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Differences Among Korean Women Attending Women's Schools and Coed Schools: Gender Identity and Perception of Workplace Culture for Women

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Abstract

By looking at the relationship between workplace culture and gender identity, this research examines ways to potentially improve women's satisfaction and perceptions of female workers in this presently disadvantageous work environment in Korea. Drawing from previous criticism for having prioritized inter-group processes over particular social identities, this research uses Social Identity Theory as the main theoretical framework in two studies to structure the factors affecting workplace environment, specifically workplace culture for women and working women's satisfaction with communication. The first study applies intra-group analysis to examine the impact that the gender composition of a school has on gender identity, and it examines the relationship between organizational gender composition and women's perceptions of workplace culture by employing an experiment within a survey, which contains scenarios of an imaginary workplace, to Korean female college students ($n = 439$). The results demonstrate women attending women's colleges displayed stronger gender identity than those attending co-ed colleges on two dimensions of gender identity: in-group ties and centrality. The second study surveys Korean female workers ($n = 171$) to examine the same relationships while more deeply looking into the effects of gender composition of the workplace on women's satisfaction with communication. The main finding shows that for a sex-integrated organization, women who attended women's colleges denoted higher communication satisfaction with supervisors and same-sex coworkers than women who attended coed colleges. Implications of these findings and future research directions are discussed.

Plain Language Summary

This research explores how workplace culture and gender identity are related to finding ways to improve the satisfaction and perception of female workers in the current disadvantageous work environment in Korea. The study uses Social Identity Theory as the main framework in two separate studies to understand the factors that influence the workplace environment for women and their satisfaction with communication. The first study examines the impact of the gender composition of a school on gender identity and the relationship between the gender composition of an organization and women's perceptions of workplace culture. It uses a survey experiment with scenarios of an imaginary workplace to collect data from Korean female college students ($n = 439$). The results show that women attending women's colleges have a stronger gender identity, specifically in terms of in-group ties and centrality, than those attending co-ed colleges. The second study surveys Korean female workers ($n = 171$) to investigate the same

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relationships further. It focuses on the effects of the gender composition of the workplace on women's satisfaction with communication. The main finding reveals that in organizations with both sexes, women who attended women's colleges reported higher satisfaction with communication with supervisors and same-sex coworkers than women who attended co-ed colleges. The implications of these findings are discussed, and suggestions for future research directions are provided. Overall, the research aims to shed light on how workplace culture and gender identity can be improved for women in Korea's current work environment, and the results offer valuable insights for further exploration in this area.

Keywords
gender identity, social identity theory, workplace culture, communication satisfaction

A literature review (Patterson & Walcutt, 2013) looking at gender discrimination in the workplace in Korea from 1990 to 2010 reports that though it has decreased, gender-based discrimination is still a problem in Korea. Out of 153 countries, Korea ranks 108 in women's general social status and 127 in women's economic participation and opportunities (World Economic Forum, 2020). According to Statistics Korea (2019), while there has been some improvement, women in Korea are still at a disadvantage when it comes to employment and wages. For Korean working women, their gender identities are affected heavily by their own family, especially by their mother and their workplace environment (Cho et al., 2015). This might be due to the cultural expectation of women. In Korea, many married female workers struggle with balancing work and family as they are expected to take care of household and parenting duties even though they are working just like their husbands.

Given the importance of work environment for the success and wellbeing of workers (Nantsupawat et al., 2016) and gendered workplace culture being one of the main challenges facing Korean women (Cho et al., 2017), the current research examines how gender ratio of the social environment (both educational and work) affects Korean women's perceptions of workplace culture.

The current research deals specifically with workplace culture for women (WCW), which this study defines by using Taylor et al.'s (2018) definition of workplace culture—the shared values and beliefs regarding women and their capacities in the workplace. Negative WCW has a detrimental effect on not only the workplace environment, but also on the overall wellbeing of female workers, especially mental health (Sojo et al., 2016). While WCW describes shared beliefs for women across the workplace, its effects are most prominent at the individual level.

Social Identity Theory (SIT) has been useful for understanding and predicting the relationship between individuals and their social group membership, positing that social groups behave according to the salience of their group identities (Tajfel, 1978). The category of interest for this study is gender identity, which is a "multidimensional, psychological construct that reflects individuals' beliefs about how the self relates to both gender groups" (Martin et al., 2017, p. 167). This definition does not necessarily require individuals to identify as one of the two traditional gender groups (male or female), but it emphasizes the relation to each respectively.

Research specifically on the role of gender identity in the workplace, while scarce, has meritoriously demonstrated the effects of gender identity on task performance (Abrams et al., 1990) and on confronting workplace sexism (Wang & Dovidio, 2017). Literature posits that the group environment and peer relations are important for gender identity construction and its effects (Drury et al., 2013). For example, in a female-dominant group environment, women might feel more confident and less stereotyped than in a male-dominant environment (V. E. Lee & Bryk, 1986). The gender ratio of the environment has a similar effect on WCW. The effect of negative WCW on work satisfaction and commitment increases in a male-dominated workplace compared to gender-balanced workplaces (Sojo et al., 2016).

Communication satisfaction (CS) is another important factor for having a positive workplace environment, job satisfaction and commitment (Chan & Lai, 2017). In a workplace, CS is affected by the relationship not only among peers, but also between managers and their direct reports (Varona, 2002). CS has a negative relation with the identity gap that individuals might feel when their salient identities at the workplace were different from the identities they wished to affirm (Ramsey et al., 2019). The less of an identity gap a person feels, the more satisfied he or she is with communication.

The current research combines literature from SIT, WCW, and CS to determine the effect of the gender ratio of both educational and workplace environment, and individual gender identity on WCW and CS via two studies.

Gender Identity and College Gender Composition

SIT (Tajfel, 1978) posits that group-related behavior can be explained by group members' psychological ideas of a group membership. According to the theory, "identity"

has two components: personal and social. The personal component stems from idiosyncratic characteristics, such as personality and physical and intellectual traits. In contrast, the social component, which refers to the processes of self-categorization and attachment to particular social categories (Pettigrew, 1986), is from salient group memberships, such as gender, class and nationality (Scheepers & Ellemers, 2019).

