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Students' Sense of Belonging to Their Academic Community

Associations with the Gender Brilliance Stereotype, Field-Specific Ability Beliefs, and Growth Mindsets

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Abstract

Despite a general increase in awareness of gender stereotypes, they continue to persist. The gender brilliance stereotype portrays men as more brilliant than women. Furthermore, the field-specific ability hypothesis suggests that certain subjects, such as mathematics or physics, are perceived to require brilliance for success, resulting in a low representation of women in these domains, with many of them feeling like they do not belong. Researchers have proposed that the gender brilliance stereotype, when combined with field-specific ability beliefs, contributes to female students' low sense of belonging. However, this theory has yet to be investigated. Additionally, researchers have proposed that the relationship between students' field-specific ability beliefs and sense of belonging may be mediated by their growth mindsets. To resolve uncertainties in existing research and identify potential avenues for future interventions, a 26-item questionnaire was administered to 614 participants, comprising three separate scales and the Implicit Association Test (IAT). Of the participants, 67.3% identified as female. The findings suggest that field-specific ability beliefs negatively affect female, but not male, students' sense of belonging. However, this relationship is neither moderated by the gender brilliance stereotype nor mediated by growth mindsets. Furthermore, the results indicate a negative correlation between field-specific ability beliefs and growth mindsets. The findings suggest that field-specific ability beliefs are likely to be crucial indicators of female students' sense of belonging and should be a focus of future interventions. Combining interventions aimed at brilliance beliefs and growth mindsets could significantly enhance the effectiveness of these initiatives. Additionally, future research should prioritise the development of valid implicit gender stereotype measures.

Keywords: gender brilliance stereotype, field-specific ability beliefs, growth mindset, sense of belonging, university students

Contents

Students' Sense of Belonging to Their Academic Community: Associations with the Gender Brilliance Stereotype, Field-Specific Ability Beliefs, and Growth Mindsets

"I hadn't been aware that there were doors closed to me until I started knocking on them." This sentiment, shared by Gertrude B. Elion, a prominent biochemist and pharmacologist of the 20th century, resonates with the challenges faced by women in academia during her era (Corless, 2019). She stands as one of the few female role models from that time. Have these adversities changed since then, or do women still encounter "closed doors" in professional settings? Furthermore, is gender segregation solely confined to scientific fields such as biochemistry or pharmacology, as experienced by Gertrude B. Elion? The latter question can be negated, as several studies demonstrate women's underrepresentation in various fields beyond the sciences, such as economics and philosophy (Leslie et al., 2015). The contemporary evidence points to ongoing gender segregation, with female students frequently experiencing feelings of alienation in their fields despite their actual abilities (e.g., Good et al., 2012). The Gender Social Norms Index (GSNI) is a review of global data which highlights continuing challenges for women in their professional journeys. It reflects biases held by 85% of the population and indicates that 90% of men and women hold some form of bias against women. Nearly half of the global population believes that men are better political leaders and two out of five people believe that men make better business executives (United Nations Development Programme, 2023). In 2020, only 10 out of 193 heads of government worldwide were female. Additionally, women held less than 24% of parliamentary seats worldwide and less than 6% of CEO positions in S&P 500 companies, which are the 500 largest publicly traded companies in the United States (United Nations Development Programme, 2020). Finally, by 2023, women constituted only 33.8% of board members in the EU's largest publicly listed companies (European Commission, 2024). The limited presence of women in high-ranking roles reflects a widespread societal problem that is also evident in education, where female students often deal with distinct challenges and uncertainties (Deiglmayr et al., 2019; Steffens et al., 2010). Negative stereotypes about women may contribute to a low sense of belonging, potentially leading to higher dropout rates or scarce representation in certain fields. This thesis will delve into a critical stereotype: the *gender brilliance stereotype*, which posits that men are more often born with innate brilliance or high intellectual ability than women (e.g., Storage et al., 2020). Furthermore, certain fields are perceived to necessitate innate brilliance for success (e.g., mathematics), correlating with a lower representation of women in these fields (e.g., Leslie et al., 2015). Identifying and

understanding the mechanisms underlying women's diminished sense of belonging in universities is crucial for developing intervention programmes that cultivate a more inclusive environment for women in specific disciplines. Hence, this thesis will explore factors associated with students' sense of belonging, focusing on the roles of field-specific ability beliefs, intelligence mindsets, and the gender brilliance stereotype.

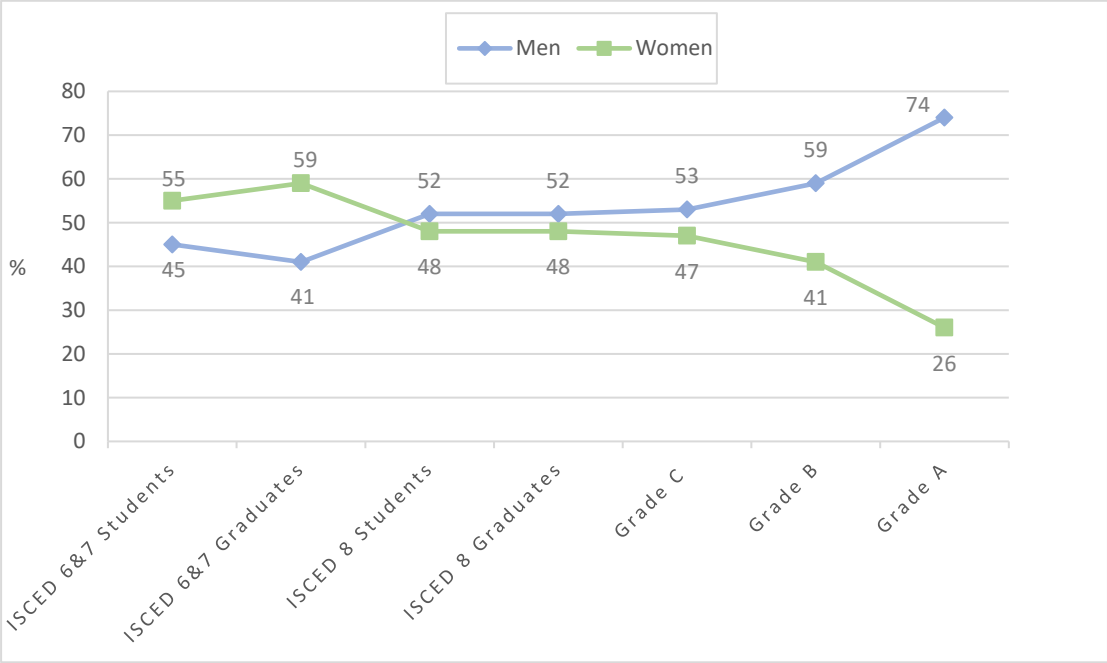
Theoretical Overview

Gender Disparity in Universities

Although women are overrepresented in tertiary education, their representation declines as they progress through scientific careers. In 2022, female students constituted over half (54.2%) of the student population at Austrian universities (Bundesministerium für Bildung, Wissenschaft und Forschung, 2023). However, despite this strong presence, fewer women were enrolled in doctoral programmes (45.7%). Furthermore, women accounted for only 44.7% of post-docs (grade C academic staff), 38.1% of senior researchers (grade B academic staff), and just 30.7% of professors (grade A academic staff) at Austrian universities (Bundesministerium für Bildung, Wissenschaft und Forschung, 2023). This pattern is consistent across the EU, where women also earn more tertiary degrees than men but are less likely to advance to the higher education levels (European Commission, 2021; eurostat, 2023). Figure 1, which is based on 2018 data from the European Commission (2021), illustrates these statistics. It shows that, within the EU, while women made up the majority of bachelor's and master's students (55%) and graduates (59%), their representation decreased at higher academic levels: 48% of female doctoral students and graduates were women, followed by 47% of postdocs, 41% of senior researchers, and only 26% of professors.

Figure 1

The Proportion of Men and Women Engaged in a Typical Academic Career, Students and Academic Staff, EU-28 in 2018[1]



Note. ISCED 6 and 7 correspond to bachelor's and master's students and graduates, and ISCED 8 to doctoral-level students and graduates. Grade C represents postdocs, grade B includes senior researchers, and grade A stands for full professorships.

The phenomenon, whereby the number of women declines from student enrolment to high-level scientific positions, as shown in Figure 1, is referred to as the *leaky pipeline* (Steffens et al., 2010). This phenomenon demonstrates that women encounter greater difficulties in pursuing certain careers. The barrier which increasingly prevents women from persevering as they ascend the hierarchy is referred to as the *glass ceiling* (Wright & Baxter, 2000). The glass ceiling implies that the existing inequality cannot be explained by any other job-related characteristics (e.g., cognitive differences) between employees.

Alongside the leaky pipeline, subject-related differences have also been identified at university level. For instance, in Austria, 78.4% of students enrolled in educational science in 2023 were female, whereas women comprised only 29.4% of the student population in

[1] The newest edition of the She Figures report is scheduled for release in 2024 (European Commission, 2024).

physics and only 34.2% in mathematics (Bundesministerium für Bildung, Wissenschaft und Forschung, 2023). According to the European Commission (2019), similar figures are observed in the EU. These show that for computer science studies, females are a minority, accounting for only 16.7% of students (Eurostat, 2018). Furthermore, female doctoral graduates were overrepresented in educational fields (68% of all graduates) and health and welfare (60%), while they were underrepresented in information and communication technologies (21%) as well as engineering, manufacturing, and construction (29%). This segregation persists despite the trivial and negligible gender differences observed in mathematics and science performances (Lindberg et al., 2010; Spelke et al., 2005). More precisely, the average gender difference in mathematics test scores among students aged 14 to 16 is often minimal and inconsequential (Else-Quest et al., 2010). Furthermore, a meta-analysis identified gender as the least significant of nine predictors of mathematics performance, with other factors such as the mother's education or the quality of the home learning environment having a greater influence (Lindberg et al., 2010). A review of 46 meta-analyses also supports the *gender similarities hypothesis*, which posits that men and women exhibit similar psychological attributes and are more alike than different (Hyde, 2005). While there are exceptions, such as gender differences in certain motor behaviours (e.g., throwing distance) and certain aspects of sexuality and aggression, these do not explain the lower representation of women in certain disciplines (Hyde, 2005; Lindberg et al., 2010). This suggests that there are other factors preventing women from entering certain fields (Steffens et al., 2010). Researchers studying the glass ceiling phenomenon have identified a potential explanation: Negative stereotypes about women may act as barriers to women pursuing or continuing certain careers (e.g., Ertl et al., 2017).

Gender Stereotypes

This thesis refers to gender as a social construct. It is constructed through psychological, cultural, and social means, meaning that it exists through our behaviour and our interactions (West & Zimmerman, 1987). Gender stereotypes are cognitive structures that reflect culturally shared opinions and expectations, as well as individual beliefs about the characteristics of men and women (Eckes, 2008). These stereotypes, as described by Eckes (2008), consist of a descriptive and a prescriptive component. The descriptive part encompasses traditional beliefs about the attributes and behaviours of women and men, whereas the prescriptive form concerns beliefs about how they should behave. The two parts of gender stereotypes bring forth different rules. For instance, women "are" and "should be"

understanding and emotional, while men "are" and "should be" dominant and determined. Exceptions to these rules do not alter the underlying stereotype (Eckes, 2008).

On a more basic level, the human mind is naturally inclined to categorise and sort individuals into specific groups according to certain traits (Aronson et al., 2020; Brewer, 2007). A stereotype is defined as a "generalization about a group of people in which identical characteristics are assigned to virtually all members of the group, regardless of actual variation among the members" (Aronson et al., 2020, p. 459). It is common for individuals to consider the characteristics (e.g., age, gender, etc.) and past actions of those belonging to a specific group when forming a perception of that group. This process leads to the prominence of these concepts in their minds (Greenwald & Banaji, 1995). Consequently, stereotype-consistent information is given greater consideration and attention (Aronson et al., 2020). This social characterisation concerning diverse group characteristics allows for the reduction of processing capacity when encountering individuals where information is incomplete (Ito & Urland, 2003).

Even seemingly positive stereotypes, such as assuming a person possesses favourable attributes due to their group membership, may have drawbacks: Overgeneralisation leads to expectations, for instance the belief that all Asians are intelligent and successful, which fail to account for individual differences (Elliot & Dweck, 2013). As an illustration, if an Asian student were experiencing academic difficulties, the teacher might be unaware of this due to the assumption that they should excel academically (Thompson & Kiang, 2010). Furthermore, individuals who are treated differently due to stereotypes that categorise them into specific groups may internalise these negative attributes, thereby reinforcing the stereotype. This phenomenon is referred to as a *self-fulfilling prophecy*, which Merton (1948) defined as: "In the beginning, a false definition of the situation evoking a new behaviour which makes the originally false conception come true". For instance, if a teacher believes that a particular student is lacking in intelligence due to a stereotype portraying them negatively, they may avoid engaging the student in class discussions or dismiss their responses. Over time, this lack of encouragement may cause the student to underperform, thereby reinforcing the teacher's initial belief and the student's internalisation of the stereotype (Aronson et al., 2020).

A seminal study conducted by Robert Rosenthal and Lenore Jacobson (1968) illustrated this effect. When teachers were told that certain students, selected at random, were expected to show significant intellectual growth, these students showed greater IQ improvement compared to their peers, despite no actual differences in ability (Rosenthal & Jacobson, 1968). Subsequent studies (e.g., Sorhagen, 2013; Weaver et al., 2016) have replicated this effect,

suggesting that students in the "better" group receive more personal attention, encouragement, and opportunities, which enhances their performance (Brophy, 1983; Retelsdorf et al., 2015; Rosenthal, 1994).

The psychological phenomenon of *stereotype threat* occurs when individuals who are stigmatised perform worse on a task due to the pressure of a negative stereotype regarding their group's performance. The phenomenon was first introduced by Steele and Aronson (1995), who established that African American participants demonstrated lower standardised test performance when reminded of negative stereotypes about their group's intellectual aptitude by framing the test as a diagnostic measure of intellectual ability. When the same test was taken but not presented as a diagnostic of ability, they performed at the same level as their Caucasian peers. A few years later, another study with a similar design was conducted, which compared the performances of women and men when subjected to stereotype threat (Spencer et al., 1999). Spencer et al. (1999) demonstrated that women in the stereotype threat condition exhibited significantly lower performance than usually equally performing men, as measured by previous SAT scores. This phenomenon has since become a widely researched topic in social psychology (Hively & El-Alayli, 2014; Pennington et al., 2016; Woodcock et al., 2012). For example, Carlana (2019) demonstrated that women's performance is significantly lower than that of their male colleagues when their teachers foster strong gender-stereotypical mindsets. Furthermore, women display lower levels of confidence in domains that are typically associated with masculinity (Carlana, 2019). The addition of stereotypical messages whilst administering tests affects the performance of university students, and this effect is more pronounced among female students (Pavlova et al., 2014). In the field of sports, female athletes who were informed of potential gender differences during the task performed worse than female athletes who were told that there were no gender differences (Hively & El-Alayli, 2014). Even minor cues can activate stereotype threat, for instance, women's mathematical performance was found to be significantly reduced when they were asked to indicate their gender before taking a test (Danaher & Crandall, 2008). It can be concluded that stereotype threat can affect any group based on race, ethnicity, gender, or socioeconomic status (Hively & El-Alayli, 2014; Woodcock et al., 2012).

In addition to the immediate impairment of performance, it is proposed that a long-term effect of stereotype threat is *domain disidentification* (Steele, 1997; Woodcock et al., 2012). This occurs when the threat becomes chronic, such as for women working in male-oriented environments. In this case the affected individual removes the domain as a self-identity (Steele, 1997). They protect themselves through the disidentification process by not caring

about the field in relation to their self. However, disidentification can have a detrimental effect on long-term motivation. It is particularly harmful for individuals who have already had to overcome difficulties entering a field where they are a minority and have already managed to identify themselves with a field where they do not feel entirely welcome. Steele (1997) proposed, that disidentified individuals are likely to underperform and not persist in the domain. It can be concluded that social structures and stereotypes are negatively affecting the academic identities and performances of significant portions of the population and need to be further examined.

