = -6.35$ $t = -2.52$, $p = .012$). Sex gaps in performance trended in the direction typically indicative of classic ST effects, with males performing better than females. These differences were not statistically significant, however, $\beta = -.27$, $t = -1.27$, $p = .21$. Therefore, although the pattern of results supported our hypothesis, evidence for classic ST was not as strong as anticipated.

We also hypothesized underperformance on the math test for males with a high chronic prevention focus relative to their low prevention-focused counterparts (hypothesis 2b). This hypothesis was

supported, as higher prevention focus was associated with poorer performance on the math test for males in the SFit group b (se) = -1.38 (.57), $t = -2.41$, $p = .017$. On the contrary, the relationship between prevention focus and performance was negligible and not statistically significant for females in this condition ($\beta = -.08$, $t = -.69$, $p = .49$). This result did not support the hypothesis that the performance of high-prevention focused females would be enhanced under SFit. Consequently, the hypothesis of diminished sex gaps in performance was only partially supported because although sex differences in performance did not emerge among participants chronically oriented toward a high prevention focus $\beta = .21$, $t = 1.04$, $p = .30$, the relationship between prevention focus and performance was negligible for females in the SFit group, but moderate and statistically significant for males ($\beta = -.33$, $t = -2.41$, $p = .017$). Therefore, the diminished, non-significant sex differences in performance observed were less a function of higher performance among high prevention-focused females than they were, a result of the significant underperformance of high prevention-focused males in this condition.

Performance in the control group

Absent of negative gender stereotypes, males and females with a high prevention focus performed comparably ($\beta = -.15$, $t = -.73$, $p = .46$) in the control condition, but among those with a low prevention focus, females outperformed males ($\beta = .48$, $t = 2.11$, $p = .036$).

Same-sex, high vs. low prevention focus performance comparisons by condition

We also compared the performance of high and low-prevention-focus-oriented males across experimental conditions and found that males chronically oriented toward a high prevention-focus orientation performed significantly worse in the SFit condition compared to their counterparts in the control condition ($\beta = -.44$, $t = -1.94$, $p = .05$). The reverse was true for low prevention focused males in the SFit condition, who performed better than their control counterparts ($\beta = .72$, $t = 2.97$, $p = .003$). On the other hand, young females in the SFit condition performed comparably to their control counterparts regardless of whether they were chronically oriented toward high or low on prevention focus (i.e., high or low), p 's $> .05$.

Study 2 discussion

The current Study examined the role of chronic regulatory focus in moderating SFit effects. Results showed that in evaluative contexts where both ST and a prevention focus were activated, SFit effects (i.e., performance boost) were moderated by individual differences in chronic prevention focus. In this testing context, females with chronic high prevention focus performed comparably to males of similar disposition in the same condition; sex differences in math performance were also significantly curtailed among high prevention-focused individuals. Contrary to what we predicted, the comparable performance between high chronic prevention-focused males and females in the SFit condition had nothing to do with females experiencing a boost in performance due to regulatory fit. In this experiment, regardless of chronic orientation toward prevention focus, the females' performance remained relatively unperturbed across experimental conditions. The reverse was true for males, where notable differences in performance of high vs. low prevention-focused males in the SFit condition emerged. Thus, pairing a negative gender stereotype with a loss reward task structure to situationally induce a prevention-focused testing environment had the most noticeable impact on the performance of males than females. This would imply that the moderating effect of chronic regulatory focus on performance was more robust for males than females. It is unclear why this pattern of results emerged. Why did chronically high prevention-focused females not experience a boost in performance when prevention focus was situationally induced? Although we have no clear answers for this result, we present a few plausible reasons to explain these findings.

First, it is possible that females in the SFit condition experienced a boost in performance, bringing their performance from the typical performance dip observed in classic ST conditions to average scores at par with their counterparts in the control condition. This would suggest that while the performance boost elevated performance to levels one would expect in the absence of negative gender stereotypes, it was not strong enough to elevate performance significantly above that. Hence moderation occurred, but its effect was weak – just as it was for the ST effects observed among low prevention-focused participants in the SFit condition. This conjecture might have been clarified had there been a classic ST condition (as in Study 1). Unfortunately, a limitation of this study was that it lacked a “ST only” experimental condition, so this conjecture remains tentative at best. It can, however, be investigated in future studies.