Social identity has been argued to be a multidimensional construct. Cameron (2004) delineates three dimensions of social identity: in-group ties, centrality, and in-group affect. When applied to gender identity, in-group ties refer to the strength of the bond (wo)men experience with other (wo)men, centrality refers to the saliency of being a (wo)man in many thoughts and behaviors, and in-group affect indicates positive feelings toward being a part of the gender group.

Social identity obtains various meanings through social comparisons with other groups. SIT assumes that individuals tend to maintain positive social identities through positive distinctiveness of in-groups over out-groups (Hodson & Earle, 2020; Tajfel & Turner, 1979). However, the theory also suggests that through affirmation by external powerful sources, such as government or press, individuals may gain a more positive perception toward their own group (McKinley et al., 2014).

While the current paper primarily deals with the workplace environment, in order to more fully understand the nuances of gender identity, this research begins by exploring the effects of prior environments (high school and university) on gender identity. Because the strength of one's gender identity can change across time, looking at not only the most recent environments, but also at previous environments, can provide a better understanding of gender composition.

Educational institutions are important for individuals' identity management. Implicit gender biases from teachers (Carlana, 2019) or schools' management (Jones, 2020) can affect individuals' perspectives around gender roles. In a recent report on Australian schools (Jones, 2020), more than a quarter of individuals reported that their schools take conservational approaches to gender roles. The effects of such segregation can be crucially important on individuals' gender identity. For example, in the same report, Jones (2020) has pointed out that gender identity was one of the most common topics of bullying. Growing up in an environment where heavy gender segregation and gender-specific bullying was observed can affect individuals' gender identity in their later lives.

Differences between single-sex and coed schools have been studied frequently (Pahlke et al., 2014). The outcomes showed that compared to female graduates of coed colleges, graduates of women's colleges are less likely to have automatic gender stereotypic beliefs and are more likely to receive their doctorates, pursue non-traditional fields for women, exhibit intellectual self-confidence, and appear in lists of notable women, such as *Who's Who of American Women* (Park et al., 2012). These effects are not visible in graduates of male-only institutions (Booth et al., 2018).

Single-sex education enables students to gain confidence in their abilities in an environment that would otherwise make this difficult for them (Kessels & Hannover, 2008). Also, girls attending a single-sex school are less likely to see themselves stereotypically (V. E. Lee & Bryk, 1986). This might lead these girls to have a stronger gender identity, especially compared to those who attend a coed school and view themselves more stereotypically. This effect can be observed more strongly in a society where gender inequality is observed in various social situations. South Korea can be an example of such a society. According to a recent Organization for Economic Co-operation and Development report (OECD, 2021), despite the constant increase during the past 5 years, gender equality in terms of women's social participation and the perception around these participations is still around 75%, demonstrating that compared to men, women's participation is less common. Such cultural and systemic gender inequality has been found to affect gender identity. For example, Cho et al. (2015) report that Korean women's negative experiences with gender discrimination in their families or workplaces increase the salience of their gender identity. Thus, it is expected that since they might experience less gender discrimination while among fellow women, female students who attend women's colleges have a stronger gender identity than those who attend coed colleges. Therefore, this paper expects those who attend women's colleges to display stronger gender identity than women who attend coed colleges (H1).

Gender Composition at Workplaces and Workplace Culture for Women (WCW)

In the previous section, the role of the gender composition of the educational environment on gender identity has been studied. However, gender composition can also affect the perception of culture in the environment. In this section, how the gender composition of the workplace may affect the perception of WCW will be studied.

Group composition affects the meaning individuals attach to their group membership identity at work (Wharton, 1992). In general, groups can be divided into homogeneous—almost entirely one demographic—or heterogeneous—comprised of various proportions of demographic types (Blau, 1977). Regarding minorities in homogeneous groups, Kanter (1977) insisted that women experience special problems in managerial positions because they are in the minority; therefore, they

experience high visibility—everyone knows their name, position, and employment history. Due to visibility, minority members experience more performance pressure than majority members do (Kanter, 1977). Similarly, Ely's (1995) research also indicated that the disproportionate representation of more men than women in organizational positions of authority highlights women's limited mobility and enhances their lower status.

WCW can be defined as workers' perceptions of women and their overall capacity in a workplace, which is shaped through social appropriateness of gender roles. WCW is complicated because the position of women in the workplace is highly affected by a patriarchal society that emphasizes women's responsibilities inside of the family and in the organization. In such patriarchal societies, attitudes regarding subordinate duties that women should perform, such as housework and childcare, also carry over into the workplace (McIlwee & Robinson, 1992). A male-oriented power dynamic creates a workplace in which women become disadvantaged. Thus, the current research reckons that women will perceive a more positive WCW from a sex-integrated organization than from a male-dominated one (H2).

Gender Composition, Gender Identity, and Workplace Culture for Women (WCW)

Workplace gender composition and gender identity can have an impact on women's perceptions of WCW in their organizations. Recent studies show that WCW has significant effects, both positive and negative. An example of a negative effect is bullying (An & Kang, 2016). However, if positively created, WCW can also be an important factor in optimizing support and control in a workplace (Catling et al., 2016).

According to SIT, when the in-group compares unfavorably to out-groups, a given social identity is threatened (Schmader, 2002). In the same manner, women who face negative outcomes, such as performance pressure from being a minority in a homogeneous gender group, may experience threats to their gender identity. Their experience with these gender identity threats may vary depending on the strength of their identification and the gender composition of their environment.

A study done on women's self-perception at work found that as the number of male employees rises, women start evaluating themselves and their attributes less favorably, and their self-perception gets lower (Ely, 1995). Given that we defined gender identity as a construct reflecting individuals' beliefs in how their selves relate to their gender groups (Martin et al., 2017), negative self-evaluation and less favorable self-perception might lead for them to relate to their gender group to a lesser degree. This may mean that women in a male-dominated environment have weaker gender identity than women who work in an environment with a more balanced gender ratio. It is possible that coed colleges have the same effect on women.

