

Feeling Home Already? A Diary Study among Newcomers in STEM about the Effects of Interactions on Organisational Belonging, and how this Differs for Gender

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Abstract

In the Dutch sector of Science, Technology, Engineering, and Mathematics (STEM), a substantial leakage of women prevails, and the field experiences an underrepresentation of female employees. This is problematic as the technical labour market already experiences a shortage of employees, and the sector would benefit from a greater variety of perspectives contributing to an effective and innovative work environment. A recurring explanation of why women keep leaving this sector is the masculine nature of it, in which stereotypes exist that portray males as the ideal STEM professional, and in which women often not feel accepted, appreciated, and welcome. As the presence of female role models in an organisation may symbolise a safer culture for women, we focused on the effect of the presence of role models in the organisation to see whether the presence of such a person may be helpful as a buffer against negative interactions. Furthermore, since the first months in a new organisation are crucial to become committed and loyal to the organisation, and women mostly drop out in the first year of their job, it is an apparent choice to focus on newcomers when tackling the problem of female underrepresentation. Therefore, this study focused on new employees in STEM organisations to see whether interactions at the work floor would influence the feelings of belonging to the organisation, and whether this differs for women compared to men. As such, we conducted a daily diary study in which new employees ($N = 97$) in the STEM sector were followed for fifteen working days. Each day, they reported their most important interaction of that day, after which they answered multiple questions to specify this interaction. Additionally, in the end questionnaire at the end of the study, they reported whether they considered someone in the organisation as a role model, after which they specified whether they identified with this person. The results showed that both on a day-level and person-level, interactions that cue feelings of acceptance and competence lead to higher feelings of organisational belonging of the employees. However, in contrast to our hypotheses, we found that women and men equally felt accepted and competent after workplace interactions, and that gender did not affect organisational belonging. Moreover, the presence of an identifiable role model did not moderate the relation between interactional acceptance and competence on organisational belonging. The findings demonstrate the importance of workplace interactions for all newcomers in an organisation, and the need to create a safe workplace in order to make newcomers feel at home in the STEM sector.

Keywords: women in STEM, newcomers, workplace interactions, feeling accepted, feeling competent, organisational belonging, identifiable role model

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Introduction

Problem Statement

Although the field of Science, Technology, Engineering and Mathematics (STEM) is growing to be one of the most important drivers of economy (UWV, 2018), women remain underrepresented as professionals in this field. To illustrate: in the Netherlands – where the current study was situated - in 2019, only 14% of the technical employees was female (Techniekpact, 2020). Furthermore, only 27% of the women with a technical educational background works in the technical sector, compared to 57% of the men (Techniekpact, 2020), indicating that women with a technological background more often leave the sector. Also, within 1.5 years after graduating, there is a substantial leakage from the STEM sector, and this leakage is significantly higher for women compared to men (Van Langen et al., 2019). This withdrawal from the sector is problematic, as gender diversity is an important asset for an effective and innovative work environment with a great variety of perspectives (Galinsky et al., 2015; Østergaard et al., 2011). Additionally, as the technical labour market experiences a shortage (TechYourFuture, 2018), appealing more women would contribute to the influx of more employees (Blickenstaff, 2005; Laeser et al., 2013). Moreover, as a career in STEM offers high earning potentials compared to more stereotype female jobs (Payscale, 2013), also for the women themselves it is important that this work field is accepting the influx of more female STEM-professionals.

The underrepresentation of women in the technical sector is a well-known phenomenon in the literature; it is described as the so-called metaphorical Leaky Pipeline, in which in various stages, from study to career, women drop out of the STEM field (Blickenstaff, 2005; Pell, 1996). Explanations for this high drop-out rate range from sociocultural factors to organisational support (e.g., Blickenstaff, 2005; Dasgupta & Stout, 2014; Fouad et al., 2016; Fouad et al., 2017; Singh et al., 2013, Wang & Degol, 2017). One of the frequently recurring explanations is that the STEM field can be considered as a quite masculine environment in which stereotypes exist that portray males as the ideal STEM professionals (Dasgupta & Stout, 2014; Leslie et al., 2015; Powell et al., 2009; Smith et al., 2013). Subsequently, women are often seen as lacking brilliance in the field (Leslie et al., 2015), being less competent (Cheryan, 2012; Moss-Racusin et al., 2012), and that having a family and a successful career in STEM do not go together (Weisgram & Diekman, 2017). Hence, this creates an environment that can be perceived as threatening for women (Casad et al., 2018), which may result in that even when women start working in the field, they often question whether they should stay (Riffle et al., 2013), or even leave the work field (Fouad, 2017; Glass et al., 2013).

For being willing to stay in a certain organisation or sector, it is important to feel a sense of belongingness (Good & Dweck, 2012; Rainey et al., 2018). However, it are often the underrepresented groups – thus, also women in STEM – that show lower levels of belonging (Rainey et al., 2018). Additionally, the first few months at a job are crucial for establishing this sense of belonging, as around 30% of the newcomers in an organisation leave within the first 90 days (Jobvite, 2018). This makes it interesting to focus on newcomers, and more specifically newcomers that belong to underrepresented groups, and their sense of belonging to their organisation. Therefore, the current study aims to zoom in on this process to see how this develops in the first weeks of one's new job.

When looking at the socialization period of new employees in an organisation, it appears that they may be more vulnerable to social interactions at the workplace as they try to fit in and find their place at the organisation (Ashfort & Mael, 1989; Van Maanen & Schein, 1977). As newcomers actively acquire social knowledge and skills in order to assume their role in the organisation, interactions with colleagues, subordinates and others provide important signals for the interpretation of experiences (Van Maanen & Schein, 1977). Therefore, the current paper focuses on how interactions at the work floor affect how new employees at a technical organisation, and more specifically female employees, feel at home at their organisation. We take gender as a predictor, as gender stereotypes may result in that STEM women more often have interactions in which they are not treated as competent workers and in which they are not fully accepted as part of the organisation compared to STEM men. This study builds further on research of Hall et al. (2015, 2019) that already found first evidence that daily interactions of women in the STEM sector can affect their perceptions of social identity threat and well-being. This supports our reasoning that women may be more vulnerable to social cues at the work floor and as such feel lower organisational belonging when these cues hint stereotypes. We add a focus on newcomers at the organisation to see how belonging fluctuates in the first few months in an organisation.

Besides the effect of interactions, the current study included the presence of a role model as potentially affecting the impact of interactions on newcomers in an organisation. It is already known that role models can be uplifting for (stereotyped) minorities as they may serve as an example to live up to (Dasgupta, 2011; Lockwood & Kunda, 1997; Wheeler et al., 1997). Also, during a socialization period in a new organisation, employees use role models to fit in and develop skills and qualifications necessary for the job (Filstad, 2004; Houghton, 2013). As in the present study we examined the effect of workplace interactions, we expected that when one considers someone in the organisation as a role model, the effect of these interactions may be

less abundant, as the role model may strengthen one's feelings of belonging to the organisation. This is important to consider as when this is the case, organisations can invest more in role models at the work floor.

Thus, the daily interactions employees have may be a powerful cue to decide whether one feels accepted and one's skills are appreciated. Therefore, in the current study, we examined the effect of daily interactions at the workplace on feelings of belonging of newcomers in a technical organisation. Furthermore, we looked at the difference of this effect between women and men, as it seemed that women may be more vulnerable to workplace interactions due to gender stereotypes. Because role models may signal an identity-safe culture, this may buffer the impact of negative interactions, and therefore the presence of a role model is included as a moderator on the impact of interactions on feelings of belonging. This paper starts with a theoretical framework to explore the most important concepts at play in more detail. Hence, as the focus lies on daily interactions, a daily diary study is conducted to grasp the effects of daily feelings and thoughts after these interactions within a natural context (Ohly, 2010). In this way, an extensive set of results can be displayed with both contributions to the literature as well as to the work practice.

Theoretical Framework

Organisational belonging

Organisational belonging is important to consider in the present study, as this is crucial for the retention of STEM employees in their organisation. It is the feeling of membership in a group and being accepted and valued by its members (Good & Dweck, 2012). When people lack feelings of belonging, they may be hesitant of whether they fit in within a specific context (Cheryan et al., 2009; Veldman, 2020; Walton & Cohen, 2007). It raises the question whether one's abilities are consistent with the field or organisation and whether one feels accepted, and that in turn affects one's achievement, engagement, and persistence (Dasgupta & Stout, 2014; Rainy et al., 2018). This may result in that they question whether they belong to that organisation or in the STEM field in general, which subsequently affects their intention to stay or leave (Ayre et al., 2013; Good & Dweck, 2012). For instance, when a woman working in the masculine field feels like her colleagues do not appreciate her input, she will feel less belonging to that organisation, which in turn will affect her persistence to stay. This suggests that a high withdrawal rate in STEM is related with lower levels of belonging to the organisation,

demonstrating the importance of whether one feels like they belong to a certain field or organisation.

STEM women may be especially vulnerable to experience a lack of belonging because they are both a numerical minority, and the STEM field often negatively stereotypes women or femininity (Van Veelen et al., 2019). Therefore, women may be especially concerned to be evaluated based on their gender, also referred to as gender identity threat. This is the particular feeling of women when devaluation takes place based on their gender, and mostly happens when one is already more vulnerable to feeling at threat, in this case being a woman in a men's world (Major & Schmader, 2017; Steele, 2002; Van Laar et al., 2019; Van Veelen et al., 2016). The experience of identity threat may have considerable impact on how people feel about their support, their own performance, personal worth, and identification with the field (Hall et al., 2019; Inzlicht & Ben-Zeev, 2000; Major & O'Brien, 2005; Steele, 1995, 1997). Consequently, there are indications that this may affect feelings of belonging. For instance, a study of Murphey et al. (2007) found that women who viewed a gender unbalanced video reported a lower sense of belonging and participation to a certain conference, compared to women watching a gender balanced video. Additionally, Cheryan et al. (2009) found that environments that broadcast a stereotypical masculinity result in higher feelings of women not belonging to the potential majors. Moreover, a field study among alumni from STEM educational programs showed that identity threat was highest among female STEM graduates who opted to work in a technical company (where women are often negatively stereotyped on their STEM ability) and who reported that they were strongly underrepresented at their work (i.e., less women than men in terms of numbers), affecting their work engagement and career confidence (Van Veelen et al., 2016). This indicates that Dutch STEM women (who are a minority in the Dutch STEM field and often negatively stereotyped) may be especially vulnerable to experiencing lower organisational belonging.

