






# Testing the basic socio-structural assumptions of social identity theory in the gender context: Evidence from correlational studies on women's leadership

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## Abstract

Given negative social identity, different perceptions of the structure of an intergroup relation (i.e., stability, legitimacy, permeability) should be related to different identity-management strategies (i.e., social competition, social creativity, or individual mobility) depending on group identification. This is among the basic tenets of social identity theory (SIT). There is surprisingly little empirical support for these postulates in the context of one of the most central group identities: gender. Using a sample of women in leadership positions in Spain ( $N = 649$ ), we tested relations between structural perceptions and identity-management strategies in a pilot study. Structural equation modeling yielded empirical support regarding social competition, but little for social creativity or individual mobility. Identity-management strategies were related to one organizational outcome (i.e., identification with the organization). The preregistered main study is intended to replicate and extend these findings using a different sample while improving several of the measures used.

## KEYWORDS

gender, identity management, leadership, social identity theory

## 1 | INTRODUCTION

Women have increasingly participated in the labor force since the 1960s, with a current share of 39% of female workers worldwide and around 46% in Spain and Germany (Fullerton, 1999; World Bank, 2019). However, this improved labor force gender ratio is not reflected at the managerial level. Globally, women account for 24% of senior roles (Grant Thornton, 2018), and lead 3% of Fortune Global 500 companies (Hinchliffe, 2019). As one striking example, women run fewer of the largest companies in the United States than men named

John (Wolfers, 2015). To counteract this imbalance, several European countries have adopted gender quotas (Eastman, 2017); however, their effectiveness remains questionable. For example, there are German companies that, when required to set a self-chosen gender quota, aimed to keep having 0% women on their board of directors (e.g., Buecker, 2019). Besides holding fewer leadership positions than men, women are often given risky and precarious leadership roles (for a review of the glass cliff phenomenon, see Ryan et al., 2016).

Gender relations in leadership provide an important intergroup-relations context as women's underrepresentation in leadership limits

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their economic and political power and perpetuates gender hierarchies. For organizations, increasing gender diversity on the managerial level can improve financial outcomes, corporate government, and customer demand services (Ellemers, Rink, Derks, & Ryan, 2012). However, in the research culture shaped by Tajfel, it appears that applying social identity theory (SIT) to gender was thought to be “a less fundamental, if not irrelevant, psychological question” (Young & Hegarty, 2019, p. 12). Although researchers later applied SIT to gender relations (e.g., Ellemers, 2001), a full examination of SIT's basic assumptions in the gender context is missing. Going beyond this context, there is little, and mixed, evidence so far for the specific effects of socio-structural variables on chosen strategies that SIT predicts (whereas there is solid evidence consistent with SIT for the importance of identification). The present studies aim to examine in the female leadership context whether identity-management strategies depend on structural perceptions as postulated by SIT.

### 1.1 | Gender as a unique intergroup-relations context

Choosing gender relations to examine the basic assumptions of SIT poses an interesting and unique context, as gender relations differ structurally from other intergroup relations. On the one hand, male dominance is still present today because men usually have more access to resources and power than women (Rudman & Glick, 2008; Sidanius & Pratto, 1999). On the other hand, heterosexual women and men are dependent on each other to form relationships, satisfy sexual needs, and produce offspring (Guttentag & Secord, 1983). This results in an ambiguous intergroup context of dominance and interdependence (Rudman & Glick, 2008; see also Wood & Eagly, 2002). In comparison, other intergroup relations (such as the relation of Black and White Americans; Tajfel & Turner, 1979, 1986) are usually less ambiguous (e.g., characterized by dominance, whereas interdependence or intimate relations can occur on an individual level but are not central to the intergroup relation). Moreover, gender is one of the most salient and encompassing social categories (Stangor, Lynch, Duan, & Glass, 1992). Due to this prevalence, women and men are in continuous contact. For members of minority groups, positive and intimate (or lack of negative) intergroup contact can decrease support for social change towards greater equality (Hässler et al., 2020). Applying these insights to SIT, women can face barriers to engage in collective action to change the status quo because of their often close ties to men (i.e., social competition might be a less used strategy). In addition, openly hostile attitudes between women and men would impair intimate interdependence, thus leading to benevolent, male-dominance reinforcing, attitudes (Glick & Fiske, 1996; Rudman & Glick, 2008). These subjectively positive attitudes can veil the fact that the intergroup relations between women and men are illegitimate. In sum, some structural perceptions and identity management strategies could be less pronounced. Yet, the *relations* between structural perceptions and identity management strategies are still likely to follow SIT's predictions, which makes gender an interesting context to examine.

### 1.2 | Social identity theory and gender

Social identity theory assumes that people's identities are based on the social groups they belong to, in addition to their individual traits (Tajfel & Turner, 1979, 1986). Comparisons with other groups are used to maintain or obtain positive social identities. If the outcome of such comparisons is negative (i.e., if the ingroup is low in status and regarded negatively by others), unsatisfactory social identities result. To restore a satisfactory social identity, people engage in certain processes and strategies (see Martiny & Rubin, 2016). SIT postulates three possible alternatives: individual mobility, social competition, and social creativity. The strategy adopted depends on the perceived legitimacy of the intergroup relation, its perceived stability, and the perceived permeability of group boundaries (Tajfel, 1982). *Individual mobility* is easier if group boundaries are permeable: for example, if it is possible to leave one's group and become a member of the outgroup, or if it is possible to achieve higher status individually. According to SIT, individual mobility is defined as leaving or dissociating oneself psychologically from an ingroup and is the preferred strategy used by members of low-status groups (Tajfel & Turner, 1979, 1986; see also Wright, Taylor, & Moghaddam, 1990). Whereas physically becoming a member of the outgroup is hardly possible in the case of gender, psychologically changing one's group has been suggested long ago (Williams & Giles, 1978). In the workplace, for example, women who perceive a “glass ceiling” may believe that the best strategy for advancing individually is to act as “one of the boys”. Indeed, for centuries, women have reached positive social identities through such strategies (Becker & Tausch, 2014; Derks, Scheepers, Scheepers, Van Laar, & Ellemers, 2011; Derks, Van Laar, & Ellemers, 2016; Derks, Van Laar, Ellemers, & De Groot, 2011c): by denying that their gender is fundamental to their social identity, considering themselves in terms of male standards, and adopting male roles and behaviors to gain prestige. As a result, self-esteem can become more positive (Ellemers, 2001; Ellemers & Van Laar, 2010).

An alternative strategy to individual mobility is *social competition* (Wright, 2001b): collective action to improve the status of women in general (Ellemers & Van Laar, 2010; Haslam, 2004; Schmitt, Ellemers, & Branscombe, 2003). Compared to other strategies, social competition represents a direct path to challenge the status quo, and is more likely to produce social conflict and open hostility. Social competition is more likely, and individual mobility less likely, when people are highly identified with a group (Doosje, Ellemers, & Spears, 1995; Ellemers, Spears, & Doosje, 1997; Mummendey, Kessler, Klink, & Mielke, 1999; Mummendey, Klink, Mielke, Wenzel, & Blanz, 1999). People strongly identified with a disadvantaged group tend to remain loyal to it, even when given the possibility of leaving it on behalf of an advantaged group (Doosje, Spears, & Ellemers, 2002; Giles & Viladot, 1994; Ouwerkerk, De Gilder, & De Vries, 2000). The structural preconditions for social competition are that the intergroup relation is perceived as illegitimate and unstable.