It might also be worthwhile to consider Keller and Bless (2008) position that the connotation of stereotypes might be heavily context-dependent; negative stereotypes may or may not elicit a prevention focus, thereby yielding results that may or may not be consistent with RFit theory. In their 3rd experiment, for example, they found that high prevention-focused females performed less well in the experimental condition where negative gender stereotypes were created by priming a negative expectancy. However, a female-only sample was used in that study, limiting our insights into the relative performance of high prevention-focused males *vs.* females in a SFit context, such as in this experiment and that of Keller and Bless (2008). Keller and Bless’ MERF hypothesis might be plausible, but post hoc analyses to investigate its tenability in explaining study findings in this context was not feasible because neither the study design nor a priori hypotheses and, consequently, planned analyses to examine SFit were grounded in this framework. Nevertheless, future studies can and should design studies that allow for investigating the MERF as a competing hypothesis to SFit theory in this and other contexts.

The current Study accounted for the anomaly in male performance (relative to SFit theory) observed in Study 1; the improved performance in a regulatory mismatch context disappeared when the interaction between individual and contextual RF was included. Study 1 showed a performance lift where there should have been a performance decline due to regulatory mismatch. *Prima facie*, the performance boost still appears when one only considers males’ overall means test scores in the SFit condition. However, upon close examination and more sophisticated analyses accounting for the interplay between individual differences in prevention focus, it is revealed that males in the SFit condition perform differently, with males of low chronic prevention focus outperforming their high prevention focus counterparts. Thus, the overall lift in the performance of males in the SFit condition is driven by the significantly high performance of males with low prevention focus in this condition. Mean scores for the low prevention focus males were characteristic of a performance boost (relative to the control group)– a finding similar to Study 1. However, males with a high chronic prevention focus performed less well compared to females of similar disposition and men with a low prevention focus. Males with high prevention focus performed 24% less well compared to their low prevention focus counterparts in the SFit condition, which is a practically significant drop in performance. They also performed 15.6% less well than their high prevention focus counterparts in the control group.

These results are consistent with theoretical predictions of SFit theory, where this finding can be explained as a result of stereotype misfit (regulatory mismatch). In Study 2, moderation allowed us to capture what was not readily discernible in the first Study: Both testing cultural and individual differences in prevention focus orientation impact the performance of both males and females under threat. The performance boost exhibited by males in the prevention focus condition in Study 1 might have possibly been driven by greater sample size of males with low prevention focus, which in turn, might have influenced average scores upwards for males in the SFit condition.

Study 2 also revealed a pattern of results akin to classic ST effects among low prevention-focused students: Males outperformed their female counterparts in the SFit condition. Essentially, having a chronic low prevention focus rendered the SFit condition frame less salient, allowing the cultural promotion to negate the impact of the losses frame, leaving only the stereotype prime. This effect was weak, however.

Results from student performance in the non-threat condition also have implications for cultural prevention focus. Earlier, we hypothesized that Uganda would likely have a cultural promotion focus. The control condition presented a context where neither stereotype nor RF orientation was activated, so performance in this condition would likely mirror the norm in educational contexts void of the influence of contextual (i.e., situationally induced or cultural) RF. Put differently, these results would represent the impact of chronic prevention focus alone on student performance. In the non-threat condition, males and females high on prevention focus performed comparably. In contrast, a substantive gender difference in performance favoring females emerged for participants with a chronically low prevention focus. Although we had no a priori hypothesis about this, these findings indicate, at least initially, that having a low prevention focus might be detrimental to the performance of men in evaluative contexts where RF is not activated.

