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When Is Dominance Related to Smiling? Assigned Dominance, Dominance Preference, Trait Dominance, and Gender as Moderators[1]

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We investigated gender and different types of dominance measures as potential moderators of the relation between dominance and smiling. We asked participants about their preference for either a dominant or a subordinate role (dominance preference), randomly assigned one of these roles to them (assigned dominance), and assessed trait dominance, felt dominance, and perceived dominance. Participants had two 8-min dyadic interactions in same-gender groups (33 all-women dyads, 36 all-men dyads), in which one was assigned to be the owner of an art gallery and the other was assigned to be the assistant to the owner. Interactions were videotaped, and smiling and perceived dominance were assessed on the basis of the videotapes. Both the particular dominance measure and gender moderated the relation between dominance and smiling. Results showed that for women in subordinate positions, those who wanted to be in a subordinate position smiled more than those who wanted to be in a dominant position. No such effect occurred for men and for participants in assigned dominant positions.

KEY WORDS: smiling; dominance; gender.

The well-established finding that women smile more than men (Hall, 1984, 1998; LaFrance & Hecht, 2000) has been proposed to be linked to women's lower status or dominance,[5] based on the claim that individuals with low status smile more than individuals with high status (Henley, 1977; Henley & LaFrance, 1984). Empirical evidence for this negative association between dominance and smiling (which for simplicity we will call the dominance–smiling hypothesis) is, however, weak at best (Cashdan, 1998; Duncan & Fiske, 1977; Friedman & Miller-Herringer, 1991; Gifford, 1994; Hall & Friedman, 1999; Hall, Horgan, & Carter, 2002; Hecht & LaFrance, 1998; Johnson, 1994; Mehrabian & Williams, 1969). It is also fair to say that the topic has not been fully explored. So far, the literature has dealt with the dominance–smiling hypothesis (a) very broadly, meaning almost exclusively in terms of main effects rather than including potential moderators, and (b) piecemeal, so that any given study generally had just one measure of dominance. The present study was undertaken to remedy these two shortcomings and therefore to deepen our understanding of the dominance–smiling relation.

Studies have, with only rare exceptions, failed to support an overall association between dominance and smiling. The very fact that psychologists have found the dominance–smiling hypothesis appealing

[1] Parts of the data have been presented in 2000 at the annual meeting of the American Psychological Society (APS) in Miami and at the 2001 annual meeting of the Society for Personality and Social Psychology (SPSP) in San Antonio.

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[5] Although many different definitions of dominance exist (Ellyson & Dovidio, 1985), dominance indicates more influence or control relative to an interaction partner. For convenience, dominance is used as an umbrella term that includes power, status, and influence.

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(e.g., Feldman, 1995; Henley, 1977; Lippa, 1994) suggests that there may be a germ of truth to the idea, which was then overgeneralized. It is conceivable, for example, that the dominance–smiling hypothesis is supported for one sex and not the other, or for some groups and not others, or under some conditions and not others, or only for some operational definitions of the dominance concept. Thus, what may be important and interesting is not the dominance–smiling hypothesis tested as a main or overall effect, but the interactions (or moderating effects) related to other factors. Consistent with this possibility, Hall et al. (2002) have proposed that affect and role-relevant motives should be strong moderators of the dominance–smiling association. For example, if a subordinate is motivated to ingratiate, then he/she might smile more than his/her superior, but if the subordinate is feeling hostile or fearful, or is motivated to be very task-oriented, he/she might smile less than his/her superior. Similarly, the motives of superiors could moderate how much they smile relative to subordinates. Without a careful specification of the affective and motivational states of interactants, results of studies could be difficult to interpret and any discussion of the dominance–smiling phenomenon could be misleading.

Out of the conviction that examination of moderating effects will do the most to advance our understanding, we designed this study. We chose to investigate gender and different operationalizations of the dominance concept as potential moderators. Gender is important in this context because the dominance–smiling hypothesis was born out of the idea that it could explain why women smile more than men do (Henley, 1977; Henley & LaFrance, 1984). Indeed, gender has sometimes been shown to influence the relation between dominance and smiling. For instance, Hall and Friedman (1999) found that high dominance women in an organization smiled more than high dominance men, but no such difference emerged between the low dominance men and women. Aside from the fact that the effect for women went counter to the dominance–smiling hypothesis, this finding indicates that gender itself may be a moderator of the dominance–smiling relation.