The third strategy, *social creativity* (Tajfel, 1982), is more likely if the intergroup relation is perceived as stable and legitimate. Applying

this strategy is often based on changing the value attributed to the ingroup, for example, by focusing on a different comparison dimension (Becker & Wright, 2011; Derks, Van Laar, & Ellemers, 2006, 2007, 2009; Ellemers & Van Rijswijk, 1997; Hinkle, Taylor, Fox Cardamone, & Ely, 1998; Jackson, Sullivan, Harnish, & Hodge, 1996; Kellerman & Rhode, 2007); or a different outgroup for comparison. For instance, women in Europe can compare their situation to that of women in Islamic cultures. Also, highlighting that women today are better off than women of previous generations is a social creativity strategy (Kellerman & Rhode, 2007). A final form of social creativity is simply redefining the value of the comparison dimension ("black is beautiful") (Jetten, Schmitt, Branscombe, & McKimmie, 2005). For example, people attempt to recover the ingroup's value by disregarding the merits of the outgroup or by emphasizing the importance of the positive virtues of the ingroup (Branscombe, 1998). Social creativity and social competition are more likely when people believe that group boundaries are impermeable (see Paulsen, Jones, Graham, Callan, & Gallois, 2005).

In the context of women in leadership, women can develop a negative social identity based on the realization that women have less successful careers than men in leadership. Women should thus be motivated to regain a positive social identity by embracing any of the three identity-management strategies (Williams & Giles, 1978). Which strategy they choose should be predictable based on general social-structural perceptions such as the legitimacy of the status quo, the permeability of group boundaries that they perceive psychologically between their ingroup and the male outgroup, the stability of the intergroup relation between men and women in leadership, and their identification with the group (Giles & Viladot, 1994).

There have been surprisingly few empirical tests of the basic SIT assumptions in the gender context. A first qualitative test of SIT strategies revealed evidence for the contrasting strategies of social competition versus individual mobility, as expected by SIT (Breinlinger & Kelly, 1994). However, the results were less clear regarding social creativity and the role of individual mobility. Yet, in another study, gender identification emerged as an important predictor of women's participation in collective action (Kelly & Breinlinger, 1995). It was only surpassed by identification as an activist, which was, however, strongly related to gender identity.

More recently, two studies examined how the perceived legitimacy of gender discrimination and its pervasiveness interact to motivate or undermine collective behavior. Women in academia had lower collective-action intentions when discrimination was perceived as legitimate and pervasive compared to rare (Jetten, Schmitt, Branscombe, Garza, & Mewse, 2011). Complementary results were obtained when examining the interest of women to engage in mentoring. Perceived illegitimacy of gender discrimination motivated women to engage in mentoring and to see mentoring as a collective strategy. This was pronounced when gender discrimination was perceived as pervasive (Hersby, Jetten, Ryan, & Schmitt, 2011).

Regarding individual strategies, research has focused on the individual-mobility strategy of Queen-Bee behavior or self-group distancing (Derks et al., 2016; Ellemers, 2001; Ellemers, Heuvel,

Gilder, Maass, & Bonvini, 2004). This term describes women distancing themselves from their group and assimilating to male norms in male-dominated organizations to achieve individual mobility and success. Researchers explain the phenomenon based on current and past experiences of gender discrimination and social-identity threat as opposed to general competitiveness (Derks et al., 2016; Faniko, Ellemers, Derks, & Lorenzi-Cioldi, 2017). Although Queen-Bee behavior is interpreted in terms of SIT and can result in legitimizing the gender hierarchy, few studies directly examined how structural perceptions of the status relation affect choosing this individual strategy. For example, Sealy (2010) found that female directors in the investment banking sector adapted to the masculine organizational culture and took on behaviors of their male colleagues because they believed in the meritocracy of the system. Thus, the belief in the permeability of the status hierarchy (i.e., meritocracy) encouraged Queen-Bee behavior and individual mobility.

Two studies with senior women in organizations and senior policewomen provide more evidence for the role of social identity for Queen-Bee behavior. Only women who were weakly identified with other women in their work context presented themselves as more masculine, had more stereotypic perceptions of junior women than men, and distanced themselves from their female colleagues (Derks, Ellemers, Ellemers, Van Laar, & De Groot, 2011; Derks, Van Laar, et al., 2011).

Taken together, although gender (and leadership) has been examined from a social-identity perspective, studies have been limited in their scope. They focused on specific structural perceptions of the gender hierarchy, examined a single strategy only, or did not focus on women and leadership. What is missing is an examination of women's leadership that considers the whole set of structural perceptions and identity-management strategies that SIT describes.

### 1.3 | Correlational field examinations of basic SIT assumptions

Although some correlational examinations of the basic SIT assumptions have been conducted (in other contexts than women and leadership), most empirical tests of these assumptions were experimental. For example, in laboratory experiments, permeability and status were manipulated in ad-hoc small groups (e.g., three people solving problems together—for reviews of the first decades of research, see Bettencourt, Charlton, Dorr, & Hume, 2001; Brown, 2000; Ellemers, 1993, 2001). Overall, the core prediction is considered validated: Structural perceptions of status relations are linked to different strategies to manage negative social identities (Brown, 2000; Ellemers & Haslam, 2012). Yet, the evidence for the specific predictions of strategies by combinations of structural features is mixed. It remains unclear which strategy is chosen in a specific intergroup context. According to Brown (2000), the only strategy well-predicted by SIT is individual mobility: "the remaining strategies have yet to be theoretically and empirically differentiated" (p. 760).

Correlational research can complement experimental evidence. First, it enables a more comprehensive examination of all relations between structural perceptions and identity-management strategies in a specific context. Second, it yields more differentiated findings than, for instance, high versus low manipulations (e.g., of permeability). Finally, the theoretical assumptions are less transparent to participants than in experiments (Wright, 2001a); higher identification with real-world groups can be expected than with ad-hoc lab groups; and real-life situations can provide a testing ground that cannot be obtained in the laboratory.

There is yet little evidence from correlational studies. In a study on the status relations between East and West Germans after the German unification, support was found for the predictive power of SIT for individual strategies such as individual mobility or recategorization at a higher level (Mummendey, Kessler, et al., 1999). Yet, collective strategies seemed to be better explained by relative-deprivation theory, whereas predictors of creativity strategies remained unclear. Moreover, the effect of the legitimacy of status relations was rather weak, and the interactions of structural perceptions, which are expected to determine choice of strategy, were not found (Mummendey, Klink, et al., 1999). These and other studies supported the important role of group identification for choice of strategy—either as a mediator (e.g., Mummendey, Kessler, et al., 1999; Mummendey, Klink, et al., 1999) or moderator (e.g., Blair & Jost, 2003). Whereas high identification is linked to collective strategies, low identification is more likely to precede individual strategies in both correlational (Kessler & Mummendey, 2002; Mummendey, Kessler, et al., 1999; Mummendey, Klink, et al., 1999) and experimental studies (Bernache-Assollant, Laurin, Bouchet, Bodet, & Lacassagne, 2010; Doosje et al., 1995; Ellemers et al., 1997).