The effect of workplace interactions on organisational belonging

Interactions on the work floor can have many implications on how one feels as they can trigger identity threat and disengagement, particularly when they hint stereotypes and cue a lack of acceptance, because people are sensitive to how others view them (Hall et al., 2015, 2019; Holleran et al., 2011; Logel et al., 2009). Especially when someone is new in an organisation, interactions may have a substantial impact, as newcomers acquire social knowledge and skills through interactions that help interpret experiences and provide the newcomers with both a sense or absence of accomplishment and competence (Van Maanen & Schein, 1977). More recent research built further on this. For instance, research regarding the engagement of

newcomers in organisations found that social cues and fair treatment are important contributors for self-investment with the organisation, and subsequently that when one is satisfied with the organisation, turn-over intentions are lower (Smith et al., 2012). This implies that in order to keep new employees engaged and feel like they belong to the organisation, a social approach that makes them feel accepted and respected is important. Additionally, a study towards the socialization of newly hired engineers found that experiences of newcomers were to a great extent influenced by interactions with people on the work floor, as these could provide both supports and barriers (Korte et al., 2019). This in turn affected the expected outcomes and work satisfaction and may even have affected their goals and perceptions regarding an engineering career in the longer term.

The current study focuses on feelings interactions may evoke and their effects on organisational belonging. We do this as on the one hand, it can be predicted that workplace interactions may have an important effect on whether a newcomer feels welcome in an organisation, having the power to make one feel either being accepted and respected or not and subsequently whether one experiences threats to the self. On the other hand, people may be unable to report threats to their identity consciously when these are not impressive experiences but rather subtle cues (Johns, Inzlicht & Schmader, 2008). Therefore, we focused on specific feelings interactions may arouse, instead of threats to one's identity. Hall et al. (2015) conducted a daily diary study and found that feelings of unacceptance and incompetence are important predictors of identity threat. There are indications in other literature that these components do affect feelings of belonging. For instance, Freeman et al. (2007) found that social acceptance may be the most important variable in relation to feelings of belonging. Furthermore, Rainey et al. (2018) found that perceived competence was an important indicator for feelings of belonging of students and even whether one retained in a major. The authors reasoned that this may be the case as one might feel out of place when they feel like others know more than they do (Rainey et al., 2018). Moreover, Ayre et al. (2013) suggested that in order to increase belonging and retain female engineers in their organisation, it is important that their competence in their engineering skills is affirmed, and that they feel accepted and respected by their colleagues and management. As was expected that the importance of feelings of belonging has an extensive impact on preventing drop-out of women in STEM, the current study aimed to build further on the findings of Hall et al. (2015, 2019) by examining the effects of these feelings of acceptance and competence after daily interactions on daily feelings of belonging to the technical organisation:

H1: On days that employees experience lower levels of acceptance and competence after workplace interactions, their feelings of belonging to the organisation on that day are lower.

Gender differences in the experience of workplace interactions

There are indications that female engineers experience workplace interactions in a different way than male engineers, and that they also feel less accepted and competent. As women are a minority in the STEM sector, they may be more vulnerable to social cues signalling male dominance (Van Veelen et al., 2019). Subsequently, when one competes with a threatened social identity, such as being a female engineer, events that threaten one's social connectedness with the majority can have large impact, also when this is seen as a minor occurrence by other individuals (Walton & Cohen, 2007), indicating that subtle cues during interactions already can have significant impact on female engineers. Moreover, in the studies of Hall et al. (2015, 2019), differences were found for gender since women, but not men, reported greater levels of identity threat after workplace interactions that elicited feelings of unacceptance and incompetence. This can be explained by that such directives in interactions made women more aware of their gender, which in turn resulted in higher feelings of mental burn out (Hall et al., 2015). Thus, female engineers may experience different levels of feelings of acceptance and competence on the work floor compared to men.

First of all, there are indications that female engineers feel less accepted compared to male engineers. The study of Hall et al. (2019) found that subtle cues of lack of acceptance already caused experiences of identity threat of female engineers, instead of very extreme or hostile conversations. Additionally, Fisher et al. (2019) found that female PHD students in the STEM field were less likely to be accepted compared to male students. Furthermore, in order to persist in the masculine work environment, it is important that male managers and colleagues show visible acceptance and respect towards their female colleagues (Ayre et al., 2013). This underlines the importance of women feeling accepted in order to feel like they belong to the technical organisation and their intentions to stay.

Second of all, several authors have demonstrated that in the STEM field, women are often stereotyped as being less competent than men. For instance, Powell et al. (2009) found that female engineers that are recognized as competent are considered unfeminine, and vice versa women that perform in feminine ways are seen as less competent. This indicates that in the STEM field, competence is aligned with being male or masculinity, which may result in that women feel less competent than men on the work floor. Furthermore, in the study of

Holleran et al. (2011), women were considered as less competent than men when discussing research with men. Moreover, Ayre et al. (2013) stressed the importance of recognising the professional competence of female engineers by male colleagues and clients, as this would strengthen the women's belonging to the engineering workplace. Thus, female engineers may feel less competent than their male colleagues at the work floor, which affects their organisational belonging.

This shows that in the STEM field, women and men have different perceptions of whether they are accepted and appreciated. Therefore, the effect of interactions cuing feelings of acceptance and competence were examined on one's feelings of belonging to the organisation, including the differences for men and women:

H2: Compared to male newcomers in a technical organisation, female newcomers will experience lower feelings of acceptance and competence during workplace interactions.

H3: Because women experience lower feelings of acceptance and competence during workplace interactions, they will experience lower feelings belonging to their organization.

Presence of role models in the organisation

As a potential preservation against the negative effect of interactions, this study includes the presence of a role model to diminish the effects of interactions on one's feelings of organisational belonging. Role models are individuals who are admired for their personal and professional being (Coté, 2000), and whose behaviour is imitated by others (Shapiro, 1978). Its positive influence has already been demonstrated in many contexts, e.g., a role model can be inspiring (Lockwood & Kunda, 1997), motivating (Buunk et al., 2007), increase performance (Marx & Roman, 2002), and increase self-efficacy (Stout et al., 2011). More narrowed down to the context of the current study, several studies have shown that a role model can be uplifting for (stereotyped) minorities, and women in the STEM field in particular. It is found that they may serve as an example that one can follow in pursuing goals and evaluating their own ability by comparing themselves to a person that already accomplished it (Lockwood & Kunda, 1997; Wheeler et al., 1997). Additionally, personal contact with same-sex engineers may be more beneficial for women's self-concept, efficacy, and career aspirations, and seeing female scientists and engineers helps preventing women to apply stereotypes on themselves (Dasgupta, 2011). To illustrate, in the context of the current study, a woman witnessing another woman having a successful career in her organisation may be encouraged in persisting a career in this

organisation, as she sees that also for women, it is possible to gain such a rewarding career. This may help as a cue for an identity safe culture, in which the experience of a negative interaction may have less effect on one's feeling of belonging to the organisation. Therefore, the current study aims to examine the effect of the presence of a role model in the organisation as a moderator on the effect of interactional acceptance and competence on feelings of belonging. We have chosen to do so, as we expected that the role model may not necessarily directly result in higher feelings of acceptance and competence, but that, for instance, when someone feels less accepted, the presence of a role model can diminish the impact this has on one's feeling of belonging to the organisation:

H4: For employees that indicated to have a role model in the organisation, the effect of feelings of acceptance and competence on organisational belonging is lower.

Identifying with the role model

However, the success of role models in the STEM field is not self-evident, as multiple studies also demonstrate that the mere presence of a successful woman in a male-dominated field is not enough to be uplifting for other women's careers. This is, as in order to advance a career in a male-dominated environment, women have to prove themselves that they are, unlike other women, successful in their career (Ellemers et al., 2004). As a result, more women at advanced career stages often describe themselves as non-prototypical (i.e., in masculine terms), compared to women at early career stages (Faniko et al., 2020). Additionally, when successful women do not support other disadvantaged group members, perceptions of injustice and group disadvantage may be turned down (Stroebe et al., 2009). Furthermore, when the successful women are considered as exceptions to the norm, they may even have deflating effects on self-perceptions and leadership aspirations of junior women, compared to exposure to male role models, as it makes it harder to strive for the same success (Hoyt & Simon, 2011).

Thus, as the presence of a successful female colleague is not enough to be uplifting for (young) women in STEM, what is then needed? Early literature towards role models described that in order to be inspired by a role model, one must be able to identify with them, and the success must seem attainable (Lockwood & Kunda, 1997, 1999). This poses a challenge in a male-dominated field in which the absence of a female role model is no exception, and the women that are present may have distanced themselves from other women. It urges the question of what the characteristics of a role model need to be in order to help combating threats to one's identity. When looking at literature about this, on the one hand, some studies have already found

that gender matching for role models and mentors is more important for women than for men, as it shows that gender-related obstacles can be overcome (Latu et al., 2013; Lockwood, 2006) and social identities may better overlap (Sosik & Godshak, 2000). In addition, exposure to same-sex role models could enhance women's subjective identification with the expert, and in turn their identification and commitment with STEM field, compared to opposite-sex role models (Stout et al., 2011). However, on the other hand, Sosik and Godshak (2000) also found that when a mentor considers trust, values, beliefs, and ethics, they may be equally valued by both gender groups. Also, in the study of Buunk et al. (2007), the female participants were exposed to a male role model, which still positively affected their proactive career behaviour. This may carefully imply that gender is not exclusively important when it comes to identifying with someone, but that other factors, such as perceived competence and personality, may play a role as well. We expect that when one can identify with a role model, the role model will serve as a buffer against negative cues in interactions, and thus this will decrease the effects of interactions on organisational belonging.

H5a: The more one can identify with a role model in terms of competences, the lower the effects of feelings of acceptance and competence on organisational belonging are.

H5b: The more one can identify with a role model in terms of personality and interests, the lower the effects of feelings of acceptance and competence on organisational belonging are.

H5c: When one has a role model of the same gender as the participant, the effect of feelings of acceptance and competence on organisational belonging is lower.

The results of women will be compared with those of men in order to see whether the effects differ for gender.

