

## RESEARCH ARTICLE OPEN ACCESS

# Cold Philosophers: Female Students' Perceived Lack of Fit in Stereotypes Is Associated With Underrepresentation

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**Received:** 21 May 2024 | **Revised:** 29 October 2024 | **Accepted:** 4 December 2024

**Funding:** This work was supported by Bundesministerium für Bildung und Forschung.

**Keywords:** gender stereotypes | lack of fit | stereotype misfit | underrepresentation in philosophy | women in academia

## ABSTRACT

Women's underrepresentation in philosophy requires a comprehensive investigation of the factors that contribute to it. This paper examines the presence of gender stereotypes regarding philosophers and the consequences of a perceived misfit in three studies. A pre-study ( $N=49$ ) confirmed that students tend to think about males when asked to name philosophers. Study 1 ( $N=530$ ) used an online experiment with a general sample and found that philosophers are perceived as more male than female. Results demonstrated a perceived gender-philosopher-misfit regarding communal but not agentic attributes. Study 2 ( $N=178$ ) confirmed the prevalence of the male philosopher stereotype in philosophy students. Building on the Lack-of-Fit Model, we hypothesized and found that female students showed a higher perceived self-philosopher-misfit than male students on the communion dimension, but unexpectedly not on the agency dimension. Using a structural equation model, we showed that this perceived gender-related communal misfit was associated with their lowered intention to persist and increased intention to quit their philosophy studies. The results replicate prior findings on gender stereotype misfits and highlight the special role of the communal dimension in shaping career decisions. Please refer to the Supporting Information section to find this article's Community and Social Impact Statement.

## 1 | Introduction

I recently presented a paper at a department that had its own seminar room. Because they had their own seminar room, they'd decorated the walls by filling them with pictures of famous philosophers. I noticed immediately that every picture I saw was a man'. (Saul 2013, 46f.)

While there have been significant improvements in the proportion of women in many academic subjects in recent years, the gender gap in philosophy remains large (Beebe 2021; Easton 2022; Klonschinski and Kraft 2022). It has been theorised that this can be explained by a predominantly male stereotype

of the philosopher and a resulting perceived misfit (gender-philosopher-misfit and self-philosopher-misfit) in ascribed attributes between female students and philosophers in terms of communal (e.g., warm, sincere) and agentic (e.g., competent, ambitious) attributes (Easton 2022; Ma et al. 2018). However, there is no empirical evidence for this so far. Therefore, this article addresses the following questions: First, is the stereotype of the philosopher male? Second, is there a perceived gender-philosopher-misfit in stereotypical attributes between women and philosophers, and if so, in which attributes (agentic or communal)? Third, do female students show a higher perceived self-philosopher-misfit than male students, and if so, where is this misfit located (in communal or agentic attributes)? And fourth, what are the consequences of a potentially perceived self-philosopher-misfit?

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## 1.1 | Underrepresentation of Women in Philosophy

The underrepresentation of women in philosophy and possible reasons for this has been discussed for years. Several authors have described a 'leaky pipeline' meaning that women leave philosophy at different stages of the academic philosophy (Calhoun 2009; Easton 2022; Klonschinski 2020). Studies from the United States, the United Kingdom, Australia and Germany resembled each other in the finding that at the beginning of introduction courses female and male philosophy students are distributed equally (Baron, Dougherty, and Miller 2015; Beebee 2021; Klonschinski and Kraft 2022; Thompson et al. 2016). However, then the leaky pipeline begins. Only 37% of the master students in the United Kingdom (Beebee 2021), only about 30%–37% of the PhD students (Beebee 2021; Klonschinski and Kraft 2022; Leslie et al. 2015) and only about 20%–28% of the professors (Beebee 2021; Klonschinski 2022; Schwitzgebel and Jennings 2017) are women. Different studies concluded that the largest drop in the percentage of women in philosophy occurs between taking introductory courses and choosing a major (Demarest et al. 2017; Dougherty, Baron, and Miller 2015a; Dougherty, Baron, and Miller 2015b; Paxton, Figdor, and Tiberius 2012; Thompson et al. 2016).

There is a commonality regarding the facts and figures at hand. First, the proportion of women in academic positions is inversely correlated with the level of academic degree attained (Beebee 2021; Klonschinski and Kraft 2022). Second, while this is likely to be true for almost all academic disciplines, it is striking for philosophy that little change has taken place compared to other subjects in recent decades (Easton 2022; Thompson et al. 2016). Therefore, it might not just be a general academic pipeline issue, but something special to philosophy (Dodds and Goddard 2013). Third and in line with this, the gender structure of both undergraduates and graduates as well as doctoral students and university staff in academic philosophy lags behind the gender ratio of other humanities subjects (Beebee and Saul 2011; Bishop et al. 2013; Healy 2011; Leslie et al. 2015). It corresponds more to mathematics and the natural sciences (STEM subjects) (Easton 2022; Klonschinski 2020). Between 2009 and 2014, only 29% of doctorates in philosophy were received by women, whereas 51% of doctorates in the humanities were received by women (Schwitzgebel and Jennings 2017). In 2018, 73% of graduates in the humanities were female, while in philosophy, mathematics and natural sciences the rate was around 48% each (Klonschinski 2020).

To summarise, there is something special about the academic philosophy and its proportion of women. The largest drop in women is between the beginning of studies and the PhD, which is significant because at this level the philosophers of tomorrow are created. But while there is quite some evidence for this it is still unclear what causes are responsible for this loss of women in academic philosophy careers.

## 1.2 | Gender Stereotype Hypothesis

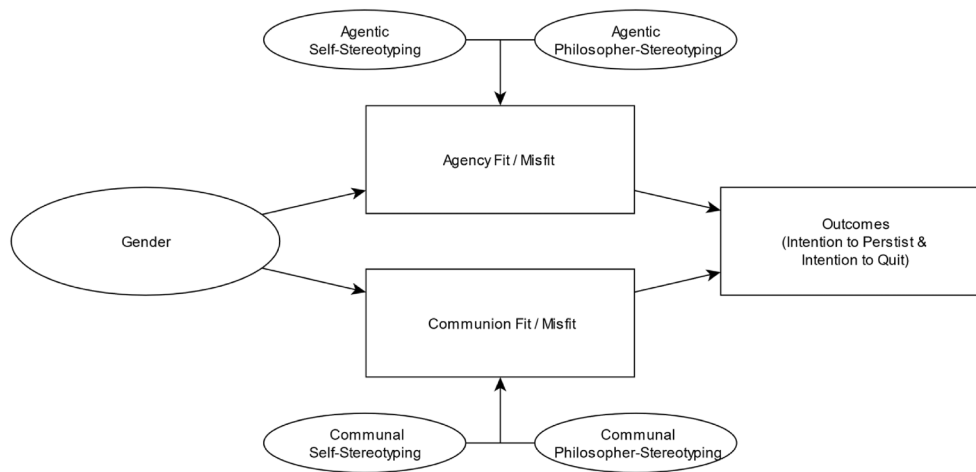
In past research, various hypotheses have been discussed to explain the underrepresentation of women in philosophy