To our knowledge, no correlational studies that take all structural features and identity-management strategies into account have been conducted in the gender context. According to Brown (2000), a challenge for future research on SIT is to recognize the variety of groups on which people base their social identity.

## 2 | THE PRESENT RESEARCH

The aim of the present research is to test the relations between structural perceptions, gender identification, and the strategies women leaders choose to cope with negative social identities. Specifically, the Pilot Study uses data collected from a large sample of women in leadership positions in Spain. The aim of the Main Study will be to test the same assumptions, using improved measures, and to generalize the findings to a sample of female leaders in Germany. A minor aim is to examine how the strategies are related to work-related outcomes.

## 3 | PILOT STUDY

Using a large sample of female leaders in Spain, we tested the basic predictions of SIT in the context of gender and leadership. Do we

observe the presumed relations between structural perceptions of the intergroup relation on the one hand and group-level or individual identity-management strategies on the other hand? We used a correlational approach and embedded scales pertaining to SIT among other scales unrelated to SIT (see Steffens, Viladot, & Scheifele, 2019). SIT postulates that a precondition for identity management is a negatively perceived social identity. Thus, we first examined whether indicators of such a negative social identity were related to strategy use. In addition, we tested separate models with gender identification as a moderator or mediator following past research. As outcomes, we included organizational identification, work-related well-being, and self-esteem (Abrams & Hogg, 1988; Haslam, Ellemers, Reynolds, & Schmitt, 2010).

As preconditions for hypothesis tests, we checked whether there are indicators of a negative social identity, and whether these are related to identity-management strategies. Our main hypotheses regarding structural perceptions and identity-management strategies are: Social competition results if permeability, legitimacy, and stability are perceived to be low (H1); social creativity results if permeability is perceived to be low, but stability and legitimacy are perceived to be high (H2); individual mobility results if permeability is perceived to be high (H3). Moreover, we tested how gender identification is related to strategy use. We expect women highly rather than lowly identified with their gender group to be more likely to use social strategies (i.e., social competition and social creativity), whereas we expect women lowly rather than highly identified with their gender group to be more likely to use the individual strategy of individual mobility (H4).

## 3.1 | Method

### 3.1.1 | Participants

Participants were female leaders in Spain in medium-sized or large companies or organizations (i.e., with more than 50 employees). They were contacted online and invited to take part in a study on gender and leadership at work. Ways of recruitment were: a professional data collection company (Opinòmetre; 511 respondents finished, 136 did not; response rate: 79%); a women's association (the Catalan "Associació Dones en xarxa"/Mujeres en red, 149 respondents); and a top-level professional woman's personal networks (65 women).

The final sample of  $N = 649$  reported a mean age of 39 years ( $SD = 9.8$ , range: 18–71). Among them, 160 women (25%) occupied high-level and 489 women (75%) medium-level positions. We computed a dichotomous variable indicating low (51%) versus high (49%) family obligations, defining high obligations as: elderly care, at least one child younger than 11 (reported by 38%), or both. A detailed description of the sample has been published (Steffens et al., 2019).

### 3.1.2 | Procedure and measures

After informed consent, participants answered socio-demographic questions. They indicated their leadership level and the proportion

of men and women working on their own leadership level in their organization (1 = only men, to 7 = only women). Then, several scales were administered, all using Likert-type response formats anchored with 1 = “strongly disagree” and 7 = “strongly agree”. Unless otherwise indicated, items were based on previous studies (Giles & Viladot, 1994; Viladot & Siguan, 1992) and selected after a pre-study with  $N = 40$  women ( $M_{age} = 56$ ,  $SD = 11$ , range: 35–77 years) conducted to test the internal consistencies of all scales. All scores were averaged to form scales. Once final analyses have been done, the data, omitting the demographic information, will be made available at the OSF.

**Indicators of negative social identities.** We used six scales as indicators of negative social identities. We measured *traditional men-competence stereotypes* by averaging the three items competent, efficient, and able (e.g., “indicate the degree to which you think men and women are competent”, anchored 1 = “applies more to men”, 7 = “applies more to women”, then recoded; Cronbach's  $\alpha = .83$ ; Runge, Frey, Gollwitzer, Helmreich, & Spence, 1981; Spence, Helmreich, & Stapp, 1975). We used seven items to measure participants' own *negative leadership-related stereotypes of women* (Cronbach's  $\alpha = .89$ ). Four of them were from the Social Roles Questionnaire (Baber & Tucker, 2006), for example, “Some types of work are just not appropriate for women”. Three items regarded risk-taking (Eckel & Grossman, 2002, 2008) (own wording), for example, “Male leaders are better able than female leaders to make risky decisions”. Three items assessed the perceived prevalence of *gender harassment* against women in one's organization (Cronbach's  $\alpha = .91$ ), based on Yoder (2002, Yoder & Berendsen, 2001), for example, “Compared to men, at meetings (or similar events) women are interrupted more often”. The perception of how condoned *sexual harassment* is in the organization was assessed with two items (Cronbach's  $\alpha = .79$ ), for example, “At my organization, sexual harassment is not considered a no-go”. Six items measured *stigma consciousness*: how far a woman perceives that she is stereotyped and discriminated at work (Cronbach's  $\alpha = .85$ ), for example, “Some of my colleagues feel that I have less ability because I'm a woman” (Von Hippel, Issa, Ma, & Stokes, 2011). We measured others' perceived *negative work-related stereotypes of mothers* using three items (Cronbach's  $\alpha = .92$ , modeled after Fuegen & Endicott, 2010), for example, “If a woman has children, others think she will not work enough hours”.

*Gender identification* was assessed with the item “I feel highly identified with my gender group” (after Von Hippel et al., 2011). Structural perceptions of the intergroup relation between women and men were measured using three items for perceived *stability* (“Status differences between men and women at work [in society/ in the government] will remain stable [will not change] in the next years”, Cronbach's  $\alpha = .91$ ). Two items assessed perceived *legitimacy* (“It is unfair that men hold a higher status in society than women”, “Comparing women and men, the superiority of men in society and at work is not justified”; both recoded,  $\alpha = .77$ ); and two items perceived *permeability* (“It is almost impossible for a woman to be taken as seriously at work as a man”, “No matter how strongly a woman

tries, she will never attain the same power at work as a man”; both recoded,  $\alpha = .81$ ).

We measured identity-management strategies in the following way. *Social competition* consisted of three items (“I would give money to a group that fights for women's rights”, “I can imagine I would protest for women's rights”, “I am a feminist”,  $\alpha = .78$ ). For *social creativity*, we borrowed two items from the benevolent sexism scale (Glick & Fiske, 1997): “Women, compared to men, tend to have a superior moral sensibility”, “Women, as compared to men, tend to have a more refined sense of culture and good taste” ( $\alpha = .79$ ). We measured *individual mobility* with one item: “In certain situations at work, I behave like the men do if this helps me to get ahead”. The scales were measured in this order: individual mobility, social competition, social creativity, identification, stability, legitimacy, permeability (sometimes with other, here irrelevant, scales interspersed).