Different researchers have operationalized dominance in different ways, which makes it difficult to reach a meaningful overall conclusion. We cannot say with certainty whether the dominance–smiling hypothesis might receive stronger or weaker support for assigned dominance, achieved dominance, felt dominance, or trait dominance, not to speak of the many possible operational definitions within each of these large categories (for example, "achieved dominance" could mean rank in an organization, socioeconomic dominance, emergent leadership within a group, etc.). People who find intuitive appeal in the dominance–smiling hypothesis might be thinking of only one, or a subset, of all of these definitional possibilities. Moreover, it is also possible that overgeneralization occurs from the finding that lower dominance is sometimes *attributed* to smiling faces in judgment studies (Halberstadt & Saitta, 1987; Keating et al., 1981). Though this effect is not consistently in evidence (Burgoon & Le Poire, 1999; Deutsch, LeBaron, & Fryer, 1987), nevertheless the belief that low dominance is associated with smiling could become transformed into the belief that there is an actual relation between the two.

We chose to look at the same dominance variables most other researchers have used so far when investigating the dominance–smiling relation: trait dominance, the assignment of a dominant or subordinate position (assigned dominance), felt dominance, and perceived dominance. In addition, we included a new variable, the wish to be in a dominant or subordinate position (dominance preference). Dominance preference indicates a person's wish for a high or low dominance position in the specific situation. In other words, dominance preference is the situation-specific dominance motivation of an individual. This is in contrast to trait dominance, which is an overall tendency to prefer a high dominance position that might be more or less pronounced depending on the actual situation. For instance, if one feels competent in the specific situation, high trait dominance most likely translates into the wish to be in a high dominance position in that specific situation, whereas if one feels less competent, even high trait dominant people might wish to take on the low dominance position (Fallon & Guo, 1994). The present study is the first to measure all of these aspects of dominance within the same research design.

Summary of Past Research

It is intuitively appealing to state that low dominance individuals smile more than high dominance individuals in order to appease the latter (Henley, 1977; Henley & LaFrance, 1984). Although it is established that the motive to ingratiate produces smiling (Godfrey, Jones, & Lord, 1986; Lefebvre, 1973), studies defined in terms of the dominance construct have not shown many differences. Studies of the relation

between smiling and *trait dominance* have not demonstrated the two variables to be related (Cashdan, 1998; Duncan & Fiske, 1977; Friedman & Miller-Herringer, 1991; Gifford, 1994; Mehrabian & Williams, 1969). Much the same is true for *assigned dominance* (e.g., taking on a dominant or subordinate role in a psychology experiment) or *achieved dominance* (e.g., being a manager as compared to an employee in a real organization; Dovidio, Brown, Heltman, Ellyson, & Keating, 1988; Hall et al., 2002; Hall & Friedman, 1999; Hall, LeBeau, Reinoso, & Thayer, 2001; Hecht & LaFrance, 1998; Johnson, 1994). Deutsch (1990) manipulated role dominance in an experiment and found the hypothesized effect on smiling, but in that study role was confounded with the motive to ingratiate (only subordinates were told to make a favorable impression). Because ingratiation is related to smiling, this result is hard to interpret. Hall et al. (2002) not only examined the relation between assigned dominance and smiling in their three studies but also tested whether smiling was related to *how dominant the participant felt* during the interaction. Results revealed no relation between felt dominance and smiling. However, Deutsch (1990) found a marginally significant negative relation between feelings of dominance and frequency of smiling during the interaction for assigned high dominance individuals but not for assigned low dominance individuals.

Whether smiling is negatively related to *perceived dominance* remains unclear on the basis of the results available to date. Keating et al. (1981) found in a large cross-cultural study that in most cultures, a nonsmiling in comparison to a smiling face was perceived as more dominant. In a study by Halberstadt and Saitta (1987), women and men rated the dominance of women and men with absent, small, and large smiles in advertisements. Results showed that smiling was perceived as less dominant than nonsmiling. However, other studies either did not demonstrate a relation between smiling and being perceived as less dominant or more submissive (Deutsch et al., 1987), or showed a positive relation (Burgoon & Le Poire, 1999).

As far as gender as a moderator of the dominance–smiling relation is concerned, in quite a few studies, results were not evaluated with respect to gender (Burgoon & Le Poire, 1999; Gifford, 1994; Keating et al., 1981). Those researchers who considered gender reported results that paint a contradictory picture. In many studies, gender did not moderate the results. For instance, in Hecht and LaFrance's study (Hecht & LaFrance, 1998), although women smiled more than men, high and low power men did not differ in how much they smiled and high and low power women did not differ in how much they smiled either. In the same vein, Hall et al. (2002) found women to smile more than men regardless of whether they occupied dominant or subordinate positions. Also, women smiled more than men regardless of whether they were experts (and therefore presumably higher in dominance) or not (Dovidio et al., 1988). Cashdan (1998) found that smiling was not related to personality characteristics related to dominance (leadership and toughness) for either women or men. Similarly, both male and female faces were perceived as less dominant if smiling than if nonsmiling (Halberstadt & Saitta, 1987). Being perceived as dominant or submissive was not related to smiling for either female or male targets in the photograph study of Deutsch et al. (1987).