However, assessing stereotypes can be challenging. It is possible that individuals may be unaware of the existence of a stereotype, may not endorse it, or may be reluctant to admit their adherence. The Implicit Association Test has been extensively employed to assess stereotypes. Despite the controversy surrounding the IAT's usage, with several researchers questioning its validity and reliability (e.g., Blanton et al., 2015; Schimmack, 2021a, 2021b), to date it remains a widely used instrument, with evidence supporting its construct and predictive validity (Kurdi et al., 2019; Nosek et al., 2007). As a result, it is an appropriate choice for investigating implicit stereotypes, which continue to shape societal beliefs and behaviours.

Transitioning from the broader context of stereotypes, it becomes crucial to examine how these phenomena affect gender perceptions. Specifically, one way gender stereotypes manifest is through the categorisation of occupations by gender, leading individuals to develop preconceived notions about the qualities required for specific jobs. For instance, female attributes and associated jobs may be associated with nurturing, kindness, and communion, while male attributes may be associated with strength, competitiveness, and agency (Aronson et al., 2020; Cejka & Eagly, 1999; Eckes, 2008). A relevant mechanism could potentially explain this phenomenon. The *social role theory of sex differences and similarities* posits that differences in the observed behaviour of men and women form the basis for gender roles, with individuals adapting their behaviour to align with these observations, thereby reinforcing the roles (Eagly et al., 2020; Van Lange et al., 2011). In other words, humans observe the behaviours of men and women and assume that their traits align with these actions. For example, seeing someone study in a library may lead to the assumption that they are hardworking (Eagly et al., 2020). When certain groups, such as men or women, are frequently seen in particular roles, the traits associated with those roles are assumed to be typical of the group and over time, these observations become shared societal expectations (Eagly et al., 2020). Furthermore, individuals who do not conform to their social roles are often treated

with hostility and rejected (Eckes, 2008). For instance, given that girls are socialised to be more altruistic and communal than boys, they are often not considered for STEM fields (STEM; Science, Technology, Engineering, Mathematics) which are culturally depicted in ways that seem incompatible with these characteristics (e.g., scientists' work is often shown as solitary, Diekman et al., 2017). The process, where individuals make mental comparisons between themselves and the typical member of a group that influence their decisions, is referred to as *self-to-prototype matching* (McPherson et al., 2018). The perceived mismatch of characteristics may consequently reduce girls' enthusiasm for pursuing STEM careers (e.g., Schmader, 2023).

Although a review of public opinion polls in the United States conducted between 1946 and 2018 revealed a significant decline in gender stereotypes that favoured men, alongside an increased belief in equal competence between men and women (Eagly et al., 2020), gender stereotypes remain a prevalent phenomenon (Storage et al., 2020). They are highly resistant to change, which is often explained by their automatic and implicit nature (Ashmore & Del Boca, 1979; Greenwald & Banaji, 1995). Furthermore, they manifest in different ways. Past research has explored the development and implications of gender stereotypes in specific domains, such as mathematics (*mathematics gender stereotype*; e.g., Cimpian et al., 2016; Cvencek et al., 2011, Heyder et al., 2019) or science (*gender science stereotype*; e.g., Nosek et al., 2009). However, a domain-general stereotype about the intellectual abilities of men and women also exists, specifically the gender brilliance stereotype.

The Gender Brilliance Stereotype

A common assumption is that innate brilliance or high intellectual ability is not only unequally distributed among individuals, but also among social groups. More specifically, it is often assumed that men are more likely to be innately brilliant than women (Storage et al., 2016, 2020; Zhao et al., 2022). This pervasive belief that exceptional intellectual ability (equivalent to "innate intelligence" or "brilliance") is predominantly a male quality rather than a female one is referred to as the gender brilliance stereotype (Bian et al., 2017; Storage et al., 2016, 2020; Zhao et al., 2022). In the examination of this stereotype, Storage et al. (2020) reached the conclusion that it differs from other gender stereotypes in two key aspects. Unlike other stereotypes (e.g., regarding mathematical or verbal abilities) the gender brilliance stereotype is not domain-specific which may enhance its power and harmful effects (Storage et al., 2020). Secondly, individuals holding this stereotype may believe that men and women are equally intelligent in general, yet still believe that men are more innately brilliant

and thus agree with the gender brilliance stereotype. Therefore, the gender brilliance stereotype is a distinct phenomenon which requires separate consideration.

The notion that brilliance is associated with men has been subjected to extensive research in recent years. One significant source of evidence supporting the occurrence of the gender brilliance stereotype is derived from individuals' self-reported perceptions of others they know well. For example, parents are two and a half times more likely to search online for information about their sons being "gifted" than for their daughters (Stephens-Davidowitz, 2014). Moreover, parents rated their son's intelligence significantly higher than their daughter's (Furnham et al., 2002). Several researchers have identified that, by the age of 6 or 7, children are more likely to associate brilliance with men than with women, and the strength of this stereotype increases over time (Bian et al., 2017; Zhao et al., 2022). A connection has also been found between children's endorsement of the gender brilliance stereotype and their parents' attitudes (Zhao et al., 2022). Another study revealed that women are only half as likely as men to receive excellent postdoctoral letters of recommendation that include phrases such as "brilliant" or "genius" (Dutt et al., 2016). Job descriptions that mention intellectual ability, as opposed to high levels of motivation, result in women being referred by 38.3% less frequently than men (Bian et al., 2018). Storage et al. (2016) found that on RateMyProfessors.com, students employ terms such as "brilliant" and "genius" two to three times more frequently when describing male instructors compared to their female counterparts. These findings are significant because they suggest the existence of a gender brilliance stereotype among a large sample. It can be reasonably inferred that the gender brilliance stereotype will influence the decision of individuals to continue in a particular field and pursue a higher degree.

The gender brilliance stereotype also has implications in academic settings: Professional contexts where brilliance is valued also lead to higher levels of prejudice against women (Bian et al., 2018), as well as higher impostor feelings among women, in addition to a lower sense of belonging and lower *self-efficacy* (Muenks et al., 2020; Muradoglu et al., 2022; Vial et al., 2022). Self-efficacy is defined as the extent to which individuals believe they can successfully accomplish tasks using their own abilities (Bandura, 1977). Emphasising brilliance as essential for success in a career also tends to reduce women's interest in that career (Bian et al., 2018). This is partly because it leads them to perceive that they do not fit in with others pursuing that career because the gender brilliance stereotype does not associate brilliance with women, leading them to feel they do not fit in with others pursuing that career (Bian et al., 2018).

It is important to raise awareness of the gender brilliance stereotype and to act against it. For instance, Buckley et al. (2022) conducted a study in which girls were more likely to choose other women as “really, really smart” after being exposed to stories about female scientists. In this study, 80% of the control group chose men over women as “really, really smart”. In the experimental group, a positive association between women and intellectual ability appears to have been created (Buckley et al., 2022). In addition to the gender brilliance stereotype negatively affecting women, Verniers and Martinot (2015) found that the more female students are perceived as hardworking in school, the less they are seen as being able to succeed in the future. Simultaneously, women are more frequently depicted as hardworking than as possessing innate ability (Kessels, 2015).

Addressing the gender brilliance stereotype is crucial, as research shows that changing perceptions can positively influence how women are viewed in terms of intellectual ability. This stereotype is linked to the belief that certain fields require innate talent for success (Hannak et al., 2023; Jenifer et al., 2023).

Field-Specific Ability Beliefs

Field-specific ability beliefs (FSAB) or *brilliance beliefs* are defined as an individual’s beliefs about the extent to which high intellectual ability or brilliance is necessary for success in a particular field, subject, or context (Hannak et al., 2023; Jenifer et al., 2023). In certain fields, success seems to hinge on innate brilliance, with factors such as effort and hard work perceived as insufficient (Muradoglu et al., 2023).

The FSAB hypothesis, initially proposed by Leslie et al. (2015), posits that domains differ in their emphasis on raw intellectual talent. These brilliance beliefs are widely held and shared by individuals in a field as well as the wider public (Heyder et al., 2020; Meyer et al., 2015). This perspective has a negative influence on certain groups who are perceived as having lower intellectual ability. A notable example is its effect on women, especially when combined with the gender brilliance stereotype, which associates brilliance more strongly with men than with women (Bian et al., 2017; Bian et al., 2018; Storage et al., 2020). Furthermore, women’s academic success is often perceived as being contingent upon hard work and effort (Kessels, 2015). Leslie et al. (2015) found that field-specific ability beliefs were significantly correlated with female representation across academic fields: the more a field valued brilliance, the fewer the female Ph.D.’s.

Studies have demonstrated, that field-specific ability beliefs are more pronounced in fields that place a greater emphasis on mathematical skills, such as mathematics and physics, than in

fields that do not (Asbury et al., 2023; Deiglmayr et al., 2019). However, other research has demonstrated that this phenomenon is not exclusive to STEM fields, but is also shown in other disciplines, such as economics and philosophy (Leslie et al., 2015). It appears that the variability of field-specific ability beliefs between and within STEM and social sciences and humanities is considerable (Asbury et al., 2023; Leslie et al., 2015; Meyer et al., 2015). Consequently, it is essential to include all subjects in future analyses. Finally, brilliance beliefs are closely interlinked with intelligence.

Intelligence Mindsets

The attitude of an individual towards their own intelligence is considered to be of crucial importance for their personal development (Scherr et al., 2017). Dweck et al. (1995) distinguished between two fundamentally different attitudes that individuals can have toward their intelligence: Those with a *growth mindset* (also known as the *incremental theory*) believe that their intelligence is malleable, allowing for positive self-improvement and sustainable development. They espouse the view that their abilities and talents can be enhanced through hard work and learning, viewing challenges as opportunities for personal growth, with setbacks seen as a natural part of the learning process. They view mistakes as an indication of an inappropriate approach to the problem or a lack of effort (Good et al., 2003). A *fixed mindset* (also known as *entity theory*) assumes that intelligence is a fixed trait that cannot be altered. Those who hold this perspective believe that their abilities and talents are fixed and cannot be further developed. They tend to avoid challenges and view mistakes as personal failures rather than opportunities for learning. This negative mindset creates a cycle of self-blame and fear, hindering individuals from effectively harnessing and developing their skills (Good et al., 2003; Kroeper et al., 2022). Furthermore, intelligence mindsets shape behaviour within academic contexts. Students with a fixed mindset are more avoidant of challenging tasks compared to those with a growth mindset (Yeager & Dweck, 2012). A growth-oriented mindset has been demonstrated to have positive short- and long-term effects on students' test performance and academic achievement (Blackwell et al., 2007). Conversely, students in scientific disciplines who are instructed by individuals with a fixed mindset experience greater psychological vulnerability, feel less connected, and exhibit poorer performance (Muenks et al., 2020). Additionally, Canning et al. (2019) discovered that faculty mindset beliefs, meaning the mindset inherent among faculty, tend to be more predictive of student achievement and motivation than other faculty characteristic, such as gender, age, ethnicity, or teaching experience. Verniers and Martinot (2015) demonstrated

that children perceive girls' intelligence as less malleable compared to boys'. This perception suggests that children believe girls have limited potential for intellectual development, potentially influencing their ability to achieve high performance. Moreover, the study found that as female students demonstrated greater diligence, they were perceived to have less potential for future achievement. Interestingly, this correlation was not observed among male students. The authors recommended replicating the study with a larger and more diverse sample to enhance the generalisability of the findings. Clark et al. (2021) conducted a study at a technical university, revealing that in scientific disciplines fostering a fixed intelligence mindset, women often perceive heightened sexism, which negatively affects their self-efficacy and sense of belonging, contributing to increased dropout rates among female students. The study's findings suggest a direct correlation between sense of belonging, stereotypes, and intelligence mindsets. Further research across diverse study fields would be valuable to extend the generalisability of these findings. Other research has indicated that women may be more susceptible to the adverse effects of a fixed mindset on mathematical ability (Dweck 2007; Good et al. 2012). Additionally, studies exploring gender differences in fixed versus growth mindsets have yielded mixed results. Although some research indicates that an individual's gender does not significantly shape their mindset (Yan et al., 2014), others have found that men tend to exhibit more fixed mindsets in comparison to women (Spinath et al., 2003). A deeper understanding of stereotype attitudes, particularly when combined with intelligence mindsets, may present opportunities for proactive measures. Teaching parents that intelligence is changeable and malleable has shown indirect positive effects on their children's attitudes towards gender differences and intelligence, ultimately enhancing children's self-efficacy (Lee et al., 2022). Similarly, adopting a perception of intelligence as malleable among students led to reduced anxiety, increased self-efficacy, and enhanced self-confidence in approaching new tasks (Samuel & Warner, 2021). Aronson et al. (2002) observed significant improvements in students' grades following their growth mindset intervention.

The belief in a fixed intelligence that cannot be improved shares similarities with the FSAB hypothesis, as both theories focus on the requirement of inherent ability. However, the FSAB hypothesis also posits that the perception of how much success depends on inherent intelligence varies between fields (Leslie et al., 2015). Furthermore, Asbury et al. (2023) demonstrated that field-specific ability beliefs and fixed mindset are two distinct constructs, which, although comparable, are certainly distinguishable. A number of studies have identified that fixed mindsets have a negative effect on a range of variables, including endorsement of achievement goals, performance, motivation, persistence, and enjoyment

(Blackwell et al., 2007; De Castella & Byrne, 2015; Dinger & Dickhäuser, 2013; Li & Bates, 2019; Mueller & Dweck, 1998; Rattan et al., 2012). Deiglmayr et al. (2019) examined the correlation between a person's sense of belonging and their brilliance beliefs but argued that there might be a mediating factor: mindsets. Students who hold the belief that their own intelligence is fixed and unchangeable may be more prone to feeling insecure and not belonging (Deiglmayr et al., 2019). These findings could further explain why fewer women are represented in fields considered difficult or demanding. Despite equal competence and intelligence, gender-specific biases and mindsets can reduce motivation and self-assurance, deterring many women from pursuing certain professions and negatively affecting their sense of belonging.

Sense of Belonging

The concept of a *sense of belonging* is defined as the feeling of belonging to a particular group or having positive relationships with others, which is a fundamental human need (Baumeister & Leary, 1995; Walton & Cohen, 2011). In an academic context, Good et al. (2012) posited that an individual's sense of belonging is strongly connected to their intention to pursue or remain in a particular field. They explained that an individual's goal is to feel a complete sense of belonging, being valued and accepted by their peers. A sense of belonging can positively affect performance, self-worth, achievement motivation, well-being, and retention in academic environments. Conversely, a reduction in the sense of belonging may result in individuals opting out and pursuing a different career path (Good et al., 2012; Höhne & Zander, 2019; Pittman & Richmond, 2007; Walton & Cohen, 2011).

Negative aptitude-related beliefs, such as the gender brilliance stereotype, can convey the message that individuals from certain groups are less valuable, suitable, or competent. This can lead them to question their fit in an academic context and, consequently, feel like they do not belong (Good et al., 2012; Smith et al., 2013; Walton et al., 2015; Walton & Cohen, 2011). A study by Cheryan et al. (2009) demonstrated that exposure to stereotypical objects in a computer science classroom diminishes women's sense of belonging and interest in the field. This experience of discouragement can evoke feelings of insecurity, fear, or loneliness related to one's sense of belonging, adversely affecting academic achievement (Walton et al., 2015), career aspirations (Cundiff et al., 2013), and persistence (Woodcock et al., 2012). Furthermore, it may also negatively affect psychological well-being (Gopalan et al., 2022; Walton & Cohen, 2011), self-esteem (Woodcock et al., 2012), and relationships with peers or professors (Mendoza-Denton et al., 2002). Consequently, students with a diminished sense of

belonging may choose to leave their current domain (Banchefsky et al., 2019; Good et al., 2012). Furthermore, students may disidentify themselves from their domain as an adaptation strategy (see p. 10; domain disidentification), which negatively affects career motivation and often results in students avoiding certain careers (Cundiff et al., 2013; Schuster & Martiny, 2017). On a more positive note, Good et al. (2012) demonstrated that teaching a growth mindset in relation to mathematical intelligence protected women's sense of belonging from negative stereotypes and encouraged them in their intention to pursue mathematics.