According to Schmader (2002), stronger identifiers tend to have a strong motivation to maintain a positive image of that identity and thus experience great threats to that identity. Therefore, women who come from single-sex education environments might experience a stronger threat to their identities in a male-dominated environment. It might lead to female students who attend women's colleges experiencing more threats to their gender identity than those who attend coed colleges in a male-dominated workplace. On the other hand, the strength of gender identity may have no effect on the experience of threats to gender identity in sex-integrated and female-dominated settings because individual workers' gender is not a salient source for their identity since Kanter (1977) suggests that gender will be salient for women when there are few women in a workgroup. In a female-dominated or sex-integrated environment, gender or gender identity might not be salient for female workers.

Therefore, female students who have stronger gender identity will be more likely to negatively evaluate WCW in a male-dominated organization than in a sex-integrated or female-dominated organization. This is because in a male-dominated environment, women might be more exposed to traditional role expectations that come with a patriarchal society, and this might, in turn, affect their rating of WCW. Female students with weaker gender identity, however, may not show differences in their perceptions of WCW in male-dominated versus sex-integrated or female-dominated organizations.

There have not been enough studies about the effects of different schooling (coed vs. gender) on gender identity. Since school is where a typical high school student spends most of his or her day, it is an important place to create and affirm gender identity. Butler (1990) uses the term "performativity" to discuss the changing process each person goes through while constructing his or her individual gender identities. Since the environment could influence one's self-perception, these processes and subsequent performances will differ depending on the educational system. In a workplace environment, male workers' expectations that women perform subordinate duties (McIlwee & Robinson, 1992) due to the patriarchal social structure might affect the salience of gender identity. Holland's (2006) and Kelan's (2010) research has demonstrated that women feel the need to act in a transgressive or gender-neutral manner in order to avoid gender-based discrimination. Therefore, it appears that women in a male-dominated environment may not act according to and feel the effects of their gender identities. Nonetheless, in a

female-dominated environment, women might feel freer to act according to and identify with their gender identities.

WCW is created by the acknowledged power in the workplace. However, it does not necessarily mean that women accept this acknowledged culture as it is. As female students in a single-sex school are more inclined to have less stereotypical ideas about themselves (V. E. Lee & Bryk, 1986) and more trust in their abilities that fall outside the realm of gender norms (Kessels & Hannover, 2008), it can be expected that those who attend single-sex schools will have a difficult time in a male-dominated workplace, where women and their roles in life tend to be reduced to housework and childcare. A relationship between gender identity of those from different types of schools, and the perception of WCW is anticipated. Hence, the relationship between gender identity and perception of WCW was expected to vary with high school (a), college (b), and workplace (c) gender compositions (H3).

Study 1

Study 1 was an experiment within a survey in which workplace gender composition was manipulated using scenarios of an imaginary workplace. Study 1 compared the gender identity of undergraduate women attending women's colleges with those attending coed colleges. Study 1 also examined whether women's college students who attended all-girls high schools might have the strongest gender identity.

Study 1 Method

Participants

Participants (age $M = 21.10$, $SD = 3.00$, *range* = 19 to 38) were 439 Korean female undergraduates (228 attending women's colleges and 211 attending coed colleges) in Seoul, South Korea. There are six major women's universities (15%) out of 40 universities excluding specialized colleges in Seoul. Professors and instructors teaching at women's colleges and/or coed colleges were asked whether they could solicit voluntary participation from students in their classes. Of participants attending women's colleges, 130 (57.02%) attended all-girls high schools. Of participants attending coed colleges, 126 (59.72%) attended all-girls high schools.

Measures

A questionnaire was constructed in Korean. All the measures used a 5-point scale (0 = *strongly disagree*, 4 = *strongly agree*) unless other scale was mentioned.

Gender Identity. The 12-item social identity scale (Cameron, 2004) was modified to measure gender identity in the three dimensions: in-group ties (e.g., "I feel strong ties to other women"), centrality (e.g., "I often think about the fact that I am a woman"), and in-group affect (e.g., "In general, I am glad to be a woman"). After removing two items, Confirmatory Factor Analysis (CFA) showed acceptable fit for a 3-factor model (Comparative Fit Index [CFI] = 0.90, Standardized Root Mean Square Residual [SRMR] = 0.06). The reliability coefficients (i.e., Cronbach's α) for in-group ties (three items), centrality (three items), and in-group affect (four items) were .63, .67, and .77, respectively.

Workplace Gender Composition. Since undergraduate students do not usually have full time jobs in Korea, workplace gender composition was manipulated by hypothetical scenarios. The participants were randomly assigned into one of the two vignettes and responded to a measure assessing their perception of WCW. The vignettes differed only in the percentage of women and men. The vignette for a male-dominated organization was as follows:

> You are a newcomer. The gender proportion of employees in your company is 20% female and 80% male. Your department has a planning team, an accounting team, an executive team, and a research team. When the department gets a new project, all the teams cooperate to complete it. You belong to the planning team, which intends successful completion of the project and designs strategies for each stage of the project. Thus, team meetings are most important for the planning team. In addition, all teams meet together once a week. In these weekly meetings, all the teams report on their outcomes and discuss the next steps for the project.

The vignette for a sex-integrated organization contained "50% male and 50% female" instead of "20% female and 80% male."

Workplace Culture for Women (WCW). Ten items were selected from the workplace culture on women's status scale (Bergman & Hallberg, 2002) to measure WCW (e.g., "I think that men receive more organizational support and trust than do women in this organization" [reverse-coded]), and all the items were reverse-coded to have higher scores indicating a more favorable WCW. The reliability coefficient (i.e., Cronbach's α) was .86. CFA showed an acceptable unidimensional model (CFI = 0.93, SRMR = 0.05).