However, Hall and Friedman (1999) reported that among high dominance individuals, women smiled more than men but this was not so among low dominance individuals. This is an example of a study in which gender moderated the relation between smiling and dominance. Because not only gender but also gender of the interaction partner affects the relation we decided to study same-gender dyads only in order not to introduce too many different variables.

The Importance of Deepening Our Understanding of the Dominance–Smiling Relation

Dominance is one of the most important dimensions of social interactions (Gifford, 1991; Wiggins, 1979) and to express one's own dominance and correctly read the interaction partner's dominance therefore seems essential to smooth social interaction. To know whether and how different communication behaviors (e.g., speaking time, interruptions) or nonverbal cues (e.g., smiling, gazing) are used to express or to infer dominance is important. In the case of smiling, it is crucial to clarify the scattered results that pertain to the relation between smiling and dominance because the dominance–smiling hypothesis is sometimes—erroneously so, as we have seen—reported as an established finding (Feldman, 1995; Henley, 1977; Lippa, 1994). This can have detrimental effects. For instance, people might be advised not to smile if they want to be perceived as leaders. This is only good advice if the relation between smiling and perceived dominance is indeed negative. Moreover, there may be certain social situations in which smiling

and dominance are negatively correlated, or such a negative correlation is prototypical for certain people. It seems worth pursuing the question of whether the relation between dominance and smiling is moderated. We focused on gender and different measures of dominance as potential moderators.

The Present Investigation

Within the same study, we assessed trait dominance, assigned roles of different dominance (low or high), measured how dominant each person felt, and how dominant each person was perceived. In addition, we asked people whether they preferred a high or low dominance role (dominance preference) prior to assigning one role to them; this enabled us to investigate whether the initial wish to be in a dominant or subordinate position affected how much they smiled. Although we expected dominance preference to be highly associated with trait dominance, we deemed it worthwhile to introduce dominance preference as a new variable because the extent to which trait dominance is manifest in behavior depends on situational aspects such as how competent one feels (Fallon & Guo, 1994), whether interacting with friends or strangers (Moskowitz, 1988), or the gender of the interaction partner (Megargee, 1969; Nyquist & Spence, 1986), to name a few. Such factors might influence how dominant one behaves regardless of how dominant one usually is (trait dominance).

METHOD

Participants

Participants were Northeastern University undergraduates who participated for partial course credit. We ran 33 all-female and 36 all-male dyads, which resulted in a total of 138 participants. Participants were recruited from the university participant pool, which is typically composed of about 84% European Americans, 6% Asian Americans, 4% African Americans, 4% Latino/a Americans, and 2% others; most are between 18- and 19-years old.

Procedure

Two participants who did not know each other were scheduled for a dyadic interaction. When both participants arrived in the waiting area, they were asked to sign the informed consent form and subsequently guided into the laboratory where they sat face-to-face and completed two personality dominance questionnaires. After completing the questionnaires, participants were separated for the instructions concerning a subsequent interaction in which they would be asked to take on the role of the owner of an Art Gallery (dominant) or the role of the assistant to the owner (subordinate).[6] Both participants heard the same instructions from an audiotape and could also read the instructions on a sheet of paper:

> You will perform two tasks, and in the following section you will find the instructions for the first task. The instructions for the second part will be given later. You will be engaged in an interaction where you can choose to take on the role of the owner of an Art Gallery or choose to take on the role of the assistant to the owner. As an owner of an Art Gallery you represent the Gallery and are responsible for the Gallery's good reputation. Therefore you tell the assistant, whom you hired, what kind of work you would like him/her to do for you and how you would like it to be done. As an assistant to the owner of an Art Gallery, you work together with your boss and try to fulfill the job requirements he/she has. Concerning your first task, let's suppose that your Art Gallery participates in a nationwide contest of "Selecting the Best Art Galleries," based on a presentation by the two of you. This presentation consists of a 2-min speech about a selected piece of art. You will have 8 min to plan and prepare the presentation together and will be handed a sheet of paper with some hints about what points should be mentioned in such a presentation. As we are also interested in the process of preparing the presentation, the 8-min preparation phase as well as the 2-min talk, given by the two of you, will be videotaped. During the 8-min preparation phase, it is important that you work together and that the owner decides what contributions of the assistant he/she wants to incorporate in the presentation. The evaluation of the Art Gallery is based on the 2-min presentation only, and the owner has the final responsibility about its quality. At the end of the first task, the owner will be asked to evaluate the partner's qualities as an assistant. Now, before we start, think about which role you would prefer. Would you like to be the owner of the Art Gallery or