In conclusion, students' sense of belonging to their academic community is an essential element that can influence their success and persistence. It can be concluded that the intelligence mindsets and brilliance beliefs held by students significantly influence their academic careers. The current body of research indicates that the concepts of growth mindsets and field-specific ability beliefs are interlinked (Deiglmayr et al., 2019; Maranges et al., 2023). Furthermore, studies have identified the negative effects of the gender brilliance stereotype when combined with brilliance beliefs (e.g., Hannak et al., 2023; Meyer et al., 2015). While many scientists have theoretically discussed the connection between these two variables, no empirical studies have yet incorporated both variables in their research. This gap highlights the need for closer analysis. A comprehensive understanding of the effects of these connections on students' sense of belonging is necessary to establish a foundation for the implementation of targeted interventions.

Purpose of the Present Study

Drawing from current research, restrictive gender-specific biases, such as the gender brilliance stereotype, could explain why women continue to be underrepresented in numerous fields to this day (Cimpian & Leslie, 2017). A considerable number of studies have been conducted to further the understanding of the implications of stereotypes within academic fields. On the one hand, there is the gender brilliance stereotype, which falsely assumes that innate brilliance is more commonly associated with males than females (e.g., Bian et al., 2017; Storage et al., 2016, 2020; Zhao et al., 2022). On the other hand, field-specific ability beliefs define the belief about the degree to which intellectual talent or brilliance is necessary for success in a particular field, subject, or context (Hannak et al., 2023; Jenifer et al., 2023). Women affected by these stereotypes may consider themselves unsuitable, experience a lower sense of belonging, and consequently choose not to pursue or persist in these study paths (Bian et al., 2018; Cimpian & Leslie, 2017; Thébaud & Charles, 2018).

Inconsistencies in Findings on Gender Differences and the Correlation Between Field-Specific Ability Beliefs and Growth Mindsets

This research aims to examine the extent of gender differences in intelligence mindsets, field-specific ability beliefs, and the gender brilliance stereotype across fields characterised by high, medium, or low field-specific ability beliefs (**Q1**). Previous studies show mixed results regarding gender differences in mindsets. While Yan et al. (2014) suggest that gender does not significantly influence mindset, Spinath et al. (2003) found that men tend to exhibit more fixed mindsets than women. In line with Spinath et al. (2003), this thesis hypothesises that within each FSAB Group, women will exhibit higher growth mindsets than men, reasoning that women may need to adopt a growth mindset more strongly to overcome gender stereotypes (**H1a**).

Furthermore, while Deiglmayr et al. (2015) reported higher field-specific ability beliefs among women, Meyer et al. (2015) found the opposite, with men showing higher brilliance beliefs. This thesis posits that women may be reminded more frequently by those around them that certain fields require brilliance, and that the effort often attributed to women may not be sufficient (Kessels, 2015), leading them to internalise and adopt this belief themselves. Therefore, in line with Deiglmayr et al. (2015), this research expects that women will exhibit higher field-specific ability beliefs than men within each FSAB Group (**H1b**).

Additionally, research on the gender brilliance stereotype has not yielded conclusive results regarding the question of whether women or men are more likely to adhere to this stereotype. Only Storage et al. (2020) identified a tendency for women to hold this belief to a greater extent. Based on these findings, and the theory that women may internalise and develop a stronger gender brilliance stereotype due to more frequent experiences of bias, this research posits that women will exhibit a higher gender brilliance stereotype than men within each FSAB Group (**H1c**).

Lastly, this research hypothesises that field-specific ability beliefs and growth mindsets are negatively correlated, meaning that individuals who strongly believe that a certain subject requires brilliance tend to have a lower growth mindset (**H1d**). Maranges et al. (2023) demonstrated this negative relationship in their study.

As noted previously, there seems to be considerable variability in field-specific ability beliefs both between and within STEM fields and the social sciences and humanities (Asbury et al., 2023; Leslie et al., 2015; Meyer et al., 2015). Therefore, it is important to include students from all academic disciplines in this analysis.

The Moderating Role of the Gender Brilliance Stereotype

The FSAB hypothesis posits that gender segregation in academia stems from two cultural beliefs: (1) the perceptions held by members of a discipline regarding the prerequisites for success in their field, and (2) the stereotype linking brilliance with men (Leslie et al., 2015). In fields with higher brilliance beliefs, the gender brilliance stereotype reinforces a greater sense of fit or belonging with men over women, thereby perpetuating gender segregation. A notable and significant limitation in previous research in this field is the exclusive focus on either the gender brilliance stereotype or field-specific ability beliefs (e.g., Leslie et al., 2015; Meyer et al., 2015). To date, no research has integrated both variables within a single study, undermining a comprehensive analysis of these crucial elements and compromising study validity. Therefore, the second research question aims to address this critical gap by investigating the complex interplay between field-specific ability beliefs, sense of belonging, and the moderating role of the gender brilliance stereotype (**Q2**). This research proposes that the relationship between field-specific ability beliefs and sense of belonging is moderated by the gender brilliance stereotype, particularly for women, as it directly affects them (**H2a**). For instance, if a woman holds high field-specific ability beliefs but a low gender brilliance stereotype, her sense of belonging may not be negatively affected by those beliefs. In contrast, for men, it is hypothesised that there will be no significant correlation between their field-specific ability beliefs and sense of belonging, as their perceived brilliance is generally not questioned (**H2b**). Therefore, it is also hypothesised that men's gender brilliance stereotype will not moderate the relationship between their field-specific ability beliefs and sense of belonging (**H2c**).

The Mediating Role of a Growth Mindset

Deiglmayr et al. (2019) were among the pioneers of the field who showed that higher brilliance was associated with stronger feelings of belonging uncertainty (i.e. a low sense of belonging) among students. While this research field is important, they omitted an important mediator from their analyses: intelligence mindsets. The manner in which an individual regards their own intelligence as either fixed or malleable can profoundly influence their academic performance, self-confidence, and motivation (e.g., Good et al., 2003; Kroeper et al., 2022; Scherr et al., 2017). The third research question of this research therefore aims to assess whether an individual's growth mindset mediates the effect of their field-specific ability beliefs on their sense of belonging (**Q3**). It is posited, that an individual's view of their intelligence as fixed may exacerbate the negative effects of brilliance beliefs on their sense of

belonging. Maranges et al. (2023) were the first researchers to examine this connection. They hypothesised that brilliance beliefs and mindsets would predict the choice between psychology and philosophy majors. Philosophy has previously been perceived as more brilliance-demanding than Psychology (Leslie et al., 2015). Maranges et al. (2023) found that brilliance beliefs, but not mindsets, significantly predicted the choice of major. However, their study was limited to psychology and philosophy students, which raises questions about the generalisability of their findings. Furthermore, the researchers utilised self-reported estimated intelligence in their analyses instead of implicit gender brilliance stereotype measures, which narrows the applicability of their results (Maranges et al., 2023). This research hypothesises that a woman's growth mindset will mediate the relationship between her field-specific ability beliefs and her sense of belonging (**H3a**). However, it is hypothesised that for a man, growth mindset will not mediate the relationship between his field-specific ability beliefs and his sense of belonging (**H3b**).

In summary, this study intends not only to replicate previous findings but also to introduce a more comprehensive approach that integrates multiple key variables. This pioneering research aims to provide insights that can inform strategies for promoting inclusivity and equity in academia. Figures 2 and 3 provide visual depictions of the relationships that will be tested.

Figure 2

Visual Representation of Research Question 2

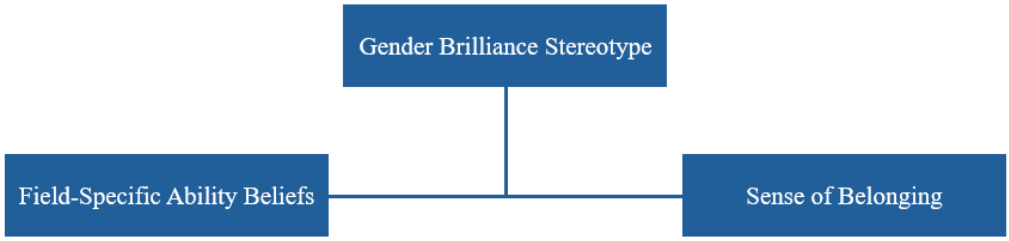
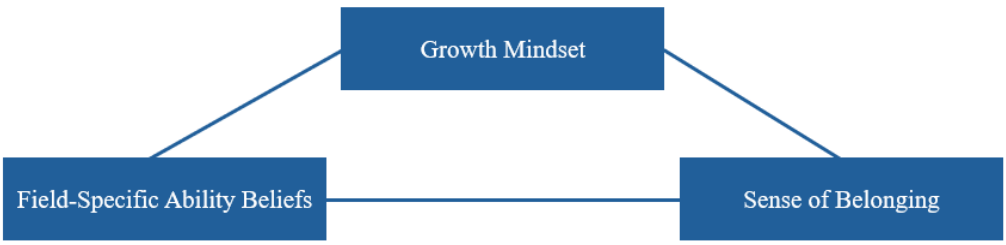


Figure 3

Visual Representation of Research Question 3



Materials and Method

Procedure

Data collection was conducted between January 11th and March 18th, 2024. Students from German-speaking universities were invited to complete an online survey using Sosci Survey (Leiner, 2024). Recruitment was carried out through various channels including WhatsApp, Instagram, Facebook, University Newsletters, Survey Circle, and direct emails to university professors. Prospective participants received a flyer containing information and a link to access the survey, as outlined in Appendix B. Participants were eligible if they were 18 years or older and currently enrolled as active students. They were instructed to complete the survey on a laptop and were informed that the study aimed to explore various aspects of studying, including topics related to gender and equality. Specific details regarding these topics were withheld until the end of the survey to avoid biasing individuals' responses. The questionnaire's introduction assured participants of the anonymity of their data and their right to withdraw participation even after completing the survey. They were also informed of the opportunity to enter a lottery for one of three €15 vouchers as an incentive for participation. Additionally, a contact e-mail address was provided in case respondents had any questions about the survey. After providing consent, they completed demographic questions, followed by the Field-Specific Ability Beliefs (FSAB) scale, the Sense of Belonging scale, the Mindset scale, and the Gender Brilliance Implicit Association Test (Gender Brilliance IAT). Finally, they had the option to enter their email address to participate in the lottery. For privacy reasons, email addresses were stored separately from the survey data. The mean completion time for the survey was approximately 10 minutes (M = 612.38 seconds; SD = 8.24).

Sample

Power Analysis

A power analysis using G*Power (Faul et al., 2007) was conducted prior to data collection, to determine appropriate sample sizes for the study. The analysis revealed that for a moderation analysis with 80% power ($\alpha = 0.05$) and a small effect size (Cohen's $d = 0.02$), a sample of $N = 395$ women and $N = 395$ men participating in the IAT would be necessary. For research questions not involving the IAT, a sample size of at least $N = 102$ participants (medium effect; Cohen's $d = 0.5$) was deemed appropriate.

Demographic Overview

Prior to conducting the analyses, the dataset was cleaned. Specifically, 5 admin cases and 4 pretest cases were excluded. Additionally, participants who indicated studying in non-German speaking countries (New Zealand, Portugal, Spain, Netherlands, Mexico) or failed to provide a country of study were removed ($N = 8$). Furthermore, participants with missing data regarding age, field of study, gender, or number of semesters were excluded ($N = 14$). Certain degree courses that were conceptually identical but described differently were grouped together for simplicity (refer to Table 6 in Appendix A for details). Finally, some individuals ($N = 7$) were excluded from the analysis due to suspicious statistical patterns in their responses (e.g., repetitive answers, unusually long or short response times).

The final sample consisted of $N = 614$ participants, with 67.3% ($N = 413$) identifying as female, 29.0% ($N = 178$) as male, 2.3% ($N = 14$) as non-binary, 0.8% ($N = 5$) indicating no gender identity, 0.2% ($N = 1$) identifying as genderfluid, and 0.5% ($N = 3$) choosing not to specify their gender. The students studied across 95 different university courses (please refer to Table 4 in the appendix for a list of all courses) and had a mean age of 24.11 years ($SD = 4.97$). On average, students were completing the fourth semester of their respective course ($M = 4.45$, $SD = 3.14$). More than half of all participants were studying for their bachelor's degree (54.4%), while the remainder were pursuing master's degrees (36.8%), doctorates (5%), diplomas (3.4%) or extension degrees (German: "Erweiterungsstudium", 0.3%). Most students were studying in Austria (84.0%), with smaller proportions in Germany (15.6%), Switzerland (0.2%), and Luxembourg (0.2%). Out of the total sample ($N = 614$), only $N = 496$ took part in the IAT. Ten participants were excluded due to having responded faster than 300ms in over 10% of trials, in line with recommendations by Greenwald et al. (2003). For research question two, the subset with valid IAT results ($N = 481$ ($N_{women} = 338$; $N_{men} = 143$)) was used. For hypotheses 1a, 1b, 1c, and 3a, 3b, which do not involve the gender brilliance stereotype, the entire sample of men and women ($N = 591$) was included. Hypothesis 1d comprised the full sample ($N = 614$).

Measures

Sociodemographic Data

The questionnaire included questions about participants' age, highest completed degree, and gender identity. Regarding their current degree, the number of completed semesters and name of their respective degree courses as well as the type of degree course (e.g., bachelor's, master's, …) and the name and country of their university were collected.

Field-Specific Ability Beliefs

Field-specific ability beliefs were assessed using the *Field-Specific Ability Beliefs (FSAB) Scale* (Leslie et al., 2015). This frequently employed questionnaire was initially published by Leslie et al. (2015) and subsequently translated into German and adapted for university students by Deiglmayr et al. (2019). The scale comprises eight items that investigate participants' perceptions of the requirements of their respective study field, as well as their opinions of their colleagues' views on the same matter. A sample item is: "Being successful in my subject of study requires a special aptitude that just can't be learned." (German: "Um in meinem Studienfach erfolgreich zu sein, muss man von vorn herein eine spezifische Begabung mitbringen, die sich nicht erlernen lässt."). The questions are rated on a 7-point Likert scale, with only the endpoints labelled, ranging from *do not agree at all* (German: *trifft gar nicht zu*; coded as 1) to *completely agree* (German: *trifft völlig zu*, coded as 7). The internal consistency of the scale was high, with a Cronbach's α of .88. The factor structure and item-total correlations were tested, revealing two factors with high loadings (minimum = .643, maximum = 807) in the rotated principal component matrix. All item-total correlations exceeded the .3 threshold, indicating strong correlations between individual item scores and the overall test score (Field, 2017). The results are presented in Appendix A.

Growth Mindset

The growth mindset was measured using the German adaptation of the *3-item Growth Mindset Scale* (Dweck et al., 1995; Rammstedt et al., 2022). All three items are formulated as fixed mindset statements and are answered on a 6-point Likert scale. The endpoints are labelled, ranging from *strongly disagree* (German: *trifft gar nicht zu*; coded as 1) to *strongly agree* (German: *stimme voll und ganz zu*; coded as 6). The items are reverse coded, with higher values indicating a higher growth mindset. A sample item is: "You have a certain amount of intelligence, and you can't really do much to change it." (German: "Sie haben ein bestimmtes Maß an Intelligenz und können nicht wirklich viel daran ändern."). A reliability analysis indicated high internal consistency, as evidenced by a Cronbach's α of 0.91. The factor structure and item-total correlations were tested, revealing one factor with high loadings (minimum = .895, maximum = 933) in the rotated principal component matrix. All item-total correlations exceeded the .3 threshold, indicating strong correlations between individual item scores and the overall test score (Field, 2017). The results are presented in Appendix A.