*Work-related outcomes.* We included several outcome scales to examine the relations between socio-structural variables and work-related outcomes. We measured *organizational identification* with three items (e.g., “I will give my best for the organization where I work to be successful, no matter what the price may be, Cronbach's  $\alpha = .83$ ). We assessed *work-related well-being* (satisfaction with work, financial situation, relationships with co-workers, opportunities for promotion) with four items taken from the Life Satisfaction Questionnaire (Fahrenberg, Myrtek, Schumacher, & Brähler, 2000; e.g., “indicate how satisfied you are with your financial situation”, anchored 1 = “not satisfied at all”, 7 = “completely satisfied”, Cronbach's  $\alpha = .77$ ). In addition, we measured *self-esteem* as a potential third outcome with two items (e.g., “I feel content with myself”, Cronbach's  $\alpha = .78$ ).

## 3.2 | Results

In all analyses, we conducted significance tests with  $\alpha < .05$ . After data screening and testing the statistical assumptions, we first examined the precondition for hypothesis testing: whether women leaders indeed had negative social identities.

### 3.2.1 | Indicators of negative social identities

SIT predicts that group members turn to identity-management strategies only if the outcome of the intergroup comparison is negative. In the case of positive social identities, group members should instead strive to keep, stabilize, or extend the superior status of the ingroup. Before testing the main hypotheses, we therefore looked at various indicators of negative social identities to see whether female leaders' subjective perceptions reflect that women compared to men are disadvantaged regarding leadership (see Table 1). Average agreement with most indicators was around scale means, with substantial variance, indicating the presence of negative social identities. Generally, positive medium-size correlations were found between all indicators of negative social identities and

	M (SD)	Correlation with:		
		Social competition	Social creativity	Individual mobility
<b>Indicators</b>				
1. Men-competence stereotypes	3.32 (.84)	<b>-.24</b>	<b>-.41</b>	<b>-.14</b>
2. Negative stereotypes of women as leaders	3.35 (1.41)	.05	<b>.39</b>	<b>.33</b>
3. Gender harassment	3.84 (1.61)	<b>.34</b>	<b>.37</b>	<b>.29</b>
4. Tolerance of sexual harassment	3.00 (1.82)	<b>.22</b>	<b>.29</b>	<b>.24</b>
5. Stigma consciousness	3.31 (1.58)	<b>.29</b>	<b>.31</b>	<b>.34</b>
6. Others' perceived negative work-related stereotypes of mothers	4.51 (1.67)	<b>.30</b>	<b>.40</b>	<b>.16</b>
<b>Strategies</b>				
7. Social competition	4.65 (1.44)		<b>.24</b>	<b>.06</b>
8. Social creativity	4.55 (1.30)			<b>.19</b>
9. Individual mobility	5.44 (1.29)			

Note: All scales 1–7. Statistically significant correlations are printed in bold ( $p < .05$ ).

identity-management strategies.<sup>1</sup> For instance, the more strongly women endorsed the stereotypes that men are better leaders and more risk-prone than women, the higher the reported strategies of social creativity and individual mobility. These findings can be taken as indicating that, indeed, negative outcomes of the intergroup comparison between women and men in leadership positions are present in our sample and are related to identity-management strategies, as SIT postulates.

### 3.2.2 | Basic SEM for structural perceptions and identity-management strategies

Means, standard deviations, and correlations between SIT scales are shown in Table 2, along with expected relations between structural perceptions and strategies. We first computed a structural equation model (SEM) with six latent variables (three structural perceptions, three strategies), disregarding identification, to test Hypotheses 1–3. The model (standardized solution depicted in Figure 1) was computed using the *lavaan* package in R (Rosseel, 2012). The model fit the data well as indicated by the depicted model fit indices, and all loadings of manifest variables on the theoretically associated latent variables were high. The structural perceptions together explained substantial variance in the strategies of social competition and social creativity, but less variance regarding individual mobility.

Looking at *social competition*, we found the expected relations regarding all three structural perceptions. Data are in line with the

**TABLE 1** Means (with standard deviations) of indicators of negative social identities and correlations with identity-management strategies

theoretical postulate that less perceived stability, legitimacy, and permeability lead to more social competition (H1). With regard to *social creativity*, we only found the expected negative relationship with permeability. Less perceived permeability of group boundaries was related to more social creativity. Whereas higher perceived stability of the intergroup relation should also lead to more social creativity, we found no significant relationship in the SEM, yielding little support for H2 (whereas the bivariate correlation had been obtained, see Table 2). Both analyses (bivariate and SEM) converged on finding the opposite of the expected relationship between perceived legitimacy and social creativity. Perceiving the intergroup relation as less legitimate (instead of more) was related to more social creativity. Finally, higher perceived stability was related to *individual mobility*, whereas we had not predicted a relationship. Also, lower, instead of higher, perceived permeability was related to individual mobility; thus, we found no support for H3. In sum, SIT predictions were only corroborated regarding social competition (plus the permeability–creativity relation). A model in which we restricted the two non-significant paths to zero fit the data as well as the basic model (CFI = .98, RMSEA = .04, SRMR = .03). A supplementary model that used positive traditional (i.e., communion-related) female stereotypes as indicators of social creativity instead of the benevolent-sexism items yielded comparable findings (see Appendix S1).

### 3.2.3 | Taking levels of gender identification into account

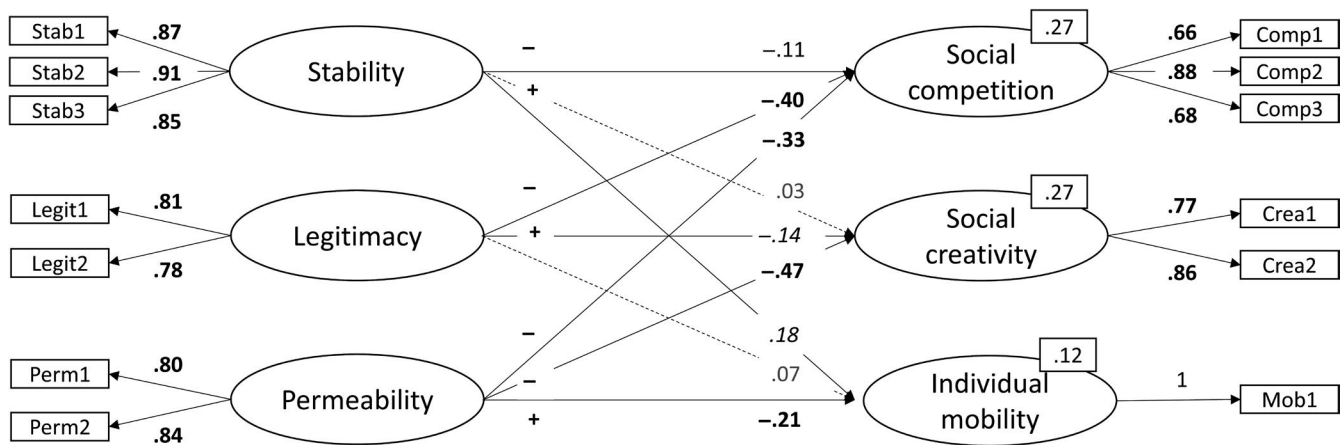
One might object against our analysis, as SIT predicts particular relations between structural variables and strategies depending on whether identification with the group is high or low (or activated by the context or not). As we invited participants to a study related to

<sup>1</sup>With one exception: Correlations of all strategies with men-competence stereotypes were negative. We explain this finding by acquiescence as high ratings on the initial scale (before recoding) indicated that competence stereotypes applied more to women.