The present study

This study ($N = 97$) aimed to examine the effect of daily fluctuations of feelings of acceptance and competence after interactions of newcomers in technical organisations on daily feelings of organisational belonging. Gender was taken as a predictor on these fluctuations, as is recognized in the literature that women in technical organisations often feel more threat to their identity, and therefore may have lower feelings of belonging to that organisation. Additionally, a role model one can identify with was included as a moderator, together with whether one should identify with this role model in terms of gender or other traits, such as

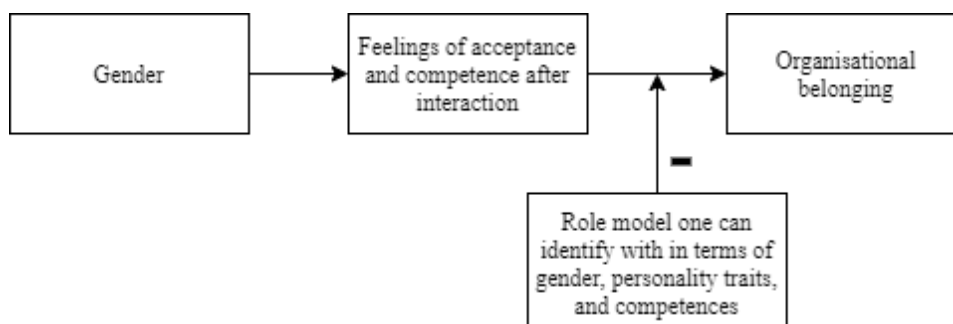
personality. In this way, this study tried to shine new light on what (new) women in the technical sector need to feel more at home in their organisation.

To examine these questions, a daily diary study was conducted in which participants answered daily questionnaires. This method aligned closely to the research aims, as it allows to study thoughts, feelings, and behaviours within a natural, fluctuating context, and captures short-term experiences within the work context (Ohly, 2010). With this, it helped detect phenomena that are difficult or impossible to observe, for instance feelings after an interaction (Rausch, 2014). Additionally, as questions were asked about the same day, data was collected close to the event. This prevented retrospective bias and increased reliability of the answers (Jobe, 2000; Ohly, 2010). Furthermore, a diary study allowed to distinguish between within-individual differences (i.e., how feelings of acceptance and competence and their effect on belonging may vary across time and circumstances) as well as between-individual differences (i.e., the extent to which feelings of acceptance and competence affect feelings of organisational belonging in general). We were motivated to do so, as feelings of competence and acceptance may vary per day, whereas we measure the presence of a role model in the end of the study, to account for the difference of employees that do have a role model they can identify with compared for those who do not.

Based on the previous research described above, we used the diary study to explore two research questions: (1a) *To what extent do daily interactions cuing acceptance and competence affect organisational belonging among newcomers, and is this different for men and women,* (1b) *what is the effect of interactions that cue acceptance and competence on organisational belonging in general,* and (2) *what is the influence of a role model one can identify with on the relation between interactions cuing feelings of acceptance and competence and organisational belonging?* This brings us to the research model displayed in Figure 1.

Figure 1

Research model



Method

Design

In this study, we conducted a daily diary study among new employees in technical organisations to examine whether daily feelings of belonging are higher when one feels more accepted and/or competent on the same day, controlled for gender, and how these findings differ for gender. The study design consisted of both a mediation and moderation model. For the mediation model, gender was the independent variable, organisational belonging was the dependent variable, and feelings of acceptance and competence were mediators. For the moderation model, the independent variables were gender and feelings of acceptance and competence after daily interaction, the dependent variable was organisational belonging, and presence of a role model (one can identify with) was measured as a moderator.

We hypothesized that feelings of belonging to the organisation have a between-individual component (such that men feel more belonging to their organisation than women) as well as a within-individuals component (the degree of these feelings of belonging varies across days). Therefore, we analysed the data both on the person-level (i.e., between participants, across days) as well as the day-level (i.e., within participants, between days). Moreover, we included a moderator to see what the effect of the presence of a role model is, and whether it matters when one can identify with that role model in terms of gender or personality traits and competences.

Participants

This study was part of a larger study of the Bridge the Gap consortium (Tech Your Future, n.d.). For this particular study, we included the participants that entered the measures relevant to this study, resulting in a final study sample of 97 participants (34 female and 63 male). In total, the study included 1114 entries, with a mean of 12 entries per person. From these 1114 entries, 56 indicated that one did not work that day, and 95 indicated that one did not had an interaction that particular day, resulting in 963 completed entries about an interaction. In addition, 239 entries were missing, indicating the number of days participants did not fill in the application. Furthermore, from the 97 participants that completed the research app, 55 also completed the end questionnaire.

Participants were new employees at STEM organisations (i.e., organisations in the technical, construction and IT sector), that started with the daily questions on average 19 days after the start date of their contract ($SD = 10.72$). Participants were aged between 22 and 60

years ($M = 32$, $SD = 9.93$). On average, participants worked 38 hours a week ($SD = 4.25$), which is in line with the Dutch average for technical professionals (CBS, 2020). Most participants were Dutch ($N = 84$), and higher educated with a completed HBO or University Bachelor ($N = 34$) or University Master ($N = 50$). Participants were included in this study when they were technical professionals, in the sense that they completed a technical study and/or worked in a technical function at the time of the study.

Participants were mostly recruited via four different organisations that were affiliated with this study, however in total participants from 14 organisations engaged in the study¹. To accommodate and motivate the four large organisations, the questionnaires were adapted to the organisation's name, and a research report afterwards with outcomes in their specific organisation was promised. Furthermore, as a motivating incentive for the participants, they would receive feedback on their professional identity after participation to the research. Data collection took place from November 2020 until March 2021 and participants engaged in the study over a period of eight weeks.

Procedure

Participation in this research consisted of an intake interview, a start questionnaire, three weeks of daily questions in the research app followed by four weeks of weekly questions, an evaluation call in between, and an end questionnaire². When new employees onboarded in one of the affiliated organisations, they were encouraged - mostly by HR of the organisation - to participate in our study. Beforehand, both in the intake and the start questionnaire, it was emphasized that participation was voluntary, that data would be stored confidentially, that personal answers would not be shared with any organisation, and that participants could stop at any given time without providing a reason.

Intake

In the first two weeks an employee started working at the organisation, an intake interview took place with one of the researchers, which was done through video calling or by phone. This took place each month in the middle of the month for a new group of participants. This took approximately 15 minutes and included an explanation of the study and its objectives, ethical approval, and questions regarding the background, motivation, and current state of events of the employee's career. The objective of this intake was to establish a good

¹ This study did not control for organisational level

² Appendix A shows the flyer participants received with a clear overview of the study design.

collaboration between researcher and participant, which is important for time intensive studies (Green et al., 2006). At the end of the meeting, the participant was asked to fill in the start questionnaire directly after the meeting, which was subsequently send by e-mail.

Daily app questions

On the starting day, the participant received information by e-mail on how to install the research app on which they would receive the daily surveys, and the daily diary study would start. For three weeks, each working day at 3:00 p.m. the questions came online, which took about three to five minutes per day to fill in, which is the recommended number of minutes according to Reis and Gable (2000). The participant received a notification of this at 3:00 p.m., and a reminder at 4:00 p.m., and the questionnaire was open to fill in until 11.00 a.m. the next day. For these measures, we used the program Ethica Data³, an end-to-end research platform that works properly for daily surveys and is easy to use on daily devices like smartphones (Ethica Data, n.d.). The daily diary study was designed to capture the effect of the interaction that most impacted the participants on that particular day. Therefore, the wording of questions explicitly focused on the day. Each day, the daily questionnaire started with asking the participants to think of the interaction of that day that sticked with them the most, followed by questions to specify this interaction, e.g., whether this interaction was with a man or woman, with how many people this interaction was and what kind of interaction it was (e.g., face to face/online, formal/informal). After these three weeks, the participant received weekly questions, but these were not used in the current research.

Interim evaluation

In order to encourage the participant to continue, in the third week the researcher called to briefly evaluate how they experienced the study so far, and whether they had any remarks or questions. In this phone call, the researcher emphasized that it would be very helpful to continue filling in the surveys.

End questionnaire

After four more weeks of weekly questions, the participant received the end questionnaire, which took about 10 minutes to complete. Afterwards, as a motivating incentive for participation, the participant received detailed feedback on their professional identity after completing the study, which was recommended by Janssens et al. (2018).

³ First, the program TIIM of the BMS lab was used (for the first 16 participants), however after some difficulties with the software, we switched to Ethica Data

Measures

The study included different questionnaires and made use of four different software applications. Table 1 shows an overview of the source of each measure.

Daily Measures

All items measured daily were assessed within participants (i.e., α_{daily_range}) to capture individual differences after interactions, but also between participants (i.e., α_{person_range}). See Appendix B for the reliabilities per variable per day.

Feeling accepted. Feelings of acceptance were measured with three items based on Hall et al., (2015, 2019): *During this interaction my interaction partner(s) was/were friendly*, *During this interaction I felt accepted by my interaction partner(s)*, and *During this interaction I was listened to*. All measures used a 5-point rating scale (1 = *Not at all* to 5 = *Totally*), $\alpha_{daily_range} = 0.75-0.94$, $\alpha_{person_range} = 0.93-0.94$, $M = 4.51$, $SD = 0.37$.

Feeling competent. Feeling competent was measured with two items based on Hall et al. (2015, 2019): *During this interaction I had the idea that my interaction partner(s) perceived me as competent*, and *I had the idea that my interaction partner(s) found my contribution useful*. All measures used a 5-point rating scale (1 = *Not at all* to 5 = *Totally*), $r_{daily_range} = 0.63-0.86$, $r_{person_range} = 0.81-0.86$, $M = 4.08$, $SD = 0.47$.

Feelings of belonging to the organisation. Feelings of belonging to the organisation were measured with two items from Veldman et al. (2020) (adjusted from the Institutional Belonging scale; London et al., (2011); Mendoza-Denton et al., (2002)). Two items were used to assess the participant's feelings that day: *The following questions are about how you experienced your work today at <organisation name>. Today I feel...* with a scale ranging from 1 (*not at home at this organization/a bad fit with my organization*) to 5 (*at home at my organization/a good fit with my organization*), $r_{daily_range} = 0.61-0.94$, $r_{person_range} = 0.88-0.95$, $M = 4.20$, $SD = 0.79$.

Person Measures

All items measured on a person level were assessed between participants.

Interview + start questionnaire. The study started with an oral interview, and subsequently the start questionnaire, which was part of the Career Compass, an instrument to measure the content of professional identity of STEM students (Möwes, 2016). The interview and start questionnaire provided us the first (demographical) data of the participants. This included amongst other things age, gender, study background, and motivation for working in

the current organisation. Furthermore, the Career Compass provided the feedback on the participants' professional identify.