Sense of Belonging

Students' sense of belonging to their academic communities was measured using a shortened 15-item version of the *Math Sense of Belonging Scale* (Ladewig et al., 2020), originally published by Good et al. (2012). The wording was modified slightly to apply to all university subjects, rather than solely mathematics. The responses to the questions are rated on a 4-point Likert scale, with only the endpoints labelled, ranging from *do not agree at all* (German: *stimme gar nicht zu*; coded as 1) to *completely agree* (German: *stimme völlig zu*; coded as 4). The participants were instructed to respond to questions pertaining to their sense of belonging within the academic community of their degree programme. The scale comprises 15 items, with the following example item: "In classes within my degree programme, I feel accepted." (German: "In Lehrveranstaltungen meines Studiums fühle ich mich akzeptiert."). For the original *Math Sense of Belonging Scale* by Ladewig et al. (2020), please refer to page 114, which can be found in Appendix B. The revised version of the scale is presented on page 78. The internal consistency of the measure was found to be high, with a Cronbach's α of 0.88. The factor structure and item-total correlations were examined, revealing four factors with high loadings (minimum = .472, maximum = 888) in the rotated principal component matrix. Although items 6 and 14 exhibited low item-total correlations, they were nevertheless retained in the analyses for several reasons. Firstly, it was deemed important to maintain the scale's similarity to the original to insure comparability. Secondly, the original scale demonstrated an acceptable or optimal model fit and high internal consistency (Ladewig et al., 2020). Lastly, the removal of these items would have only marginally increased reliability, with Cronbach's α rising from 0.880 to 0.886 upon the removal of item 6 and to 0.884 upon the removal of item 14. Consequently, it was decided to retain all 15 items in the scale. Further detailed results are provided in Appendix A.

Gender Brilliance Stereotype

To assess the gender brilliance stereotype of each individual, a programme within Sosci Survey (Leiner, 2024) based on the *Implicit Association Test (IAT)*, originally developed by Greenwald et al. (1998, 2003) was employed. This response time-based measure is an implicit tool that can identify stereotypes that participants are unwilling or unable to report. It has been extensively used in past research (Nosek & Smyth, 2011; Storage et al., 2020; Zhao et al., 2022).

Each participant was presented with stimuli related to the category male or female and words related to the trait brilliant (e.g., genius, brilliant, smart; German: "brilliant",

"hochintelligent", "genial") or to the similarly positive comparison trait happy (e.g., happy, joyful; German: "glücklich", fröhlich", "optimistisch"). The reaction times were tested across two critical blocks. The first block was a stereotype-congruent block in which male stimuli and words related to brilliant were assigned the same response key (F versus J on the keyboard). The second block was a stereotype-incongruent block in which the pairings were reversed (male + comparison trait and female + brilliant).

In accordance with previous literature (Storage et al., 2020; Zhao et al., 2022), the order of the critical blocks was randomly assigned to all participants. This resulted in one group (Group A) combining "male = brilliant" in the first block, while the other group (Group B) combined "female = brilliant" in the first block. The difference in reaction times between the two blocks, known as the *D-score*, was automatically computed by Sosci Survey (Leiner, 2024) using Greenwald et al.'s (2003) scoring algorithm and subsequently loaded into SPSS along with all raw values and times.

The logic of the IAT suggests that the speed at which an individual associates brilliance with men rather than women indicates the strength of their gender brilliance stereotype. Consequently, for individuals with a more pronounced gender brilliance stereotype the difference between the stereotype-congruent and the stereotype-incongruent blocks is larger. Therefore, the greater the D-score, the stronger the association between male and brilliant categories. In Group B, where the order of the critical blocks was reversed, the D-score was also inverted, meaning that the opposite or inverse value was used for subsequent calculations. This reversal ensured that the results from both Group A and Group B could be compared effectively.

The male and female stimuli were taken from the Chicago Face Database (Ma et al., 2015), in accordance with Storage et al. (2020). Eight photographs of white men and eight photographs of white women were selected from the database, matched for similar attractiveness (M_{Female} = 3.54; M_{Male} = 3.51), happiness (M_{Female} = 2.51; M_{Male} = 2.59), and age (M_{Female} = 25.40; M_{Male} = 25.39). The IAT could be completed remotely on a laptop or computer in approximately five minutes. In more detail, the seven blocks of the IAT proceeded as follows: In the initial practice block, participants were presented with 20 trials in which they were required to indicate whether a given image depicted a man (key F; left side) or a woman (key J; right side). In the second practice block, participants assigned a total of 20 words from the categories *brilliant* (key F; left side) and the category *happy* (key J; right side). The third practice block served as a trial for the stereotype-congruent test block, with 20 trials where participants categorised images and words using the F key (left side) for *male*

stimuli (images of men) or *brilliant* stimuli (words related to brilliance), or the J key (right side) for *female* stimuli (images of women) or *happy* stimuli (words related to happy). The stereotype-congruent test block comprised 40 trials conducted similarly to block three. Block five comprised 40 trials in which participants were required to assign images to the categories of female and male, but with the categories switched (F key for *female* stimuli and J key for *male* stimuli). This resulted in the categories *female* and *brilliant* being assigned to the same key, while the categories *male* and *happy* were assigned to the same key. Block six introduced a stereotype-incongruent exercise with 20 trials. The final block, the seventh in total, was a stereotype-incongruent test block which was conducted similarly to block six, comprising 40 trials. The order of the blocks was randomised for participants, so the detailed explanation pertains only to Group A. For Group B, the order was reversed. For further details on the structure of the IAT, please refer to Greenwald et al. (1998, 2003).

Notably, due to the unique structure of the IAT, standard reliability measures like Cronbach's alpha were not applicable. Instead, a split-half procedure was employed to assess reliability, following the method outlined by Schnabel et al. (2008). This involved correlating the items "number of trials", "number of incorrect answers", "number of correct answers of blocks 3 and 6 (exercise blocks)", and "blocks 4 and 7 (test blocks)" to calculate the Spearman-Brown-coefficient. The reliability analysis revealed a split-half reliability of 0.89 for Group A and 0.93 for Group B.

Analysis Method

The statistical analysis was conducted using IBM SPSS Statistics (version 29) software along with PROCESS Macro (version 4.3.1) developed by Andrew F. Hayes (Hayes, 2022). Initially, the reliability of the scales used was assessed by calculating Cronbach's alpha and the split-half reliability. Item-total correlations were then computed to evaluate the discriminatory power of individual items within each scale. Subsequently, descriptive statistical methods were employed to describe the sample, and checks were performed to ensure the assumptions of the relevant statistical tests were met. Finally, inferential statistical analyses were conducted to address the research questions. The first research question was addressed by using a multivariate analysis of variance (MANOVA), focusing specifically on the effects of gender as well as the interaction between gender and FSAB Group. The dependent variables included average scores from the Field-Specific Ability Beliefs Scale, the Growth Mindset Scale, and the improved D-scores of the IAT. Independent variables consisted of participants' gender and their field of study categorised based on low, medium,

and high brilliance beliefs. Categorisation was conducted using a previous study that assessed field-specific ability beliefs for most courses at the University of Vienna (Lueger, 2022). This study, focusing on field-specific ability beliefs in German-speaking countries, provided a comparable framework to the current sample. However, for degree courses not covered in Lueger's (2022) study, a pragmatic approach was necessary due to the challenge of directly assessing field-specific ability beliefs, which could be influenced by students' sense of belonging. Therefore, these uncategorised courses were grouped based on similarities to other courses or by comparison with existing studies. For example, civil engineering, a degree course not listed in Lueger's (2022) study, was categorised using the field-specific ability beliefs assessment for mechanical engineering from Deiglmayr et al.'s (2019) study. Therefore, when necessary, studies such as those by Leslie et al. (2015) or Deiglmayr et al. (2019), which provided rankings of field-specific ability beliefs, were used as templates for categorisation. In cases where no suitable studies were available for guidance, the degree course curriculum was thoroughly analysed. Additionally, the mathematics intensity of a course was used as an additional indicator of higher field-specific ability beliefs, consistent with the approach taken by Deiglmayr et al. (2019). This methodology ensured a comprehensive and informed classification of academic fields. For a list of all courses categorised according to their field-specific ability beliefs, please consult Table 5 located in Appendix A. For the second research question, a moderation analysis was executed, with participants' field-specific ability beliefs serving as the independent variable and sense of belonging as the dependent variable. Their gender brilliance stereotype (IAT score) was included as the moderator variable. For the third research question, a mediation analysis was conducted. Participants' field-specific ability beliefs were the independent variable, sense of belonging was the dependent variable, and growth mindset acted as the mediator variable. The mediation and moderation analyses were conducted using PROCESS macro (Version 4.3.1) by Andrew F. Hayes (Hayes, 2022). All statistical analyses utilised a significance level (alpha) set at 0.05 (5%). Therefore, results with a p value less than 0.05 were deemed significantly significant.

Artificial Intelligence

DeepL (DeepL, 2024) was used for translation of technical terms, refinement of grammar (sentence structure), and as a dictionary for finding synonyms.

Results

Table 1 presents sample size, mean, and standard deviations for the variables sense of belonging, field-specific ability beliefs, gender brilliance stereotype, and growth mindset.

Table 1

Descriptive Statistics of the Main Variables

	N	*M*	*SD*
Sense of Belonging	614	2.96	0.54
Field-specific Ability Beliefs	614	2.99	1.13
Growth Mindset	614	3.63	1.29
Gender Brilliance Stereotype	497	0.28	0.34

Note. Sense of belonging was measured on a 4-point Likert scale (1 = “do not agree at all” to 4 = “completely agree”), with higher values indicating a stronger sense of belonging. Field-specific ability beliefs were assessed on a 7-point Likert scale (1 = “do not agree at all” to 7 = “completely agree”), with higher scores indicating stronger ability beliefs. Growth mindset was measured on a 6-point Likert scale (1 = “strongly disagree” to 6 = “strongly agree”), with higher values reflecting a stronger growth mindset. The gender brilliance stereotype was measured using a D-score, ranging from -2 to +2, with a midpoint of 0.

Table 2 presents the correlations among the variables sense of belonging, field-specific ability beliefs, gender brilliance stereotype, and growth mindset.

Table 2

Correlations Between the Main Variables

	1	2	3	4
1.Sense of Belonging	-	-0.13**	0.11**	-0.10*
2.Field-specific Ability Beliefs	-0.13**	-	-0.14**	0.04
3.Growth Mindset	0.11**	-0.14**	-	-0.01
4.Gender Brilliance Stereotype	-0.10*	0.04	-0.01	-

Note. *$p < .05$. **$p < .01$.

Examining Gender Differences and the Correlation Between Field-Specific Ability Beliefs and Growth Mindsets

A Two-Way MANOVA was conducted to assess the main effects and interaction effects of Gender Identity and FSAB Group on the gender brilliance stereotype, growth mindset, and field-specific ability beliefs.

Scatterplots were used to check for a linear relationship between the variables to verify the assumptions of the multivariate analysis of variance. The analysis revealed non-linearity, suggesting reduced statistical power of the test. Additionally, a correlation analysis was performed to examine collinearity among the dependent variables. The correlations were low ($r < 0.85$, Schroeder et al., 1990), indicating that multicollinearity was not a confounding factor in the analysis.

Multivariate normality was assessed using the Shapiro-Wilk test, revealing that some groups were not normally distributed, however, given the robustness of the MANOVA, this outcome was deemed acceptable (Finch, 2005). Univariate and multivariate outliers were assessed using skewness, kurtosis, boxplots, and Mahalanobis distances. No univariate outliers were found, and the Mahalanobis distance ($p > .001$) indicated the absence of multivariate outliers. Homogeneity of error variances was confirmed for all scores ($p > .05$) using Levene's test, and homogeneity of covariances was verified by Box's test ($p > .001$). Table 3 summarises descriptive statistics for each subgroup.

Table 3

Descriptive Statistics of Participants' Field-Specific Ability Beliefs, Gender Brilliance Stereotype, and Growth Mindset Categorised by Gender and FSAB Group

Variable	Field-specific Ability Beliefs		Growth Mindset		Gender Brilliance Stereotype	
	M(SD)	*N*	*M(SD)*	*N*	*M(SD)*	*N*
Low FSAB						
Male	2.90(1.07)	46	3.43(1.23)	46	0.21(0.35)	36
Female	2.93(1.12)	175	3.63(1.17)	175	0.30(0.36)	144
Total	2.93(1.11)	221	3.59(1.19)	221	0.28(0.36)	180
Average FSAB						
Male	2.84(1.00)	90	3.52(1.37)	90	0.23(0.33)	69
Female	2.88(1.17)	155	3.76(1.25)	155	0.31(0.28)	128
Total	2.86(1.11)	245	3.67(1.30)	245	0.28(0.30)	197
High FSAB						
Male	3.50(1.20)	42	3.71(1.47)	42	0.16(0.38)	37
Female	3.22(1.15)	83	3.60(1.38)	83	0.35(0.35)	66
Total	3.32(1.17)	125	3.64(1.40)	125	0.28(0.36)	103

Note. Field-specific ability beliefs were assessed on a 7-point Likert scale (1 = "do not agree at all" to 7 = "completely agree"), with higher scores indicating stronger ability beliefs. The growth mindset scale used a 6-point Likert scale (1 = "strongly disagree" to 6 = "strongly agree"), with higher values reflecting a stronger growth mindset. The gender brilliance stereotype was measured using a D-score, ranging from -2 to +2, with a midpoint of 0.

The MANOVA results revealed a statistically significant difference based on gender identity, $F(3, 472) = 4.31$, $p = .005$, partial $\eta^2 = 0.027$, Wilk's $\Lambda = 0.973$, on the combined dependent variables. However, the interaction between gender identity and FSAB Group did not contribute significantly to the observed effects, $F(6, 944) = 886$, $p = .504$, partial $\eta^2 = 0.006$, Wilk's $\Lambda = 0.989$.

Post-hoc univariate ANOVAs were performed for each dependent variable. Hypothesis 1a predicted a statistically significant difference in growth mindsets, field-specific ability beliefs, and the gender brilliance stereotype within each FSAB Group between men and women. The results demonstrated a statistically significant difference between gender identity and the gender brilliance stereotype, $F(1, 474) = 12.12$, $p < 0.001$, partial $\eta^2 = 0.025$. Mean values depicted in Table 3 indicate that women exhibit a higher gender brilliance stereotype than men. However, no significant difference was found between participants' gender for growth mindsets, $F(1, 474) = 0.896$, $p = 0.344$, partial $\eta^2 = 0.002$, or between gender and field-specific ability beliefs, $F(1, 474) = 0.014$, $p = 0.905$, partial $\eta^2 = 0.000$.

Consequently, hypotheses 1a, which anticipated a higher growth mindset among women, and 1b, which expected higher field-specific ability beliefs among women than men, were not supported. However, the findings were consistent with hypothesis 1c, which predicted a higher gender brilliance stereotype among women than men. For hypothesis 1d, which expected a negative correlation between growth mindsets and field-specific ability beliefs, a correlation analysis was conducted with the entire sample ($N = 614$). The Shapiro-Wilk test indicated that both variables were non-normally distributed ($p < .05$). However, given the robustness of the Pearson correlation and the large sample size ($N > 30$), this deviation was deemed acceptable (Döring & Bortz, 2016). A scatterplot revealed a non-linear relationship between the variables; thus, the Spearman's-rho coefficient was utilised for analysis. A significant negative correlation was observed between field-specific ability beliefs and growth mindsets, with a correlation coefficient of $r = -0.127$ and $p < .001$, indicating a small effect size (Cohen, 1988). This result supports hypothesis 1d.

Investigating the Gender Brilliance Stereotype as a Moderator Between Field-Specific Ability Beliefs and Sense of Belonging

To examine research question 2, a moderation analysis was performed using PROCESS macro by Hayes (2022), which uses ordinary least squares regression, yielding unstandardised coefficients for all effects. Bootstrapping with 5000 samples was employed, with heteroscedasticity consistent standard errors, to compute the confidence intervals. The assumption of linearity was tested by examining the relationship between the variables involved in the moderation analysis. Visual inspection of the scatterplots, after LOESS smoothing, indicated that the relationship was approximately linear.