**TABLE 2** Means (standard deviations) and correlations among main scales in pilot study

	M (SD)	Correlations					
		2.	3.	4.	5.	6.	7.
Structural perceptions							
1. Stability	4.15 (1.49)	<b>-.44</b>	.07	(-) .01	(+) .23	.30	.02
2. Permeability	4.16 (1.68)		.06	(-) <b>-.25</b>	(-) <b>-.41</b>	(+) <b>-.26</b>	-.03
3. Legitimacy	2.16 (1.33)			(-) <b>-.31</b>	(+) <b>-.11</b>	.07	<b>-.33</b>
Strategies							
4. Social competition	4.65 (1.44)				.25	.06	.29
5. Social creativity	4.55 (1.30)					.25	.23
6. Individual mobility	4.16 (1.70)						.06
7. Gender identification	5.44 (1.29)						

Note: All scales 1–7. Statistically significant correlations are printed in bold ( $p < .05$ ). Expected directions of relation between structural perceptions and strategies are shown in parentheses.



CFI = .98, RMSEA = .04, SRMR = .03

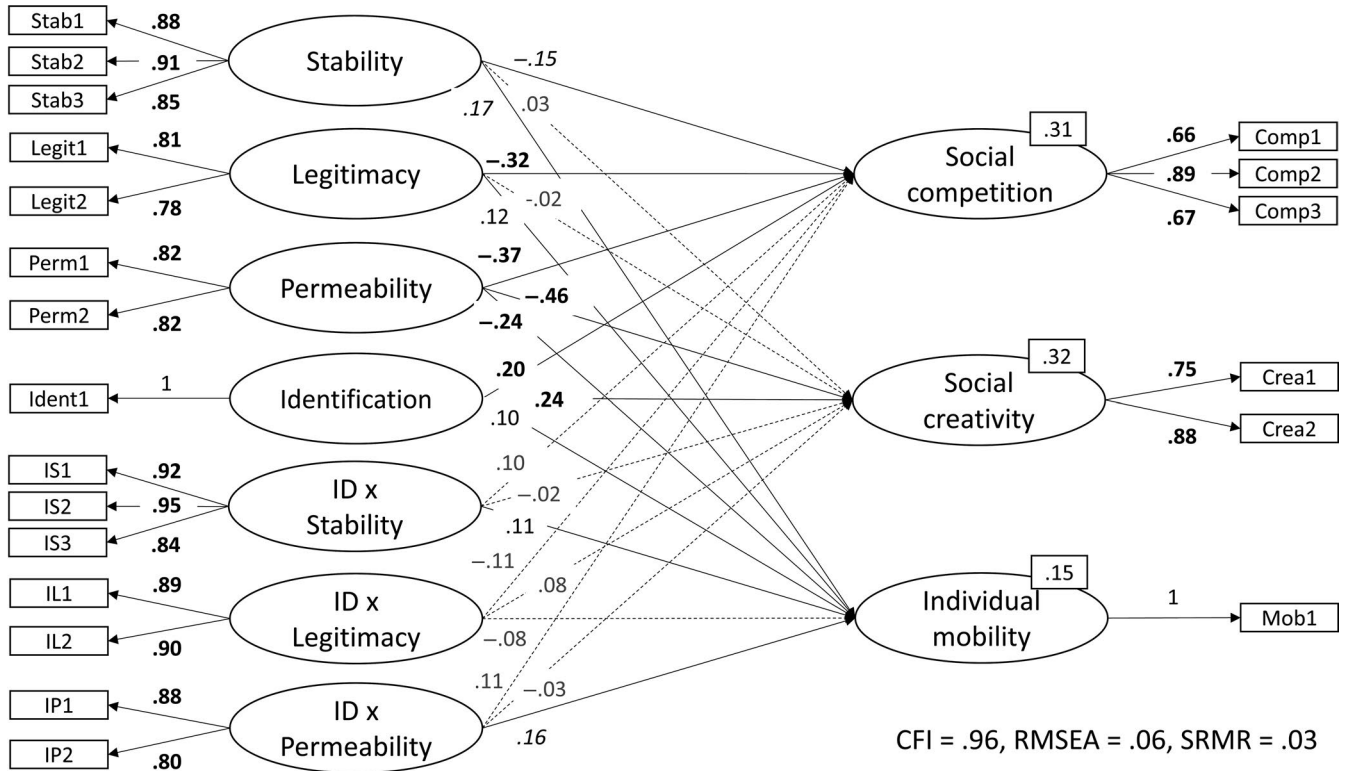
**FIGURE 1** Structural equation model for structural perceptions and strategies. Expected relations are depicted (+/-) as well as standardized coefficients printed in bold for  $p < .001$ , in italic for  $p < .01$ , and without modification for  $p < .05$ . Dashed lines and grey color represent non-significant paths and  $R^2$  is presented in the upper right corner of the latent strategy variables

gender and leadership which repeatedly referred to gender, we assume that gender was activated. Also, Table 2 shows that average gender identification was high (5.44, with 7 being the maximum). Testing whether gender identification moderates<sup>2</sup> the obtained relations, we followed the approach suggested by Kenny and Judd (1984). We computed indicator variables by multiplying the identification item with each structural-perception indicator variable (after standardization). Then, we defined respective latent variables by these indicators (e.g., identification  $\times$  each of three indicators of perceived stability yielded three indicator variables of identification  $\times$  stability). Figure 2 shows the model (standardized solution)