Role model. For the end questionnaire, the program Qualtrics was utilized, an easy-to-use software tool (BMS Datalab, n.d.), and measured the effect of the presence of a role model one can identify with. Additionally, the items concerning the role model were measured between participants as a moderator to examine the overall effect of its presence on daily feelings of belonging. First, the participants were asked to think of someone in their organisation who they see as an example (a role model). Hence, they were asked how easy it was to come up with someone in order to measure the presence in a quantitative way, using a 5-point scale (1 = *Very easy* to 5 = *Very difficult*), $N = 60$, $M = 2.78$, $SD = 1.55$, and providing them the option to indicate that they failed to come up with someone ($N = 5$). Subsequently, questions were asked regarding the gender of this role model (81.5% = male, 18.5% = female), and to what extent the participant resembled this person in both competencies, and personality and interests (1 = *I am very different from this person* to 5 = *I am very similar to this person*), as based on the study of Young et al. (2013), respectively $M = 3.64$, $SD = 0.68$, and $M = 3.38$, $SD = 0.81$. As the correlation between these two questions was .16, the questions were treated as separate variables.

Table 1

Consulted Information Sources for the Measurements of Study Variables

Variables	Intake	Start questionnaire	Daily questionnaires	End questionnaire
1. Demographics	X	X		
2. Feeling accepted			X	
3. Feeling competent			X	
4. Organisational belonging			X	
5. Role model				X

Main Analyses

We conceptualized the data as a two-level structure in which days were nested within individuals. To analyse our multilevel data (i.e., days nested within participants) a mixed model procedure was conducted using IBM SPSS Statistics (Version 27), with maximum likelihood estimation. Multilevel models were specified with both day-level (Level 1) and person-level (Level 2) effects. For the Level 1 effects, we used a day-level dataset with the data per day, whilst for the Level 2 effects we used the person-level dataset in which we aggregated all the data from the different days to one score per person. Specifically, feelings of acceptance and

competence after an interaction, and daily feelings of belonging were day-level predictor variables, and were person mean-centred to compare individual differences per day with the overall person-mean by setting the average score of each participant over all days to zero. Also, person-level effects of acceptance and competence were tested by including their person means. Furthermore, person-level variables (i.e., gender and questions regarding the presence of an identifiable role model) were grand mean centred, that is, the overall mean was subtracted such that the average across all participants was 0.

We started with some exploratory analyses to examine the different interactions men and women reported. To see whether these differences were statistically significant, we conducted Chi-square tests of independence and independent t-tests. Then, we tested the null model to compute the Intraclass Correlation Coefficient (ICC), which quantifies the proportion of the total variance accounted for personal differences. Then, we explored the daily effect of feelings of acceptance and competence on feelings of belonging with the day-level dataset, to see whether both a day-level and person-level effect could be found for this relation. Subsequently, we used the person-level dataset (i.e., the aggregated data) to test whether women (but not men) would experience lower feelings of belonging to their organisation in general, when mediated by interactional acceptance and/or competence, using the PROCESS macro in SPSS (Hayes, 2012). Lastly, we continued with the moderation model, in which we followed the four-step process of Aguinis, Gottfredson, and Culpepper (2013). We started with a model with random intercept and fixed slope. First, we added the level 1 predictor (i.e., feelings of acceptance or competence), after which we added our level 2 predictor (i.e., presence of a role model one can identify with). In the next step, we created a model with, next to the random intercept, also a random slope of the level 1 predictor, to see whether the relationships between feelings of acceptance and competence and feelings of belonging varied among newcomers. If this step would be significant, we would perform a cross-level interaction model for understanding whether the presence of a role model one can identify with can explain a part of the variance in the slopes across the participants.

Results

Descriptive statistics

Out of the 963 reported interactions, 68.7% of the interactions took place online (being a video call, phone call without video, or written exchange), whereas 31.3% was an interaction in physical presence. This is not surprising, given the situation concerning the COVID-19 pandemic⁴ during the time the study took place. Furthermore, 58.9% of the interactions were only with one interaction partner, which are used for the current descriptives. A chi-square test of independence showed that all participants had more conversations with male interaction partners (82.86%) compared to female interaction partners (17.14%), $\chi^2(1, N = 560) = 17.480, p < .001$, which is not surprising given the underrepresentation of women in the sector. Furthermore, it showed that women reported more online (76.12%) than physical conversations compared to men (64.80%), $\chi^2(1, N = 843) = 11.321, p < .001$, and also that women reported more spontaneous (60.90%) than planned conversations compared to men (47.65%), $\chi^2(1, N = 843) = 5.62, p = .018$. Also, the chi-square test showed that women more often had interactions with someone of higher status than the participant (72.68%) compared to men (63.49%), $\chi^2(4, N = 561) = 12.893, p = .012$. An overview of the descriptives of interactions can be found in Table 2. Moreover, Appendix C shows a more extensive overview of the differences of interactions with men and women.

Table 2

Descriptives of interactions

	All participants	Male participants	Female participants
Male interaction partner ^a	464	321	143
Female interaction partner ^a	96	45	51
Interaction partner had a lower or the same status ^a	187	134	53
Interaction partner had a higher status ^a	374	233	141
Online conversation	579	359	220
Physical conversation	264	195	69
Planned conversation	377	264	113
Spontaneous conversation	466	290	176

^a Interactions with only one interaction partner

Note. There were 843 interactions with both one and multiple interaction partners, and 560 interactions with only one interaction partner.

⁴ The COVID-19 pandemic is a global pandemic that started in 2020, having a profound impact on human life and causing many jobs to become remote in order to minimize COVID-19 infection (Vyas & Butakhieo, 2020)

Descriptives role model

From the 60 participants that filled in the end questionnaire, 55 indicated to consider a person in the organisation as a role model. As can be seen in Table 3, women reported equally a male or female role model, whereas men only reported a male role model. Furthermore, most of the participants reported that they highly identified with the role model. This was a bit higher for identifying based on personality and interests (i.e., 87.27% reported high identifying) compared to identifying based on competences (i.e., 63.63% reported high identifying).

Table 3

Descriptives presence of role model, differences for men and women^a

Variables	Male participant	Female participant
	Gender role model	
Male role model	33	11
Female role model	0	10
	Identify based on competences ^b	
High identifying	19	16
Low identifying	15	5
	Identify based on personality and interests ^b	
High identifying	29	19
Low identifying	5	2

^aN = 55

^b Using median split; Scale categories: (1-5):

Identifying based on competences: high = 4,5; low = 1, 2, 3

Identifying based on personality and interests: high = 3, 4,5; low = 1, 2

Correlations and t-test (between participants)

Correlations between measurements (at a between participant level, i.e., the aggregated dataset) are presented in Table 4, which are correlations for each individual over the 15 days of the study. These correlations suggest that feelings of belonging to the organisation are positively related to feelings of acceptance and feelings of competence. Thus, when someone experiences higher levels of acceptance in interactions in general, they will also experience higher levels of belonging to the organisation in general. Additionally, feelings of acceptance and competence are also positively correlated, indicating that when one feels accepted after an interaction, they also feel more competent, and vice versa.

Table 4

Correlations between study variables and demographics (between-participants) ^a

Variables	M	SD	1	2	3	4	5	6	7
1. Gender			-						
2. Age	31.60	9.95	-.31**	-					
3. Work experience (years)	6.48	9.57	-.30**	.94**	-				
4. Educational level	2.49	0.70	.17**	-.18**	-.28**	-			
5. Feelings of acceptance	4.51	0.37	.09**	-.20	-.03	-.24**	-		
6. Feelings of competence	4.08	0.47	-.04	.10**	.06*	-.34**	.79**	-	
7. Feelings of belonging	4.22	0.59	-.08**	.23**	.19**	-.16**	.55**	.68**	-

** $p < .001$, * $p < .05$ Scale categories: (1-5)

^a $N=1338$

Note. Gender: 1 = man, 2 = woman; Educational level: 1 = vocational education, 2 = university of applied sciences/university bachelor, 3 = university master, 4 = promotion/ PhD.

To see whether these outcomes significantly differ for women compared to men, we then conducted an independent t-test. It showed that on average, women ($M = 2.74$, $SE = 4.64$) have less years of work experience compared to men ($M = 8.60$, $SE = 10.68$), and this difference, 5.86, 95% CI [2.737, 8.986], was statistically significant ($t(90.408) = 3.727$, $p < 0.001$). We found no significant difference for educational level between men and women, 95% CI [-0.466, 0.745], $t(88.643) = -1.434$, $p = 0.155$. Moreover, unlike we predicted with hypothesis 2, we found no significant differences in how men and women reported their feelings of acceptance (95% CI [-0.241, 0.075], $t(95) = -1.042$, $p = .300$), competence (95% CI [-0.193, 0.253], $t(49.840) = 0.271$, $p = .788$), and belonging (95% CI [-0.177, 0.320], $t(95) = 0.568$, $p = .571$) after interactions.

Null model: Intra-class correlations

For each day-level variable (i.e., belonging, acceptance and competence), the ICC was computed by estimating the random variance in the intercept, that is, the between-person variance in the variables. A high ICC shows that greater variance can be explained by between-individual differences. Therefore, the analyses started by analysing null models, in which only the dependent variable was estimated without any predictors. For feelings of belonging, the ICC was .51, which indicates that 51% of the variance of feelings of belonging was between individuals and 49% was within individuals. Furthermore, for feelings of acceptance, the ICC was .29, and the ICC of feelings of competence was .25. This reveals that the largest part of variance of the variables was within participants.

Do interactions cuing feelings of acceptance and competence predict organisational belonging?

Confirming hypothesis 1, both a person-level effect (i.e., between-individual) and a day-level effect (i.e., within-individual between days) were found. On days when employees felt more accepted after an interaction, they also felt more organisational belonging on that day, compared to days when they experienced lower feelings of acceptance after interactions ($B = 0.41$, $p < .001$). Moreover, newcomers that in general experienced more feelings of acceptance after interactions also felt more belonging to their organisation ($B = 0.87$, $p < .001$).

For feelings of competence, we also found both a day-level and person-level effect on feelings of belonging. Employees that in general reported higher levels of feelings of competence, also reported higher levels of organisational belonging ($B = 0.85$, $p < .001$).