[6] We adapted this assigned dominance manipulation from a study by Hall et al. (2002) and changed the specifics according to our needs. We chose this "art gallery task" because we wanted to minimize competence differences in participants because topic familiarity has been shown to influence dominance behavior (Fallon & Guo, 1994). In our study, competence differences could have influenced dominance preference. However, because roles were randomly assigned to participants, this would not have systematically biased the results.

> the assistant to the owner? Before you decide, try to imagine how comfortable you would feel being the owner or the assistant. Please choose your role now.

After having indicated their preference on the instruction sheet, participants were informed that the roles would be allocated to them randomly by flipping a coin[7] and were asked not to discuss their role preference with their interaction partner. Participants were then brought together again, and a coin flip decided who would take on the owner role (dominant role) and who would take on the assistant role (subordinate role).

Participants engaged in a first interaction in which they prepared the presentation of a painting by Marc Chagall (*The Red Horse*, 1938/1944). This interaction lasted 8 min and was videotaped. After the subsequent 2-min presentation, the owner evaluated the assistant with regard to his or her qualities as an assistant.

The same participants engaged in a second interaction, in which they remained in their roles and had to come to a consensus about exhibiting a painting in the Art Gallery. Prior to the interaction, each participant separately chose from the same variety of 14 paintings the one he or she wanted to exhibit in the Art Gallery. If both chose the same painting, the experimenter would have them choose again (this happened in four cases; in one case, participants had to choose three times until they both selected a different painting). Participants were then brought together again and asked to debate during 8 min which one of the two paintings in question should be selected to exhibit in the Art Gallery. Again, this interaction was videotaped. In the end, participants were asked about how dominant they felt during the interactions, then debriefed, and thanked for their participation.

Measures

Trait Dominance

Trait dominance was assessed with two self-report measures: the "Control Expressed scale" of the FIRO-B (Schutz, 1958), which consists of 9 items on a Guttman scale, and a second questionnaire that contained 6 California Psychological Inventory (CPI) dominance items (Gough, 1975) and 4 additional items created by the researchers for this study. On a scale from 1 (*I don't agree*) to 6 (*I strongly agree*), participants indicated how much they agreed with each questionnaire statement. Five items on the second questionnaire were reverse scored. Sample items were "I like to give orders and get things moving" (item from the CPI dominance) or "I feel more comfortable if someone else is in charge" (reversed scored, item generated by researchers). Internal consistency of the measure was Cronbach $\alpha = .77$. The FIRO-B and the second questionnaire were highly correlated, $r(138) = .54$, $p < .0001$, and we therefore combined the two by z-transforming and averaging them to obtain a composite trait dominance measure hereafter referred to as trait dominance.

Dominance Preference

After learning exactly what the dominant role (owner) and the subordinate role (assistant) entailed, participants indicated which role they wanted to be in prior to the interaction.[8] We assumed that dominance preference would be highly related to trait dominance. Nevertheless, situational factors such as gender of the interaction partner (Megargee, 1969; Nyquist & Spence, 1986) or familiarity with the interaction partner (Moskowitz, 1988) can influence how much of their trait dominance becomes apparent in behavior, and most likely also which role they prefer. Dominance preference therefore stands for the situation-specific manifestation of trait dominance.

Assigned Dominance

Regardless of the indicated dominance preference, the dominant and subordinate roles were randomly assigned to participants by flipping a coin. This procedure ensured that the assigned dominance was independent of trait dominance, which is important because if participants think that assigned dominance is somehow a reflection of their trait dominance, they might adapt their dominance behavior to match what they perceive as experimenter feedback about their trait dominance rather than according to their "real" level of trait dominance.

[7] The idea of combining wished for dominance positions with randomly assigned dominance positions stems from Schmid Mast and Bischof (1999).

[8] Of the 138 participants, 76 indicated that they preferred the assistant role and 62 indicated that they preferred the owner role.