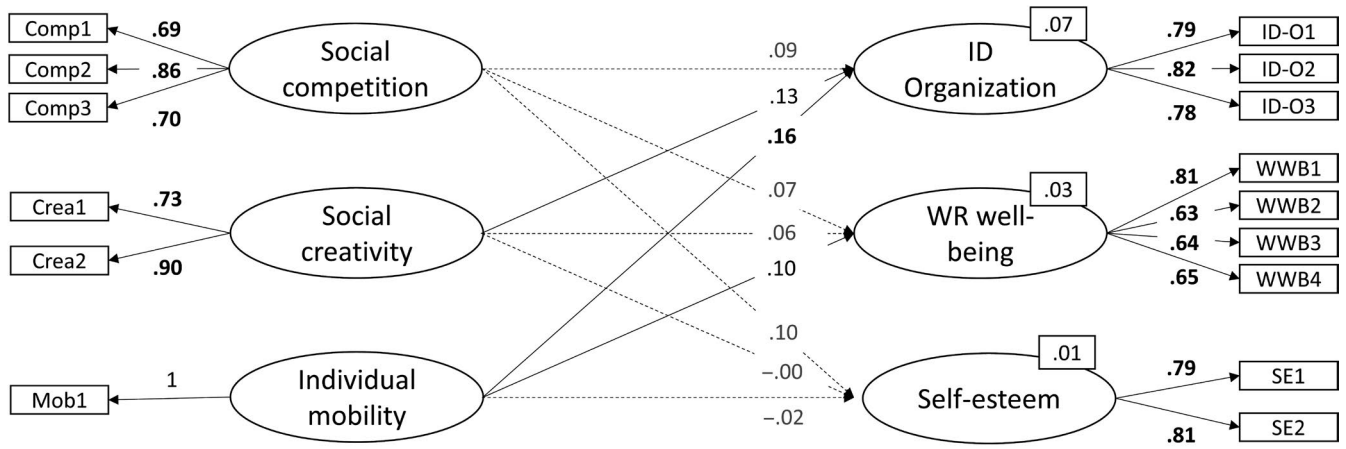
that, again, fit the data well. Including identification as a moderator, this model explained somewhat more variance in the chosen strategies than the basic model without identification. As in the basic model, we found the expected relations only regarding social competition and regarding the negative relation between permeability perceptions and social creativity. Furthermore, data were in line with the theoretical conception that higher identification led to more social competition and more social creativity, as expected (H4), but, against expectations, also to more individual mobility (even though the relation was small).<sup>3</sup> It thus appears that higher identification generally went along with higher agreement with social-identity

<sup>2</sup>We report a SEM with identification as a mediator instead of a moderator variable (as tested by Mummendey, Kessler, et al., 1999; Mummendey, Klink, et al., 1999) in Appendix S1 in addition to further model tests (separate models for women reporting high vs. low family obligations; women in male-dominated vs. not male-dominated organizations; and women on the highest vs. intermediate leadership level).

<sup>3</sup>To understand this unexpected finding, we checked it in subsets of the sample. The positive correlation was due to women who indicated not working in male-dominated organizations ( $r = .17, p = .005$ ). Among women working in male-dominated organizations at the highest leadership level, we descriptively found the expected negative correlation ( $r = -.16, p = .20$ ).



**FIGURE 2** Structural equation model for structural perceptions, gender identification as a moderator, and strategies. Standardized coefficients are printed in bold for  $p < .001$ , in italic for  $p < .01$ , and without modification for  $p < .05$ . Dashed lines and grey color represent non-significant paths and  $R^2$  is presented in the upper right corner of the latent strategy variables



CFI = .95, RMSEA = .06, SRMR = .04

**FIGURE 3** Structural equation model for strategies and outcomes. ID Organization = organizational identification, WR well-being = work-related well-being. Standardized coefficients are printed in bold for  $p < .001$ , in italic for  $p < .01$ , and without modification for  $p < .05$ . Dashed lines and grey color represent non-significant paths and  $R^2$  is presented in the upper right corner of the latent strategy variables

strategies, regardless of strategy. Two moderation effects were obtained, both regarding individual mobility. As both identification and perceived stability increased, so did individual mobility. Similarly, as identification and perceived permeability increased, so did individual mobility; both are the reverse of what one would expect. Perceived legitimacy did not interact with identification.

### 3.2.4 | Relations between SIT strategies and outcomes

Going beyond a test of the basic predictions of SIT, it is interesting to see how the different strategies are related to various outcome variables. As shown in Figure 3, the model in which the SIT



strategies were conceived as the predictor variables fit the data well, and all indicator variables loaded highly on the respective latent variables. Organizational identification was influenced by SIT strategies. The more women leaders reported to apply social creativity and individual mobility the higher was their organizational identification. Thus, in particular, the flexibility to “act as the boys do” if needed appeared to be an adaptive strategy for them. In addition, we found a positive relationship between individual mobility and work-related well-being, but no other relations between social-identity strategies and either work-related well-being or self-esteem.

### 3.3 | Discussion

The Pilot Study yielded strong support for the relations predicted by SIT between structural perceptions of the intergroup relation between female and male leaders and the strategy of social competition (H1). In addition, consistent with SIT predictions lower perceived permeability of group boundaries was related to more social creativity. No other SIT-predicted relation between structural perceptions on the one hand and individual mobility and social creativity, on the other hand, was obtained, yielding little support for H2–3. Especially for individual mobility, results contradicted predictions (e.g., lower, instead of higher, permeability was related to individual mobility). This finding could be explained with the insufficient one-item measure of individual mobility. The unexpected relation between low perceived legitimacy and social creativity emphasizes the lack of clarity on how to predict social creativity (Brown, 2000; Niens & Cairns, 2003). Again, the measurement of social creativity in this dataset only focused on one sub-strategy of social creativity: changing the comparison dimension. As Niens and Cairns (2003) pointed out, the theory remains vague regarding when each sub-strategy is applied. Both measures of individual mobility and social creativity measures should thus be extended in the Main Study.

Moreover, high gender identification was uniformly related to higher use of all strategies, including individual mobility (against SIT expectations). However, as gender identification was generally high, finding moderation effects was less likely (for other failures to find moderation effects in the presence of high identification, see Reese, Berthold, & Steffens, 2016; Steffens, Reese, Ehrke, & Jonas, 2017). Nevertheless, the findings can also be explained by past research in which high identification was linked to individual effort to improve the position of low-status groups (e.g., Ouwerkerk et al., 2000). Thus, high identifiers are interested in changing *something*, regardless of which strategy they have to apply. In this sense, even individual mobility could have positive effects for the group if successful individuals are perceived as role models (Haslam et al., 2010). Another explanation can be different forms of gender identification: identification with women and identification with feminists (Van Breen, Spears, Kuppens, & De Lemus, 2017). For example, in our model with gender identification

as a mediator, low identification was linked to social competition. This can be explained by considering that these women might not identify with traditional women but have a more politicized gender identity that encourages social competition (which was also partly operationalized through being a feminist). Consequently, identification also should be measured in a more differentiated way in the Main Study.

Whereas indicators of negative social identities were related to SIT strategy use, we had failed to directly measure women leaders' perception that their group is regarded negatively by others. This should be done in the Main Study. Finally, work-related well-being was the only outcome that was substantially influenced by SIT-strategy use in our model. We thus aim to collect outcome variables in the Main Study that we expect to be more directly influenced by strategy use.

In sum, our results should be viewed in light of the unique intergroup context. As outlined in the introduction, gender relations are highly ambiguous and thus differ from other intergroup relations. To make more substantiated claims about SIT's basic socio-structural assumptions, examinations in other intergroup contexts are necessary. Even in the gender context, future research should consider other contexts than female leadership, such as men in HEED (health care, elementary education, and the domestic domain). In this context, men are in a minority position because HEED domains are usually associated with and occupied by women (Croft, Schmader, & Block, 2015; Meeussen, Van Laar, & Van Grootel, 2020). Yet, permeability could be higher for men than for women trying to succeed in male-dominated fields (the glass escalator phenomenon, especially relevant in traditional organizations; Williams, 2013). Therefore, understanding how structural perceptions relate to men's identity-management strategies represents an interesting avenue for future research.