Furthermore, on days employees felt more competent after an interaction, they also reported higher levels of organisational belonging on that same day, compared to days when they experienced lower feelings of competence ($B = 0.32, p < .001$).

Additionally, we entered both feelings of acceptance and competence in the model at the same time to examine what variable would have had the highest effect. We found that in general, the person-level effect of competence ($B = 0.79, p < .001$) was higher than the effect of acceptance ($B = 0.10, p = .593$). Furthermore, the day-level effect of feelings of competence ($B = 0.21, p < .001$) was also higher than that of feelings of acceptance ($B = 0.22, p < .001$). This shows that competence has both a higher person-level and day-level effect than acceptance.

Since we were interested in the effect of gender in this paper, we also explored whether the relationship between acceptance and competence on belonging was similar for men and women. As such, we found that for both groups, the effects of acceptance and competence go in the same direction, which can be found in Table 5.

Table 5

Relationships between organisational belonging and feelings of acceptance and competence for men and women

Measures	Person level (between participants)		Day-level (within-participants between days)	
	<i>B</i> (95% CI)		<i>B</i> (95% CI)	
	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>
Feelings of acceptance	0.78**	0.95**	0.37**	0.42**
Feelings of competence	0.74**	0.97**	0.29**	0.33**

** $p < .001$

Mediation effect of feelings of acceptance and competence on gender and feelings of belonging

Using the person level dataset (i.e., the aggregated dataset), we tested hypothesis 3, which expected that women (but not men) in general would experience lower feelings of belonging when their conversations at work engendered lower feelings of competence and acceptance. To see whether the model supported the mediation, we started with examining the effect of gender on organisational belonging, as mediated by feelings of acceptance and competence after interactions, using the PROCESS macro for SPSS, Model 4 (Hayes, 2012).

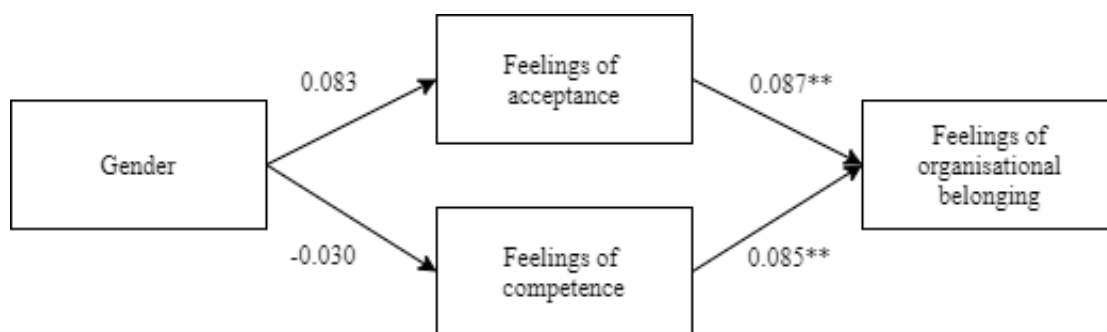
We did this separately for feelings of acceptance and competence. Figure 2 gives a graphical overview of the direct paths of this mediation model.

Other than expected, results showed no significant effect of gender on feelings of acceptance, $\beta = 0.083$, $SE = 0.080$, 95% CI [-0.075,0.241], $p = .300$, indicating that gender does not have an influence on the extent to whether one feels accepted to the organisation in general. As such, the effect of gender on belonging was also not significant, [indirect effect: $\beta = -0.144$, $SE = 0.105$, 95% CI [-0.352,0.064], $p = .173$].

Also, for the model in which we included feelings of competence as a mediator, the direct effect of gender on feelings of competence was not significant, $\beta = -0.030$, $SE = 0.099$, 95% CI [-0.227, 0.167], $p = .763$. Subsequently, we also found no significant effect of gender on belonging, when mediated by feelings of competence, [indirect effect: $\beta = -0.046$, $SE = 0.094$, 95% CI [-0.232, 0.140], $p = .626$]. Therefore, the results do not support the mediation model, thus no further analyses are required regarding the effect of the mediator in the model and hypothesis 3 is not supported.

Figure 2

Graphical overview of direct paths in the mediation model



Note. Includes the direct effects of hypothesis 1 and 3.

** $p < .001$

Moderation effect of a role model one can identify with

To understand whether an identifiable role model can explain part of the variance in the slope across the participants, the moderation effect of an identifiable role model was examined using cross-level interaction with feelings of acceptance and competence as a level 1 predictor, and the role model as a level 2 predictor. We started with testing the effect of only the presence

of a role model on the relation between interactions and organisational belonging. Hence, we measured identifying with a role model in three ways: 1) Identifying in terms of competences, 2) Identifying in terms of personality and interests, and 3) Identifying in terms of gender. Respectively three separate cross-level interactions were performed. The results are set out in the tables in Appendix E.

Is the effect of conversations cuing acceptance or competence (level 1) on feelings of belonging (level 1) moderated by the presence of a role model in the organisation (level 2)?

Hypothesis 4 expected that when an employee indicated to have a role model in the organisation, the effect of acceptance/competence on organisational belonging would be weaker. Table E1 and E2 show no support for this hypothesis, as the random slope of presence of a role model was not significant, and as such the relationship between acceptance/competence and organisational belonging did not differ across employees.

Is the effect of conversations cuing acceptance or competence (level 1) on feelings of belonging (level 1) moderated by identification with a role model in terms of competences, personality and interests, or gender (level 2)?

Hypothesis 5 stated that the more a newcomer identifies with a role model in terms of competences, personality and interests, or gender, the weaker the relationship between feelings of acceptance/competence and belonging is. Table E3 until E8 show that this hypothesis was not supported, as the random slope of identifying with a role model was not significant and as such the relationship between interactional acceptance/competence and organisational belonging did not appear to differ across different employees.

Do the effects of a role model differ for women compared to men?

Since this paper is interested in gender differences, we also compared the models for women to the ones for men, which can be found in Tables E9-E16. Since the moderation effect showed no significant results, both for men and women a role model does not moderate the effect of interactions cuing acceptance/competence on organisational belonging.

Discussion

This research is the first to study the effects of daily interactions on organisational belonging of new employees in STEM organisations, and more specifically whether female newcomers in STEM are indeed more vulnerable to feel low belonging, because they experience a lack of acceptance and respect in their daily workplace interactions. To do so, we conducted a daily diary study in the natural setting of STEM organisations. We found that on days when interactions cue feelings of acceptance and competence, the feelings of belonging to the organisation of that person on that same day are lower. Also, in general, when someone reports lower feelings of acceptance and competence, the general feelings of organisational belonging are lower. This is in line with what was expected, as we predicted that interactions may have an important effect on one's organisational belonging, since especially newcomers are sensitive to how others view them and they are still trying to find their place in the organisation (Ashfort & Mael, 1989; Van Maanen & Schein, 1977). However, no differences were found between the extent to which men and women reported to feel accepted and respected in their interactions. Additionally, the presence of an identifiable role model was expected to diminish the effect of interactions on organisational belonging as it would serve as a buffer against negative experiences, however this effect was not found.

The results of this study show the importance of interactions at the work floor in the socialisation period of a new employee, as was found that feelings of acceptance and competence after an interaction both influence feelings of belonging on that same day, as well as in general, which is important for one's achievement, engagement, and persistence to the organisation (Dasgupta & Stout, 2014; Rainy et al., 2018). These findings are in line with other studies that showed that interactions can impact experiences of newcomers in an organisation (Korte et al., 2019; Smith et al., 2012). Additionally, as this study built further on research of Hall et al. (2015; 2019) that suggested that interactions can evoke threats to one's identity, we showed more narrowed down that interactions impact whether one feels belonging to the organisation. The outcomes thereby suggest that subtle cues of interactions can already support or hinder whether a newcomer feels at home at an organisation. This can be explained by the existing knowledge that newcomers acquire the social skills and knowledge necessary to learn the job through interactions, that may help interpret experiences (Van Maanen & Schein, 1977), which makes them more vulnerable to these external, social influences. This stresses the importance for organisations to foster a safe work environment in which newcomers feel accepted and competent, and to create awareness towards the impact interactions may have.

The current study found that women and men felt equally accepted and competent after workplace interactions, and no differences were found on how these feelings affected belonging. Furthermore, we also found that the degree of organisational belonging of men and women was equal. This is inconsistent with the findings of Hall et al. (2015), who found that for women, but not for men, feelings of incompetence and unacceptance affected their sense of identity threat. As several studies showed that when there is gender imbalance, and when the underrepresented group - in this case female employees - is negatively stereotyped, feelings of belonging of the underrepresented group are lower (Cheryan et al., 2009; Murphey et al., 2007; Van Veelen et al., 2016), we expected that therefore also feelings of competence and acceptance would influence organisation belonging of the female employees to a greater extent. The reason that no differences were found between men and women may be explained by that the organisations that participated in this research already have a focus on creating a safe culture for their new employees, since they voluntarily participated in a study towards the work culture in their organisation. Therefore, it may be that in these organisations, already more of a safe culture exists in which both men and women feel accepted and appreciated, and women are not, or to a lesser extent, negatively stereotyped. This may in turn explain why not many differences were found between men and women for how they felt after interactions at work.

Although we expected that the presence of an identifiable role model would diminish the effect of interactions on organisational belonging, we found no effect of this in the study. This is surprising, as a great variety of studies have demonstrated the uplifting effect a role model can have on (underrepresented) employees, as they serve as an example for pursuing goals and evaluating one's own ability (Dasgupta, 2011, Lockwood & Kunda, 1997; Wheeler et al., 1997), and to develop the needed skills and qualifications (Houghton, 2013; Filstad, 2004). The study of Filstad (2004) may help explaining why no effects of a role model were found in this particular study. She describes that newcomers often use several role models at the same time, in which they adopt different qualifications from different role models in order to create their own personal style. This creates a much more complex picture of the process of role models than the model of the current study. Since we only asked the participants at the end of the study to indicate whether they had a role model in their organisation, this may have been too simplistic considering the findings of Filstad (2004). Together, findings of this study underscore the importance of workplace interactions on how newcomers feel at home at their organisation, stressing the importance of a safe culture at the work floor.