Study 1 Results

Study 1 examined three hypotheses. H1 was tested with MANOVA, and H2 was tested with ANOVA. Finally, H3 was tested with moderated multiple regression. Table 1 shows the mean and standard deviation for each condition pertinent to H1 and H2, and Table 2 shows the moderated multiple regression results pertinent to H3.

Table 1. Means and Standard Deviations.

		Study 1				Study 2			
DVs	IV	High school	College			High school	College	Workplace	
Ingroup ties	Women's	2.62 (0.58)	2.65[a] (0.58)			2.55 (0.56)	2.53 (0.67)	Sex-integrated	2.54 (0.68)
	Coed	2.56 (0.60)	2.53[b] (0.58)			2.44 (0.70)	2.51 (0.58)	Male-dominated	2.51 (0.57)
Centrality	Women's	2.56 (0.69)	2.60[a] (0.61)			2.44 (0.63)	2.40 (0.56)	Sex-integrated	2.29 (0.72)
	Coed	2.48 (0.63)	2.45[b] (0.72)			2.12 (0.64)	2.32 (0.69)	Male-dominated	2.38 (0.60)
Ingroup affect	Women's	2.52 (0.71)	2.61 (0.59)			2.62 (0.78)	2.60 (0.71)	Sex-integrated	2.74 (0.69)
	Coed	2.62 (0.60)	2.51 (0.74)			2.60 (0.75)	2.62 (0.80)	Male-dominated	2.54 (0.72)
WCW	Women's	1.69 (0.58)	1.60[a] (0.54)	Sex-integrated	1.80[a] (0.64)	1.98 (0.72)	1.99 (0.74)	Sex-integrated	2.46[a] (0.70)
	Coed	1.67 (0.54)	1.77[b] (0.58)	Male-dominated	1.54[b] (0.42)	2.27 (0.85)	2.10 (0.78)	Male-dominated	1.83[b] (0.71)
				CS with supervisor	Women's		2.64[a] (0.64)		
					Coed		2.02[b] (1.13)		
				CS with same-sex coworkers	Women's		2.87[a] (0.78)		
					Coed		2.37[b] (0.78)		
				CS with coworkers	Women's		2.77 (0.54)		
					Coed		2.72 (0.55)		

Note. Standard Deviations are reported in parentheses. WCW = workplace cultures for women; CS = communication satisfaction. Different superscripts (a and b in a column) indicate significant difference at $p < .05$.

Table 2. Moderated Multiple Regression Results (Study 1, Workplace Culture for Women).

	B	*SE*	β	*t*
High school sex composition (HS)	0.01	0.05	.01	0.26
College sex composition (CS)	−0.10	0.06	−.09	−1.82
Workplace sex composition (WS)	0.23	0.06	.20	4.09***
In-group ties (ties)	0.06	0.05	.06	1.30
Centrality	−0.08	0.04	−.10	−1.95
In-group affect (affect)	0.003	0.04	.00	0.07
F (6, 432) = 5.35, $p < .001$, Adj. $R^2 = 0.06$				
HS × ties	0.20	0.09	.15	2.08*
HS × centrality	0.23	0.09	.21	2.51*
HS × affect	−0.06	0.09	−.06	−0.65
CS × ties	0.08	0.09	.06	0.89
CS × centrality	0.13	0.09	.10	1.51
CS × affect	0.13	0.09	.10	1.56
WS × ties	0.23	0.10	.18	2.41*
WS × centrality	0.07	0.09	.07	0.86
WS × affect	−0.15	0.09	−.14	−1.69
F_{change} (9, 423) = 3.06, $p = .001$, $R^2_{change} = 0.06$				
HS × WS × ties	0.55	0.19	.33	2.90*
HS × WS × centrality	0.12	0.18	.09	0.69
HS × WS × affect	−0.19	0.19	−.14	−0.97
CS × WS × ties	−0.08	0.19	−.04	−0.40
CS × WS × centrality	0.14	0.17	.07	0.79
CS × WS × affect	0.39	0.18	.23	2.22*
F_{change} (6, 417) = 2.68, $p = .01$, $R^2_{change} = 0.03$				

Note. For sex compositions in high school and college: dummy-coded with coed = 0 and women's = 1. Workplace sex composition (WS): dummy-coded with male-dominated = 0 and sex-integrated = 1.
*$p < .05$. ***$p < .001$.

Women's Versus Coed Colleges on Gender Identity

Students attending women's colleges were predicted to display stronger gender identity than women attending coed colleges (i.e., H1). A 2 (high school) × 2 (college) MANOVA was conducted with the three dimensions of gender identity as the dependent variables (i.e., in-group ties, centrality, and in-group affect). MANOVA results showed no significant effect for high school sex composition, F (3, 433) = 2.45, p = .07, *partial* η^2 = 0.02, and no significant interaction effect for high school and college sex composition, F (3, 433) = 0.39, p = .76, *partial* η^2 = 0.00. However, in support of H1, MANOVA results showed a significant effect for college sex composition, F (3, 433) = 3.29, p = .02, *partial* η^2 = 0.02. When ANOVAs were conducted separately for each dependent variable, women attending women's colleges showed higher in-group ties than did women attending coed colleges, F (1, 435) = 4.49, $p < .05$, η^2 = 0.01. See Table 1 for the means. Women attending women's colleges showed higher centrality than did women attending coed colleges, F (1, 435) = 6.88, $p < .01$, η^2 = 0.02. Women attending women's colleges, however, did not differ from women attending coed colleges regarding in-group affect, F (1, 435) = 2.55, p = .11, η^2 = 0.01. These findings support H1 for two dimensions of gender identity.

Sex-Integrated Versus Male-Dominated Organizations on Workplace Culture for Women (WCW)

The effect of workplace sex composition on WCW (i.e., H2) was tested with a 2 (high school: girls vs. coed) × 2 (college woman's vs. coed) × 2 (workplace: sex-integrated vs. male-dominated) ANOVA with WCW as the dependent variable. The results showed that high school did not have a significant main effect, F (1, 431) = 0.03, p = .87, η^2 = 0.00. College had a significant main effect, F (1, 431) = 5.32, $p < .05$, η^2 = 0.01. Women attending coed colleges perceived more positive WCW than did women attending women's colleges (see Table 1 for the means). Workplace had a significant main effect, F (1, 431) = 13.36, $p < .001$, η^2 = 0.03. Women perceived more positive WCW for a sex-integrated organization than for a male-dominated organization. This finding supports H2. The analysis did not show any significant 2-way or 3-way interactions.