A moderation analysis for all women who had completed the IAT ($N = 338$) was run to determine whether the relationship between their field-specific ability beliefs and sense of

belonging is moderated by their gender brilliance stereotype. The overall model was significant, $F(3, 334) = 3.41$, $p = .018$, predicting 3.12% of the variance. However, the analysis did not indicate that the gender brilliance stereotype significantly moderated the relationship between field-specific ability beliefs and sense of belonging, $\Delta R^2 = 0.03\%$, $F(1, 334) = 0.09$, $p = .76$, 95% CI[-0.17, 0.13].

Following recommendations by Hayes (2022) the interaction term was dropped from the model, resulting in a new simple effects model. This new model revealed a significant relationship between field-specific ability beliefs, $B = -0.07$, $p = .007$, and sense of belonging but not for the gender brilliance stereotype, $B = -0.14$, $p = 0.107$, and sense of belonging. Therefore, hypothesis 2a could not be supported.

For hypothesis 2b, the same analysis was conducted for men ($N = 142$). The overall model was not significant, $F(3, 138) = 1.22$, $p = .306$. This result is consistent with hypotheses 2b and 2c, which anticipated no significant correlation between men's field-specific ability beliefs and their sense of belonging, as well as no moderation of this relationship by their gender brilliance stereotype.

Exploring Growth Mindset as a Mediator Between Field-Specific Ability Beliefs and Sense of Belonging

Mediation analyses were performed for research question 3 using PROCESS macro by Hayes (2022), which uses ordinary least squares regression. These analyses yielded unstandardised path coefficients for total, direct, and indirect effects. Bootstrapping with 5000 samples together with heteroscedasticity consistent standard errors were employed to compute the confidence intervals and inferential statistics. Effects were deemed significant when the confidence interval did not include zero. A mediation analysis for all women ($N = 413$) was conducted, to analyse whether the relationship between their field-specific ability beliefs and sense of belonging is mediated by their growth mindset. Prior to the mediation analysis the relationship of all variables was tested and turned out to be approximately linear, as assessed by visual inspection of the scatterplots after LOESS smoothing.

Subsequently, a simple mediation was performed. An effect of field-specific ability beliefs on women's sense of belonging was observed, $B = -0.0783$, $p = .0015$. After entering the mediator into the model, field-specific ability beliefs predicted the mediator significantly, $B = -0.1559$, $p = .0043$, which in turn did not predict sense of belonging significantly, $B = 0.0431$, $p = .0627$. Results indicate, that the relationship between field-specific ability beliefs and

female students' sense of belonging is not mediated by growth mindset, indirect effect *ab* = -0.0067, 95%-CI[-0.0163, 0.0003].

The same tests were conducted for men ($N = 178$): No significant effect of field-specific ability beliefs on men's sense of belonging was observed, $B = -0.0343$, $p = .4025$. After entering the mediator into the model, field-specific ability beliefs predicted the mediator significantly, $B = -0.1887$, $p = .0493$, which in turn did not predict sense of belonging significantly, $B = 0.0342$, $p = .2745$. Results indicate, that the relationship between field-specific ability beliefs and students' sense of belonging is not mediated by growth mindset, indirect effect *ab* = -0.0065, 95%-CI[-0.0224, 0.0053].

Therefore, growth mindset does not mediate the relationship between field-specific ability beliefs and sense of belonging for men and women, in line with hypothesis 3b but not 3a.

Discussion

While the literature on gender stereotypes continues to expand, many aspects require further exploration. One of the primary challenges in studying these stereotypes is their implicit nature. Individuals may not be consciously aware that they hold biases, or they might be unwilling to acknowledge them. However, the presence of gender disparities in academic and professional settings, as evidenced by statistics, highlights the critical need for continued research in this field. A stereotype that has gained prominence is the gender brilliance stereotype, which has become increasingly relevant in understanding gender inequities in academic contexts. While it has become less socially acceptable to make broad generalisations about an individual's intelligence based on gender, the attribution of exceptional brilliance or giftedness in specific domains remains socially permissible. Furthermore, research into the gender brilliance stereotype and related constructs has resulted in conflicting findings, underlining the importance for further investigation. This thesis aimed to contribute to this area by encompassing diverse subject groups. Incorporating STEM and non-STEM fields facilitated a more comprehensive understanding of the concepts under examination. The first research question hypothesised that, within groups defined by varying levels of field-specific ability beliefs, women would exhibit higher growth mindsets than men as a means of coping with gender stereotypes. Moreover, it was anticipated that women would hold stronger field-specific ability beliefs given their more direct experience with these beliefs and exposure to narratives emphasising the need for exceptional talent to succeed. It was also expected that women would exhibit a stronger gender brilliance stereotype compared

to men, consistent with previous research findings (Storage et al., 2020). Finally, a negative correlation between growth mindset and field-specific ability beliefs was expected.

The second research question involved a closer examination of the gender brilliance stereotype as a moderator between field-specific ability beliefs and sense of belonging. The theoretical link between the gender brilliance stereotype and field-specific ability beliefs, which associate brilliance with certain subjects more than others, is apparent. However, this connection has not been experimentally analysed to date, representing one of the primary goals of this thesis. Therefore, it was proposed that the connection between field-specific ability beliefs and sense of belonging is moderated by the gender brilliance stereotype, specifically for women due to its direct effect on them. For men, it was hypothesised that there would be no significant correlation between their field-specific ability beliefs and sense of belonging, as their perceived brilliance is typically not subjected to questioning.

Finally, this thesis also aimed to investigate whether the connection between field-specific ability beliefs and sense of belonging may be mediated by an individual's growth mindset, building on prior propositions by Deiglmayr et al. (2019). This thesis suggested that a higher growth mindset among women could help alleviate the adverse effects of field-specific ability beliefs on their sense of belonging, by providing resilience and confidence in their intellectual capabilities.

Examining Gender Differences and the Correlation Between Field-Specific Ability Beliefs and Growth Mindsets

This study aimed to shed light on gender disparities concerning individuals' gender brilliance stereotype, field-specific ability beliefs, and growth mindsets. In accordance with prior research by Spinath et al. (2003), this thesis postulated that women tend to have higher growth mindsets than men, reasoning that women may need to adopt a growth mindset more strongly to overcome gender stereotypes. However, contrary to expectations, no significant gender differences were identified in students' growth mindset. This outcome corroborates the findings of Yan et al. (2014). The results may be attributed to the sample comprising solely university students, which may result in the accumulation of similar beliefs about learning and development. For field-specific ability beliefs, higher brilliance beliefs among women than men were expected, in line with findings from Deiglmayr et al. (2019). Contrary to expectations, no relevant gender differences were detected. Previous research has yielded ambiguous results on this matter, underscoring the intricate nature of field-specific ability beliefs. In line with the third hypothesis, women demonstrated a higher gender brilliance

stereotype. This is consistent with findings from Storage et al. (2020), who also used the IAT. One potential explanation for this result is that women's experiences of bias may trigger negative stereotypes about their own gender. The combination of encountering bias and receiving less positive feedback on their intellectual abilities, while being more frequently praised for their work ethic and effort, may reinforce these beliefs. Consequently, women may be more prone than men to internalise the stereotype that they are less innately brilliant than men. Finally, the data supported the assumption that individuals with lower field-specific ability beliefs tend to have a higher growth mindset. Although the correlation only had a small effect size (Cohen, 1988), the results nevertheless suggest a tendency for individuals who strongly believe that a certain subject requires brilliance to exhibit a lower growth mindset. Further investigation into the underlying causes of this correlation, potentially through regression analysis and a longitudinal study design, could provide important insights.

Investigating the Gender Brilliance Stereotype as a Moderator Between Field-Specific Ability Beliefs and Sense of Belonging

According to theoretical background, women's field-specific ability beliefs were expected to negatively affect their sense of belonging. This is due to higher external or self-imposed expectations, which make it more challenging for them to establish a sense of belonging within their academic community. Moreover, it was anticipated that this relationship would be moderated by their implicit gender brilliance stereotypes. As such, a woman with high field-specific ability beliefs but a low gender brilliance stereotype may believe that everyone has an equal chance of success, regardless of the perceived need for brilliance in a field, thereby mitigating the effect on her sense of belonging. Conversely, no relationship was expected between field-specific ability beliefs and sense of belonging for men, nor was a moderating role of the gender brilliance stereotype anticipated. The data supported this, suggesting that men's sense of belonging does not vary based on their field-specific ability beliefs. In contrast, the results of this study suggest that higher field-specific ability beliefs negatively influence women's sense of belonging. This finding aligns with previous studies (e.g., Deiglmayr et al., 2019; Maranges et al., 2023). Nonetheless, the gender brilliance stereotype did not moderate the relationship between women's field-specific ability beliefs and sense of belonging. This could be explained in part by the idea that a woman's belief that a field requires brilliance for success may suffice in fostering an uncomfortable and competitive atmosphere, irrespective of whether she believes that men are generally more brilliant than women. For example, Gneezy et al. (2003) demonstrated that increased

competitiveness in an environment led to enhanced performance for men, but not for women. Furthermore, Vial et al. (2022) showed that high beliefs in brilliance may create negative and competitive workplace environments, resulting in a diminished sense of belonging among women.

Alternatively, moderation effects may go undetected if the effect size is small, due to low power (Faul et al., 2007). These two opposing arguments make definite conclusions challenging. Additionally, the reliability of the Implicit Association Test (IAT) used in this study warrants critical examination. Although widely used to assess gender stereotypes, the IAT is not without limitations and has been subject of recent discussions. Some argue in favour of its construct and predictive validity (Nosek et al., 2007), while others caution against using response time measures to determine implicit attitudes. For instance, Ottaway et al. (2001) demonstrated, that participants responded faster to stimuli they were more familiar with, suggesting that attitudes obtained by semantic instances (e.g., "female") may not accurately predict behaviours or prejudices (e.g., prejudice towards women regarding their brilliance). Rezaei (2011) also found lower re-test reliability for the IAT than originally reported by Greenwald et al. (1995). Moreover, criticism has been raised regarding the construct validation of the instrument. Schimmack (2021b) suggests that independent experts' evaluations are essential, highlighting the need to critically examine the analyses conducted by Greenwald et al. (1995). Additionally, Greenwald et al. (1995) interpreted low correlations between IAT scores and explicit measures as evidence of the tests validity, without considering the possibility of invalid IAT scores (Schimmack, 2021b). Another noteworthy concern with the IAT is its validity across different attitude objects (Schimmack, 2021b). While it may effectively detect a gender-science bias, its validity could be compromised when measuring other constructs. This variability complicates the generalisation of IAT results across different domains. Furthermore, Oswald et al. (2013) reported relatively low predictive validity of the stereotype IAT in relation to discriminatory behaviour, judgements, or decisions. Schimmack (2021b) suggested the IAT may accurately classify individuals into two antagonistic groups but not in individual variations in attitude intensity. This finding aligns with the present study's observation of a lack of moderation between the gender brilliance stereotype and field-specific ability beliefs, suggesting that the IAT may not accurately reflect participants' implicit bias individually. Furthermore, the theory aligns with the findings of this study that women exhibited a higher gender brilliance stereotype than men. This is a direct comparison between two opposing groups, and a result supported by previous research (Storage et al., 2020).

Additional factors influencing the outcomes of the Implicit Association Test have been addressed, including processing attitudes, ease of information accumulation, and cognitive skills, which further complicate the interpretation of results (Klauer et al., 2007; McFarland & Crouch, 2002). Moreover, transient factors that can affect the IAT have also been identified (Schmukle & Egloff, 2005). In this study, to achieve a large sample size, participants completed the IAT through a questionnaire, rather than in a controlled setting. This approach introduced potential environmental variables, such as background noise, which may have contributed to increased measurement errors.

In order to assess the reliability of the IAT in this study, an approach recommended by Schnabel et al. (2008) was employed. This involved correlating the number of trials, number of incorrect answers, and number of correct answers of blocks 3 and 6 (exercise blocks) and blocks 4 and 7 (test blocks). However, the most commonly employed method for calculating the IAT's reliability, which involves correlating training and test blocks, yielded a relatively low correlation coefficient (Group A: $r = 0.347$; Group B: $r = .215$) in comparison to the reliability scores typically observed for the IAT (usually $r > 0.7$) (Greenwald et al., 2003; Nosek et al., 2007). This prompts further questions regarding the robustness of the results obtained in this study.

Exploring Growth Mindset as a Mediator between Field-Specific Ability Beliefs and Sense of Belonging

Deiglmayr et al. (2019) investigated the positive correlation between field-specific ability beliefs and belonging uncertainty (equivalent to a low sense of belonging) and proposed that this association might be mediated by a growth mindset. This thesis similarly hypothesised, that a higher growth mindset would mitigate the negative effect of field-specific ability beliefs on women's sense of belonging. In the case of men, no mediating effect was expected. Contrary to expectations, no mediating effect was found for women, and consistent with the hypothesis, no effect was found for men. Although field-specific ability beliefs correlate negatively with growth mindsets, growth mindsets do not act as mediators. A study by Maranges et al. (2023) reached a somewhat similar result: The gender disparity between philosophy, which is predominantly male-dominated, and psychology, which is predominantly female dominated, was attributed to the influence of brilliance beliefs rather than growth mindsets. It seems that field-specific ability beliefs may be pivotal predictors of sense of belonging and female representation. While Maranges et al. (2023) did not identify growth mindset as a significant predictor, they did identify a significant negative correlation

between field-specific ability beliefs and growth mindset. This result is echoed in this study. It appears that growth mindsets and brilliance beliefs are strongly interlinked. Despite being distinct concepts (Asbury et al., 2023), it would be beneficial to consider growth mindsets and brilliance beliefs as complementary in future research. As several studies have shown the advantages of growth mindset interventions (e.g., Aronson et al., 2002; Samuel & Warner, 2021), it would be wise to educate on the malleability of intelligence as well as the misconception of brilliance beliefs.

Limitations

While this study contributes to the understanding of factors influencing students' sense of belonging, it is important to acknowledge its limitations. Firstly, as a non-experimental study with a cross-sectional approach, although correlations were found between certain variables, it is not possible to conclude that these are causal relationships. Consequently, future studies should employ longitudinal designs or experimental manipulations in order to explore causal relationships between the variables, as exemplified by Hannak et al. (2023).

A further limitation concerns the demographic composition of the sample. The low participation of individuals who do not identify as male or female resulted in their exclusion from most research questions. This was further compounded by the existing literature, which adopts a binary gender approach. Subsequently, there is a lack of data and theories to base hypotheses on for individuals that identify as non-binary. The binary perspective, which required participants to select either photos of men or women during the IAT, was criticised by numerous participants in the comment section of the survey. Future research should strive to include individuals of all genders in their studies.

Moreover, the study focused exclusively on gender differences and did not include an analysis of ethnic or cultural differences. An intersectional approach would have made it challenging to identify specific effects, as previous research (e.g., Jaxon et al., 2019) indicates that brilliance is not only falsely associated primarily with men but also with white individuals. It was beyond the scope of this study to address both gender and ethnicity; however, future research must consider both matters.

It is also important to note that the descriptive statistics in this study indicated a tendency towards a higher sense of belonging and lower field-specific ability beliefs in this sample. This trend can be attributed to the relatively low number of participants enrolled in degree programmes characterised by high field-specific ability beliefs. Future studies would benefit

from obtaining a sample that includes equal representation from all field-specific ability belief groups.

Practical Implications and Directions for Future Research

Despite encountering numerous challenges, particularly regarding the controversial Implicit Association Test (IAT), this thesis represents a substantial contribution to the research on gender stereotypes in several key areas. Notably, the study highlights the significant relationship between field-specific ability beliefs and the sense of belonging among female students. The perception that certain scientific fields require innate brilliance, which cannot be acquired, can substantially diminish female students' connection to their respective fields. Despite a significant correlation between field-specific ability beliefs and growth mindsets, the latter were not found to be mediators between female students' field-specific ability beliefs and sense of belonging.