(Dougherty, Baron, and Miller 2015a). Thereby, it has been argued that it is probably not a monocausal relationship, but a 'perfect storm' formed by an interaction of (societal) gender discriminations and particularities in academic philosophy (Antony 2012). However, the hypotheses differ in their theoretical and empirical explanatory strength, and most empirical data so far has been collected for the 'Internalized Stereotype Hypothesis' (Dougherty, Baron, and Miller 2015a). This hypothesis states that the stereotype of philosophers differs from the (societal) gender stereotypes of women (gender-philosopher-misfit) and therefore female students are more likely to perceive a misfit (self-philosopher-misfit) and leave philosophy. This misfit could happen in two ways (Dougherty, Baron, and Miller 2015a). The stereotype for philosophers could either directly misfit women if it stereotypes philosophers as male (philosopher = male). Additionally, the stereotype for philosophers could indirectly misfit women because philosophers are associated with attributes that are associated as not female (philosopher = attribute  $X \neq$  female) or women are associated with attributes that are associated as not philosophical (women = attribute  $X \neq$  philosophical). For example, philosophers could be associated with attributes that are coded as agentic, and agentic attributes are not associated with being female or women could be associated with attributes that are coded as communal, and communal attributes are not associated with being philosophical (Calhoun 2009; Dougherty, Baron, and Miller 2015a; Haslanger 2008).

## 1.3 | Stereotype Model

Stereotypes refer to the characteristics and attributes assigned to social groups. Building on the work of Bakan (1966), the 'Big Two' (agency and communion) have become established as an effective framework for describing and analysing social cognitions, stereotyping and self-concept (Abele et al. 2016; Abele et al. 2021; Eagly et al. 2020; Rucker, Galinsky, and Magee 2018). Building on evolutionary theory, evaluations of others are based on the ideas of 'getting along' (communion) and 'getting ahead' (agency) (Abele et al. 2021; Hogan 1982). Communion therefore refers to qualities important for building and maintaining social relationships, such as being friendly or fair. Agency, on the other hand, refers to attributes important for achieving goals, such as competence, determination and ambition. These two dimensions are also referred to as warmth and competence (Fiske, Cuddy, and Glick 2007). The Stereotype-Content Model (SCM; Fiske, Cuddy, and Glick 2007; Fiske et al. 2018) provides a framework for these dimensions and shows that they explain most of the variance in the perception of social behaviour. People use them to describe groups. For example, rich people are seen as high in competence and low in warmth, whereas old people are described as high in warmth and low in competence (Cuddy, Fiske, and Glick 2007).

Humans also use specific attributes to describe genders. Gender stereotypes are defined as 'preconceptions regarding what men and women are like' (Heilman and Caleo 2018). They divide people into one of the two social categories of gender based on their reproductive function (Eagly et al. 2020).<sup>1</sup> These stereotypes do not need to be overtly articulated and supported. They indirectly and unconsciously shape our ideas of behaviours,



**FIGURE 1** | Theoretical model. The gender of students influences the perceived fit/misfit which leads to intention to persist and intention to quit.

characteristics, preferences and attributes of men and women (Valian 1998). Stereotypically, women are described as more communal and less agentic, and men as more agentic and less communal (Abele et al. 2016; Fiske, Cuddy, and Glick 2007). This traditional classification has hardly changed (Haines, Deaux, and Lofaro 2016). Even more, the association of women with communal attributes has intensified in recent years (Eagly et al. 2020).

People also use agentic and communal attributes to describe professions. For example, doctors are seen as high in agency and communion, while politicians are seen as low in both, and lawyers are seen as high in agency and low in communion (Friehe, Aparicio Lukassowitz, and Wagner 2022; Gligorić, Van Kleef, and Rutjens 2022; Imhoff et al. 2013). While there is a lot of research on the stereotyping of professions, the stereotyping of the profession of philosophers has not been well researched. As stereotypes stem from people's observations of social roles and role models (Eagly and Wood 2012; Koenig and Eagly 2014), it can be argued that philosophers are stereotypically more likely characterised as male because the well-known and thus prototypical philosophers are/were mostly male (e.g., Kant, Aristoteles, Nietzsche and Plato). A first indication of this explicit gender stereotype could be found in research by DiBella and colleagues (Di Bella, Miles, and Saul 2016). In their research, building on an open-question format survey, the attributes mentioned were rated by philosophy students according to how typical they are for philosophers. In this study, 'male' was named and rated as typical, which indicates an explicit male stereotype (Di Bella, Miles, and Saul 2016). Furthermore, it has been hypothesized that the stereotypical attributes of philosophers are, for example, competitiveness and winning behaviour (Easton 2022), assertiveness, tenacity and perseverance (Antony 2012), or combative and focused on individual achievement (Haslanger 2008). All of these attributes are considered agentic and might therefore be associated less strongly with women than with men. Initial evidence for the association of agentic attributes with philosophy has been found. It has been shown that philosophy is highly associated with brilliance, in terms of field-specific ability beliefs, and inherent talent (Leslie et al. 2015) and that typical attributes are analytical, abstract, logical, and rational (Di Bella, Miles, and Saul 2016).

To summarise, it can be assumed that stereotypically philosophers are seen as male and thus not as female because the well-known philosophers are/were male. Moreover, it can be assumed that philosophers are stereotypically described with attributes that are considered agentic rather than communal and therefore not female. However, regarding the content of the attributes, Diekmann et al. (2017) hypothesized that a misfit in communal goals is primarily responsible for the misfit perceived by women in male occupations (e.g., STEM). Therefore, it is important to check both whether philosophy is explicitly associated with male rather than female philosophers and whether philosophers are ascribed with male (agentic) rather than female (communal) attributes.

#### 1.4 | Consequences of a Perceived Misfit

The Lack-of-Fit Model (Heilman 1983; Heilman and Caleo 2018) provides a framework for predicting the potential impact of a perceived misfit. The model consists of three parts: First, self-stereotyping and stereotyping a category (e.g., job, discipline). This can be measured on the two stereotypical dimensions of agency and communion. Second, the resulting assessment of the (agency and communion) fit or misfit. And third, the consequences of the perceived fit or misfit. The model assumes that people who feel close to the main stereotype of the profession feel more compatible with other members of the profession and therefore have more positive outcomes and long-term perspectives. In contrast, a perceived misfit should be related to negative outcome variables and long-term perspectives (Heilman and Caleo 2018). For students, this long-term perspective includes at least two aspects: One is the intention to persist (e.g., doing a PhD or working in academics) and the other is the intention to quit. Quitting your studies takes place in several phases (Bäulke, Grunschel, and Dresel 2022). The intention to quit is thereby an early indicator of a final dropout and can therefore be used as a dropout predictor (Blüthmann, Thiel, and Wolfgramm 2011; Fleischer et al. 2019). The theoretical model (applied to the context of philosophy students) can be seen in Figure 1.