General discussion

The present Study examined the generalizability of SFit theory to a Ugandan cultural context. Collectively, findings from Studies 1 and 2 provided evidence to support the theory. Findings from the current investigation deconstructed the interplay between individual psychological RF orientation and RF at different levels of context, showing that both are important to consider when studying RFit in non-Western cultures. Study 2, in particular, revealed cultural RF orientation as an influential determinant of performance outcomes in evaluative contexts where a mismatch in RF between the immediate testing (situational) and cultural contexts exists. In this Study, cultural RF orientation exerted greater influence on performance than the RF demands induced in the evaluative context depending on one's chronic prevention focus orientation level. Therefore, experimental research in non-Western cultures, or at least African settings, should consider and account for the relative strength that cultural influences might have in inadvertently impacting study outcomes. We strongly encourage researchers to examine these interactions as they could enhance our understanding and interpretation of RFit in the ST framework in understudied populations.

Culture plays an essential role in social behavior. While culture is undoubtedly vital to socializing the promotion and prevention motivations of its members (E. T. Higgins, 2008; Henrich et al., 2010; Kurman & Hui, 2011), it is equally important to remember that the distinction between Western European and non-Western cultures on certain psychological variables is not always so clear. For instance, research has linked non-Western, collectivist cultures to highly prevention-focused tendencies and individualistic, Western cultures to promotion-focused tendencies (Lee et al., 2000; Ouschan et al., 2007; Zhang & Mittal, 2007). However, as this Study showed, Uganda, which ranks high on collectivism (Hofstede et al., 2010), was culturally oriented toward promotion and not prevention of RF in evaluative testing contexts. Thus, among non-Western collectivist cultures, an intra-cultural variation on some psychological variables might exist, and it cannot always be assumed that psychological orientations ascribed to broader cultural classifications apply. This study shows that collectivism and prevention focus do not always correspond. Therefore, it would be much more beneficial for research examining psychosocial phenomena in under-studied populations like non-western, or more specifically, African cultural contexts to consider intra-cultural variation on such psychological variables and endeavor to excavate these accordingly for the specific culture under investigation. Failure to do so, particularly in cases where cultural psycho-characteristics of the population under study deviate from the broader cultural umbrella (e.g., the tendency for collectivist cultures to be prevention-focused), might generate misguided hypotheses, and hence a flawed lens through which findings are interpreted. Consequently, this might increase the risk of drawing erroneous conclusions from study findings, mainly when they depart substantively from the hypothesis.

Limitation

The current Study investigated the effect of SFit on the math performance of males and females in a non-western cultural setting. In Study 1, this was achieved by manipulating the testing context across three experimental groups (Control, ST, and SFit). Study 2 introduced individual differences in chronic prevention focus as a third, independent (moderator) variable, used more culturally- appropriate test items, and a direct manipulation of stereotype threat (including the stereotype's directionality). We also dropped the ST experimental group in Study 2 to focus our power on comparisons between the Control and SFit groups. Therefore, given the preceding differences in study design, Study 2 is not a direct replication of Study 1 so findings from both studies are not directly comparable. To that end, it was impossible to use findings from an ST-only group to disambiguate in Study 2 findings for low prevention male participants who improved under SFit because that condition was not included in the experimental design. However, considering the results of the male participants in Study 2, we find evidence of SFit, but not in the manner we anticipated. SFit can be created by any matching pairing of stereotype and matching context can create SFit, so it is possible that these male participants experienced a partial Fit in the SFit condition. The SFit manipulation included a stereotype and a reward structure that involved losing 3 points for an incorrect response and gaining 1 point for each correct response. Male participants had a positive stereotype associated with their group and still gained 1 point for each correct response. This small gain may have been enough to create a fit in the presence of the promotion focus "in the air" and the low chronic prevention focus. This explanation is consistent with the finding that male participants in SFit performed better than the Control men in Study 1. In other words, we are just finding the "fit" in an area we did not anticipate. Given that salient states can create a fit state, we are discovering that it can be hard to identify what elements will "fit." However, future research will need to investigate this possibility.

Also, the decision to eliminate the ST-only experimental group from the Study 2 design to preserve power was methodologically sound; it also proved to be a fundamental limitation in facilitating further insights into/clarifying observed findings on the moderation effect of chronic prevention focus on the performance of high prevention focused females in the SFit condition.