Smiling

On the basis of the videotaped interactions, coders counted how many times a participant smiled during the entire 8-min period of the first and the second videotaped interaction (16 min altogether). Smiling was coded for each participant separately (the half of the screen that showed the interaction partner was covered up). Coders were instructed to code a smile each time they "saw" a smile regardless of whether the person was listening or speaking and regardless of whether there was a vocalization accompanying the smile (therefore laughter was included).[9] In fact, no other instruction or definition was needed because coders readily agreed on what was a smile and what was not a smile ($r = .92$, reached by the two coders on coding smiling in an unrelated dataset). Each of the two coders coded half of all the interactions. Coders were undergraduates working as research assistants in the lab.

Perceived Dominance

We used three trained coders (average $r = .79$, reached on coding a subset of 20 participants) to assess perceived dominance. On the basis of the videotaped interactions, coders rated each participant on dominance on a scale from 1 (*low in dominance*) to 6 (*high in dominance*) after each minute of the entire first and second interaction. Within session, ratings did not differ much over time, therefore we averaged them. The ratings of the participants that all three coders rated to establish reliability were averaged, and each coder rated about one-third of the remaining interactions. Coders were undergraduates working as research assistant in the lab and were not the same people who coded smiling.

Dominance for each individual was assessed while the interaction partner was visible. Coders were given the following behavioral description of a person high in dominance (adapted from Kiesler, 1984): "Is quick to take charge of the conversation or discussion, or to offer suggestions about what needs to be done; dominates the flow of conversation, or changes topic, or interrupts and 'talks down'; expresses firm, strong personal preferences, or stands up for own opinions or positions; states preferences, opinions, or positions in a dogmatic or unyielding manner; seizes opportunities to instruct or explain things, or to give advice; overwhelms or 'steamrolls' the partner by his/her arguments, positions, preferences, or actions." The behavioral description of a person low in dominance read as follows: "Waits for or follows the partner's lead regarding topics or issues to discus, directions or actions to pursue; finds it almost impossible to take the lead, or to initiate or change the topic of discussion; claims he/she doesn't have an opinion, preference, or position, or that 'it doesn't matter,' 'whatever you want,' 'I don't know,' etc.; expresses own preferences hesitantly or weakly, or yields easily to the partner's viewpoints, or backs down quickly when the partner questions or disagrees; is quick to agree with the partner's opinions or to comply with the partner's directions or preferences; seems unable to assert what he/she wants, or to stand up to the partner, or to take any opposing position."

Felt Dominance

A postexperimental questionnaire contained items that concerned how much dominance participants felt during the interactions (felt dominance). Felt dominance was assessed with nine items (five reversed) on a scale from 1 (*I don't agree*) to 6 (*I strongly agree*). A sample item is "I felt that I was the dominant one in the interaction." Internal consistency for felt dominance was $\alpha = .77$. We used felt dominance as a manipulation check for the assigned roles, and we expected owners to feel more dominant than assistants in their roles, which is what we found, $t(136) = 4.98$, $p < .0001$ (M owners $= 4.15$ vs. M assistants $= 3.50$).

RESULTS

Perceived dominance ratings for the first and the second interaction were highly correlated, $r(69) = .73$, $p < .0001$ and $r(69) = .71$, $p < .0001$ (assigned assistants and assigned owners, respectively), and so was smiling for the first and second interaction, $r(69) = .78$, $p < .0001$ and $r(69) = .70$, $p < .0001$ (assigned assistants and assigned owners, respectively). This and the fact that the results for the first and the second interaction did not differ from each other with respect to our research focus led us to pool the variables across the two interactions by averaging them. All reported significance tests are two-tailed. To provide the reader

[9] We could not code different types of smiles (e.g., Duchenne and non-Duchenne smiles) because the quality of the videotape was not good enough.

Table I. Correlations Between Dominance and Smiling Broken Down by the Two Classes of Moderators (Gender, Dominance Measure)

	Women		Men	
Dominance measure	Assistants	Owners	Assistants	Owners
Assigned dominance	.10		−.15	
Dominance preference	−.53***[a,b]	−.10	.05	−.03
Trait dominance	−.31†[c]	−.30†[c]	.16	.16
Perceived dominance	−.37*[d]	−.24[c]	.49**[e]	.21
Felt dominance	−.19	−.20	.07	.09

Note. Women assistants/women owners: $N = 33$; men assistants/men owners: $N = 36$. The relation between dominance preference and smiling is expressed as a point-biserial correlation with preferred owner coded as 1 and preferred assistant coded as 0. The relation between assigned dominance and smiling is expressed as a point-biserial correlation with assigned owner coded as 1 and assigned assistant coded as 0 (N for women = 66; N for men = 72). Other entries in the table are zero-order Pearson correlations between the named dominance variable and smiling.
[a]Men's and women's correlations differ at $p < .05$.
[b]Assistants' and owners' correlations differ at $p < .05$.
[c]Men's and women's correlations differ at $p < .10$.
[d]Men's and women's correlations differ at $p < .001$.
[e]Assistants' and owners' correlations differ at $p < .10$.
$^{*}p < .05$. $^{**}p < .01$. $^{\dagger}p < .10$.

with an idea of the magnitude of the effects found, we systematically report the effect size r (Rosenthal & Rosnow, 1991).