While previous research has demonstrated that growth mindset interventions can reduce anxiety, increase self-efficacy, improve performance, and enhance self-confidence in approaching new tasks among students (e.g., Aronson et al., 2002; Samuel & Warner, 2021), these interventions have yet to address field-specific ability beliefs. Given the conceptual overlap and mutual influence between these constructs, it is essential to consider field-specific ability beliefs as a distinct concept in intervention programmes (Asbury et al., 2023). Therefore, it is important to educate students about the pervasive stereotype that certain subjects are reserved for "brilliant" scientists, or more radically, for men. As the findings in this study indicate, such stereotypes can harm female students, potentially diminishing their sense of belonging. Furthermore, Leslie et al. (2015) demonstrated that women are underrepresented in fields with high field-specific ability beliefs. To address these issues, universities should implement interventions, especially during the first year, when students are adjusting to a new and often challenging environment (e.g., Besser & Zeigler-Hill, 2012). While it would be beneficial to implement these programmes in all courses, they are particularly important in fields where high field-specific ability beliefs are prevalent.

Heyder et al. (2020) showed that students' intrinsic motivation decreases when teachers exhibit strong field-specific ability beliefs. Therefore, it is imperative to engage in open discourse with educators on this matter. They should learn to avoid reinforcing stereotypes, such as praising women for hard work and men for brilliance, and to adopt teaching practices that promote growth mindsets, as proposed by Aronson et al. (2002). Educators should elucidate that abilities can develop over time, that effort is positive, and that mistakes and

challenges are a natural part of learning. Additionally, professors should be trained to provide constructive feedback that emphasises the learning process rather than innate talent.

Possible approaches could include the use of role models, a methodology demonstrated to be efficacious by Buckley et al. (2022). They found that introducing female role models by reading a set of two short stories about female scientists helps challenge stereotypes. For instance, in disciplines with a low proportion of female students, women currently employed in those fields could share their experiences and accounts of how they achieved success. Furthermore, by educating students about the effects of stereotypes and field-specific ability beliefs and normalising their experiences, educators can facilitate the cultivation of a supportive environment where students can share their experiences with one another, which can positively contribute to students' sense of belonging (Walton & Cohen, 2011). Despite the evidence presented in this study indicating that women display a greater tendency to endorse the gender brilliance stereotype, it is nevertheless recommended that interventions be directed at both female and male students. It is essential that all parties actively work towards minimising biases and preventing their reinforcement. This awareness of gender-stereotypical attitudes among both students and professors should hopefully lead to an improved sense of belonging among female students.

Another noteworthy finding from this study, which has implications for future research, is that the gender brilliance stereotype does not moderate the relationship between field-specific ability beliefs and the sense of belonging experienced by female students. Nevertheless, this finding requires further investigation. The non-significance may be attributed to measurement issues, including potential validity and reliability concerns, or simply the necessity for further examination of the Implicit Association Test. Robust research necessitates the inclusion of the gender brilliance stereotype and field-specific ability beliefs in relevant studies. While this study represents an initial attempt to integrate both concepts, it should not be the last. Future research may benefit from including an explicit measure of the gender brilliance stereotype to enable comparison and support for the IAT results. According to Schimmack (2021), concerns about socially desirable responding in anonymous surveys may be redundant. Thus, future research would benefit from investigating the gender brilliance stereotype using explicit measures until the IAT is validated properly or, preferably, a new measurement tool is developed. A potential strategy until then would be to employ both the IAT and an explicit measure to gain a more comprehensive understanding while accounting for potential measurement errors in both tests (Schimmack, 2021b).

Conclusion

In conclusion, this thesis identifies the critical intersection between students' gender stereotypes, field-specific ability beliefs, growth mindsets, and sense of belonging. The importance of gender stereotype research is exemplified by the direct link between field-specific ability beliefs and female students' sense of belonging, as well as the underrepresentation of women in numerous fields that are assumed to require innate brilliance. Future research should focus on intervention studies aimed at addressing individuals' beliefs about their own brilliance, as well as their perceptions of brilliance being essential for success in certain fields. Additionally, emphasis should be placed on the development and improvement of test instruments such as the IAT. The objective is to reduce gender segregation and empower all students to pursue their preferred fields of study without being constrained by negative stereotypes.

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Appendix A

Additional Data

Table 4

Participants' Degree Courses

Degree Course	Percentage
Agrarwissenschaften	0,2
Agrarwissenschaften / Gartenbauwissenschaften	0,3
Applied Economics	0,2
Arbeitsmarktmanagement	0,2
Archäologie	0,2
Architektur	2,1
Astronomie	0,2
Automatisierung und robotische Systeme	0,2
Bauingenieurwesen	0,2
Betriebswirtschaftslehre	6,7
Bildungswissenschaften	2,4
Biologie	4,4
Biotechnologie	1
Chemie	0,3
Climate Change and Societal Transformation	0,2
Deutsche Philologie	0,2
Digitale Transformationen der Informations- und Medienwirtschaft	0,2
Doktorat Medizinische Wissenschaften	0,5
Energie- und Umweltwissenschaften	0,2
Erdwissenschaften	0,7
Ernährungswissenschaften	0,2
Europäische Ethnologie	0,2
Evangelische Fachtheologie	0,2
Event Management	0,2
Finance	0,2

Forstwissenschaften und Forstwirtschaft	2
Gender Studies	0,2
Geodäsie	0,2
Geographie	1,3
Geologie und Umweltschutz	0,2
Geowissenschaften	0,2
Germanistik	0,2
Geschichte	0,8
Gesundheitspsychologie und Medizinpädagogik	0,2
Global Demography	0,2
Globalgeschichte und Global Studies	0,2
Green Marketing	0,2
Holz- und Forstwirtschaft	0,2
Holz- und Naturfasertechnologie	0,2
Holztechnologie- und Management	0,2
Immobilienmanagement- und Bewertung	0,3
Informatik	4,1
Informationsdesign	0,2
Ingenieurwissenschaften	3,1
Innovations- und Informationsmanagement	0,2
International Business Management	0,3
Internationale Entwicklung	0,8
Kartographie und Geoinformation	0,2
Kultur- und Sozialanthropologie	0,2
Kunstgeschichte	1
Landschaftsplanung- und Landschaftsarchitektur	3,3
Lebensmittelwissenschaften- und Technologie / Biotechnologie	1,8
Lehramt	4,7
Marketingmanagement	0,2
Maschinenbau	0,2
Mathematik	4,6
Medien- und Kommunikationsmanagement	0,2

Medien und Musik	0,2
Medizin	3,3
Meteorologie	0,2
Mikrobiologie	0,2
MultiMediaTechnology	0,2
Naturwissenschaften	0,2
Personalmanagement	0,3
Pharmazie	1
PhD Molecular Medicine	0,2
Philosophie	2,8
Physik	3,7
Politikwissenschaft	0,3
Psychologie	9
Publizistik- und Kommunikationswissenschaften	7,2
Raumplanung und Raumordnung	3,1
Rechtswissenschaften	2,8
Restrukturierung	0,2
Romanistik Französisch	0,2
Sales Management	0,2
Soziale Arbeit	0,3
Soziologie	0,8
Sozioökonomie	0,2
Sportwissenschaft	0,3
Sprachwissenschaft	0,2
Stadtplanung	0,2
Statistik	0,3
Theater-, Film- und Medienwissenschaften	1,5
Umwelt- und Bioressourcenmanagement	3,6
Umweltingenieurwissenschaften	0,2
Umweltmanagement	0,7
Veterinärmedizin	0,8
Volksschullehramt	0,7
Volkswirtschaftslehre	0,2

Wildtierökologie	0,2
Wirtschafts- und Sozialwissenschaften	0,3
Wirtschaftsinformatik	1,1
Wirtschaftspsychologie	1,3
Wirtschaftswissenschaften	0,3

Table 5

Degree Courses Categorised by FSAB Levels

Low FSAB	Average FSAB	High FSAB
Agrarwissenschaften	Global Demography	Architektur
Agrarwissenschaften / Gartenbauwissenschaften	Globalgeschichte und Global Studies	Betriebswirtschaftslehre
Applied Economics	Green Marketing	Bildungswissenschaften
Arbeitsmarktmanagement	Holz- und Forstwirtschaft	Biologie
Archäologie	Holz- und Naturfasertechnologie	Chemie
Astronomie	Holztechnologie- und Management	Informatik
Automatisierung und robotische Systeme	Immobilienmanagement- und Bewertung	Ingenieurwissenschaften
Bauingenieurwesen	Informationsdesign	Landschaftsplanung- und Landschaftsarchitektur
Biotechnologie	Innovations- und Informationsmanagement	Mathematik
Climate Change and Societal Transformation	International Business Management	Medizin
Deutsche Philologie	Internationale Entwicklung	Physik
Digitale Transformationen der Informations- und Medienwirtschaft	Kartographie und Geoinformation	Politikwissenschaft

Doktorat Medizinische Wissenschaften	Kultur- und Sozialanthropologie	Psychologie
Energie- und Umweltwissenschaften	Kunstgeschichte	Publizistik- und Kommunikationswissenschaften
Erdwissenschaften	Lebensmittelwissenschaften- und Technologie / Biotechnologie	Rechtswissenschaften
Ernährungswissenschaften	Marketingmanagement	Umweltmanagement
Europäische Ethnologie	Maschinenbau	Veterinärmedizin
Evangelische Fachtheologie	Medien- und Kommunikationsmanagement	Volksschullehramt
Event Management	Medien und Musik	Volkswirtschaftslehre
Finance	Meteorologie	Wildtierökologie
Forstwissenschaften und Forstwirtschaft	Mikrobiologie	Wirtschafts- und Sozialwissenschaften
Gender Studies	MultiMediaTechnology	Wirtschaftsinformatik
Geodäsie	Naturwissenschaften	Wirtschaftspsychologie
Geographie	Personalmanagement	Wirtschaftswissenschaften
Geologie und Umweltschutz	Pharmazie	
Geowissenschaften	Philosophie	
Germanistik	Raumplanung und Raumordnung	
Geschichte	Restrukturierung	
Gesundheitspsychologie und Medizinpädagogik	Sales Management	
Lehramt	Soziale Arbeit	
PhD Molecular Medicine	Soziologie	
Romanistik Französisch	Sozioökonomie	
	Sportwissenschaft	
	Sprachwissenschaft	
	Stadtplanung	
	Statistik	

	Theater-, Film- und Medienwissenschaften
	Umwelt- und Bioressourcenmanagement
	Umweltingenieurwissenschaften

Table 6

Categorisations of all Participants' Degree Courses

Degree Programme	*Categorised as*
Raumplanung und Raumordnung Raumplanung und -ordnung Raumplanung Raumordnung und Raumforschung (Geographie Institut) Raumordnung Raumforschung	Raumplanung und Raumordnung
Primarstufenpädagogik Lehramt Primarstufe Volksschullehramt Pädagogik	Volksschullehramt
Lebensmittelwissenschaften-und Technologie Lebensmittel und Biotechnologie	Lebensmittelwissenschaften-und Technologie / Biotechnologie
International Management International Business Management	International Business Management
Immobilienmanagement & Bewertung Immobilienmanagement	Immobilienmanagement-und Bewertung
Forstwissenschaften Forstwirtschaft	Forstwissenschaften und Forstwirtschaft

Factor Analyses

Table 7

Rotated Principal Component Matrix of the Items of the Sense of Belonging Scale

	Component			
	1	2	3	4
bin ich ängstlich.*	0,840	0,209	-0,016	0,171
bin ich angespannt.*	0,828	0,102	0,009	0,129
wünsche ich mir, ich könnte in den Hintergrund rücken, damit mich keiner wahrnimmt.*	0,820	0,169	0,189	-0,080
bin ich nervös.*	0,800	0,144	-0,031	0,198
wünsche ich mir, ich wäre unsichtbar.*	0,784	0,256	0,190	-0,026
fühle ich mich als Teil der akademischen Gemeinschaft meines Studiums.	0,187	0,888	0,161	0,046
sehe ich mich als Mitglied der akademischen Gemeinschaft meines Studiengangs.	0,211	0,880	0,134	0,124
habe ich das Gefühl zur akademischen Gemeinschaft meines Fachs zu gehören.	0,182	0,856	0,172	0,022
fühle ich mich anerkannt.	0,290	0,489	0,318	0,431
versuche ich, so wenig wie möglich zu machen.*	0,159	0,115	0,678	-0,250
vertraue ich darauf, dass die Professor*innen mir engagiert beim Lernen helfen.	-0,078	0,116	0,677	0,089
vertraue ich darauf, dass die Professor*innen an mich glauben, auch wenn ich etwas schlecht mache.	0,090	0,168	0,602	0,321
fühle ich mich wertgeschätzt.	0,203	0,427	0,474	0,307

vertraue ich darauf, dass die Testmaterialien (Prüfungen, Tests, o.Ä.) niemanden bevorzugen oder benachteiligen.	0,065	0,051	0,033	0,789
fühle ich mich akzeptiert.	0,386	0,463	0,147	0,472

*The item is reverse coded

Table 8

Rotated Principal Component Matrix of the Items of the Growth Mindset Scale

	Component
Ihre Intelligenz ist eine Eigenschaft, die Sie nicht groß verändern können.*	0,933
Sie haben ein bestimmtes Maß an Intelligenz und können nicht wirklich viel daran ändern.*	0,929
Sie können neue Dinge lernen, aber Ihre grundsätzliche Intelligenz können Sie nicht wirklich verändern.*	0,895

*The item is reverse coded

Table 9

Rotated Principal Component Matrix of the Items of the FSAB – Scale

	Component	
	1	2
Um in unserem Studienfach erfolgreich zu sein, muss man von vornherein eine spezifische Begabung mitbringen, die sich nicht erlernen lässt.	0,807	-0,212
Wenn man in meinem Studienfach Erfolg haben will, ist harte Arbeit alleine nicht ausreichend; man braucht zusätzlich eine angeborene Begabung bzw. ein bestimmtes Talent.	0,782	-0,383
Wenn man in unserem Studienfach Erfolg haben will, ist harte Arbeit alleine nicht ausreichend; man braucht zusätzlich eine angeborene Begabung bzw. ein bestimmtes Talent.	0,771	-0,208

In meinem Studienfach kann im Prinzip jede Person erfolgreich sein, wenn sie sich hinreichend anstrengt.*	0,763	0,043
Um in meinem Studienfach erfolgreich zu sein, muss man von vornherein eine spezifische Begabung mitbringen, die sich nicht erlernen lässt.	0,742	-0,459
In unserem Studienfach kann im Prinzip jede Person erfolgreich sein, wenn sie sich hinreichend anstrengt.*	0,719	0,336
In unserem Studienfach sind die wichtigsten Erfolgsfaktoren Motivation und Durchhaltevermögen; die reine Begabung ist zweitrangig.*	0,663	0,595
In meinem Studienfach sind die wichtigsten Erfolgsfaktoren Motivation und Durchhaltevermögen; die reine Begabung ist zweitrangig.*	0,643	0,471

*The item is reverse coded

Item-Total Correlations

Table 10

Item-Total Correlations of the Sense of Belonging Scale

Item	Item-Total Correlation
bin ich nervös. *	0,573
vertraue ich darauf, dass die Professor*innen an mich glauben, auch wenn ich etwas schlecht mache.	0,399
habe ich das Gefühl zur akademischen Gemeinschaft meines Fachs zu gehören.	0,639
versuche ich, so wenig wie möglich zu machen.*	0,288
wünsche ich mir, ich wäre unsichtbar.*	0,657
vertraue ich darauf, dass die Professor*innen mir engagiert beim Lernen helfen.	0,229
bin ich ängstlich.*	0,639
fühle ich mich als Teil der akademischen Gemeinschaft meines Studiums.	0,668

wünsche ich mir, ich könnte in den Hintergrund rücken, damit mich keiner wahrnimmt.*	0,607
fühle ich mich akzeptiert.	0,641
sehe ich mich als Mitglied der akademischen Gemeinschaft meines Studiengangs.	0,691
bin ich angespannt.*	0,559
fühle ich mich wertgeschätzt.	0,564
vertraue ich darauf, dass die Testmaterialien (Prüfungen, Tests, o.Ä.) niemanden bevorzugen oder benachteiligen.	0,243
fühle ich mich anerkannt.	0,646

*The item is reverse coded

Table 11

Item-Total Correlations of the Growth Mindset Scale

Item	Item-Total Correlation
Sie haben ein bestimmtes Maß an Intelligenz und können nicht wirklich viel daran ändern.*	0,833
Ihre Intelligenz ist eine Eigenschaft, die Sie nicht groß verändern können.*	0,839
Sie können neue Dinge lernen, aber Ihre grundsätzliche Intelligenz können Sie nicht wirklich verändern.*	0,773

*The item is reverse coded

Table 12

Item-Total Correlations of the Field-Specific Ability Beliefs Scale

Item	Item-Total Correlation
Um in meinem Studienfach erfolgreich zu sein, muss man von vornherein eine spezifische Begabung mitbringen, die sich nicht erlernen lässt.	0,648

Wenn man in meinem Studienfach Erfolg haben will, ist harte Arbeit alleine nicht ausreichend; man braucht zusätzlich eine angeborene Begabung bzw. ein bestimmtes Talent.	0,700
In meinem Studienfach kann im Prinzip jede Person erfolgreich sein, wenn sie sich hinreichend anstrengt.*	0,678
In meinem Studienfach sind die wichtigsten Erfolgsfaktoren Motivation und Durchhaltevermögen; die reine Begabung ist zweitrangig.*	0,544
Um in unserem Studienfach erfolgreich zu sein, muss man von vornherein eine spezifische Begabung mitbringen, die sich nicht erlernen lässt.	0,721
Wenn man in unserem Studienfach Erfolg haben will, ist harte Arbeit alleine nicht ausreichend; man braucht zusätzlich eine angeborene Begabung bzw. ein bestimmtes Talent.	0,676
In unserem Studienfach kann im Prinzip jede Person erfolgreich sein, wenn sie sich hinreichend anstrengt.*	0,619
In unserem Studienfach sind die wichtigsten Erfolgsfaktoren Motivation und Durchhaltevermögen; die reine Begabung ist zweitrangig.*	0,566

*The item is reverse coded

Artificial Intelligence

DeepL (DeepL, 2024) was used for translation of technical terms, refinement of grammar (sentence structure), and as a dictionary for finding synonyms.