More generally, these results should be interpreted and restricted to Ugandan cultural contexts, as regional cultural differences also exist in a continent as large as Africa. These findings may or may not translate to West or North African cultures. For example, more work would have to be conducted in other East African countries to assess whether these findings replicate in those contexts. Second, the current investigation focused on SFit in an evaluative context primed for the prevention of RF, so the results presented here are limited to this focus. We recommend that additional experiments be conducted to examine whether SFit theory might be supported in this cultural context when promotion focus is activated instead. Confirmatory, direct replication studies in this cultural setting are also recommended to provide a thorough and unified understanding of RFit in this and other similar cultural contexts. Lastly, future cross-cultural studies should examine both immediate context and cultural context. Most studies may attempt to consider broader culture but need to examine the interplay between the two.

Conclusion

Historically, psychological theories have been supported using data from groups not representative of the world population. Henrich and colleagues (2010) argue that Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies differ psychologically from the rest of the world on several psychological processes and that these differences are associated with cultural differences in how self-concept is defined. In the West, the self is understood as an internal psychological process (individualism) compared to the rest of the world relative to social roles and relationships (collectivism). Consequently, WEIRD or Western societies tend to be more individualistic, have stronger motivations for consistency and have weaker motivations for conformity (Henrich et al., 2010) relative to non-

Western societies. Thus, psychological research conducted primarily with Western samples is more likely to yield findings that might vary in other cultural contexts, especially with phenomena like ST that are not only highly contextual but also heavily reliant on self-concept (Schmader et al., 2008), to operate.

The disproportionate amount of research in the Western cultural context is a potential threat to the external validity of ST research. This is the first Study to examine the impact of cultural RF on SFit theory. The current Study demonstrates the need to expand ST research to non-Western cultures: We found evidence of SFit in Uganda and identified ways the culture in Uganda may have influenced stereotype findings. This demonstrates that it is critically important to identify the boundary conditions for our theories and ask how the cultural contexts interact with our variables of interest. Greater diversity in research would go a long way in expanding our knowledge of the scope and boundary conditions of phenomena like ST. Therefore, to build a more comprehensive theory of ST, concerted efforts should be made to expand this line of research with under-studied populations. Relying on research findings based on samples from North America and Western Europe, where most ST studies have been conducted, may cause researchers to miss critical dimensions of variation, devoting undue attention to behavioral tendencies that are unusual in a global context instead. However, if the goal of the research program is to shed light on the human condition, then this narrow, unrepresentative sample may lead to an uneven and incomplete understanding of the phenomenon under investigation.

Notes

1. All measures were administered in English, an official language in Uganda.
2. For within-sex comparisons of SFit and ST groups, Cohen's d was computed by dividing the mean difference (SFit-ST) in math performance by the pooled SD of both groups.
3. Collectivist cultures orient toward a prevention regulatory focus (Lockwood et al., 2005), which, for this sample, was evidenced by a tendency to endorse prevention regulatory focus. Reported alpha adjusted to account for relative sample homogeneity on this construct (see Pike & Hudson, 1998).
4. The prevention focus measure was anchored on a scale that ranged from 1–9. Scores on the prevention focus subscale ranged from 2–8.2. Therefore, the values at which the interaction was probed corresponded to 2 SD above the mean on the moderator. We conducted the same analyses at 1SD above and below the mean of the moderator and found similar results. Therefore, using 2SD changed neither the direction nor interpretation of the results.

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Data availability statement

The data described in this article are openly available in the Open Science Framework at <https://doi.org/10.17605/OSF.IO/X6EB7>

Open scholarship



This article has earned the Center for Open Science badges for Open Data and Open Materials through Open Practices Disclosure. The data and materials are openly accessible at <https://doi.org/10.17605/OSF.IO/X6EB7>