Different effects of a perceived misfit have been found in research so far. For example, a greater perceived misfit with the stereotype of a marine or surgeon led to lower occupational

identification and motivation, as well as a higher intention to quit the profession for both women and men (Peters, Ryan, and Haslam 2012a; Peters, Ryan, and Haslam 2015). For students, a higher perceived misfit from a prototypical good student resulted in a higher percentage of quitting (Lane and Gibbons 2007). These findings indicate the consequences of a general misfit.

Regarding a perceived misfit between self-stereotyping and other-stereotyping on agentic and communal attributes, studies have already shown that communal goals are more important for women in general (Pöhlmann 2001) and especially for female students when choosing a profession (Diekmann et al. 2011; Diekmann, Weisgram, and Belanger 2015). Therefore, it could be argued that the misfit on the communal dimension is more decisive for women. However, the effects of an agentic misfit could also be found in the university context. In a study of professors (assistant, associate and full professors) in the Netherlands, perceived agency misfit negatively correlated with job commitment and identification and positively correlated with exhaustion and intention to quit. This influenced especially female assistant professors as they had the highest perceived misfit compared to successful scientists (Van Veelen and Derks 2021). However, in that study, the question was framed asking about successful scientists, so it is not too surprising that the strongest association was observed with agency and not with communion because only agency contains success-based attributes.

For philosophy students, there are still no studies regarding a perceived misfit and the consequences thereof. However, there is research on perceived similarity, which can give first indications. Philosophy students who stated that they feel similar to philosophers showed a higher continuation in philosophy (Demarest et al. 2017). Furthermore, for female philosophy students, it was found that the higher the IAT score for the men-philosophy connection, the lower the self-philosophy connection and thus the lower the interest in philosophy (Ma et al. 2018). However, these studies have examined misfit as a similarity or implicit association and not at the level of self-philosopher-misfit in terms of agentic and communal attributes. To get a complete picture of the underlying causes, it is necessary to examine not only whether there is a perceived misfit, but also on which dimension this misfit can be found. If philosophers are perceived as male, this could be either because they are described as too agentic or as not communal enough. Therefore, we examine not only if there is a perceived misfit but also on which dimensions.

## 1.5 | The Present Research

Deriving from the theoretical and empirical research we focus on four questions: First, is the stereotype of the philosopher male? We hypothesize that the stereotype is rather male than female. To test this, a pre-study used an open-question format to test whether people know more men than women when asked about philosophers. Study 1 and Study 2 then tested this by asking about the (typical) gender of philosophers and the gender distribution in philosophy.

Second, is there a misfit (gender-philosopher-misfit) in stereotypical attributes between women and philosophers, and if so,

in which attributes (agentic or communal)? We hypothesize that there is a difference and women are seen as higher in communion and lower in agency than philosophers. To test this, Study 1 uses an experimental design to test the stereotypical attributes of philosophers, men, and women.

Third, do female students show a higher perceived misfit (self-philosopher-misfit) than male students, and if so, where is this misfit located (in communal or agentic attributes)? We hypothesize that female students show a higher perceived misfit in communion and agency than male students. To test this Study 2 uses a correlative design to investigate the perceived misfit between self-concept and philosopher-stereotyping in philosophy students.

And fourth, what are the consequences of this perceived misfit? We hypothesize that a higher perceived misfit is associated with a higher intention to quit and a lower intention to persist in philosophy students.

Ethical approval for Study 1 and Study 2 was obtained from the ethics committee of Kiel University. The studies took place in spring 2023. Participants in all studies gave informed consent prior to participation and agreed to privacy statements regarding the collection, storage and publication of their data. All exclusions in these studies are reported. Items, data and codes of Study 1 and Study 2 can be found in the [Supporting Information](#). The studies were not preregistered.

## 1.6 | Pre-Study

An open-question format was used to get an initial indication to answer our first question of whether philosophers are more likely to be associated with men. Students were asked to name all the philosophers they knew. This open-question format was used to get a better impression of the stereotypes students have in mind when thinking about philosophers. We hypothesized that they knew more male than female philosophers. The study was conducted as an online survey in German and took about 3 min.

## 1.7 | Method

### 1.7.1 | Participants

Participants were recruited and surveyed in seminars at Kiel University. Using G\*Power (Faul et al. 2009), the minimum sample size for a paired *t*-test was calculated to be  $N=36$  for a medium effect ( $d=0.5$ ) and a power of 0.9. In total,  $N=49$  participants completed the survey. Eight persons who stated that they studied philosophy as a second subject were excluded in order to measure general, societal stereotypical perceptions (we explicitly focus on philosophy students in Study 2). The proportion of females in the final sample was 74%<sup>2</sup>. The mean age was 24.8 years ( $SD=5.18$  years; range = 20–50 years).

### 1.7.2 | Procedure and Measures

Participants had 90 s to name as many philosophers as they could think of. All participants were provided with keyboards



to ensure equal opportunities when entering names. At the end, participants provided some demographic information (gender, age and experience with philosophy).

## 1.8 | Results and Discussion

### 1.8.1 | Naming of Philosophers

In the first step, we counted which philosophers were mentioned most often. These were Kant (18), Aristoteles (11) and Plato (9). To answer our first research question, we investigated whether subjects named male or female philosophers. For this purpose, the philosophers named were categorised according to their gender. 97% of them were male (121 male and 4 female). Subjects in the sample knew more male ( $M=2.95$ ;  $SD=1.99$ ) than female ( $M=0.10$ ;  $SD=0.3$ ) philosophers ( $t(40)=9.33$ ;  $p<0.001$ ;  $d=2.01$ ). There was no difference between female and male participants ( $p>0.3$ ).

The results show that the students, as hypothesized (Research Question 1), named more male than female philosophers. This suggests that people have a male picture in their mind when thinking about philosophers and is in line with our first research question.

## 2 | Study 1

After an initial indication of the male stereotype of the philosopher was found in the pre-study, this connection was investigated further in Study 1. It focused on the psychological stereotypes associated with philosophers and used a mixture of a cross-sectional and an experimental design. To answer our first question, the subjects were asked in a cross-sectional design about the typical gender of philosophers and the gender distribution in philosophy. This was done before the manipulation. To answer our second question, participants were randomly assigned to one of five target groups (men, male philosophers, philosophers, female philosophers and women) whom they were asked to rate on agentic and communal attributes. We hypothesized that philosophers are seen as more male than female (Research Question 1) and that people perceive a misfit (gender-philosopher-misfit) regarding attributes between women and philosophers (Research Question 2). More specifically, we hypothesized that philosophers are seen as more agentic and less communal than women and there should be a greater misfit between the associations of women with philosophers in contrast to men with philosophers. The study was conducted as an online survey in German and took about 7 min.

### 2.1 | Method

#### 2.1.1 | Participants

Participants were recruited via the online recruiting company 'bilendi & respondi'. This was done to ensure that a more general sample was collected. A priori power analysis showed that with a small to medium effect size ( $f=0.2$ ), a power of 0.95, and five groups, the minimum sample size is  $N=470$ . Because of this, our goal was to survey at least 500 people in case some of them had to be excluded from the analysis afterward. In total,  $N=530$  completed the survey. As participants were recruited through an online

recruiting company, the data was carefully analysed to exclude individuals who were not serious about taking the survey. To ensure this, participants were excluded if they either stated that they had not answered the survey honestly or had failed the attention check. The final sample consisted of  $N=520$  persons. The proportion of females was 51%. The mean age was 45.4 years ( $SD=14.27$  years; range = 19–72 years). 65% of the participants were employed, 17.5% were retired. 6.5% were university students, and 6.7% were high school students, unemployed or apprentices. 31.5% had a university degree, 27.7% had the general qualification for university entrance, and 38.5% indicated a lower education level.