Abstract (English)

Despite a general increase in awareness of gender stereotypes, they continue to persist. The gender brilliance stereotype portrays men as more brilliant than women. Furthermore, the field-specific ability hypothesis suggests that certain subjects, such as mathematics or physics, are perceived to require brilliance for success, resulting in a low representation of women in these domains, with many of them feeling like they do not belong. Researchers have proposed that the gender brilliance stereotype, when combined with field-specific ability beliefs, contributes to female students' low sense of belonging. However, this theory has yet to be investigated. Additionally, researchers have proposed that the relationship between students' field-specific ability beliefs and sense of belonging may be mediated by their growth mindsets. To resolve uncertainties in existing research and identify potential avenues for future interventions, a 26-item questionnaire was administered to 614 participants, comprising three separate scales and the Implicit Association Test (IAT). Of the participants, 67.3% identified as female. The findings suggest that field-specific ability beliefs negatively affect female, but not male, students' sense of belonging. However, this relationship is neither moderated by the gender brilliance stereotype nor mediated by growth mindsets. Furthermore, the results indicate a negative correlation between field-specific ability beliefs and growth mindsets. The findings suggest that field-specific ability beliefs are likely to be crucial indicators of female students' sense of belonging and should be a focus of future interventions. Combining interventions aimed at brilliance beliefs and growth mindsets could significantly enhance the effectiveness of these initiatives. Additionally, future research should prioritise the development of valid implicit gender stereotype measures.

Keywords: gender brilliance stereotype, field-specific ability beliefs, growth mindset, sense of belonging, university students

Abstract (German)

Trotz eines steigenden Bewusstseins für Geschlechterstereotype bleiben sie weiterhin bestehen. Das Gender Brillanz Stereotyp beschreibt die Annahme, Männer seien brillanter als Frauen. Zudem besagt die Theorie der feldspezifischen Fähigkeitsüberzeugungen, dass in bestimmten Fächern, wie beispielsweise Mathematik oder Physik, der Glaube vorherrscht, Erfolg erfordere angeborene Brillanz. Je stärker dieser Glaube verankert ist, desto weniger Frauen sind in diesen Bereichen vertreten und desto geringer ist das Zugehörigkeitsgefühl der Studentinnen. Forscher*innen führten die Überlegung an, dass das Gender Brillanz Stereotyp in Kombination mit feldspezifischen Fähigkeitsüberzeugungen zum geringen Zugehörigkeitsgefühl weiblicher Studierender beiträgt. Diese Hypothese wurde bisher jedoch nicht empirisch untersucht. Zudem wurde vermutet, dass die Beziehung zwischen feldspezifischen Fähigkeitsüberzeugungen und dem Zugehörigkeitsgefühl von Studentinnen durch das Growth Mindset mediiert wird. Um Unklarheiten bisheriger Studien aufzuklären und Ansätze für zukünftige Interventionen zu identifizieren, wurden ein Fragebogen mit drei verschiedenen Skalen und insgesamt 26 Items sowie der Implicit Association Test (IAT) bei 614 Studierenden eingesetzt. Von den Studierenden identifizierten sich 67,3% als weiblich. Die Ergebnisse deuten darauf hin, dass feldspezifische Fähigkeitsüberzeugungen das Zugehörigkeitsgefühl von Studentinnen negativ beeinflussen, nicht jedoch das der Studenten. Diese Beziehung wird jedoch weder durch das Gender Brillanz Stereotyp moderiert noch durch das Growth Mindset mediiert. Weiters deuten die Ergebnisse auf einen negativen Zusammenhang zwischen feldspezifischen Fähigkeitsüberzeugungen und Growth Mindsets hin. Insgesamt deuten die Ergebnisse darauf hin, dass feldspezifische Fähigkeitsüberzeugungen wichtige Indikatoren für das Zugehörigkeitsgefühl von Studentinnen sein könnten und daher ein Schwerpunkt zukünftiger Interventionen sein sollten. Interventionen sollten sich sowohl auf feldspezifische Fähigkeitsüberzeugungen als auch auf Growth Mindsets konzentrieren, um die Wirksamkeit dieser Initiativen zu erhöhen. Zudem sollte zukünftige Forschung die Entwicklung valider impliziter Messverfahren priorisieren.

Keywords: Gender Brillanz Stereotyp, feldspezifische Fähigkeitsüberzeugungen, Growth Mindset, Zugehörigkeitsgefühl, Studierende

Appendix B

Recruitment Flyer

Introduction to the Questionnaire

0% ausgefüllt

Liebe Teilnehmer*innen,

vielen Dank, dass Sie Interesse daran haben, an dieser Studie im Rahmen meiner Masterarbeit an der Universität Wien teilzunehmen. Es geht um soziale Aspekte des Studiums. **Bitte beachten Sie, dass Sie nur an der Studie teilnehmen können, wenn Sie volljährig sind, aktuell studieren und über ausreichende Deutschkenntnisse verfügen.**

Die **Bearbeitung der Studie** dauert ungefähr **10 Minuten** und kann **NUR am PC/Laptop** durchgeführt werden.

Ziel der Studie: Ich untersuche in dieser Studie, wie Studierende ihr Studienfach wahrnehmen. Da es um Ihre persönliche Meinung geht, gibt es keine richtigen oder falschen Antworten. Bitte überlegen Sie daher nicht lange, am meisten helfen Sie mir, wenn Sie spontan und ehrlich antworten. Sollte Ihnen einmal die Entscheidung schwer fallen, dann geben Sie bitte trotzdem eine Antwort an, und zwar diejenige, die Ihrer Meinung nach am ehesten zutrifft. Anschließend an die Fragen zu Ihren Erfahrungen gibt es zum Abschluss noch einen Test, bei dem Ihre Reaktionszeit gemessen werden soll (Sie erhalten dazu explizite Anweisungen).

Anonymität: Die Speicherung und Verarbeitung Ihrer persönlichen Daten erfolgt anonym. Sie können sich am Ende des Fragebogens noch einmal entscheiden, ob ich Ihre Antworten verwenden darf. Wenn Sie dann zustimmen, ist eine spätere Löschung Ihrer Daten nicht mehr möglich, da ich Ihnen Ihre Antworten aufgrund der Anonymisierung dann nicht mehr zuordnen kann.

Freiwilligkeit: Die Einwilligung zur Datenverarbeitung sowie Ihre Teilnahme an dieser Studie erfolgen vollkommen freiwillig. Sollten Sie der Einwilligungserklärung nicht zustimmen, ist eine Teilnahme an der Studie leider nicht möglich. Sollten Sie sich dazu entscheiden teilzunehmen, bitte ich Sie darum, alle Angaben wahrheitsgemäß zu tätigen und die Studie gewissenhaft zu bearbeiten. Sie können Ihre Teilnahme jederzeit ohne Angabe von Gründen beenden, ohne dass Ihnen dadurch Nachteile entstehen.

Aufwandsentschädigung: Für Ihre Teilnahme erhalten Sie die Möglichkeit, einen von 3 Wunschgutscheinen im Wert von je 15 Euro zu gewinnen. Hierfür werden Sie am Ende der Befragung darum gebeten, eine gültige E-Mail Adresse anzugeben, sodass ich Sie kontaktieren kann, sofern Sie für den Gewinn ausgelost wurden. Die angegebene E-Mail Adresse wird unabhängig von Ihren sonstigen Angaben in der Untersuchung gespeichert und nach der Auslosung gelöscht.

Bei Fragen oder Unklarheiten wenden Sie sich gerne an: miaf99@univie.ac.at

Vielen Dank!

1. Ich bin mit der anonymisierten Speicherung und Verarbeitung meiner Angaben einverstanden.

- ◯ Ja
- ◯ Nein

Weiter

B.Sc. Mia Fallon, Psychologie Institut, Universität Wien

Demographic Data

0% ausgefüllt

1. Alter:

2. Aktuelle Geschlechtsidentität:

- ◯ weiblich
- ◯ männlich
- ◯ nicht-binär
- ◯ keine Geschlechtsidentität
- ◯ keine Angabe
- ◯ eigene Angabe:

3. Höchster Bildungsabschluss:

[Bitte auswählen]

4. Ich studiere zurzeit in...

[Bitte auswählen]

5. Hochschule:

[Bitte auswählen]

6. Aktuelles Studienfach:

Falls Sie mehr als ein Fach studieren, geben Sie bitte Ihr Hauptstudium an.

[Bitte auswählen]

7. Aktueller Studienabschnitt:

[Bitte auswählen]

8. Aktuelles Semester:

Im wievielten Semester befinden Sie sich gerade im aktuellen Studium?

Weiter

Field-Specific Ability Beliefs: Self

10% ausgefüllt

Persönlich denke ich:

Folgende Fragen beziehen sich auf Einstellungen zu Erfolg im Studium. Bitte geben Sie an, inwieweit **Sie persönlich** von den folgenden Aussagen überzeugt sind.

Ich persönlich denke....	trifft gar nicht zu						trifft völlig zu
Um in meinem Studienfach erfolgreich zu sein, muss man von vornherein eine spezifische Begabung mitbringen, die sich nicht erlernen lässt.	○	○	○	○	○	○	○
Wenn man in meinem Studienfach Erfolg haben will, ist harte Arbeit alleine nicht ausreichend; man braucht zusätzlich eine angeborene Begabung bzw. ein bestimmtes Talent.	○	○	○	○	○	○	○
In meinem Studienfach kann im Prinzip jede Person erfolgreich sein, wenn sie sich hinreichend anstrengt.	○	○	○	○	○	○	○
In meinem Studienfach sind die wichtigsten Erfolgsfaktoren Motivation und Durchhaltevermögen; die reine Begabung ist zweitrangig.	○	○	○	○	○	○	○

Weiter

Sense of Belonging

20% ausgefüllt

Nun würde ich Sie bitten, ein paar Fragen zu Ihrem Studiengang beziehungsweise der akademischen Gemeinschaft („Scientific Community“) Ihres Studienfaches zu beantworten. Als akademische Gemeinschaft bezeichnet man die breite Gruppe von Personen, die in diesem Bereich involviert sind, einschließlich den Studierenden und Professor*innen in Ihrem Studiengang. Genauer gesagt, möchte ich herausfinden, wie zugehörig Sie sich Ihrem Studium und Ihrem Fach fühlen.

Lesen Sie bitte jede Aussage sorgfältig durch und geben Sie die Zahl an, die Ihren Grad der Zustimmung widerspiegelt.

In Lehrveranstaltungen meines Studiums...	stimme gar nicht zu			stimme völlig zu
... bin ich nervös.	○	○	○	○
... vertraue ich darauf, dass die Professor*innen an mich glauben, auch wenn ich etwas schlecht mache.	○	○	○	○
... habe ich das Gefühl zur akademischen Gemeinschaft meines Fachs zu gehören.	○	○	○	○
... versuche ich, so wenig wie möglich zu machen.	○	○	○	○
... wünsche ich mir, ich wäre unsichtbar.	○	○	○	○
... vertraue ich darauf, dass die Professor*innen mir engagiert beim Lernen helfen.	○	○	○	○
... bin ich ängstlich.	○	○	○	○
... fühle ich mich als Teil der akademischen Gemeinschaft meines Studiums.	○	○	○	○
... wünsche ich mir, ich könnte in den Hintergrund rücken, damit mich keiner wahrnimmt.	○	○	○	○
... fühle ich mich akzeptiert.	○	○	○	○

... sehe ich mich als Mitglied der akademischen Gemeinschaft meines Studiengangs.	○ ○ ○ ○
... bin ich angespannt.	○ ○ ○ ○
... fühle ich mich wertgeschätzt.	○ ○ ○ ○
... vertraue ich darauf, dass die Testmaterialien (Prüfungen, Tests, o.Ä.) niemanden bevorzugen oder benachteiligen.	○ ○ ○ ○
... fühle ich mich anerkannt.	○ ○ ○ ○

Weiter

Field-Specific Ability Beliefs: Other

30% ausgefüllt

Studierende meines Studienfachs denken:

Folgende Fragen beziehen sich auf Einstellungen zu Erfolg im Studium. Bitte geben Sie an, inwieweit Sie glauben, dass **Personen, die mit Ihnen studieren**, von folgenden Aussagen überzeugt sind.

Meine Studienkolleg*innen denken....	trifft gar nicht zu						trifft völlig zu
Um in unserem Studienfach erfolgreich zu sein, muss man von vornherein eine spezifische Begabung mitbringen, die sich nicht erlernen lässt.	○	○	○	○	○	○	○
Wenn man in unserem Studienfach Erfolg haben will, ist harte Arbeit alleine nicht ausreichend; man braucht zusätzlich eine angeborene Begabung bzw. ein bestimmtes Talent.	○	○	○	○	○	○	○
In unserem Studienfach kann im Prinzip jede Person erfolgreich sein, wenn sie sich hinreichend anstrengt.	○	○	○	○	○	○	○
In unserem Studienfach sind die wichtigsten Erfolgsfaktoren Motivation und Durchhaltevermögen; die reine Begabung ist zweitrangig.	○	○	○	○	○	○	○

Growth Mindset

40% ausgefüllt

Persönlich denke ich:

Wie sehr stimmen Sie folgenden Aussagen zu?

	stimme gar nicht zu					stimme voll und ganz zu
Sie haben ein bestimmtes Maß an Intelligenz und können nicht wirklich viel daran ändern.	○	○	○	○	○	○
Ihre Intelligenz ist eine Eigenschaft, die Sie nicht groß verändern können.	○	○	○	○	○	○
Sie können neue Dinge lernen, aber Ihre grundsätzliche Intelligenz können Sie nicht wirklich verändern.	○	○	○	○	○	○

Weiter

Implicit Association Test: Introduction

Implicit Association Test: Group A

63% ausgefüllt

F

J

männlich

weiblich

Legen Sie Ihren Mittel- oder Zeigefinger auf die Tasten **F** und **J**. Wörter oder Bilder ("Items") werden nacheinander in der Mitte des Bildschirms erscheinen. Die Items passen jeweils zu einer der Kategorien (männlich/weiblich), die Sie am oberen Bildschirmrand sehen können. Wenn das Item zur linken Kategorie gehört, drücken Sie bitte die Taste **F**, wenn es zur rechten Kategorie gehört, die Taste **J**. Jedes Item gehört nur zu einer Kategorie.