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.
- Arnett, J. J. (2008). The neglected 95%: Why American psychology needs to become less American. *The American Psychologist*, 63(7), 602–614. <https://doi.org/10.1037/0003-066X.63.7.602>
- Bianco, A. T., Higgins, E. T., & Klem, A. (2003). How “fun/importance” fit impacts performance: Relating implicit theories to instructions. *Personality & Social Psychology Bulletin*, 29(9), 1091–1103. <https://doi.org/10.1177/0146167203253481>
- Brodish, A. B., & Devine, P. G. (2009). The role of performance-avoidance goals and worry in mediating the relationship between stereotype threat and performance. *Journal of Experimental Social Psychology*, 45(1), 180–185. <https://doi.org/10.1016/j.jesp.2008.08.005>
- Brown, R. P., & Josephs, R. A. (1999). A burden of proof: Stereotype relevance and gender differences in math performance. *Journal of Personality and Social Psychology*, 76(2), 246–257. <https://doi.org/10.1037/0022-3514.76.2.246>
- Brown, R. P., & Pinel, E. C. (2003). Stigma on my mind: Individual differences in the experience of stereotype threat. *Journal of Experimental Social Psychology*, 39(6), 626–633. [https://doi.org/10.1016/S0022-1031\(03\)00039-8](https://doi.org/10.1016/S0022-1031(03)00039-8)
- Chalabae, A., Sarrazin, P., Stone, J., & Cury, F. (2008). Do achievement goals mediate stereotype threat?: An investigation on females' soccer performance. *Journal of Sport & Exercise Psychology*, 30(2), 143–158. <https://doi.org/10.1123/jsep.30.2.143>
- Crowe, E., & Higgins, E. T. (1997). Regulatory focus and strategic inclinations: Promotion and prevention in decision-making. *Organizational Behavior and Human Decision Processes*, 69(2), 117–132. <https://doi.org/10.1006/obhd.1996.2675>
- Dawson, J. F. (2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology*, 29(1), 1–19. <https://doi.org/10.1007/s10869-013-9308-7>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149–1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Flore, P. C., & Wicherts, J. M. (2015). Does stereotype threat influence performance of girls in stereotyped domains? A meta-analysis. *Journal of School Psychology*, 53(1), 25–44. <https://doi.org/10.1016/j.jsp.2014.10.002>
- Förster, J., Higgins, E. T., & Idson, C. L. (1998). Approach and avoidance strength as a function of regulatory focus: Revisiting the “goal looms larger” effect. *Journal of Personality and Social Psychology*, 75(5), 1115–1131. <https://doi.org/10.1037/0022-3514.75.5.1115>
- Freitas, A. L., & Higgins, E. T. (2002). Enjoying goal-directed action: The role of regulatory fit. *Psychological Science*, 13(1), 1–6. <https://doi.org/10.1111/1467-9280.00401>
- Friedman, R. S., & Förster, J. (2001). The effects of promotion and prevention cues on creativity. *Journal of Personality and Social Psychology*, 81(6), 1001–1013. <https://doi.org/10.1037/0022-3514.81.6.1001>
- Grimm, L. R., Markman, A. B., Maddox, W. T., & Baldwin, G. C. (2009). Stereotype threat re-interpreted as regulatory mismatch. *Journal of Personality and Social Psychology*, 96(2), 288–304. <https://doi.org/10.1037/a0013463>
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *The Behavioral and Brain Sciences*, 33(2–3), 61–83. <https://doi.org/10.1017/S0140525X0999152X>
- Higgins, T. E. (1997). Beyond pleasure and pain. *The American Psychologist*, 52(12), 1280–1300. <https://doi.org/10.1037/0003-066X.52.12.1280>
- Higgins, E. T. (1998). Promotion and Prevention: Regulatory Focus as a Motivational Principle. *Advances in Experimental Social Psychology*, 30, 1–46.
- Higgins, E. T. (2000). Making a good decision: Value from fit. *The American Psychologist*, 55(11), 1217–1230. <https://doi.org/10.1037/0003-066X.55.11.1217>
- Higgins, T. E. (2005). Value from regulatory fit. *Current Directions in Psychological Science*, 14(4), 209–213. <https://doi.org/10.1111/j.0963-7214.2005.00366.x>