#### 2.1.2 | Procedure and Measures

Subjects were asked to indicate the typical gender of different professional groups. In order to disguise the aim of the study, we asked for four occupational groups, namely philosophers, computer scientists, teachers and psychologists (e.g., 'Professional group of philosophers (people who deal with philosophy as a profession)'). The rating scale was presented on a 7-point Likert scale (coded as 1–7) and reached from 'very female' to 'very male'. In addition, the presumed gender distribution in the professional groups was assessed. The scale was in 10% steps from '100% men–0% women' to '0% men–100% women' (coded as 0–10).

Then, all participants were randomly assigned to one of five conditions and rated one out of five groups: philosophers, male philosophers, female philosophers, men and women. These groups were chosen to include all relevant comparisons, that is, between a gender and philosophers.

Participants indicated the extent to which 10 agentic and 10 communal attributes (Abele et al. 2016) described the respective target group. The instruction for philosophers was 'Think of philosophers (people who are professionally involved in philosophy). How would you describe a typical member of this group?' 'Philosophers' was replaced by the other groups, depending on the experimental condition. Items were rated on a bipolar 7-point Likert scale (e.g., 'little competent—very competent' or 'not at all self-confident—very self-confident' for agency and 'little caring—very caring' or 'little fair—very fair' for communion; coded as 1–7). The reliability of the scales showed very high reliability (Communion:  $\alpha=0.95$ ; Agency:  $\alpha=0.90$ ). At the end of the survey, participants provided demographic information (i.e., age, occupation and gender).

### 2.2 | Results

#### 2.2.1 | Stereotypical Gender of Philosophers (Cross-Sectional)

Overall, 2  $t$ -tests were conducted to examine the stereotypical gender of philosophers (Research Question 1). The first test analysed the typical gender of philosophers while the second analysed the assumed gender distribution in philosophy (both measured before the manipulation). We calculated one-sample  $t$ -tests that tested against the scale midpoint. For gender attribution, the scale midpoint was 4, and for gender ratio 5. Subjects in the sample described the typical philosopher ( $M=4.67$ ;

$SD=1.10$ ) as more male than female ( $t(519)=13.84; p<0.001; d=0.61$ ) and the gender distribution in philosophy ( $M=3.93; SD=1.85$ ) as dominated more strongly by men than by women ( $t(519)=13.26; p<0.001; d=0.58$ ).<sup>4</sup>

### 2.2.2 | Gender-Philosopher-Misfit in Stereotypical Attributes (Experimental)

Next, group differences between the ratings of the five groups were examined. Table 1 shows the group means with standard deviations.

To test for a gender-philosopher-misfit (Research Question 2) in the stereotypical attributes of the five groups, two ANOVAs were conducted. The ANOVA analysing the differences in agency between the five groups showed no significant result ( $F(4, 515)=1.27; p=0.28$ ). The ANOVA analysing the differences in communion between the five groups was significant

**TABLE 1** | Sample size, means and standard deviations of the groups in Study 1.

		N	M	SD
Agency	Men	125	5.05	0.92
	Male philosophers	96	4.80	0.91
	Philosophers	109	4.84	0.92
	Female philosophers	94	4.92	0.89
	Women	96	4.92	0.95
Communion	Men	125	4.28	1.1
	Male philosophers	96	4.65	0.94
	Philosophers	109	4.80	0.99
	Female philosophers	94	4.95	1.04
	Women	96	5.27	0.91

Note: N, M and SD are used to represent sample size, mean and standard deviation, respectively.

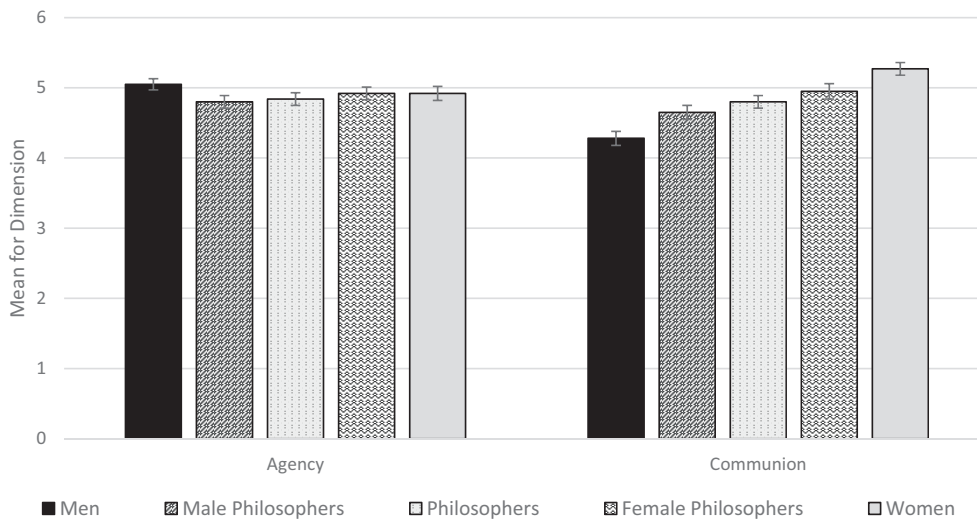
( $F(4, 515)=14.56; p<0.001$ ). Tukey post hoc analysis regarding communal differences revealed significant differences between men and philosophers ( $M_{Diff}=-0.52; p=0.001; 95\%-CI [0.16, 0.88]$ ), women and philosophers ( $M_{Diff}=0.47; p=0.007; 95\%-CI [0.09, 0.86]$ ), women and male philosophers ( $M_{Diff}=0.63; p<0.001; 95\%-CI [0.23, 1.02]$ ), men and female philosophers ( $M_{Diff}=-0.67; p<0.001; 95\%-CI [0.29, 1.04]$ ) and men and women ( $M_{Diff}=0.99; p<0.001; 95\%-CI [0.62, 1.36]$ ). The means with standard errors (SE) can be seen in Figure 2.

### 2.3 | Discussion Study 1

In Study 1, the stereotypes about philosophers were investigated. As predicted (Research Question 1), typical philosophers were clearly perceived as male and the gender distribution was believed to be dominated by men as well. The stereotypical attributes (agency and communion), however, indicated two gender-philosopher-misfits (Research Question 2). First, a misfit between the perception of women and philosophers on the communion dimension, and second a misfit between the perception of men and philosophers on the communion dimension as well. Women were described as significantly more communal than philosophers were, whereas men were described as significantly less communal than philosophers. There was no difference on the agency dimension. While both agency and communion misfits are reported in the literature (Diekman, Weisgram, and Belanger 2015; Van Veelen and Derks 2021), the findings of Study 1 suggest a misfit only on the communion dimension. This will be further investigated in Study 2. Furthermore, in Study 2 we examined the stereotypes of philosophers in (female) philosophy students and the consequences of possible perceived self-philosopher-misfits since the initial study period is the time when the greatest dropout occurs.