Strengths, limitations, and future research

This study has several strengths. First, the method of a diary study allowed to study the feelings of the participants on the same day the interactions took place, which prevents retrospective bias and subsequently increased the reliability of the answers (Jobe, 2000; Ohly, 2010). Second, this method resulted in a high power of the study, as we do not only have a considerable number of participants, but also several days within these participants, resulting in many data entries. Third, with the within-subjects design, random noise was minimized, as less variance came from differences between participants (Budi, 2018). Fourth, as several organisations were motivated to participate to the study since they would also benefit from the results afterwards, these organisations also encouraged the participant to participate and to continue with the study. This may have given the participants additional incentive, next to the intensive contact with the researcher, to take part in the study in a serious way.

Apart from the strengths, this study has also some limitations and recommendations for future research. First of all, next to the fact that the effect of a role model was only measured once, also the timing of the measurement was not optimal. The presence of the role model was only measured afterwards, and we did not ask when the participants had met the role model. Therefore, it can be the case that someone met the role model after the first three weeks of the study, and then the role model would not have influenced the interactions in these first weeks of the study. Furthermore, the power of the items may have not been sufficient, as the end questionnaire in which the questions were included had a lower response rate than the daily questionnaires. For future research it is therefore recommended to include measurement of the role model in the daily questionnaire, as the perceptions of having a role model can differ per day, and this also results in more datapoints for these specific questions.

Second, the current model has a two-level nested model, in which days were nested within individuals. However, as participants of different organisations took part, the study was in fact a three-level nested model, in which individuals were nested within organisations. Therefore, the current study did not control for the effect of the different organisations (e.g., their organisational culture and onboarding process). For a future study, using a three-level nested model is recommended to include the effect of different organisations.

Thirdly, although the study had a high power, the sample size of the group with female and male participants was not equal, as roughly one-third of the participants was female, and two-third was male. This may have affected the power of the analyses conducted with gender as a variable (Rusticus and Lovato, 2014). For future research, it is therefore recommended to have more equal sample sizes.

Apart from these limitations, it is important to consider the conditions of the time this study took place, as this was during the Covid-19 pandemic. Because of this, participants often worked from home and in some cases, they did not even go to the office once in their first months. This may have affected the daily interactions of the participants, as these interactions were often limited to online interactions with only a few direct colleagues which were often rather work-related. This was also mentioned by multiple participants during the interim evaluations, in which a lack of spontaneous, informal, conversations was expressed. As they were not physically present at the organisation, one could question how well they were able to indicate whether they felt at home at the organisation. On the one hand, this can have impacted the outcomes of the study in a negative way, as one may have not been able to get involved in the organisation and working from home may impact the mental well-being of employees negatively (Vyas & Butakhieo, 2020). On the other hand, working from home also comes with advantages, such as greater work control (Ipsen et al., 2021). In the light of this study, it can be speculated that working from home can in some cases be a safer place compared to working at the office, especially when one is new in an organisation, as it is a more controlled environment with more planned, work-related conversations. Therefore, it may also have affected the outcomes of this study in a positive way. Therefore, it would be interesting to conduct the same study again when it is possible to work more frequently at the office again, to see whether the outcomes would differ.

Another recommendation for future research is to include a lagged analysis. The current study only focused on daily effects of interactions in the first weeks of a job. As the first weeks of a new job are crucial for the decision whether one wants to stay or leave in an organisation (Jobvite, 2018), it would be interesting to conduct further research to see whether interactions have more effect in the first weeks of their job, compared to after a few months.

Conclusion

This study used a diary study to examine the effect of interactions on feelings of organisational belonging of newcomers in STEM organisations in the first few months of their job. Based on the findings of our study, we conclude that workplace interactions that elicit feelings of acceptance and competence affect feelings of belonging to an organisation both on the same day as well as in general. Thereby, this study endorses the importance of workplace practices aimed to foster interactions that make newcomers feel more accepted and competent, as only these simple cues can already influence the degree to which someone feels belonging to the organisation. Although no significant effect was found for gender in this study, we believe

that when an organisation pays attention to design such a safe workplace, it will help strengthen the feelings of belonging of underrepresented groups in the STEM sector. In this way, both men and women can feel at home in STEM.

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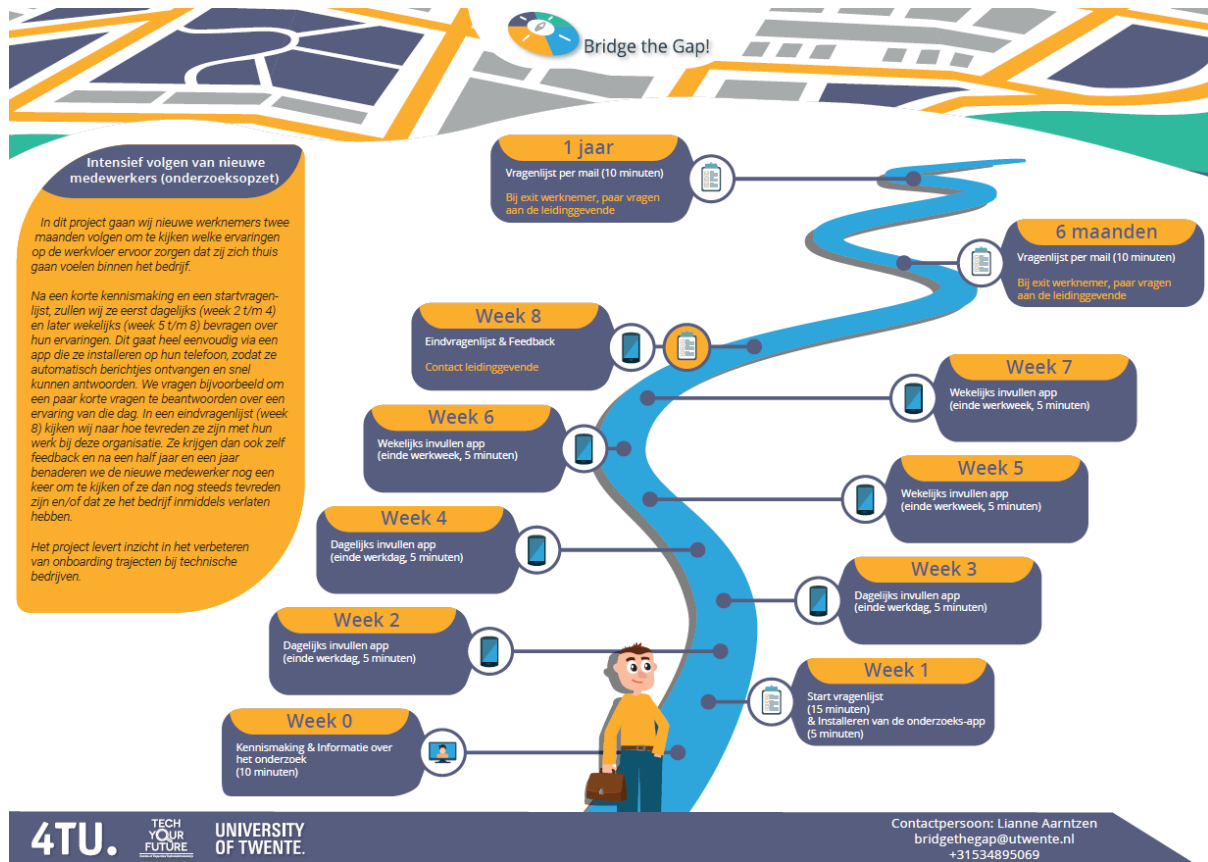
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Appendix A

Flyer study design



Appendix B

Reliabilities per variable per day

Day level	<i>α</i> _{daily_range} Acceptance	<i>α</i> _{person_range} Acceptance	<i>r</i> _{daily_range} Competence	<i>r</i> _{person_range} Competence	<i>r</i> _{daily_range} Belonging	<i>r</i> _{person_range} Belonging
1	.770	.923	.695	.808	.744	.880
2	.880	.933	.754	.808	.727	.892
3	.845	.933	.750	.808	.608	.894
4	.861	.940	.721	.830	.841	.952
5	.897	.939	.857	.823	.895	.954
6	.859	.940	.748	.830	.799	.952
7	.831	.939	.691	.859	.889	.952
8	.921	.938	.773	.830	.799	.949
9	.911	.938	.702	.830	.918	.952
10	.879	.937	.751	.823	.939	.954
11	.926	.938	.850	.858	.854	.952
12	.883	.938	.674	.863	.893	.953
13	.880	.938	.814	.862	.899	.953
14	.727	.939	.632	.859	.745	.952
15	.825	.932	.630	.846	.864	.954

Appendix C
Descriptives of interactions

Baseline characteristic	Male Participants			Female Participants		
	Talking to All Interaction Partners	Talking to Male Interaction Partners	Talking to Female Interaction Partners	Talking to All Interaction Partners	Talking to Male Interaction Partners	Talking to Female Interaction Partners
	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>
Any conversation	464	321	143	96	45	51
Online conversation	207	181	26	129	94	35
Physical conversation	117	104	13	40	28	12
Planned conversation	200	172	28	80	61	19
Spontaneous conversation	124	113	11	89	61	28
Interaction partner had a lower or the same status	133	117	16	53	41	12
Interaction partner had a higher status	233	204	29	141	102	39

Note: Includes conversations with only one interaction partner.

^a*N*=580

Appendix D

Correlations between study variables, split by identifying with a role model

Variables			Presence of a role model			Identify based on personality			Identify based on competences			Identify based on gender		
	M	SD	1	2	3	1	2	3	1	2	3	1	2	3
8. Feelings of belonging	4.22	0.59	-	.50**	.55**	-	.54**	.44**	-	.38**	.45**	-	.21**	.39**
9. Feelings of acceptance	4.51	0.37	.03	-	.74**	.50**	-	.76**	.55**	-	.72**	.55**	-	.66**
10. Feelings of competence	4.08	0.47	.37**	.57**	-	.56**	.74**	-	.59**	.75**	-	.57**	.76**	-
Gender participant: male														
11. Feelings of belonging	4.21	0.76	-	.51**	.53**	-	.55**	.49**	-	.41**	.44**	-	-	-
12. Feelings of acceptance	4.46	0.58	-.03	-	.74**	.52**	-	.80**	.58**	-	.74**	.51**	-	-
13. Feelings of competence	4.04	0.75	.05	.72**	-	.54**	.73**	-	.59**	.73**	-	.53**	.74**	-
Gender participant: female														
14. Feelings of belonging	4.11	0.91	-	.48**	.57**	-	.41*	.25	-	.32*	.49**	-	.21**	.39**
15. Feelings of acceptance	4.65	0.55	.14	-	.75**	.48**	-	.65**	.52**	-	.66**	.63**	-	.66**
16. Feelings of competence	4.17	0.80	.57**	.28	-	.59**	.76**	-	.59**	.77**	-	.70**	.78**	-

^aN=541, ** $p < .001$, * $p < .05$ Scale categories: (1-5)

Note. High identifiers are on the left of the diagonal, low identifiers are on the right of the diagonal. Presence of a role model is on the left of the diagonal, no presence of a role model is on the right.