Relation Between Dominance and Smiling: Main Effects

The dominance–smiling hypothesis posits a negative relation between smiling and dominance. We first calculated the dominance–smiling relations for all of our dominance measures without taking into account gender of the dyad and whether a person was in the assistant or owner role. Because assistants and owners were not independent of each other, we averaged smiling, dominance preference, trait dominance, perceived dominance, and felt dominance between the assistant and the owner in each dyad. Therefore, the main effect analyses are based on dyads ($N = 69$). Only for the relation between assigned dominance and smiling did we calculate the correlation based on an N of 138. There was a marginally significant negative relation between smiling and dominance preference, $r(67) = -.21$, $p = .091$. No relation between smiling and any of the other dominance variables emerged: trait dominance, $r(67) = -.08$, $p > .10$, perceived dominance, $r(67) = .10$, $p > .10$, felt dominance, $r(67) = -.07$, $p > .10$, and assigned dominance, $r(136) = -.03$, $p > .10$. We looked at moderators because we wanted to discover whether these null results (with the exception of dominance preference) conceal actually existing dominance–smiling relations.

Relation Between Dominance and Smiling: Gender and Type of Dominance Measure as Moderators

Table I shows the association between dominance and smiling for assigned dominance, dominance preference, trait dominance, perceived dominance, and felt dominance separately for assistants and owners and separately for women and men. It can be seen that assigned dominance did not affect how much participants smiled. Also, Table I shows that gender clearly was a moderator: The dominance–smiling relation for dominance preference, trait dominance, and perceived dominance all showed a significant gender difference (for dominance preference only in the assistant role). Overall, there was a negative association between dominance and smiling for women, whereas for men, there was no relation with the exception of perceived dominance for which the association was positive. It can also be seen that the assigned role is not much of a moderator except for dominance preference, where for women assistants there was a significantly more pronounced negative relation between smiling and dominance preference than for women owners, $r = -.53$ versus $r = -.10$; $Z = 1.96$, $p < .05$, and for perceived dominance, where for men assistants there was a marginally significantly more pronounced positive relation than for men owners, $r = .49$ versus $r = .21$; $Z = 1.74$, $p < .10$.[10] In all other cases, the

[10]These comparisons took the nonindependence of owners and assistants into account. We applied the formula for nonindependent

Table II. Intercorrelations Among Dominance Measures

	Dominance measures			
Dominance measures	Dominance preference	Trait dominance	Perceived dominance	Felt dominance
Dominance preference	—	.47**/.37*	.32†/.31†	.31†/.09
Trait dominance	.53**/.33*	—	.33†/.37*	.15/.43**
Perceived dominance	−.02/.34*	.09/.05	—	.18/.22
Felt dominance	.26/.47**	.43*/.40*	−.10/.03	—

Note. Entries above the diagonal are correlations for assigned assistants and entries below the diagonal are correlations for assigned owners. First entry in each cell is the correlation for women, $N = 33$, and second entry in each cell is the correlation for men, $N = 36$. Dominance preference was coded as preferred owner = 1 and preferred assistant = 0.
* $p < .05$. ** $p < .01$. † $p < .10$.

assigned role did not make a difference. The kind of dominance being measured was also a moderator because felt dominance did not show any relation with smiling, whereas perceived dominance, for instance, did.

Of course, the dominance measures were not independent from each other, and Table II shows the interrelations among them. As expected, trait dominance and dominance preference were the most highly associated. To disentangle whether dominance preference or trait dominance was the more decisive variable in the negative association with smiling in women assistants (Table I), we calculated partial correlations. We controlled for the influence of trait dominance on the relation between dominance preference and smiling by partialling out trait dominance. The significant relation between dominance preference and smiling in women assistants prevailed, $pr(30) = -.46$, $p < .008$. We then controlled for the influence of dominance preference on the relation between trait dominance and smiling by partialling out dominance preference. The marginally significant correlations dropped to nonsignificant for assigned female assistants, $pr(30) = -.08$, $p > .10$. This means that dominance preference is guided somewhat by trait dominance, but its relation with smiling was independent from trait dominance.