Nach einer korrekten Zuordnung erscheint automatisch das nächste Item. Wenn Sie einen Fehler machen, erscheint ein rotes **X**. Korrigieren Sie den Fehler, indem Sie die andere Taste drücken.

Während dieser Zuordnungsaufgabe wird die Zeit gemessen. **REAGIEREN SIE SO SCHNELL SIE KÖNNEN** und machen Sie dabei so wenig Fehler wie möglich. Wenn Sie zu langsam reagieren oder zu viele Fehler machen, wird das Ergebnis ungültig sein. Die Aufgabe wird ca. fünf Minuten dauern.

Bitte die **Leertaste** drücken, um anzufangen.

soSci
oFb - der onlineFragebogen

60% ausgefüllt

F

männlich

J

weiblich

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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soSci
oFb - der onlineFragebogen

60% ausgefüllt

F J

brillant **glücklich**

Beachten Sie oben die veränderten Kategorien (brillant/glücklich). Die zuzuordnenden Items (Wörter oder Bilder) haben sich ebenfalls geändert. Die Regeln bleiben allerdings die gleichen.

Wenn das Item zur linken Kategorie gehört, drücken Sie die Taste **F**, wenn es zur rechten Kategorie gehört, drücken Sie die Taste **J**. Jedes Item gehört nur zu einer Kategorie. Ein rotes **X** erscheint, wenn Sie einen Fehler machen. Korrigieren Sie den Fehler, indem Sie die andere Taste drücken. **REAGIEREN SIE SO SCHNELL SIE KÖNNEN.**

Bitte die **Leertaste** drücken, um anzufangen.

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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60% ausgefüllt

F

J

brillant

glücklich

optimistisch

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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60% ausgefüllt

F

J

männlich

weiblich

brillant

glücklich

Wie Sie oben sehen, erscheinen die vier Kategorien, die Sie zuerst getrennt gesehen haben, nun zusammen. Beachten Sie, dass jedes Item nur in eine Kategorie gehört. Wenn zum Beispiel die Kategorien „männlich“ und „brillant“ auf verschiedenen Seiten des Bildschirms erscheinen würden, dann gehörten die Bilder, die männlich bezeichnen, in die Kategorie „männlich“ und nicht in die Kategorie „brillant“.

Die **blauen** und **schwarzen** Felder und Items können dabei helfen, die richtige Kategorie zu finden. Drücken Sie die Tasten **F** oder **J**, um die Items den vier Kategorien **links** und **rechts** zuzuordnen. Korrigieren Sie Fehler, indem Sie die jeweils andere Taste drücken.

Bitte die **Leertaste** drücken, um anzufangen.

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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60% ausgefüllt

F

männlich

brillant

J

weiblich

glücklich

genial

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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soSci
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60% ausgefüllt

F

J

männlich

weiblich

brillant

glücklich

Sortieren Sie noch einmal die gleichen vier Kategorien. Beachten Sie dabei so schnell und fehlerfrei wie möglich vorzugehen.

Die **blauen** und **schwarzen** Felder und Items können dabei helfen, die richtige Kategorie zu finden. Drücken Sie die Tasten **F** oder **J**, um die Items den vier Kategorien **links** und **rechts** zuzuordnen. Korrigieren Sie Fehler, indem Sie die jeweils andere Taste drücken.

Bitte die **Leertaste** drücken, um anzufangen.

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

soSci
oFb - der onlineFragebogen

60% ausgefüllt

F

männlich

brillant

J

weiblich

glücklich

genial

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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soSci
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60% ausgefüllt

F J

weiblich **männlich**

Beachten Sie, dass es nun nur zwei Kategorien gibt und dass diese die Seiten getauscht haben. Die Kategorie, die vorher links war, ist nun rechts, die rechte Kategorie ist nun links. Üben Sie zunächst die neue Anordnung.

Drücken Sie die Tasten **F** oder **J**, um die Items den zwei Kategorien **links** und **rechts** zuzuordnen und korrigieren Sie Fehler, indem Sie die jeweils andere Taste drücken.

Bitte die **Leertaste** drücken, um anzufangen.

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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60% ausgefüllt

F

J

weiblich

männlich

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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soSci
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60% ausgefüllt

F

J

weiblich

männlich

brillant

glücklich

Sie haben es gleich geschafft :) Beachten Sie, dass die vier Kategorien nun zusammen in einer Kombination stehen. Beachten Sie, dass jedes Item nur zu einer Kategorie gehört.

Die **blauen** und **schwarzen** Felder und Items können dabei helfen, die richtige Kategorie zu finden.

Drücken Sie die Tasten **F** oder **J**, um die Items den zwei Kategorien **links** und **rechts** zuzuordnen. Korrigieren Sie Fehler, indem Sie die jeweils andere Taste drücken.

Bitte die **Leertaste** drücken, um anzufangen.

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

soSci
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60% ausgefüllt

F

J

weiblich

männlich

brillant

glücklich

optimistisch

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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soSci
oFb - der onlineFragebogen

60% ausgefüllt

F

J

weiblich

männlich

brillant

glücklich

Das ist der letzte Block, dann haben Sie es geschafft :) Sortieren Sie noch einmal die gleichen vier Kategorien. Beachten Sie dabei so schnell und fehlerfrei wie möglich vorzugehen.

Die **blauen** und **schwarzen** Felder und Items können dabei helfen, die richtige Kategorie zu finden.

Drücken Sie die Tasten **F** oder **J**, um die Items den zwei Kategorien **links** und **rechts** zuzuordnen. Korrigieren Sie Fehler, indem Sie die jeweils andere Taste drücken.

Bitte die **Leertaste** drücken, um anzufangen.

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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60% ausgefüllt

F

J

weiblich

männlich

brillant

glücklich

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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Implicit Association Test: Group B

60% ausgefüllt

F

J

weiblich

männlich

Legen Sie Ihren Mittel- oder Zeigefinger auf die Tasten **F** und **J**. Wörter oder Bilder ("Items") werden nacheinander in der Mitte des Bildschirms erscheinen. Die Items passen jeweils zu einer der Kategorien (männlich/weiblich), die Sie am oberen Bildschirmrand sehen können. Wenn das Item zur linken Kategorie gehört, drücken Sie bitte die Taste **F**, wenn es zur rechten Kategorie gehört, die Taste **J**. Jedes Item gehört nur zu einer Kategorie.

Nach einer korrekten Zuordnung erscheint automatisch das nächste Item. Wenn Sie einen Fehler machen, erscheint ein rotes **X**. Korrigieren Sie den Fehler, indem Sie die andere Taste drücken.

Während dieser Zuordnungsaufgabe wird die Zeit gemessen. **REAGIEREN SIE SO SCHNELL SIE KÖNNEN** und machen Sie dabei so wenig Fehler wie möglich. Wenn Sie zu langsam reagieren oder zu viele Fehler machen, wird das Ergebnis ungültig sein. Die Aufgabe wird ca. fünf Minuten dauern.

Bitte die **Leertaste** drücken, um anzufangen.

soSci
oFb - der onlineFragebogen

60% ausgefüllt

F

J

weiblich

männlich

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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soSci
oFb - der onlineFragebogen

60% ausgefüllt

F

J

brillant

glücklich

Beachten Sie oben die veränderten Kategorien (brillant/glücklich). Die zuzuordnenden Items (Wörter oder Bilder) haben sich ebenfalls geändert. Die Regeln bleiben allerdings die gleichen.

Wenn das Item zur linken Kategorie gehört, drücken Sie die Taste **F**, wenn es zur rechten Kategorie gehört, drücken Sie die Taste **J**. Jedes Item gehört nur zu einer Kategorie. Ein rotes **X** erscheint, wenn Sie einen Fehler machen. Korrigieren Sie den Fehler, indem Sie die andere Taste drücken. **REAGIEREN SIE SO SCHNELL SIE KÖNNEN.**

Bitte die **Leertaste** drücken, um anzufangen.

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

soSci
oFb - der onlineFragebogen

63% ausgefüllt

F

J

brillant

glücklich

brillant

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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oFb - der onlineFragebogen

63% ausgefüllt

F

J

weiblich

männlich

brillant

glücklich

Wie Sie oben sehen, erscheinen die vier Kategorien, die Sie zuerst getrennt gesehen haben, nun zusammen. Beachten Sie, dass jedes Item nur in eine Kategorie gehört. Wenn zum Beispiel die Kategorien „weiblich“ und „brillant“ auf verschiedenen Seiten des Bildschirms erscheinen würden, dann gehörten die Bilder, die weiblich bezeichnen, in die Kategorie „weiblich“ und nicht in die Kategorie „brillant“.

Die **blauen** und **schwarzen** Felder und Items können dabei helfen, die richtige Kategorie zu finden. Drücken Sie die Tasten **F** oder **J**, um die Items den vier Kategorien **links** und **rechts** zuzuordnen. Korrigieren Sie Fehler, indem Sie die jeweils andere Taste drücken.

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soSci
oFb - der onlineFragebogen

60% ausgefüllt

F

J

weiblich

männlich

brillant

glücklich

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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oFb - der onlineFragebogen

63% ausgefüllt

F

J

weiblich

männlich

brillant

glücklich

Sortieren Sie noch einmal die gleichen vier Kategorien. Beachten Sie dabei so schnell und fehlerfrei wie möglich vorzugehen.

Die **blauen** und **schwarzen** Felder und Items können dabei helfen, die richtige Kategorie zu finden. Drücken Sie die Tasten **F** oder **J**, um die Items den vier Kategorien **links** und **rechts** zuzuordnen. Korrigieren Sie Fehler, indem Sie die jeweils andere Taste drücken.

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Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

soSci
oFb - der onlineFragebogen

60% ausgefüllt

F

J

weiblich

männlich

brillant

glücklich

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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63% ausgefüllt

F

J

männlich

weiblich

Beachten Sie, dass es nun nur zwei Kategorien gibt und dass diese die Seiten getauscht haben. Die Kategorie, die vorher links war, ist nun rechts, die rechte Kategorie ist nun links. Üben Sie zunächst die neue Anordnung.

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oFb - der onlineFragebogen

63% ausgefüllt

F

J

männlich

weiblich

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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63% ausgefüllt

F J

männlich **weiblich**

brillant **glücklich**

Sie haben es gleich geschafft :) Beachten Sie, dass die vier Kategorien nun zusammen in einer Kombination stehen. Beachten Sie, dass jedes Item nur zu einer Kategorie gehört.

Die **blauen** und **schwarzen** Felder und Items können dabei helfen, die richtige Kategorie zu finden.

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60% ausgefüllt

F

männlich

brillant

J

weiblich

glücklich

Falls die Tasten nicht funktionieren, klicken Sie bitte in den Rahmen, und versuchen Sie es erneut.

Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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soSci
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63% ausgefüllt

F J

männlich **weiblich**

brillant **glücklich**

Das ist der letzte Block, dann haben Sie es geschafft :) Sortieren Sie noch einmal die gleichen vier Kategorien. Beachten Sie dabei so schnell und fehlerfrei wie möglich vorzugehen.

Die **blauen** und **schwarzen** Felder und Items können dabei helfen, die richtige Kategorie zu finden.

Drücken Sie die Tasten **F** oder **J**, um die Items den zwei Kategorien **links** und **rechts** zuzuordnen. Korrigieren Sie Fehler, indem Sie die jeweils andere Taste drücken.

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soSci
oFb - der onlineFragebogen

63% ausgefüllt

F

J

männlich

weiblich

brillant

glücklich

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Wenn das rote X erscheint, drücken Sie die andere Taste, damit das rote X wieder verschwindet.

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Sendoff

70% ausgefüllt

1. Ich bin mit der anonymisierten Speicherung und Verarbeitung meiner Angaben einverstanden.

- ◯ Ja
- ◯ Nein

2. Offene Anmerkungen:

Falls Sie Anmerkungen, Kommentare, oder Unklarheiten zu dem Fragebogen haben, können Sie diese hier vermerken.

Weiter

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soSci
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80% ausgefüllt

Liebe*r Teilnehmer*in,

herzlichen Dank für die Teilnahme!

Sie helfen mir damit, genderbezogene Stereotype im Studium zu untersuchen. Genauer geht es um den Zusammenhang zwischen feldspezifischen Fähigkeitsüberzeugungen und dem Gender Brillanz Stereotyp mit dem Zugehörigkeitsgefühl zum Studienfach in Abhängigkeit von Intelligenz-Mindsets. Der Reaktionstest sollte dabei Ihre unbewussten Einstellungen messen.

Bitte klicken Sie unbedingt unten rechts auf „**Weiter**" – erst dann ist der Fragebogen abgeschlossen und Ihre Daten gespeichert.

Falls Sie am **Gewinnspiel** teilnehmen möchten, haben Sie unten die Möglichkeit, Ihre E-Mail Adresse anzugeben.

Ich danke Ihnen nochmals herzlich für Ihre Zeit und Mühe, ich weiß es sehr zu schätzen!
Falls Sie noch Fragen zum Inhalt, Zweck oder zur Forschungsethik dieser Erhebung haben, wenden Sie sich bitte an: a11715132@unet.univie.ac.at

1. Möchten Sie am Gewinnspiel teilnehmen?

Sofern Sie an der Verlosung zum Gewinnspiel teilnehmen möchten kreuzen Sie bitte „Ja" an und geben Sie anschließend Ihre E-Mail-Adresse ein. Andernfalls bitte ich Sie, auf „Weiter" zu klicken.

☐ Ich will am **Gewinnspiel** teilnehmen. Ich willige ein, dass meine E-Mail-Adresse bis zur Ziehung der Gewinner gespeichert wird. Diese Einwilligung kann ich jederzeit widerrufen. Meine Angaben in dieser Befragung bleiben weiterhin anonym, meine E-Mail-Adresse wird nicht an Dritte weitergegeben.

Weiter

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Vielen Dank für Ihre Teilnahme!

Ich möchte mich ganz herzlich für Ihre Mithilfe bedanken.

Durch das vollständige Ausfüllen des Fragebogens haben Sie meinem **Forschungsvorhaben sehr geholfen**.

Ich würde mich sehr freuen, wenn Sie diese Studie unterstützen, indem Sie sie an **weitere Studierende in Ihrem Bekanntenkreis weiterleiten**.

Ihre Antworten wurden **gespeichert**, Sie können das Browser-Fenster nun schließen.

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Original Sense of Belonging Scale

Table 13 presents the items used in the original Sense of Belonging Scale by Ladewig et al. (2020).

Table 13

Items included in the Sense of Belonging Scale by Ladewig et al. (2020)

Item	Wenn ich in einer Physikumgebung bin, dann…
1	… fühle ich, dass ich zur Physik-Community dazugehöre.
2	... fühle ich mich als Teil dieser Community.
3	... sehe ich mich als Mitglied der Physik-Welt.
4	... versuche ich, so wenig wie möglich zu machen.
5	... wünsche ich mir, ich könnte in den Hintergrund rücken, damit mich keiner wahrnimmt.
6	... wünsche ich mir, ich wäre unsichtbar.
7	... fühle ich mich akzeptiert.
8	... fühle ich mich wertgeschätzt.
9	... fühle ich mich anerkannt.
10	... fühle ich mich ängstlich
11	... bin ich angespannt.
12	... bin ich nervös.
13	... vertraue ich darauf, dass die Lehrenden mir engagiert beim Lernen helfen.
14	... vertraue ich darauf, dass die Lehrenden an mich glauben, auch wenn ich etwas schlecht mache.
15	... vertraue ich darauf, dass die Testmaterialien (Klausuren, Tests, o.Ä.) niemanden bevorzugen oder benachteiligen.