Gender Identity and Workplace Culture for Women (WCW)

To test H3 which predicts that the relationship between gender identity and perception of WCW would vary with high school (3a), college (3b), and workplace (3c), a moderated multiple regression was conducted (see Table 2 for the results). The first-order predictors explained a significant amount of variance in the dependent variable, F (6, 432) = 5.35, Adj. R^2 = 0.06, $p < .001$. Among the first order predictors, workplace (β = .20, t = 4.09, $p < .001$) was significant, indicating that individuals perceived greater WCW for a sex-integrated organization than for a male-dominated organization. Like the ANOVA results, this finding also supports H2.

The second-order predictors (i.e., high school × in-group ties, high school × centrality, high school × affect, college × in-group ties, college × centrality, college × affect, workplace × in-group ties, workplace × centrality, and workplace × affect) explained a significant amount of variance in the dependent variable, F_{change} (9, 423) = 3.06, R^2_{change} = 0.06, $p < .01$. Among the predictors, high school × in-group ties was significant, unstandardized coefficient B = 0.20, SE = 0.09, t = 2.08, $p < .05$. Among women who attended coed high schools, in-group ties was negatively, but not significantly related to WCW, simple slope $b = -0.06$, p = .43. Among women who attended all-girls high schools, in-group ties was positively and significantly related to WCW, simple slope b = 0.14, $p < .05$. The finding supports H3a.

High school × centrality was significant, B = 0.23, SE = 0.09, t = 2.51, $p < .05$. Among women who attended coed high schools, centrality was negatively and significantly related to WCW, simple slope $b = -0.22$, $p < .01$. Among women who attended all-girls high schools, in-group ties was not significantly related to WCW, simple slope $b = -0.02$, p = .73. The finding supports H3b.

Workplace × in-group ties was significant, B = 0.23, SE = 0.10, t = 2.41, $p < .05$. Among women who read a description about a male-dominated organization, in-group ties was negatively, but not significantly related to WCW, simple slope $b = -0.07$, p = .21. Among women who read a description about a sex-integrated organization, in-group ties was positively and significantly related to WCW, simple slope b = 0.14, $p < .05$. The finding supports H3c.

The third-order predictors (i.e., high school × workplace × in-group ties, high school × workplace × centrality, high school × workplace × affect, college × workplace × in-group ties, college × workplace × centrality, and college × workplace × affect) explained a significant amount of variance in the dependent variable, F_{change} (6, 417) = 2.68, R^2_{change} = 0.03, $p < .05$. Among the predictors, high school × workplace × in-group ties was significant, B = 0.55, SE = 0.19, t = 2.90, $p < .01$. The findings showed that among undergraduates who attended girl's high school, those who read a description about a sex-integrated organization indicated that their in-group ties of gender identity were positively and significantly related to their perception of WCW, simple slope b = 0.32, $p < .01$. For all the other groups of

women, on the other hand, in-group ties of gender identity were not significantly related to WCW. This finding supports H3a and H3c as well. That is, the relationship between gender identity and perception of WCW was positively strengthened if participants were from girl's high school and read about a sex-integrated organization. College × workplace × in-group affect was significant, $B = 0.39$, $SE = 0.18$, $t = 2.22$, $p < .05$. The findings showed that out of undergraduates attending coed colleges, in-group affect was positively related to WCW, simple slope $b = 0.18$, $p < .05$, among those who read a description about a male-dominated organization, whereas in-group affect was negatively related to WCW, simple slope $b = -0.16$, $p < .05$, among those who read a description about a sex-integrated organization. Among undergraduates attending women's colleges, in-group affect was not significantly related to WCW. The finding supports H3b and H3c. That is, the relationship between gender identity and perception of WCW was positively strengthened if participants were from coed colleges and read about a male-dominated organization.

Study 1 Discussion

In this study, women attending women's colleges displayed stronger gender identity than those attending co-ed colleges on two dimensions of gender identity: in-group ties and centrality. However, these differences in effect size were small and, therefore, ought to be taken with caution. Nevertheless, these findings support the previous study regarding the effect of group composition on gender (Drury et al., 2013). On the other hand, type of high school had no significant effect on gender identity, as participants may have been more heavily influenced by their more recent experiences in a new educational environment—a coed university.

In order to grasp the relationship more thoroughly, Study 2 was conducted using actual full-time employees. These results will be mentioned more in-depth in the general discussion along with the results from the second study.

Study 2

Study 1 collected data from college students who were given a hypothetical situation on the workplace. In order to complement this limitation, Study 2 utilized a survey that compared female working adults employed at male-dominated workplaces with those at sex-integrated organizations. Study 2 augmented the same hypotheses used in Study 1 to also examine the effects of workplace on working adult women's CS level with their supervisors, coworkers in general, and same-sex coworkers.

Communication Satisfaction (CS)

CS can affect employee behavior, and managers should emphasize creating a more positive workplace culture (Chan & Lai, 2017). Under SIT, the role of gender identity will likely vary according to workplace because having a minority status as a woman in the workplace can lead to isolation and subsequent feelings of dissatisfaction with workplace environment and communication. That is, women working in a male-dominant environment will feel less satisfaction with the environment than women working in a sex-integrated environment. Research looking at environmental change has shown that when moved from single-sex to coed universities, students' academic success has been negatively affected (Dustmann et al., 2018). Given that academic success is highly dependent on school culture and the relationships with friends (i.e., communication satisfaction) (Brooms, 2019), when moved from single-sex environment (i.e., education) to male-dominated environment (i.e., workplace), individuals might not operate at their best due to the lack of shared cultural experience and satisfactory communication.