Perceived dominance showed different relations to smiling depending on the gender of the target. Perceived dominance was negatively related to smiling for assigned female assistants, $r = -.37$, and positively related to smiling for assigned male assistants, $r = .49$ (Table I). The men's and women's correlations were significantly different from each other, $Z = 3.66$, $p < .001$. The same gender difference, which was marginally significant, $Z = 1.82$, $p < .10$, emerged for the relation between perceived dominance and smiling for assigned owners ($r = -.24$ for women and $r = .21$ for men). As can be seen in Table II, perceived dominance and trait dominance were significantly correlated for assistants. It might be the case that perceivers can assess trait dominance correctly, and because smiling is related to trait dominance, the perceived dominance with smiling correlation is a restatement of the trait dominance with smiling correlation. To test for this, we correlated smiling with perceived dominance, controlled for trait dominance, and found that the correlations did not change either for female assistants, $pr(30) = -.30$, $p < .10$ (compared to $r = -.37$, Table I) or for male assistants, $pr(33) = .48$, $p < .01$ (compared to $r = .49$, Table I).[11]

No significant association between felt dominance and smiling emerged, neither for assigned assistants nor for assigned owners, regardless of gender of the dyad (Table I).

A Closer Look at Smiling as a Function of Gender, Assigned Dominance, and Dominance Preference

For dominance preference, Table I shows that only for women in the assistant role was smiling related to their dominance preference; women smiled more if they initially wanted to be the assistant than if they initially wanted to be the owner. To explore further how much women and men in the assistant and owner roles with either the initial wish for the assistant or owner roles actually smiled, we calculated

and nonoverlapping correlations (Raghunathan, Rosenthal, & Rubin, 1996).

[11] The same picture emerged when we correlated smiling with perceived dominance and controlled for dominance preference: female assistants, $pr(30) = -.25$, $p > .10$ (compared to $r = -.37$), female owners, $pr(30) = -.24$, $p > .10$ (compared to $r = -.24$), male assistants, $pr(33) = .50$, $p < .01$ (compared to $r = .49$), male owners, $pr(33) = .23$, $p > .10$ (compared to $r = .21$).

two 2 × 2 ANOVAs with dominance preference and gender of the dyad as independent variables and smiling as the dependent variable for assigned owners and assigned assistants separately.

For assigned assistants, we found a significant gender main effect, $F(1, 65) = 12.36$, $p = .0008$, effect size $r = .40$, which indicated that women smiled more ($M = 15.38$) than men ($M = 10.08$). Also, there was a significant dominance preference main effect, $F(1, 65) = 5.09$, $p = .027$, effect size $r = .30$, which showed that assistants who preferred to be the assistant smiled more ($M = 14.56$) than assistants who preferred to be the owner ($M = 10.83$). There was also a significant interaction effect (dominance preference × gender), $F(1, 65) = 7.16$, $p = .009$, effect size $r = .31$ (Fig. 1, top). Simple main effects analyses showed that for women, assistants who wanted to be the assistant smiled more than assistants who wanted to be the owner, $t(65) = 3.43$, $p < .001$, effect size $r = .39$, although for men there was no such difference, $t(65) = 0.30$, $p > .50$, effect size $r = .04$ (Fig. 1, top). In fact, both main effects and the interaction effect were driven by female assistants who wished to be assistant, who smiled more ($M = 18.58$) than anyone else in the assistant role ($M = 11.53$, $M = 9.73$, $M = 10.33$, female assistants who wanted to be owner, male assistants who wanted to be assistant, and male assistants who wanted to be owner, respectively), contrast $t(65) = 5.15$, $p < .000005$, $r = .54$ (Fig. 1, top).