## 4 | PREREGISTERED MAIN STUDY

The aim of the Main Study will be to reexamine the relations predicted by SIT in a different national context (Germany instead of Spain). As discussed, we aim to improve the measurement of the socio-structural constructs and identity-management strategies to better understand the (so far) mixed results. As the measures in the Pilot Study were somewhat inconsistent regarding the conceptual level (i.e., organizational vs. societal level), we will adapt all measures to focus on the organizational context, in addition to extending those which were limited in scope (i.e., social creativity and individual mobility). Gender identification will also be measured in a more differentiated way than in the Pilot Study. Moreover, the Main Study will assess negative social identities more directly and include more directly affected outcome measures.

The hypotheses correspond to those of the Pilot Study, representing the basic assumptions of SIT (H1–H3), the role of identification (H4, H5), and relevant outcome variables (H6). As a precondition

for hypothesis tests, we will assess whether a negative social identity is related to identity-management strategies.<sup>4</sup>

Our main hypotheses are again that social competition results if permeability, legitimacy, and stability are all perceived to be low (H1). Social creativity results if permeability is perceived to be low, but stability and legitimacy are perceived to be high (H2). Individual mobility results if permeability is perceived to be high (H3).

Regarding identification, we first need to assess whether there is enough variance and no ceiling effect. For identification with women in general, we expect women highly as opposed to lowly identified with their gender group to be more likely to use social strategies (i.e., social competition and social creativity), whereas we expect women lowly rather than highly identified with their gender group to be more likely to use the individual strategy of individual mobility (H4). For feminist identification, we expect highly identified women to be more likely to use social competition (H5), in line with pilot-study results and research on collective action (Van Zomeren, Postmes, & Spears, 2008; see also Kelly & Breinlinger, 1995). Finally, we expect positive relations between use of SIT strategies and positive organizational outcomes (H6).

## 4.1 | Method

### 4.1.1 | Participants and power analysis

As in the Pilot Study, we aim to recruit women leaders in medium-sized or large companies or organizations (i.e., with more than 50 employees), but in Germany instead of Spain. We will contact potential participants via social media (e.g., professional networking sites such as LinkedIn or Xing, and Facebook), e-mail lists, professional women's networks, own networks of the researchers and research assistants, and encourage snowball sampling. Large companies and organizations will be asked to distribute the link to the online study to their female leaders. If we do not obtain the planned sample size using these techniques, a professional company will be paid to recruit the remaining participants.

Participants indicating that they are not currently in a leadership position will be excluded before filling out the questionnaire, as will be participants who are below the legal age of consent (18 years), or did not indicate being female (i.e., not answered item, indicated being male, or self-chosen description of gender identity). To ensure sufficient effort, we will exclude from data analyses participants who have completed <80% of the questionnaire and whose response time was considerably lower than the average ( $-3 SD$ ). Finally, failed attention checks and indicating not having taken the study seriously will lead to exclusion.

<sup>4</sup>We will also compute a supplementary model with negative social identity as a moderator. Participants who perceive a negative social identity should be more motivated to use identity-management strategies than those who do not perceive a negative social identity or have already successfully managed it.

**TABLE 3** Post-hoc power for the relations in the basic structural equation model of the pilot study

	$\beta$	Power
Stability $\rightarrow$ Social competition	-.11	.57
Permeability $\rightarrow$ Social competition	-.33	>.99
Legitimacy $\rightarrow$ Social competition	-.39	>.99
Stability $\rightarrow$ Social creativity	.03	.10
Permeability $\rightarrow$ Social creativity	-.47	>.99
Legitimacy $\rightarrow$ Social creativity	-.14	.79
Stability $\rightarrow$ Individual mobility	.17	.93
Permeability $\rightarrow$ Individual mobility	-.21	.97
Legitimacy $\rightarrow$ Individual mobility	.07	.30

We determined the post-hoc power for our effects in the Pilot Study using the packages *lavaan* (Rosseel, 2012) and *simsem* (Jorgensen, Pornprasertmanit, & Schoemann, 2018) in R and the function `sim{simsem}` to run a monte carlo simulation with 10,000 replications. This power analysis was based on the results of our basic structural equation model with a sample of  $N = 615$ . Table 3 presents the achieved power for the paths from the predictors *stability*, *permeability*, and *legitimacy* on the dependent measures *social competition*, *social creativity*, and *individual mobility*. We achieved a satisfactory power of .93 for standardized coefficients of at least .17. Because we consider smaller effects than .20 of little theoretical value, we plan to recruit the same overall sample size as in the Pilot Study ( $N = 649$ ) to allow for possible exclusions.

### 4.1.2 | Treatment of outliers and missing data

Regarding outliers, we will follow recommendations by Leys, Delacre, Mora, Lakens, and Ley (2019) for preregistration. Error outliers (i.e., non-legitimate observations due to, e.g., measurement or encoding error) will be deleted. We will detect multivariate outliers with the MCD75 (Minimum Covariance Determinant with a breakpoint of .25), with a chi-square at  $p = .001$ . We will then run all analyses with and without outliers winsorized (i.e., given the  $\pm 3 SD$  value). For lower proportions of missing data than 20%, we will use full information maximum likelihood estimation in *lavaan*.

### 4.1.3 | Procedure and measures

Women leaders will again be invited to take part in a study on gender and leadership at work which they can access via a link. After informed consent and initial inclusion questions, we will present scales with a 7-point response format ranging from 1 = "strongly disagree" to 7 = "strongly agree" if not indicated otherwise. For allowing direct comparisons between the Pilot Study and the Main Study, we will

include all items from the Pilot Study in addition to the improved measures described below.

To directly measure *negative social identity*, we will include four items on public collective self-esteem (adapted from Bohner & Sturm, 1997; Luhtanen & Crocker, 1992): "Overall, women leaders are considered good by others", "Most people consider women leaders, on average, to be more ineffective leaders than men" (recoded), "In general, others respect women leaders", "In general, others think that women leaders are unworthy" (recoded). To obtain a more differentiated measurement of *gender identification*, we will measure identification with women and feminists at work separately with four items each (e.g., "At work, being a woman [feminist] is an important part of how I see myself"; adapted from Van Breen et al., 2017).

Regarding structural perceptions, measures will refer directly to the organizational leadership context. We will measure perceived *stability* with three items (adapted from Mummendey, Kessler, et al., 1999; Mummendey, Klink, et al., 1999): "I think the status differences between women and men in leadership will remain stable for the next years", "The current status differences between women and men in leadership will not change easily", and "The current status differences between women and men in leadership are just temporary" (recoded). The measurement of perceived *legitimacy* will be: "It is unfair that men hold a higher status in leadership than women", "Comparing women and men, the superiority of men in leadership is not justified" (both recoded and similarly used in Pilot Study), and "It is justified that men occupy more leadership positions than women" (adapted from Verkuyten & Reijerse, 2008). We will complement the perceived *permeability* measure from the Pilot Study by the item "If you are a woman you can climb the ladder of success only so far" (adapted from Foster, Sloto, & Ruby, 2006; Lalonde, Doan, & Patterson, 2000), also resulting in three items in total (all recoded).