Nevertheless, it is important to note that results observed in a school environment might not be observed in the research on the work environment. In schools, college instructors hold a position of power of authority, and all students are on the same level (even though beyond the classroom, one gender might be regarded higher in social power). In a workplace, these differences matter because a male-dominant workplace is more likely to have male supervisors than sex-integrated workplaces, which is positively related to the increased likelihood of having female supervisors (Huffman et al., 2010). Moreover, as compared to the male-dominant workplace, women working in sex-integrated workplaces—similar to female-dominant environments—are exposed to less social-sexual behaviors (Gutek & Morasch, 1982), and workplaces that have a sex-integrated environment are exposed to less gender devaluation (Cohen & Huffman, 2003). Following this logic, women who attended women's college will feel more comfortable in a sex-integrated workplace, given that it is similar to their familiar environment, than in a male-dominant workplace. On the other hand, women who attended a co-ed college might be more accustomed to the social power men have and thus feel more worrisome and uncomfortable than women who attended women's colleges and are used to speaking up and confronting others willingly. Therefore, the current paper hypothesizes that those who attended women's colleges will perceive more CS in a sex-integrated organization than women who attended coed colleges (H4), and the last hypothesis is proposed as follows; the relationship between gender

identity and CS will vary with high school (a), college (b), and workplace (c) gender composition (H5).

Study 2 Method

Participants

Participants (age $M = 30.17$, $SD = 5.63$, *range* = 21 to 53) were 171 Korean women working adults (employment length $M = 65.73$ months, $SD = 67.87$). Of the participants, 47 (27.5%) participants categorized their job as information technology, and 35 (20.5%) technical in nature and research-related. All participants had four-year college degrees. Of 59 participants who graduated from women's colleges, 43 (72.88%) attended girl's high schools. Of 104 participants who graduated from coed colleges, 69 (66.35%) attended girl's high schools.

On additional page separate from the questionnaire, participants were asked to indicate their company names and departments, and one author of this research verified the sex-composition of the workplace. Most of the participants ($n = 113$; 66.08%) reported to work at male-dominated organizations when three options (i.e., male-dominated, female-dominated, and sex-integrated) were given

Measures

Study 2 measured the same items as Study 1. Hypothetical scenarios were excluded and an item for workplace gender composition was used. Finally, items for CS were additionally included in Study 2.

Gender Identity. After removing one item from in-group affect ("Generally, I feel good when I think about myself as a woman"), CFA showed good fit (CFI = 0.93, SRMR = 0.06). The reliability coefficients (i.e., Cronbach's α) for in-group ties (four items), centrality (four items), and in-group affect (three items) were .78, .71, and .80, respectively.

Workplace Gender Composition. Unlike Study 1, which used scenarios of an imaginary workplace, participants were asked to indicate the gender composition of their workplace as "more women than men," "more men than women," and "equal ratio of women and men."

Workplace Culture for Women (WCW). After dropping three items, CFA showed the unidimensional model was acceptable (CFI = 0.93, SRMR = 0.05). The reliability coefficient (i.e., Cronbach's α) of the seven items was .90.

Communication Satisfaction (CS). Items were adapted and modified from Downs and Hazen (1977), Hecht (1978), and Gladstein (1984). CS with a supervisor was measured with six items (e.g., "I am comfortable talking with my supervisor"). CS with coworkers was measured with four items (e.g., "My coworkers give kind responses to what I say"). CS with same-sex coworkers, as compared with opposite-sex coworkers, was measured with five items (e.g., "I am more comfortable when I talk with same-sex coworkers compared to opposite-sex coworkers"). The reliability coefficients (i.e., Cronbach's α) for CS with a supervisor, with coworkers and with same-sex coworkers were .95, .93, and .93, respectively. CFA for a three-factor model was acceptable (CFI = 0.95, SRMR = 0.04).

Study 2 Results

Study 2 examined five hypotheses. H1 was tested with MANOVA, H2 and H4 were tested with ANOVA, and H3 and H5 were tested with moderated multiple regression. Table 1 shows the mean and standard deviation for each condition pertinent to H1, H2, and H4, and Table 3 shows the moderated multiple regression results pertinent to H3.

Women's Versus Coed Colleges on Gender Identity

The relationship between college sex composition and gender identity (i.e., H1) was tested again with working adults in Study 2. A 2 (high school) $\times$ 2 (college) $\times$ 2 (workplace) MANOVA was conducted with the three dimensions of gender identity as the dependent variables (i.e., in-group ties, centrality, and in-group affect). In short, the MANOVA did not yield any significant effect; subsequently, three separate ANOVAs for each dependent variable were not conducted. The results showed that workplace sex composition was not a significant main effect, $F(3, 151) = 0.24$, $p = .87$, *partial* $\eta^2 = 0.00$. The data were not consistent with H1. All other effects were not significant as well.

Sex-Integrated Versus Male-Dominated Organizations on Workplace Culture for Women (WCW)

The effect of workplace sex composition on WCW (i.e., H2) was tested with a 2 (high school) $\times$ 2 (college) $\times$ 2 (workplace) ANOVA. The results showed that workplace had a significant main effect on WCW, $F(1, 153) = 21.48$, $p < .001$, $\eta^2 = 0.11$. Women working at sex-integrated organizations reported more positive WCW than women working at male-dominated organizations (see Table 1 for the means). This finding supports H2, which predicted that women would perceive more positive WCW from a sex-integrated organization than from a male-dominated one. All other effects were not significant.

Table 3. Moderated Multiple Regression Results (Study 2, Workplace Culture for Women).