Appendix E

Tables for multilevel analyses

Table E1

The effect of acceptance on belonging, moderated by presence of a role model

Level and variable	Model			
	Null (Step 1)	Random Intercept and Fixed Slope (Step 2)	Random Intercept and Random Slope (Step 3)	Cross-Level Interaction (Step 4)
Level 1				
Intercept (γ_{00})	4.22** (0.060)	4.330** (0.303)	4.328** (0.303)	
Feelings of acceptance (γ_{10})		0.436** (0.042)	0.421** (0.054)	
Level 2				
Presence role model (γ_{01})		-0.111 (0.271)	-0.109 (0.271)	
Cross-level interaction				
Feelings of acceptance*presence role model (γ_{11})				
Variance components				
Within-person (L1) variance (σ^2)	0.300	0.286	0.275	
Intercept (L2) variance (τ_{00})	0.313	0.307	0.308	
Slope (L2) variance (τ_{11})			0.044	
Additional information				
ICC	0.51			
-2 log likelihood (FIML)	1955.363	1212.859	1207.532	
Number of estimated parameters	3	5	6	
Pseudo R^2				

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and

L2 sample size = 60. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E2

The effect of competence on belonging, moderated by presence of a role model

Level and variable	Model			
	Null (Step 1)	Random Intercept and Fixed Slope (Step 2)	Random Intercept and Random Slope (Step 3)	Cross-Level Interaction (Step 4)
Level 1				
Intercept (γ_{00})	4.22** (0.060)	4.329** (0.303)	4.314** (0.304)	
Feelings of competence (γ_{10})		0.350** (0.030)	0.312** (0.047)	
Level 2				
Presence role model (γ_{01})		-0.110 (0.271)	-0.096 (0.272)	
Cross-level interaction				
Feelings of competence*presence role model (γ_{11})				
Variance components				
Within-person (L1) variance (σ^2)	0.300	0.276	0.245	
Intercept (L2) variance (τ_{00})	0.313	0.308	0.312	
Slope (L2) variance (τ_{11})			0.059	
Additional information				
ICC	0.51			
-2 log likelihood (FIML)	1955.363	1191.462	1160.153	
Number of estimated parameters	3	5	6	
Pseudo R^2				

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and

L2 sample size = 60. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E3

The effect of acceptance on belonging, moderated by identify with competences role model

Level and variable	Model			
	Null (Step 1)	Random Intercept and Fixed Slope (Step 2)	Random Intercept and Random Slope (Step 3)	Cross-Level Interaction (Step 4)
Level 1				
Intercept (Y_{00})	4.22** (0.060)	4.085** (0.389)	4.085** (0.388)	
Feelings of acceptance (Y_{10})		0.440** (0.049)	0.424** (0.056)	
Level 2				
Identify with competences (Y_{01})		0.037 (0.105)	0.047 (0.105)	
Cross-Level Interaction				
Acceptance * Identify with competences (Y_{01})				
Variance Components				
Within-days (L1) variance	0.300	0.287	0.275	
Intercept (L2) variance	0.313	0.258	0.259	
Slope (L2) variance			0.042	
Additional information				
ICC	0.51			
-2 log likelihood (FIML)	1955.363	1109.336	1104.404	
Number of estimated parameters	3	5	6	
Pseudo R^2				

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and

L2 sample size = 55. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E4

The effect of competence on belonging, moderated by identify with competences role model

Level and variable	Model			
	Null (Step 1)	Random Intercept and Fixed Slope (Step 2)	Random Intercept and Random Slope (Step 3)	Cross-Level Interaction (Step 4)
Level 1				
Intercept (Y_{00})	4.22** (0.060)	4.085** (0.388)	4.083** (0.388)	
Feelings of competence (Y_{10})		0.358** (0.031)	0.323** (0.049)	
Level 2				
Identify with competences (Y_{01})		0.037 (0.105)	0.037 (0.105)	
Cross-Level Interaction				
Acceptance * Identify with competences (Y_{01})				
Variance Components				
Within-days (L1) variance	0.300	0.275	0.242	
Intercept (L2) variance	0.313	0.259	0.262	
Slope (L2) variance			0.061	
Additional information				
ICC	0.51			
-2 log likelihood (FIML)	1955.363	1086.436	1054.299	
Number of estimated parameters	3	5	6	
Pseudo R^2				

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and

L2 sample size = 55. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E5

The effect of acceptance on belonging, moderated by identify with personality and interests role model

Level and variable	Model			
	Null (Step 1)	Random Intercept and Fixed Slope (Step 2)	Random Intercept and Random Slope (Step 3)	Cross-Level Interaction (Step 4)
Level 1				
Intercept (Y_{00})	4.22** (0.060)	4.245** (0.308)	4.245** (0.308)	
Feelings of acceptance (Y_{10})		0.440** (0.043)	0.424** (0.056)	
Level 2				
Identify with personality and interests (Y_{01})		-0.008 (0.089)	-0.008 (0.089)	
Cross-Level Interaction				
Acceptance * Identify with personality and interests (Y_{01})				
Variance Components				
Within-days (L1) variance	0.300	0.287	0.275	
Intercept (L2) variance	0.313	0.258	0.259	
Slope (L2) variance			0.043	
Additional information				
ICC	0.51			
-2 log likelihood (FIML)	1955.363	1109.452	1104.520	
Number of estimated parameters	3	5	6	
Pseudo R^2				

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and

L2 sample size = 55. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E6

The effect of competence on belonging, moderated by identify with personality and interests role model

Level and variable	Model			
	Null (Step 1)	Random Intercept and Fixed Slope (Step 2)	Random Intercept and Random Slope (Step 3)	Cross-Level Interaction (Step 4)
Level 1				
Intercept (Y_{00})	4.22** (0.060)	4.245** (0.308)	4.244**(0.308)	
Feelings of competence (Y_{10})		0.358** (0.031)	0.323** (0.049)	
Level 2				
Presence Role Model identifying based on personality and interests (Y_{01})		-0.008 (0.089)	-0.008 (0.089)	
Cross-Level Interaction				
Competence*Role model (Y_{01})				
Variance Components				
Within-days (L1) variance	0.300	0.275	0.242	
Intercept (L2) variance	0.313	0.259	0.262	
Slope (L2) variance			0.061	
Additional information				
ICC	0.51			
-2 log likelihood (FIML)	1955.363	1086.552	1054.419	
Number of estimated parameters	3	5	6	
Pseudo R^2				

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and

L2 sample size = 55. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E7

The effect of acceptance on belonging, moderated by identify with gender role model

Level and variable	Model			
	Null (Step 1)	Random Intercept and Fixed Slope (Step 2)	Random Intercept and Random Slope (Step 3)	Cross-Level Interaction (Step 4)
Level 1				
Intercept (Y_{00})	4.22** (0.060)	4.269** (0.161)	4.269** (0.161)	
Feelings of acceptance (Y_{10})		0.444** (0.043)	0.430** (0.056)	
Level 2				
Match Gender Role Model (Y_{01})		-0.075 (0.181)	-0.075 (0.181)	
Cross-Level Interaction				
Acceptance * Match Role Model (Y_{01})				
Variance Components				
Within-days (L1) variance	0.300	0.287	0.276	
Intercept (L2) variance	0.313	0.257	0.258	
Slope (L2) variance			0.042	
Additional information				
ICC	0.51			
-2 log likelihood (FIML)	1955.363	1099.421	1094.612	
Number of estimated parameters	3	5	6	
Pseudo R^2				

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and

L2 sample size = 54. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error, match gender = 1, no match gender = 0.

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

Table E8

The effect of competence on belonging, moderated by identify with gender role model

Level and variable	Model			
	Null (Step 1)	Random Intercept and Fixed Slope (Step 2)	Random Intercept and Random Slope (Step 3)	Cross-Level Interaction (Step 4)
Level 1				
Intercept (Y_{00})	4.22** (0.060)	4.269** (0.161)	4.268** (0.161)	
Feelings of competence (Y_{10})		0.357** (0.031)	0.322** (0.049)	
Level 2				
Match Gender Role Model (Y_{01})		-0.075 (0.181)	-0.074 (0.181)	
Cross-Level Interaction				
Competence * Match Role Model (Y_{01})				
Variance Components				
Within-days (L1) variance	0.300	0.276	0.243	
Intercept (L2) variance	0.313	0.258	0.261	
Slope (L2) variance			0.062	
Additional information				
ICC	0.51			
-2 log likelihood (FIML)	1955.363	1078.738	1046.591	
Number of estimated parameters	3	5	6	
Pseudo R^2				

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and

L2 sample size = 54. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error, match gender = 1, no match gender = 0.