- Higgins, E. T. (2008). Culture and personality: Variability across universal motives as the missing link. *Social and Personality Psychology Compass*, 2(2), 608–634. <https://doi.org/10.1111/j.1751-9004.2007.00075.x>
- Higgins, E. T., Friedman, R. S., Harlow, R. E., Idson, L. C., Ayduk, O. N., & Taylor, A. (2001). Achievement orientations from subjective histories of success: Promotion pride versus prevention pride. *European Journal of Social Psychology*, 31(1), 3–23. <https://doi.org/10.1002/ejsp.27>
- Higgins, T. E., Ideson, C. L., Freitas, A. L., Speigel, S., & Molden, D. C. (2003). Transfer of value from fit. *Journal of Personality and Social Psychology*, 84(6), 1140–1153. <https://doi.org/10.1037/0022-3514.84.6.1140>
- Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and organizations: Software of the mind: Intercultural competition and its importance for survival* (3rd ed.). McGraw-Hill.
- Huguet, P., & Régner, I. (2007). Stereotype threat among schoolgirls in quasi-ordinary classroom circumstances. *Journal of Educational Psychology*, 99(3), 545–560. <https://doi.org/10.1037/0022-0663.99.3.545>
- Huguet, P., & Régner, I. (2009). Counter-stereotypic beliefs in math do not protect school girls from stereotype threat. *Journal of Experimental Social Psychology*, 45(4), 1024–1027. <https://doi.org/10.1016/j.jesp.2009.04.029>
- Inzlicht, M., & Ben-Zeev, T. (2003). Do High-Achieving Female Students Underperform in Private? The Implications of Threatening Environments on Intellectual Processing. *Journal of Educational Psychology*, 95(4), 796–805. <https://doi.org/10.1037/0022-0663.95.4.796>
- Kaahwa, J. (2012). The experiences of Ugandan females in mathematics. *Science Journal of Psychology*, 12, 1–12. <https://doi.org/10.7237/sjpsych/103>
- Kakooza, J. (2004). Mathematics and gender in Ugandan primary school: Influence on teachers, parents and learners. *Paper presented at the International conference to review research on science, technology, and mathematics education*, Goa, India.
- Keller, J., & Bless, H. (2006). Regulatory fit and cognitive performance: The interactive effect of chronic and situationally induced self-regulatory mechanisms on test performance. *European Journal of Social Psychology*, 36(3), 393–405. <https://doi.org/10.1002/ejsp.307>
- Keller, J., & Bless, H. (2008). When positive and negative expectancies disrupt performance: Regulatory focus as a catalyst. *European Journal of Social Psychology*, 38(2), 187–212. <https://doi.org/10.1002/ejsp.452>
- Kurman, J., & Hui, C. M. (2011). Promotion, prevention or both: Regulatory focus and culture revisited. *Online Readings in Psychology and Culture*, 5(3). <https://doi.org/10.9707/2307-0919.1109>
- Lee, A. Y., Aaker, J. L., & Gardner, W. L. (2000). The pleasures and pains of distinct self-construals: The role of interdependence in regulatory focus. *Journal of Personality and Social Psychology*, 78(6), 1122–1134. <https://doi.org/10.1037/0022-3514.78.6.1122>
- Lockwood, P., Jordan, C. H., & Kunda, Z. (2002). Motivation by positive or negative role models: Regulatory focus determines who will inspire us. *Journal of Personality and Social Psychology*, 83(4), 854–864. <https://doi.org/10.1037/0022-3514.83.4.854>
- Lockwood, P., Marshall, T. C., & Sadler, P. (2005). Promoting Success or Preventing Failure: Cultural Differences in Motivation by Positive and Negative Role Models. *Personality & Social Psychology Bulletin*, 31(3), 379–392. <https://doi.org/10.1177/0146167204271598>
- Logel, C., Walton, G. M., Spencer, S. J., Iserman, E. C., von Hippel, W., & Bell, A. E. (2009). Interacting with sexist men triggers social identity threat among female engineers. *Journal of Personality and Social Psychology*, 96(6), 1089–1103. <https://doi.org/10.1037/a0015703>
- McKown, C., & Strambler, M. J. (2009). Developmental antecedents and social and academic consequences of stereotype-consciousness in middle childhood. *Child Development*, 80(6), 1643–1659. <https://doi.org/10.1111/j.1467-8624.2009.01359.x>
- MoES. (2016). *Gender in education sector policy*. <http://www.education.go.ug/files/downloads/GENDER%20IN%20EDUCATION%20SECTOR%20POLICY.pdf>
- Mushemeza, E. D. (2016). Opportunities and challenges of academic staff in higher education in Africa. *International Journal of Higher Education*, 5(3), 236–246. <https://doi.org/10.5430/ijhe.v5n3p236>
- Nabunya, P., Curley, J., & Ssewamala, F. M. (2021). Gender Norms, Beliefs and Academic Achievement of Orphaned Adolescent Boys and Girls in Uganda. *The Journal of Genetic Psychology*, 182(2), 89–101. <https://doi.org/10.1080/00221325.2021.1873727>
- Ninsiima, A. B., Leye, E., Michielsen, K., Kemigisha, E., Nyakato, V. N., & Coene, G. (2018). "Girls Have More Challenges; They Need to Be Locked Up": A Qualitative Study of Gender Norms and the Sexuality of Young Adolescents in Uganda. *International Journal of Environmental Research and Public Health*, 15(2), 193. <https://doi.org/10.3390/ijerph15020193>
- Oboko, M. (2017). Effects of examination policies on school culture in high schools in Uganda. *Multidisciplinary Research Journal*, 2(2), 1–10.
- Odaga, G. (2020). Gender in Uganda's tertiary educational distribution. *Social Sciences & Humanities Open*, 2(10), 1–12. <https://doi.org/10.1016/j.ssaho.2020.100023>
- Odama, S. (2018). The impact of examination ridden system of education on democracy in education in Uganda: An implication for policy change. *Globe: A Journal of Language, Culture and Communication*, 6, 94–114.