### 3 | Study 2

In Study 2, we used a cross-sectional design to test whether philosophy students hold comparable stereotypes (Research



**FIGURE 2** | Agency and communion attributions for different groups. Means and standard error for the five groups (Men, Male Philosophers, Philosophers, Female Philosophers, and Women) on the two dimensions of agency and communion in Study 1.

Question 1 and Research Question 3) and what the potential consequences are (Research Question 4). Investigating a university student sample is important, as this is the stage where the greatest dropout of the leaky pipeline is found. Previous research focusing on other academic disciplines has shown that a perceived misfit can lead to a lower intention to persist (Demarest et al. 2017) and a higher intention to quit (Peters et al. 2012b; Van Veelen and Derks 2021). We hypothesized that philosophy students see philosophers as male (Research Question 1), female students show a higher perceived self-philosopher-misfit (within-subject) than male students regarding communal attributes (Research Question 3), and this perceived misfit is associated with a lower long-term perspective in philosophy for female students (Research Question 4). The study was conducted as an online survey in German and took about 15 min.

### 3.1 | Method

#### 3.1.1 | Participants

Participants were recruited in philosophy seminars at Kiel University. Using G\*Power, an a priori power analysis showed that for a *t*-test between two independent groups (male and female students) with a medium effect size ( $d=0.5$ ) and a power of 0.95, the minimum sample size is  $N=176$  (Faul et al. 2009). Furthermore, the minimum sample for the proposed SEM is  $N=173$ , with an expected mean effect of 0.3 and a power of 0.9 (Soper 2023). In total, 203 students started the survey. However, some participants were excluded because they had not finished the survey. The final sample consisted of  $N=178$  persons. The proportion of females was 63.5%<sup>5</sup>. The subjects were between 19 and 35 years old with a mean of  $M=23.98$  ( $SD=2.9$ ). The proportion of students that already finished their bachelor's degree was 29.2%.

#### 3.1.2 | Measures

At the beginning of the survey, participants were asked how they would describe a typical philosopher. To do this, they rated philosophers on the same agentic and communal attributes (Abele et al. 2016) as in Study 1. Next, subjects were asked to indicate with which gender they associated philosophers on a 7-point Likert scale (coded as 1–7) with the scale points 'male' and 'female'. In addition, they reported how many male and female philosophers they knew. Questions were then asked about their intention to persist (6 items; adapted from Banchevsky, Lewis, and Ito 2019; e.g., 'I intend to do a PhD in philosophy'. and 'Philosophy is the right career path for me'.) and their intention to quit (4 items; adapted from Carstensen et al. 2020; 'I am seriously thinking of giving up my philosophy studies altogether' and 'I have thought about dropping out of philosophy studies several times'). The scales were translated into German (if needed), adapted to philosophy, and surveyed on a 5-Point Likert scale (coded as 1–5). Two items for the intention to persist were excluded due to a corrected scale correlation of less than  $r=0.5$  (BrckaLorenz, Chiang, and Nelson Laird 2013; Teo et al. 2018). The two scales both showed good reliability (Intention to Persist:  $\alpha=0.78$ ; Intention to Quit:

$\alpha=0.82$ ) and the correlation between the scales was  $r=-0.47$ . In addition, two individual confirmatory factor analyses (CFA) were conducted. The CFAs for Intention to Persist ( $\chi^2(2)=1.68$ ;  $p=0.43$ ; RMSEA=0.00; CFI=1.0; TLI=1.0; SRMR=0.018) and Intention to Quit ( $\chi^2(2)=9.8$ ;  $p=0.007$ ; RMSEA=0.148; CFI=0.971; TLI=0.912; SRMR=0.034) showed good model fit.

Finally, self-stereotyping on the same agentic and communal attributes was measured (Abele et al. 2016). Building on the work on the Lack-of-Fit Model, we used a trait-based approach. The self-philosopher-misfit is therefore understood as the difference between self-stereotyping and philosopher-stereotyping (Otten and Epstude 2006; Van Veelen and Derks 2021). Therefore, a difference score was created for agentic and communal attributes to calculate students' perceived misfits. For this purpose, the philosopher-stereotyping was subtracted from the self-stereotyping (see Van Veelen and Derks 2021, for a similar approach). Then a scale was formed from the difference scores per dimension (agency and communion). Accordingly, values larger than zero mean that subjects perceived a misfit and reported they possess the respective attributes more strongly than a philosopher does. Negative values mean that subjects perceive a misfit and reported that they possess the respective attributes less than a philosopher does. Values around zero mean that students perceived a fit between self- and philosopher attributions. Not all differences showed a good fit to the scale. Thus, three items for agency and three items for communion were excluded due to a corrected scale correlation of less than 0.5 (BrckaLorenz, Chiang, and Nelson Laird 2013; Teo et al. 2018).<sup>6</sup> The two scales both showed good reliability (Communion-Fit:  $\alpha=0.86$ ; Agency-Fit:  $\alpha=0.80$ ). In addition, two individual confirmatory factor analyses (CFA) were conducted. The CFAs for Communion Misfit ( $\chi^2(14)=30.01$ ;  $p=0.008$ ; RMSEA=0.080; CFI=0.968; TLI=0.952; SRMR=0.037) and Agency Misfit ( $\chi^2(13)=27.95$ ;  $p=0.009$ ; RMSEA=0.080; CFI=0.960; TLI=0.935; SRMR=0.051)<sup>7</sup> showed good model fit.

At the conclusion of the survey, participants provided demographic information (e.g., age, gender and bachelor's degree).