As we will measure feminist identity separately now, the item "I am a feminist" will not be included in the measure of *social competition* to avoid overlap of constructs. Instead, to measure social competition we will ask participants how likely they are to participate in five activities on behalf of women's advancement at work: becoming a member of a women's network, taking a seat on a committee that examines the underrepresentation of women in certain areas in the work context, participating in activities where women can advise each other in the pursuit of a certain career, being a mentor in a mentoring project in which junior women are supported in achieving their ambitions, signing a petition for increasing the proportion of women in leadership. To test different ways to use *social creativity* in a more encompassing way, we developed the item pool presented in Table 4 covering the four sub-strategies of social creativity: *changing the comparison group* (e.g., "I tell myself that, as compared to housewives, women leaders are very independent"), *time-related comparisons* (e.g., "I tell myself that as compared to women of the past century, women leaders of today have good career opportunities"), *changing the comparison dimension* (e.g., "I tell myself that female leaders, compared to male ones, tend to have better social skills"),

**TABLE 4** Item pool used to measure social creativity in the main study

Change of comparison group

1. I tell myself that as compared to housewives, women leaders are very independent.
2. I tell myself that as compared to women in the Near East, Western women have arrived at powerful leadership positions.

Time-related comparisons

3. I tell myself that as compared to women of the past century, women leaders of today have more freedom to decide whether and in which position to work.
3. I tell myself that as compared to women of the past century, women leaders of today have good career opportunities.

Change of comparison dimension

3. I tell myself that female leaders, compared to male ones, tend to have better social skills.
3. I tell myself that a leadership style with interpersonal instead of task orientation can benefit team work.
3. I tell myself that female leaders often foster a better atmosphere in work teams compared to male leaders.

Change of evaluation of comparison dimension

3. I tell myself that (even if men may indeed occupy more leadership roles than women) status does not buy you happiness.

Note: 7-point scale ranging from 1 = "never" to 7 = "very often".

and *changing the evaluation of the comparison dimension* (e.g., "I tell myself that [even if men may indeed occupy more leadership roles than women] status does not buy you happiness"). To differentiate positive ingroup stereotypes from the strategic use of social creativity to cope with a negative social identity, we will use a scale from "never" to "very often" (see analysis plan below to determine which items form a reliable scale).

We will exchange the *individual mobility* item for a more comprehensive scale comprising four items: "Women have the best chance of achieving the same status as men in organizations when every woman in herself tries to do as well as possible", "I am not that interested in the position of women in general in organizations", "I think it is important to attain a high position within an organization individually rather than improving the prospects for women leaders in general", "I am willing to act in a less feminine way if that improves my opportunities within an organization" (adapted from Derks, Van Laar, & Ellemers, 2009).

#### Outcomes

As in the Pilot Study, we will measure *organizational identification* with three items (e.g., "I will give my best for the organization where I work to be successful, no matter what the price may be"). In addition, we will assess *turnover intentions* by asking how often participants think about the following actions: looking for a new job; considering resigning from their job for another one; and imagining themselves to work in the same organization in the future (recoded) (7-point scale from 1 = "never" to 7 = "very often").

We will include two attention check items asking participants to select option 1 on the scale to check whether they have read the statements attentively (included in the stability and individual

mobility measures). At the end of the survey, we will ask participants to indicate demographic information and how carefully they completed the study.

#### 4.1.4 | Analysis plan

For descriptive statistics and inspecting floor or ceiling effects and variances, we will form scales by averaging items if Cronbach's alpha is at least .60. Items will be dropped from scales if Cronbach's alpha is increased by at least .10. If Cronbach's alpha is below .60, exploratory factor analyses will test whether a subset of items loads on one factor. If there is no such subset, we will run analyses for each item separately. Means, standard deviations, and zero-order correlations will be computed for all variables. Following the Pilot Study, we will run structural equation models in *lavaan* using bootstrapping to examine the relations predicted by SIT. Satisfactory goodness of fit will be determined through CFI > .95, RMSEA < .06, and SRMR < .08 (Hu & Bentler, 1999).

We will run a basic SEM with the three structural perceptions and three identity management strategies as latent variables (H1–H3). Measurement models will be based on the indicators included in the scales (formed as indicated above) but used as separate items. As a prerequisite, we will examine whether a negative social identity is present (operationalized via public collective self-esteem) that would justify identity enhancement and is thus related to strategy use. Hence, we will also compute a supplementary model with negative social identity as a moderator, because the presence of a negative social identity should especially motivate identity management.

Then, given enough variance in identification and no ceiling effects, we will run a model including identification with women at work as a moderator (H4; following Kenny & Judd, 1984). First, we will compute indicators of the interactions of identification and structural perceptions (stability, legitimacy, and permeability respectively) by multiplying the standardized items. We will use these indicators to define latent variables. For example, as we use four items to measure identification with women and three items to measure perceived stability, we will arrive at  $3 \times 4$  indicator variables for the latent variable of the interaction of identification with women and perceived stability. In the presence of ceiling effects for gender identification, we will not interpret lack of moderation as contradicting SIT predictions.

Ceiling effects are less likely for identification with feminists. We will apply the same procedure to run a model with feminist identification as a moderator (H5). Two supplementary models with identification as a mediator (woman, feminist) will again be computed. Last, we will examine whether the use of identity-management strategies is linked to several outcome variables (H6), thus including strategies as predictors of organizational identification and turnover intentions. For each model, we will examine  $R^2$  to see whether the structural perceptions and identification explain sufficient variance in the identity-management strategies.

Supplementary model tests are used to exclude alternative explanations of the findings.

We will use several covariates in the basic SEM (in italics). Due to the importance of contact for intergroup attitudes (Lemmer & Wagner, 2015; Pettigrew & Tropp, 2006), we will include *quality of contact* in the context as a covariate. As contact between women and men is generally high, we will not include a measure of quantity of contact (see Hässler et al., 2020). In addition, we will control for the *sector of the organization* because of persisting gender segregation (Levanon & Grusky, 2016). The structural perceptions are likely to differ between more male- and female-dominated sectors as well as the extent to which women leaders represent a minority in these sectors. Similarly, the *gender composition* at the organization in general and at the managerial level of the participants can affect the organizational climate and prevalence of stereotypes, and thus represents an important covariate (Steffens et al., 2019). We will also control for the *organizational level or seniority* of the participants and their *family obligations*, as both can affect perceptions of the work environment (Steffens et al., 2019). Moreover, the higher the organizational level the more likely are individual mobility attempts and Queen-Bee behavior (Ellemers et al., 2012). Finally, we will control for *weekly working hours* as working hours are likely related to upward mobility interest and thus use of identity-management strategies.

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#### CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

#### ETHICAL APPROVAL

This study was carried out in accordance with the recommendations of the Ethics Committee, Faculty of Psychology, University of Koblenz and Landau. Informed consent was obtained from all subjects prior to clicking the link to the study. All subjects were treated in accordance with the Declaration of Helsinki and informed in advance that we were only interested in their personal opinions, that data would only be subjected to group-based analyses, and that their data would be treated confidentially.

#### TRANSPARENCY STATEMENT

The data is publicly available at <https://osf.io>.

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## SUPPORTING INFORMATION

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

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