- Ouschan, L., Boldero, J. M., Kashima, Y., Wakimoto, R., & Kashima, E. S. (2007). Regulatory focus strategies scale: A measure of individual differences in the endorsement of regulatory strategies. *Asian Journal of Social Psychology, 10*(4), 243–457. <https://doi.org/10.1111/j.1467-839X.2007.00233.x>
- Picho, K., & Brown, S. W. (2012). Can stereotype threat be measured? A validation of the social Identities and attitudes scale (SIAS). *Journal of Advanced Academics, 22*(3), 374–411. <https://doi.org/10.1177/1932202X1102200302>
- Picho, K., & Schmader, T. (2017). When do gender stereotypes impair math performance? A study of stereotype threat among Ugandan adolescents. *Sex Roles, 78*(3–4), 295–306. <https://doi.org/10.1007/s11199-017-0780-9>
- Picho, K., & Stephens, J. M. (2010). Culture, context and stereotype threat: A comparative analysis of young Ugandan women in single-sex and coed schools. *The Journal of Educational Research, 105*(1), 52–63. <https://doi.org/10.1080/00220671.2010.517576>
- Pike, C. K., & Hudson, W. W. (1998). Reliability and measurement error in the presence of homogeneity. *Journal of Social Service Research, 24*(1–2), 149–163. https://doi.org/10.1300/J079v24n01_07
- Quintana, S. M. (1994). A model of ethnic perspective taking ability applied to Mexican-American children and youth. *International Journal of Intercultural Relations, 18*(4), 419–448. [https://doi.org/10.1016/0147-1767\(94\)90016-7](https://doi.org/10.1016/0147-1767(94)90016-7)
- Quintana, S. M. (1998). Children's developmental understanding of ethnicity and race. *Applied and Preventive Psychology, 7*(1), 27–45. [https://doi.org/10.1016/S0962-1849\(98\)80020-6](https://doi.org/10.1016/S0962-1849(98)80020-6)
- Robinson-Cimpian, J. P., Lubienski, S. T., Ganley, C. M., & Copur-Gencturk, Y. (2014). Teachers' perceptions of students' mathematics proficiency may exacerbate early gender gaps in achievement. *Developmental Psychology, 50*(4), 1262–1281. <https://doi.org/10.1037/a0035073>
- Schmader, T. (2002). Gender identification moderates stereotype threat effects on women's math performance. *Journal of Experimental Social Psychology, 38*(2), 194–201. <https://doi.org/10.1006/jesp.2001.1500>
- Schmader, T., Hall, W., & Croft, A. (2015). Stereotype threat in intergroup relations. In M. Mikulincer, P. R. Shaver, J. F. Dovidio, & J. A. Simpson (Eds.), *APA handbook of personality and social psychology, Vol. 2. Group processes* (pp. 447–471). American Psychological Association. <https://doi.org/10.1037/14342-017>
- Schmader, T., Johns, M., & Forbes, C. (2008). An integrated process model of stereotype threat effects on performance. *Psychological Review, 115*(2), 336–356. <https://doi.org/10.1037/0033-295X.115.2.336>
- Seibt, B., & Förster, J. (2004). Stereotype threat and performance: How self-stereotypes influence processing by inducing regulatory foci. *Journal of Personality and Social Psychology, 87*(1), 38–56. <https://doi.org/10.1037/0022-3514.87.1.38>