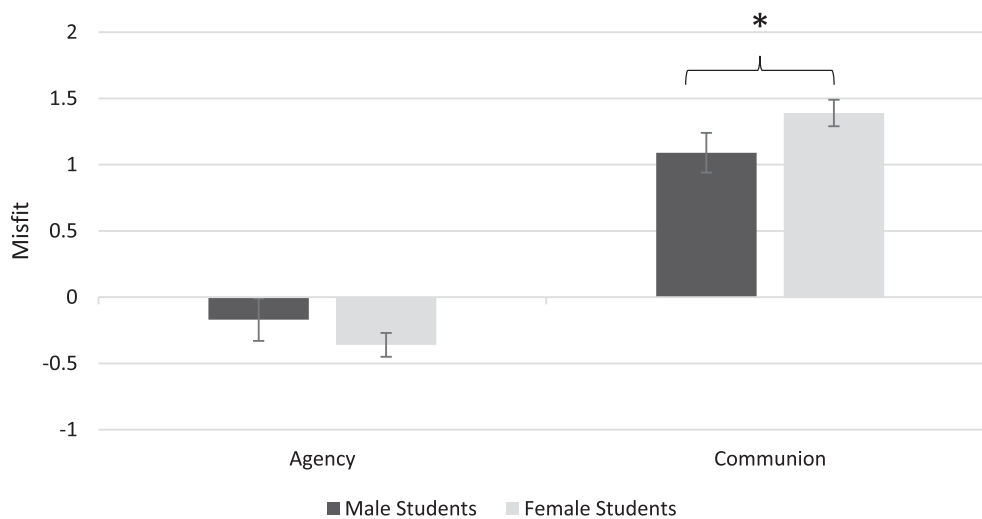
### 3.2 | Results

#### 3.2.1 | Gender Attribution of Philosophers

To examine the gender attribution of philosophers (Research Question 1), a one-sample *t*-test that tested against the neutral point (4) was calculated for perceived gender. Subjects in the sample described philosophers ( $M=3.11$ ;  $SD=1.10$ ) as more male than female ( $t(177)=10.73$ ;  $p<0.001$ ;  $d=0.80$ ). The second test analysed if students knew more male or female philosophers using a paired *t*-test. Subjects knew more male ( $M=24.73$ ;  $SD=21.28$ ) than female ( $M=8.99$ ;  $SD=7.11$ ) philosophers ( $t(171)=10.3$ ;  $p<0.001$ ;  $d=0.78$ ).<sup>8</sup>

#### 3.2.2 | Self-Philosopher-Misfit

To examine the self-philosopher-misfit of students (Research Question 3), a one-sample *t*-test that tested against the neutral



**FIGURE 3** | Misfit in perceived agency and communion for Male and Female students. Means and standard errors for the fit of male and female students in the dimension's agency and communion in Study 2. Scores above zero describe a misfit indicating that students rated themselves higher on the respective scales than philosophers. Scores below zero describe a misfit indicating that students rated themselves lower than philosophers. Asterisk indicating a significant difference.

point (0) was calculated for each dimension. Students described themselves as higher in communal attributes ( $M = 1.29$ ;  $SD = 1.12$ ) than philosophers ( $t(177) = 15.41$ ;  $p < 0.001$ ;  $d = 1.16$ ) and lower in agency ( $M = -0.30$ ;  $SD = 1.07$ ) than philosophers ( $t(177) = -3.72$ ;  $p < 0.001$ ;  $d = 0.28$ ). Next, gender differences were examined to see if the perceived misfit of female students differed from the perceived misfit of male students. Female students ( $M = 1.39$ ;  $SD = 1.08$ ) showed a higher perceived misfit than male students ( $M = 1.09$ ;  $SD = 1.18$ ) regarding communion ( $t(172) = 1.68$ ;  $p = 0.047$ ;  $d = 0.27$ ). No difference was found regarding the perceived agency misfit ( $t(98.5) = 1.03$ ;  $p = 0.15$ ;  $M_{\text{female}} = -0.36$ ;  $SD_{\text{female}} = 1.0$ ;  $M_{\text{male}} = -0.17$ ;  $SD_{\text{male}} = 1.3$ ). The means with standard errors can be seen in Figure 3.

Based on the results, we analysed what caused the misfit. For this purpose, we analysed gender differences in the stereotyping of philosophers as well as in self-stereotyping. There were no gender differences in the communal and agentic stereotyping of philosophers and the agentic self-stereotyping (all  $p$ 's  $> 0.3$ ). However, there was a significant difference ( $t(172) = 3.82$ ;  $p < 0.001$ ;  $d = 0.61$ ) in communal self-stereotyping between male students ( $M = 5.70$ ;  $SD = 0.76$ ) and female students ( $M = 6.13$ ;  $SD = 0.69$ ). We thus conclude that the gender differences in the self-philosophers-misfit were mainly caused by gender differences in communal self-stereotyping.

Next, a structural equation model with gender as dichotomous predictor was tested to examine the consequences of female students' (compared to male students') perceived misfit on their intention to persist and intention to quit philosophy (Research Question 4). The mean values of the two constructs for each gender can be seen in Table 2.

In the SEM, gender (1 = female; 2 = male) served as a predictor for perceived misfit scores in agency and communion. Additionally, intention to persist and intention to quit were

**TABLE 2** | Sample size, means and standard deviations in Study 2.

		N	M	SD
Intention to persist	Male students	61	3.42	0.96
	Female students	113	3.05	0.89
Intention to quit	Male students	61	1.63	0.86
	Female students	113	1.73	0.82

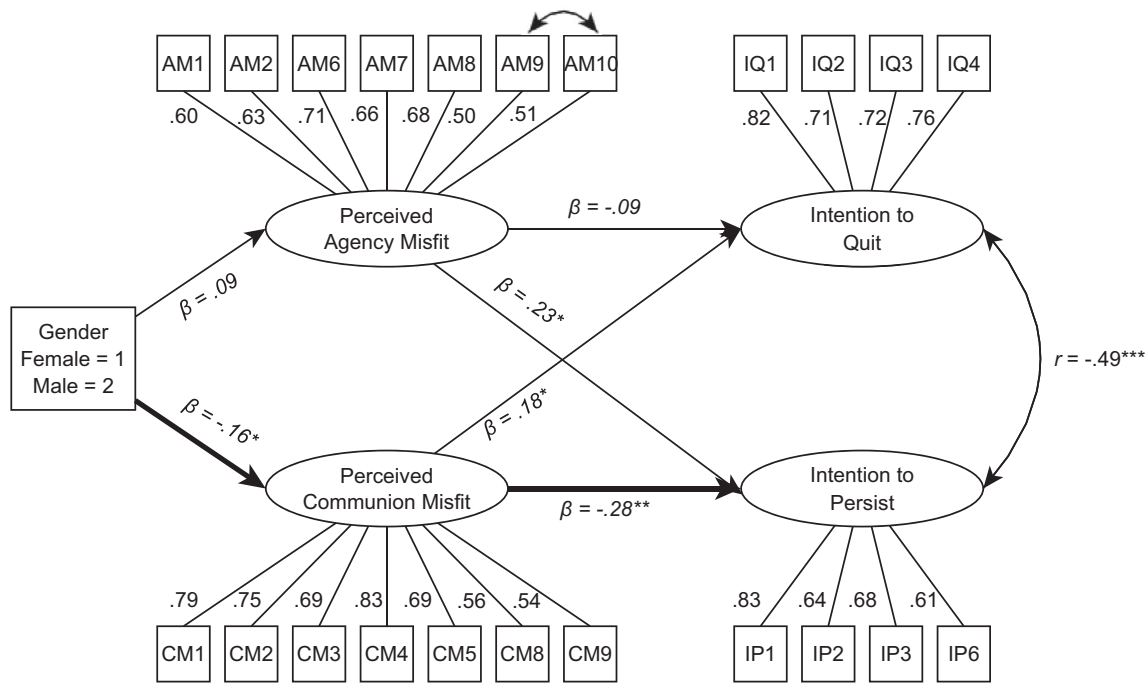
Note: N, M and SD are used to represent sample size, mean and standard deviation, respectively.