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

Table E9

The effect of acceptance on belonging compared for men and women, moderated by presence of a role model

Level and variable	Model						Cross-Level Interaction (Step 4)
	Null (Step 1)		Random Intercept and Fixed Slope (Step 2)		Random Intercept and Random Slope (Step 3)		
	Men	Women	Men	Women	Men	Women	
Level 1							
Intercept (γ_{00})	4.25** (0.072)	4.17** (0.105)	4.017** (0.360)	4.802** (0.512)	4.009** (0.360)	4.802** (0.512)	
Feelings of acceptance (γ_{10})			0.458** (0.049)	0.384** (0.781)	0.435** (0.070)	0.381** (0.084)	
Level 2							
Presence role model (γ_{01})			0.218 (0.323)	-0.608 (0.456)	0.225 (0.323)	-0.610 (0.456)	
Cross-level interaction							
Feelings of acceptance*presence role model (γ_{11})							
Variance components							
Within-person (L1) variance (σ^2)	0.288	.323	0.286	0.308	0.257	0.305	
Intercept (L2) variance (τ_{00})	0.256	.339	0.307	0.348	0.260	0.348	
Slope (L2) variance (τ_{11})					0.060	0.013	
Additional information							
ICC	0.51	0.51					
-2 log likelihood (FIML)	1246.131	707.188	751.924	455.821	745.778	455.642	
Number of estimated parameters	3	3	5	5	6	6	
Pseudo R^2							

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and L2 sample size = 60. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E10

The effect of competence on belonging compared for men and women, moderated by presence of a role model

Level and variable	Model						Cross-Level Interaction (Step 4)
	Null (Step 1)		Random Intercept and Fixed Slope (Step 2)		Random Intercept and Random Slope (Step 3)		
	Men	Women	Men	Women	Men	Women	
Level 1							
Intercept (γ_{00})	4.25** (0.072)	4.17** (0.105)	4.013** (0.360)	4.802** (0.512)	3.985** (0.360)	4.805** (0.513)	
Feelings of competence (γ_{10})			0.458** (0.049)	0.384** (0.781)	0.317** (0.056)	0.298** (0.084)	
Level 2							
Presence role model (γ_{01})			0.222 (0.322)	-0.609 (0.456)	0.250 (0.323)	-0.611 (0.456)	
Cross-level interaction							
Feelings of competence*presence role model (γ_{11})							
Variance components							
Within-person (L1) variance (σ^2)	0.288	.323	0.262	0.300	0.231	0.270	
Intercept (L2) variance (τ_{00})	0.256	.339	0.259	0.348	0.263	0.352	
Slope (L2) variance (τ_{11})					0.058	0.063	
Additional information							
ICC	0.51	0.51					
-2 log likelihood (FIML)	1246.131	707.188	736.339	449.946	714.889	439.940	
Number of estimated parameters	3	3	5	5	6	6	
Pseudo R^2							

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and L2 sample size = 60. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E11

The effect of acceptance on belonging compared for men and women, moderated by identifying based on competences

Level and variable	Model						Cross- Level Interaction (Step 4)
	Null (Step 1)		Random Intercept and Fixed Slope (Step 2)		Random Intercept and Random Slope (Step 3)		
	Men	Women	Men	Women	Men	Women	
Level 1							
Intercept (γ_{00})	4.25** (0.072)	4.17** (0.105)	4.251** (0.495)	3.534** (0.700)	4.249** (0.495)	3.534** (0.700)	
Feelings of acceptance (γ_{10})			0.475** (0.049)	0.359** (0.083)	0.455** (0.072)	0.356** (0.087)	
Level 2							
Identify with competences (γ_{01})			-0.005 (0.141)	-0.168 (0.176)	-0.004 (0.140)	0.168 (0.176)	
Cross-level interaction							
Feelings of acceptance*identify with competences (γ_{11})							
Variance components							
Within-person (L1) variance (σ^2)	0.288	.323	0.267	0.320	0.251	0.318	
Intercept (L2) variance (τ_{00})	0.256	.339	0.281	0.206	0.283	0.207	
Slope (L2) variance (τ_{11})					0.062	0.008	
Additional information							
ICC	0.51	0.51					
-2 log likelihood (FIML)	1246.131	707.188	688.926	415.602	682.720	415.529	
Number of estimated parameters	3	3	5	5	6	6	
Pseudo R^2							

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and L2 sample size = 60. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E12

The effect of competences on belonging compared for men and women, moderated by identifying based on competences

Level and variable	Model						
	Null (Step 1)		Random Intercept and Fixed Slope (Step 2)		Random Intercept and Random Slope (Step 3)		Cross-Level Interaction (Step 4)
	Men	Women	Men	Women	Men	Women	
Level 1							
Intercept (γ_{00})	4.25** (0.072)	4.17** (0.105)	4.250** (0.495)	3.535** (0.700)	4.247** (0.493)	3.537** (0.700)	
Feelings of competences (γ_{10})			0.373** (0.036)	0.322** (0.060)	0.334** (0.057)	0.302** (0.092)	
Level 2							
Identify with competences (γ_{01})			-0.004 (0.141)	0.168 (0.176)	-0.004 (0.140)	0.167 (0.176)	
Cross-level interaction							
Feelings of competences*identify with competences (γ_{11})							
Variance components							
Within-person (L1) variance (σ^2)	0.288	.323	0.258	0.307	0.251	0.318	
Intercept (L2) variance (τ_{00})	0.256	.339	0.282	0.208	0.283	0.207	
Slope (L2) variance (τ_{11})					0.062	0.008	
Additional information							
ICC	0.51	0.51					
-2 log likelihood (FIML)	1246.131	707.188	675.807	406.974	654.287	396.393	
Number of estimated parameters	3	3	5	5	6	6	
Pseudo R^2							

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and L2 sample size = 60. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E13

The effect of acceptance on belonging compared for men and women, moderated by identifying based on personality and interests

Level and variable	Model						Cross-Level Interaction (Step 4)
	Null (Step 1)		Random Intercept and Fixed Slope (Step 2)		Random Intercept and Random Slope (Step 3)		
	Men	Women	Men	Women	Men	Women	
Level 1							
Intercept (γ_{00})	4.25** (0.072)	4.17** (0.105)	4.103** (0.419)	4.390** (0.473)	4.102** (0.419)	4.390** (0.473)	
Feelings of acceptance (γ_{10})			0.359** (0.083)	0.359** (0.083)	0.455** (0.072)	0.356** (0.087)	
Level 2							
Identify with personality and interests (γ_{01})			0.041 (0.127)	-0.054 (0.127)	0.041 (0.127)	-0.055 (0.127)	
Cross-level interaction							
Feelings of acceptance*identify with personality and interests (γ_{11})							
Variance components							
Within-person (L1) variance (σ^2)	0.288	.323	0.267	0.320	0.251	0.318	
Intercept (L2) variance (τ_{00})	0.256	.339	0.281	0.215	0.282	0.216	
Slope (L2) variance (τ_{11})					0.062	0.008	
Additional information							
ICC	0.51	0.51					
-2 log likelihood (FIML)	1246.131	707.188	688.822	416.309	682.615	416.235	
Number of estimated parameters	3	3	5	5	6	6	
Pseudo R^2							

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and L2 sample size = 60. Values in parentheses are

standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E14

The effect of competence on belonging compared for men and women, moderated by identifying based on personality and interests

Level and variable	Model						Cross-Level Interaction (Step 4)
	Null (Step 1)		Random Intercept and Fixed Slope (Step 2)		Random Intercept and Random Slope (Step 3)		
	Men	Women	Men	Women	Men	Women	
Level 1							
Intercept (γ_{00})	4.25** (0.072)	4.17** (0.105)	4.102** (0.419)	4.390** (0.474)	4.101** (0.418)	4.392** (0.474)	
Feelings of acceptance (γ_{10})			0.373** (0.036)	0.322** (0.060)	0.334** (0.057)	0.302** (0.092)	
Level 2							
Identify with personality and interests (γ_{01})			0.041 (0.127)	-0.055 (0.127)	0.041 (0.126)	-0.055 (0.127)	
Cross-level interaction							
Feelings of acceptance*identify with personality and interests (γ_{11})							
Variance components							
Within-person (L1) variance (σ^2)	0.288	.323	0.258	0.307	0.225	0.272	
Intercept (L2) variance (τ_{00})	0.256	.339	0.281	0.218	0.284	0.220	
Slope (L2) variance (τ_{11})					0.056	0.072	
Additional information							
ICC	0.51	0.51					
-2 log likelihood (FIML)	1246.131	707.188	675.702	407.678	654.180	397.090	
Number of estimated parameters	3	3	5	5	6	6	
Pseudo R^2							

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and L2 sample size = 60. Values in parentheses are

standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E15

The effect of acceptance on belonging compared for men and women, moderated by identifying with gender

Level and variable	Model						Cross- Level Interaction (Step 4)
	Null (Step 1)		Random Intercept and Fixed Slope (Step 2)		Random Intercept and Random Slope (Step 3)		
	Men	Women	Men	Women	Men	Women	
Level 1							
Intercept (γ_{00})	4.25** (0.072)	4.17** (0.105)	4.219** (0.097)	4.272** (0.148)	4.219** (0.097)	4.272** (0.148)	
Feelings of acceptance (γ_{10})			0.481** (0.050)	0.359** (0.083)	0.466** (0.072)	0.356** (0.087)	
Level 2							
Identify with gender (γ_{01})			-	-0.169 (0.216)	-	-0.169 (0.216)	
Cross-level interaction							
Feelings of acceptance*identify with gender (γ_{11})							
Variance components							
Within-person (L1) variance (σ^2)	0.288	.323	0.267	0.320	0.251	0.319	
Intercept (L2) variance (τ_{00})	0.256	.339	0.282	0.208	0.283	0.208	
Slope (L2) variance (τ_{11})					0.060	0.008	
Additional information							
ICC	0.51	0.51					
-2 log likelihood (FIML)	1246.131	707.188	678.925	415.894	672.902	415.821	
Number of estimated parameters	3	3	5	5	6	6	
Pseudo R^2							

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and L2 sample size = 60. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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

Table E16

The effect of competence on belonging compared for men and women, moderated by identifying with gender

Level and variable	Model						
	Null (Step 1)		Random Intercept and Fixed Slope (Step 2)		Random Intercept and Random Slope (Step 3)		Cross-Level Interaction (Step 4)
	Men	Women	Men	Women	Men	Women	
Level 1							
Intercept (γ_{00})	4.25** (0.072)	4.17** (0.105)	4.219** (0.097)	4.271** (0.148)	4.219** (0.097)	4.270** (0.148)	
Feelings of competence (γ_{10})			0.372** (0.036)	0.322** (0.060)	0.331** (0.058)	0.302** (0.092)	
Level 2							
Identify with gender (γ_{01})			-	-0.168 (0.216)	-	-0.165 (0.216)	
Cross-level interaction							
Feelings of competence*identify with gender (γ_{11})							
Variance components							
Within-person (L1) variance (σ^2)	0.288	.323	0.259	0.308	0.226	0.273	
Intercept (L2) variance (τ_{00})	0.256	.339	0.282	0.210	0.285	0.214	
Slope (L2) variance (τ_{11})					0.057	0.072	
Additional information							
ICC	0.51	0.51					
-2 log likelihood (FIML)	1246.131	707.188	668.344	407.272	646.795	396.707	
Number of estimated parameters	3	3	5	5	6	6	
Pseudo R^2							

Note: FIML = full information maximum likelihood estimation; L1 = Level 1; L2 = Level 2. L1 $N = 961$ and L2 sample size = 60. Values in parentheses are standard errors; t-statistics were computed as the ratio of each regression coefficient divided by its standard error.

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