- Sekaquaptewa, D., & Thompson, M. (2003). Solo status, stereotype threat, and performance expectancies: Their effects on women's performance. *Journal of Experimental Social Psychology, 39*(1), 68–74. [https://doi.org/10.1016/S0022-1031\(02\)00508-5](https://doi.org/10.1016/S0022-1031(02)00508-5)
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Houghton-Mifflin.
- Shah, J., Higgins, E. T., & Friedman, R. S. (1998). Performance incentives and means: How regulatory focus influences goal attainment. *Journal of Personality and Social Psychology, 74*(2), 285–293. <https://doi.org/10.1037/0022-3514.74.2.285>
- Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology, 35*(1), 4–28. <https://doi.org/10.1006/jesp.1998.1373>
- Stahl, T., Van Laar, C., & Ellemers, N. (2012). The role of prevention focus under stereotype threat: Initial cognitive mobilization is followed by depletion. *Journal of Personality and Social Psychology, 102*(6), 1239–1251. <https://doi.org/10.1037/a0027678>
- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *The American Psychologist, 52*(6), 613–629. <https://doi.org/10.1037/0003-066X.52.6.613>
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test-performance of African-Americans. *Journal of Personality and Social Psychology, 69*(5), 797–811. <https://doi.org/10.1037//0022-3514.69.5.797>
- The World Bank. (2022). *School enrollment, secondary, female (% net) - North America*. The World Bank Data. <https://data.worldbank.org>
- Teferra, D., & Altbach, P. G. (2004). African higher education: Challenges for the 21st century. *Higher Education, 47*(1), 21–50. <https://doi.org/10.1023/B:HIGH.0000009822.49980.30>
- Ugandan Bureau of Statistics. (2017). Statistical Abstract. https://www.ubos.org/wp-content/uploads/publications/03_20182017_UBOS_Statistical_Abstract.pdf
- Ugandan Bureau of Statistics. (2019). *Gender issues in Uganda: An analysis of gender-based violence, asset ownership and employment*. https://www.ubos.org/wp-content/uploads/publications/03_2019_UBOS_Gender_Issues_Report_2019.pdf
- Uguanyi, C. S., & Nwagbo, C. R. (2013). Influence of gender stereotype threats on undergraduate students' achievement in mathematics and science. *Journal of Education and Practice, 4*(28), 80–85.
- United Nations Development Program. (2020). *Human Development Reports*. <https://hdr.undp.org/data-center/the-matic-composite-indices/gender-inequality-index#/indicies/GII>

- Verkuyten, M., Kinket, B., & van der Wielen, C. (1997). Preadolescents' understanding of ethnic discrimination. *The Journal of Genetic Psychology, 158*(1), 97–112. <https://doi.org/10.1080/00221329709596655>
- Walton, G. M., & Cohen, G. L. (2003). Stereotype lift. *Journal of Experimental Social Psychology, 39*(5), 456–467. <https://doi.org/10.1016/S0022-10310300019-2>
- Wasserberg, M. J. (2017). Stereotype threat effects on African American and Latina/o elementary students tested together. *Journal for Multicultural Education, 11*(1), 51–60. <https://doi.org/10.1108/JME-03-2016-0024>
- Zhang, Y., & Mittal, V. (2007). The attractiveness of enriched and impoverished options: Culture, self-construal, and regulatory focus. *Personality & Social Psychology Bulletin, 33*(4), 588–598. <https://doi.org/10.1177/0146167206296954>