regressed on perceived agency misfit and perceived communion misfit to test these as mediators (see Figure 4). For the direct paths, estimates of standardised parameters were interpreted. The indirect effects were generated by bootstrapping (10,000 iterations) and tested with a 95% confidence interval (MacKinnon, Lockwood, and Williams 2004; Shrout and Bolger 2002; Van Veelen and Derks 2021). The model showed a good model fit ( $\chi^2(222) = 342$ ;  $p < 0.001$ ;  $RMSEA = 0.056$ ;  $CFI = 0.917$ ;  $TLI = 0.906$ ;  $SRMR = 0.067$ ).<sup>9</sup> As hypothesized, gender significantly predicted the perceived misfit in communion (with female students having a higher perceived misfit). A higher perceived communion misfit further predicted a lower intention to persist and a higher intention to quit. Gender did not predict the perceived misfit in agency but the perceived misfit in agency predicted a lower intention to persist. The indirect effect from gender via perceived communion misfit to intention to persist was significant (indirect effect:  $b = 0.103$ ;  $CI\ 95\% [0.003, 0.283]$ ).<sup>10</sup>

### 3.3 | Discussion Study 2

Study 2 replicated Study 1's findings from a sample from the general population and demonstrated that also among philosophy university students the stereotype of philosophers is more strongly male. Students described philosophers as more male





**FIGURE 4** | Structural equation model regarding gender on long-term prospect via perceived misfit. Structural equation model for the association between gender and intention to persist and intention to quit via perceived misfit in communion and agency in Study 2. Bold lines indicate a significant indirect path. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

than female and knew significantly more male than female philosophers (Research Question 1). The self-philosopher-misfit revealed that students show a perceived misfit to philosophers. Students described themselves as higher in communion and lower in agency than philosophers. However, the perceived misfit in stereotypical attributions of communion was higher for female students than for male students (Research Question 3). As predicted, the perceived misfits correlated with the outcome variables. Perceived agency misfit correlated with the intention to persist. This indicates that students with a high fit regarding self- and philosopher stereotyping are more likely to stay in philosophy. Perceived communion misfit correlated with both a lower intention to persist in philosophy and a higher intention to quit philosophy. The indirect path from gender to intention to persist via perceived communion misfit was significant, meaning that female students as compared with male students showed a higher misfit in communion which further translated into lower intention to persist in philosophy (e.g., do a PhD or work as a philosopher). This suggests that the internalised stereotype hypothesis can explain (at least in part) the drop-out of women from philosophy and the underrepresentation of women in the field (Research Question 4). The perceived misfit with the stereotypical philosopher indicates that female students see themselves as warmer and thus possibly too warm for philosophy.

#### 4 | General Discussion

The underrepresentation of women in philosophy has been observed in many countries (Beebe 2021; Klonschinski and Kraft 2022; Paxton, Figdor, and Tiberius 2012; Thompson et al. 2016). Different explanations and hypotheses have been put forward to explain this gap (Dougherty, Baron, and

Miller 2015a). In particular, the idea of a perceived misfit in stereotypical attributes is often discussed and mentioned as a possible cause (e.g., Haslanger 2008; Valian 2005). However, there has been little empirical work testing this hypothesis and its impact on the underrepresentation of women (Dougherty, Baron, and Miller 2015a). In this paper, building on the Lack-of-Fit Model (Heilman 1983; Heilman and Caleo 2018), theoretical considerations have been given as to why the perceived misfit of stereotypes about women and philosophy (gender-philosopher-misfit and self-philosopher-misfit) causes the underrepresentation of women in philosophy (Peters, Ryan, and Haslam 2015; Van Veelen and Derks 2021). Following this scheme, three studies were designed to investigate (1) whether philosophers are perceived as male, (2) whether and where there is a gender-philosopher misfit in stereotypical attributes of women and philosophers, (3) if female students show a higher self-philosopher-misfit than male students and (4) what the consequences of this perceived misfit for the long-term perspective of women in philosophy are. As hypothesized, we found that the stereotype of the philosopher is male in an open questionnaire (pre-study), experimental (Study 1), and correlational design (Study 2). The stereotypical attributes indicate a difference on the dimension of communion, which means that women are stereotyped as warmer than philosophers (Study 1). The same pattern was observed for philosophy university students (Study 2). They also classified philosophers as male and knew more male philosophers. Moreover, female students showed a higher perceived misfit on the communal dimension. Both the perceived agency and communion misfits were correlated with a lower intention to persist indicating that students who described themselves as lower in agency and/or higher in communion than philosophers showed a lower intention to persist. However, only the perceived communion misfit was correlated with a higher intention to quit and showed an indirect effect

on the intention to persist. Thus, it can be argued that female philosophy students leave the discipline because they perceive themselves as being too warm for the field of philosophy and its stereotypical cold philosophers.

#### 4.1 | Limitations and Further Directions

While the perceived misfit could be shown in three different and even one experimental design, only a correlative design was used for the consequences of the perceived misfit. Causal inferences regarding the consequences of this misfit can therefore not be made. Furthermore, Study 2 focused only on one possible explanation for the underrepresentation of women in philosophy. Since mono-causal links cannot be assumed and rather a perfect storm could be the case (Antony 2012), it cannot be excluded that other aspects (e.g., course content, hostile atmosphere and brilliance stereotype) also cause female students to leave philosophy (Dougherty, Baron, and Miller 2015a; Nyul et al. 2025). In addition to the agentic stereotype, the brilliance stereotype could be addressed more explicitly (cf. Leslie et al. 2015). We see two different hypotheses: On the one hand, brilliance could form a shared factor with the agentic stereotype, as the items used for agency (e.g., competent, clever and intelligent) and for brilliance (e.g., brilliant, super-smart and genius [Bian, Leslie, and Cimpian 2017; Storage et al. 2020]) are similar. Since our data does not show any gender differences in the students' self-description or perceived agency misfit, we would hypothesize that there would be no gender differences on the agency/brilliance factor and that the gender differences only persist in the communal stereotype. On the other hand, brilliance could be a separate factor in addition to agency and communion. As men and philosophy are stereotyped with brilliance (Leslie et al. 2015; Storage et al. 2020) there could be significant gender differences. Further research is needed to fully understand the stereotypes of philosophers and the impacts of perceived communion, agency, and (potential) brilliance misfits.

Moreover, the effects of the leaky pipeline are not unique to philosophy but can be observed in almost all academic fields (Casad, Petzel, and Ingalls 2019; Wittman et al. 2019). Previous studies have found the perceived misfit on both the agentic (Van Veelen and Derks 2021) and communal (Diekman et al. 2011; Diekman et al. 2017) dimensions. Our study clearly points to the communal dimension. Therefore, it would be interesting to compare philosophy with other disciplines. In this way, it could be investigated which effects are specific to philosophy and which are more related to academic careers as a whole. The findings from philosophy could then be transferred to other fields and disciplines in which women are also underrepresented (e.g., STEM subjects) or to academia as a whole.