	B	*SE*	β	*t*
High school sex composition (HS)	−0.11	0.12	−.06	−0.90
College sex composition (CS)	−0.04	0.11	−.03	−0.41
Workplace sex composition (WS)	0.52	0.11	.32	4.70***
In-group ties (ties)	−0.11	0.08	−.10	1.40
Centrality	−0.23	0.08	−.19	−2.73
In-group affect (affect)	0.34	0.07	.34	5.04***
F (6, 154) = 11.93, $p < .001$, Adj. $R^2 = 0.29$				
HS × ties	0.17	0.19	.12	0.93
HS × centrality	−0.03	0.20	−.02	−0.14
HS × affect	−0.11	0.17	−.09	−0.64
CS × ties	−0.11	0.18	−.06	0.63
CS × centrality	0.13	0.19	.06	0.68
CS × affect	−0.02	0.16	−.01	−1.14
WS × ties	0.01	0.18	.01	0.08
WS × centrality	−0.08	0.18	−.04	−0.42
WS × affect	0.02	0.17	.01	0.15
F_{change} (9, 145) = 0.31, $p = .969$, $R^2_{change} = 0.01$				
HS × WS × ties	−0.67	0.39	−.25	−1.71
HS × WS × centrality	0.85	0.40	.36	2.01
HS × WS × affect	−0.34	0.35	−.13	−0.98
CS × WS × ties	0.65	0.36	.26	1.80
CS × WS × centrality	−0.80	0.41	−.22	−1.92
CS × WS × affect	0.48	0.36	.15	1.33
F_{change} (6, 139) = 1.92, $p = .081$, $R^2_{change} = 0.05$				

Note. For sex compositions in high school and college: dummy-coded with coed = 0 and women's = 1. Workplace sex composition (WS): dummy-coded with male-dominated = 0 and sex-integrated = 1.
***$p < .001$.

Gender Identity and Workplace Culture for Women (WCW)

To test H3, predicting that the relationship between gender identity and WCW would vary with high school (3a), college (3b), and workplace (3c) gender composition, a moderated multiple regression was conducted like the one from Study 1. See Table 3 for the results.

The first-order predictors explained a significant amount of variance in the dependent variable, F (6, 154) = 11.94, Adj. $R^2 = 0.29$, $p < .001$. Among the predictors, workplace ($\beta = .32$, $t = 4.70$, $p < .001$), centrality ($\beta = -.19$, $t = -2.73$, $p < .01$), and in-group affect ($\beta = .34$, $t = 5.04$, $p < .001$) were significant, indicating that individuals perceived greater WCW for a sex-integrated organization than for a male-dominated organization. Like the ANOVA analysis, this finding also supports H2. The second-order and third-order predictors shows insignificant. These findings did not support H3. All results are available in Table 3.

Communication Satisfaction (CS)

To test H4, which predicts that those who attended women's college will perceive more CS for a sex-integrated organization than women who attended coed college, ANOVAs showed that the significant interaction effects were on CS with a supervisor, F (1, 152) = 4.35, $p = .039$, partial $\eta^2 = 0.03$, and CS with same-sex coworkers, F (1, 152) = 4.47, $p = .036$, partial $\eta^2 = 0.03$.

Among women employed at sex-integrated organizations, women who graduated from women's colleges indicated higher CS with supervisors than women who graduated from coed colleges, t (56) = 2.16, $p = .04$, $\eta^2 = 0.07$ (see Table 1 for the means). In addition, women from women's colleges indicated higher CS with same-sex coworkers than women from coed colleges, t (56) = 2.27, $p = .03$, $\eta^2 = 0.08$. The finding supports H4 regarding CS with supervisors and same-sex coworkers.

To test H5, predicting that the relationship between gender identity and CS would vary with high school (3a), college (3b) and workplace (3c), moderated multiple regressions were conducted. The first-order predictors explained a significant amount of variance in CS with coworkers, F (6, 153) = 2.63, Adj. $R^2 = 0.06$, $p < .05$. Among the first order predictors, only in-group tie ($\beta = .19$, $t = 2.38$, $p < .05$) was significant. None of the other predictors were significant. The first-order predictors explained a significant amount of variance in CS

with same-sex coworkers, F (6, 152) = 3.97, Adj. $R^2 = 0.12$, $p = .001$. Among the first order predictors, only in-group tie ($\beta = .32$, $t = 4.14$, $p < .001$) was significant. All second-order and third-order predictors were not significant. These results show that H5 was not supported.

Study 2 Discussion

Contrary to our expectations and Study 1, school gender composition and workplace gender composition had no interaction effects on gender identity. However, when using WCW as the dependent variable, workplace gender composition affected WCW significantly. Organizations with more women in higher positions tend to be less sexually segregated (Stainback & Kwon, 2012). When there is less segregation, WCW will be more positive. It also supports the previous literature on the negative workplace perception by women in patriarchal Korean companies, male-dominant environments (e.g., H. K. Lee, 2013).

Study 2 shows that for a sex-integrated organization, women who attended women's colleges denoted higher CS with supervisors and with same-sex coworkers than women who attended coed colleges. Female workers who graduated from women's colleges may be more comfortable communicating with other women in the workplace, as their in-group ties are stronger, and they are inclined to improve the group in order to sustain their non-minority status as women. Study 2 provides a better understanding as to what kind of organizational structure in terms of gender ratio a workplace needs for better communication satisfaction.

Discussion

Identities are individually constructed and modified through one's social environment. According to SIT, group-related behaviors can be explained through in-group psychology (Tajfel, 1978). Since the gender and social identity of a person should be considered together with the group, our approach to studying gender identity and WCW examines the gender composition of both the educational institute and the workplace. Using both female undergraduate students in Study 1 and female workers in Study 2, we compared differences between assumptions about WCW and gender identity and the reality of such assumptions in an actual workplace, respectively.

Many studies in the tradition of SIT have been criticized because they prioritize inter-group processes at the expense of ignoring the content of particular social identities (e.g., Schiffmann & Wicklund, 1992). The current study corroborates the arguments that social identity processes will not be displayed by all group members (Brown et al., 1992) via intra-group analysis to demonstrate how social identity can be used in intra-group processes as well. The results of the first study demonstrate that there is a difference regarding the strength of gender identity between students in women's colleges and those in coed colleges as it was proposed before (Park et al., 2012). Nonetheless, the results from the second study failed to demonstrate strong predictive power for college sex composition. Therefore, overall, these studies show the importance of the gender ratio of the social environment in which an individual is most recently immersed.