#### 4.2 | Implications and Intervention Strategies

Our results indicate that a perceived misfit regarding the self-other-fit could prevent students from continuing their studies or could cause them to drop out. This was particularly evident among female students in philosophy and could

thus explain their underrepresentation. Building on these findings, however, there is also a clear way to challenge this underrepresentation. Reducing the perceived misfit in students should lead to more identification, a higher sense of belonging and an increased intention to persist in philosophy (Demarest et al. 2017; Kessels et al. 2018; Peters, Ryan, and Haslam 2012a). This should apply to all students, given that the correlation between a higher misfit and a lower intention to persist in the subject is applicable to the entire sample.<sup>11</sup> However, female students are likely to gain the most advantage, as they exhibited the highest levels of perceived communion misfit.

A reduction of the misfit could happen in different ways. On the one hand, the self-philosopher fit could be changed. Promising indications of this can be found in an experimental design (Peters et al. 2012b). The authors used two experiments to manipulate the perceived similarity between female police officers and their leaders and between psychology students and professional psychologists. Results indicated a higher career motivation and more willingness to engage in career development behaviours if the fit was higher. In addition, changing the stereotype of either women or philosophy could increase the fit. However, since gender stereotypes are very all-encompassing (Abele et al. 2016) and have changed little in recent decades (Eagly et al. 2020; Haines, Deaux, and Lofaro 2016) changing the image of philosophers and their associated attributes might be more promising. Initial approaches in other fields show that establishing female role models can change stereotypes and show positive effects on women and female students (Stout et al. 2011; Van Camp, Gilbert, and O'Brien 2019). In philosophy, not only professors serve as role models, but above all the authors of philosophy texts and books that students read (Herfeld, Müller, and Von Allmen 2022; Schouten 2016). In recent years, a change in the canon and the focus on female philosophers have been discussed (Mercer 2020; Waithe 1989) and implemented in practical projects (See for example <https://www.womeninparathesis.co.uk/>) Future research could investigate whether a canon with more female philosophers would increase the association of philosophers with communal attributes. Another approach to change the stereotype of a profession or discipline is changing the attributes perceived as important for it (Kray, Galinsky, and Thompson 2002). Kray, Galinsky, and Thompson (2002) did this by additionally linking communal attributes such as being empathetic to successful negotiation and therefore changed women's expectation of what it takes to be a good negotiator.

Complementing agentic traits (such as competence) with communal traits (such as respectful or warm-hearted) for example in leadership contexts (Rosette and Tost 2010) could also contribute to more healthy work climates. Workplace incivility is often created by disrespectful and unempathetic workplace behaviours (Schilpzand, De Pater, and Erez 2016) and negatively impacts employees' health and performance (Cortina et al. 2001; Zadow et al. 2021). Given that people want respectful relationships at work (Van Quaquebeke, Zenker, and Eckloff 2009), it seems appropriate to add communal attributes to professions that are perceived as agentic and cold such as philosophy.

## 5 | Conclusion

In this paper, we applied the Lack-of-Fit Model to philosophy to test the gender stereotype hypothesis (Dougherty, Baron, and Miller 2015a). Four research questions were formulated to test whether (1) the stereotype of philosophers is male, (2) women and (3) female students perceive higher misfits to philosophers and (4) what the consequences of these misfits are. Our results suggest that the gender stereotype hypothesis is valid and can (partly) explain why women are underrepresented in philosophy. It was found that philosophers are perceived and described as male. Female students perceived a higher misfit to philosophers on the communion dimension compared to their male peers. This perceived misfit was correlated with a lower intention to persist in philosophy. This is a novel finding, as previous studies have increasingly focused on agentic stereotyping. However, our data suggest that the perceived misfit does not seem to be due to the abilities, but to the lack in communion. Further research should now use these results to investigate possible changes in philosophy and extend these findings to other disciplines.

### Acknowledgements

We thank Sabrina Poschmann for assistance with the data collection, and Anouschka Liebig for comments that greatly improved the manuscript. We have no known conflict of interest to disclose. Ethical approval for Study 1 and Study 2 was obtained from the ethics committee of Kiel University. Participants in all studies gave informed consent prior to participation and agreed to privacy statements regarding the collection, storage and publication of their data. All exclusions in these studies are reported. This work was funded by a grant from the Federal Ministry of Education and Research (BMBF) to Daniela Renger (01FP22021G). The research reported in this article was conducted by Arian Leopold under Daniela Renger's supervision in partial fulfilment of the requirements for a doctoral degree. Open Access funding enabled and organized by Projekt DEAL.

### Conflicts of Interest

The authors declare no conflicts of interest.

### Data Availability Statement

The data that supports the findings of this study are available in the Supporting Information of this article.

### Endnotes

- <sup>1</sup> This designation is not intended to imply that there are only two genders or a dichotomy of the genders.
- <sup>2</sup> Gender was measured using three categories (male, female and diverse). Two diverse persons were excluded from the calculation of gender differences.
- <sup>3</sup> Gender was measured using three categories (male, female and diverse). There were two diverse persons in the sample.
- <sup>4</sup> Regarding the distractor groups, computer scientists were also characterised as more likely to be male than female ( $t_{\text{Typical}}(519) = 25.16; p < 0.001; d = 1.10; t_{\text{Distribution}}(519) = 22.57; p < 0.001; d = 0.99$ ), whereas psychologists ( $t_{\text{Typical}}(519) = -4.78; p < 0.001; d = 0.21; t_{\text{Distribution}}(519) = -3.66; p < 0.001; d = 0.16$ ) and teachers ( $t_{\text{Typical}}(519) = -10.06; p < 0.001; d = 0.44; t_{\text{Distribution}}(519) = -12.94; p < 0.001; d = 0.57$ ) were characterised as more likely to be female. With two male and two female rated groups, we were confident that participants were not biased in a specific direction before entering the rating of the five groups.

<sup>5</sup> Gender was measured using three categories (male, female and diverse). Four diverse persons were excluded from the calculation of gender differences.

<sup>6</sup> The analysis with all items did not lead to any substantially different results. The data analysis with all items can be found in the Open Data section of the [Supporting Information](#).

<sup>7</sup> For Agency Misfit the two items 'intelligent' and 'clever' were correlated, as they shared error variance due to their proximity in terms of content.

<sup>8</sup> Six subjects were excluded from these analyses because they could be defined as outliers (more than two standard deviations away from the mean). The analysis with all participants did not lead to any substantially different results. The data analysis with all participants can be found in the Open Data section of the [Supporting Information](#).

<sup>9</sup> The two items 'intelligent' and 'clever' were correlated, as they shared error variance due to their proximity in terms of content.

<sup>10</sup> Gender via communion misfit to intention to quit (*indirect effect*:  $b = -0.060$ ; CI 95%  $[-0.215, 0.002]$ ). Gender via agency misfit to intention to persist (*indirect effect*:  $b = 0.049$ ; CI 95%  $[-0.022, 0.258]$ ). Gender via agency misfit to intention to quit (*indirect effect*:  $b = -0.018$ ; CI 95%  $[-0.143, 0.017]$ ).

<sup>11</sup> In addition to the reported analyses, we calculated whether the relationships between the misfits (both for agency and communion) and the outcomes (both for intention to persist and intention to quit) are moderated by gender. No moderation effect was found. The analyses can be found in the Open Code.

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### Supporting Information

Additional supporting information can be found online in the Supporting Information section.