Through this study, we deduced that dimensions of social identity (Cameron, 2004) can be used in gender identity. Also, we showed the importance of using dimensions with identities since they are multidimensional constructs (e.g., Graupensperger et al., 2020; Martin et al., 2017), and it is difficult to grasp the real effects of identity when looking at it as a whole. As seen in the results, two dimensions of gender identity—in-group ties and centrality—are found to be significantly related to college: women attending women's colleges showed higher in-group ties than did women attending coed colleges, whereas in-group affect fails to do so. One reason that in-group affect was not significant may be because group identities can be created based on self-definition or self-investment (Leach et al., 2008), which is necessary for stronger in-group affect. Future research can more deeply look into this relationship and its underlying reasons.

Korea is heavily influenced by Confucianism, which lends itself to patriarchal culture and reverence for parents and elders (Yang & Kwon, 2017). By using the Korean sample, this study enabled investigation of the effect of patriarchal work structure on gender roles and expectations. Women who graduated from women's colleges and coed colleges did not differ in any dimension of gender identity. Because women tend to be the minority and face more gender inequalities than men, gender identity may not be the most dominant identity for working women. Furthermore, in Korea, females who do not follow traditional patriarchal beliefs, such as being obedient and submissive, are subject to social pressure and alienation within a company (H. K. Lee, 2013). Due to this pressure, they might feel the need to act genderless (Kelan, 2010) and, thus, do not feel the effect of gender identity as much.

However, these results contradict the findings from Cho et al. (2015), as they posit that gender identity is a very important factor for working Korean women. The differences between our results and Cho and colleagues' results may stem from the fact that they looked at only women leaders while our sample includes women holding a variety of positions. Future research can compare the effect of gender identity for higher level and lower level Korean workers to help to enhance organizational

communication and SIT, as these differences might enforce the importance of social power in terms of group membership. Those who have power in their organization can feel stronger gender identity because they already have the power to behave more freely than those in a lower position whose jobs depend on getting along well with their superiors.

Unlike previous studies, which used women's percentage of the total workforce (e.g., Bergman & Hallberg, 2002) or traditionally male-dominated work environments (e.g., Denissen, 2010), the current research focused on self-reported numbers. As predicted, women working at sex-integrated organizations reported more positive WCW than women working at male-dominated organizations. However, unlike college students who assessed WCW of a hypothetical organization in Study 1, college gender composition did not affect working women's assessments of WCW at their current workplaces, underscoring the changing nature of gender identity.

Among women who attended coed high schools, in-group ties was negatively but not significantly related to WCW, and centrality was negatively and significantly related to WCW. Du Bois (1996) talks about the "double consciousness" of race, which means seeing/judging oneself through the eyes/perceptions of others. In gender identity, women are forced to see themselves through the eyes of others. Thus, in a group of all women, the saliency of being a woman is felt less than it would be in a male-dominated group. As a result, in-group ties was positively and significantly related to WCW among women who attended female high schools.

Next, CS is a significant factor for organizational citizenship behavior, which extends expected worker responsibilities to things like courtesy and sportsmanship (Chan & Lai, 2017). Thus, CS is good for both job performance and job satisfaction. To our knowledge, gender identity has not been studied related to communication satisfaction. In our study, among female working adults, the effects of gender identity on CS did not vary with high school, college and workplace gender composition. However, looking at them separately, there was some significance: in-group ties was significant for CS with coworkers and same-sex coworkers. Since in-group ties is related to communication satisfaction, it is also related to job satisfaction and performance. Thus, when companies are hiring, they should consider the proportion of men and women so that they can work more effectively using their in-group ties.

Lastly, the effect size in some of the findings were small. In fact, even for statistically significant findings, eta-squared was as low as nearly .01. Hence, such findings ought to be taken more cautiously. For example, the differences between students attending coed colleges and those in women's colleges regarding in group ties and centrality were significant but showed small effect sizes in Study 1. In Study 2, working adults who graduated from coed colleges did not significantly differ from those who graduated from women's colleges on any of the gender identity dimensions. This may be due to the larger sample in Study 1 than in Study 2, rather than due to undergraduates currently in college (Study 1 sample) versus working adults who already graduated from colleges (Study 2 sample).

While this study revealed some interesting relationships between the strength of gender identity and perception of WCW in male-dominated and sex-integrated companies in Korea, it has some limitations. In both studies, workplace gender composition was examined as being divided between male-dominated and gender-integrated workplaces with no mention of female-dominated workplaces. Thus, gender segregation is confounded with male domination and the minority status of the participant's in-group.

Moreover, in Study 2, the number of female workers may be an effective variable since more female workers generate stronger feelings of gender identity in individual female workers. Besides the exact sex-composition of an organization, it may be also important to consider whom workers frequently interact with. For example, it is possible that even at sex-integrated workplaces, women and men may interact mostly with same-sex coworkers in their departments or teams. Thus, future research should study the differences between male-dominated, female-dominated and sex-integrated workplaces in order to get more precise answers. Also, even though this study only intended to study South Korea, future studies should study other countries to determine whether the results are generalizable.

Lastly, the current study has looked at school gender ratio from an objective point of view. However, this might have caused us to miss certain individual differences. Despite studying in a co-ed school, an individual might have been exposed to a relatively homogenous gender group. Similarly, even though individuals study in a single-sex school, they might have experienced negative gender discrimination even among those who are of the same gender. In terms of the role of gender identity and school gender ratio, future research could consider possible individual experiences in schools to further explore the effect of gender ratio on gender identity.

In conclusion, when investigating the effect of gender identity and gender-related perceptions, it is important to note that gender composition should be included. Research should continue to disentangle how gender composition of various environments affects individuals' perceptions and behaviors while examining the effect of gender identity for men as well. Organizational communication and social identity scholars should continue to parse social identity and its power on workplace perceptions.

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Data Availability Statement

The data sets analyzed for this study will be available from the corresponding author upon reasonable request.

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