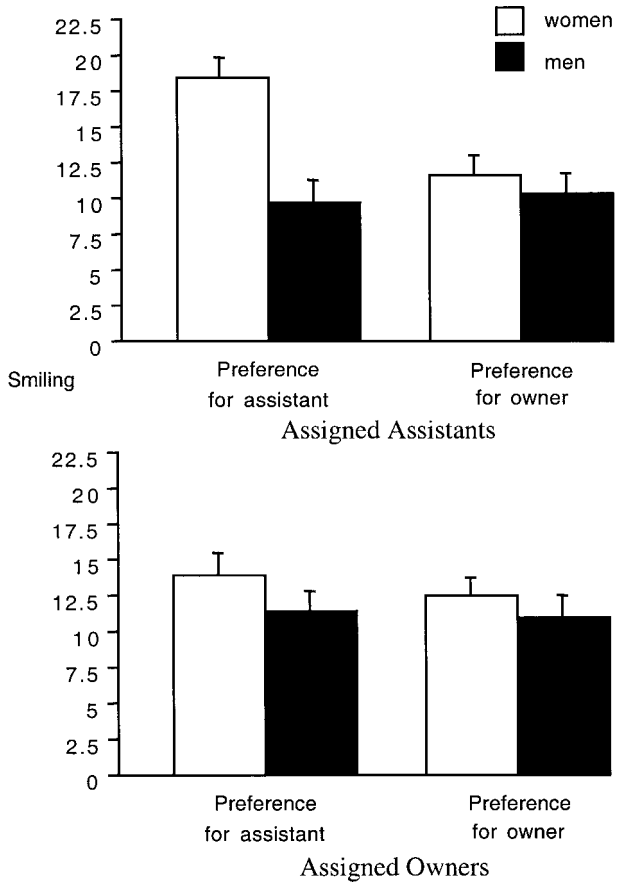

Fig. 1. Mean frequency of smiling as a function of gender, assigned dominance, and dominance preference.

For assigned owners, the main effects for gender and dominance preference were not significant, $F(1, 65) = 0.29$, $p = .59$, effect size $r = .07$, and $F(1, 65) = 1.63$, $p = .21$, effect size $r = .16$, respectively, nor was their interaction, $F(1, 65) = 0.09$, $p = .77$, effect size $r = .04$ (Fig. 1, bottom, $M = 13.87$, $M = 12.55$, $M = 11.38$, $M = 11.00$, female owners who wanted to be assistant, female owners who wanted to be owner, male owners who wanted to be assistant, male owners who wanted to be owner, respectively).

To ensure that the results for assigned owners and assigned assistants were significantly different from each other, we conducted a 2 (gender) × 2 (assistant's preference) × 2 (owner's preference) × 2 (assigned dominance role) mixed-model ANOVA with assigned dominance role as the repeated measure variable and smiling as the dependent variable. Because owners and assistants interacted with each other and therefore their smiling was not independent from each other, the repeated measure approach was used to take this nonindependence into account. If the interaction effects involving assigned dominance role are significant, then this indicates that the picture of results reported for owners is indeed different from the one reported for assistants. There were five significant effects (all other Fs < 2.57, $p > .10$). There was a significant gender main effect, $F(1, 61) = 4.64$, $p < .05$, effect size $r = .27$, that indicated that women smiled more ($M = 14.42$) than men ($M = 10.62$), and a significant assistant's preference main effect, $F(1, 61) = 4.32$, $p < .05$, effect size $r = .26$, that indicated that dyads with an assistant who initially chose the assistant role smiled more ($M = 13.51$) than dyads with an assistant who initially chose the owner role ($M = 11.15$). Also, there was an assigned dominance × assistant's preference interaction effect, $F(1, 61) = 4.21$, $p < .05$, effect size $r = .25$, an assigned dominance × assistant's preference × gender interaction effect, $F(1, 61) = 8.80$, $p < .01$, effect size $r = .36$, and an assigned dominance × assistant's preference × owner's preference interaction effect, $F(1, 61) = 5.51$, $p < .05$, effect size $r = .29$. The

Table III. Gender Differences in Smiling and Different Dominance Measures

	M Male dyads	*M* Female dyads	*t*	*p*	*r* Effect size
Smiling	10.65	14.42	−2.86	.006	−.33
Dominance preference	1.50	1.40	1.60	.12	.19
Trait dominance	4.01	3.76	2.13	.04	.25
Perceived dominance	3.08	3.10	−0.10	.92	−.01
Felt dominance	3.93	3.72	1.80	.08	.21

Note. $df = 67$.

significant interaction effects involving assigned dominance make it clear that the pattern of results for assistants was indeed different from the pattern of results for owners (Fig. 1).

Gender Difference Main Effects

We also looked at gender differences for smiling and different measures of dominance. We averaged smiling, dominance preference, trait dominance, perceived dominance, and felt dominance within dyads because assistants and owners were not independent of each other. Table III shows that women smiled more than men, that there was no gender difference in dominance preference, that men were more trait dominant than women, that men and women were perceived as equally dominant, and that men felt marginally more dominant than women. We had 33 all-women dyads and 36 all-male dyads, and in each there was an assigned owner and an assigned assistant, so there was no gender difference in assigned dominance.

DISCUSSION

The goal of the present research was to identify variables that moderate the relation between smiling and dominance with an emphasis on gender and different measures of dominance. We found that gender and the type of dominance measure moderated the dominance–smiling relation.

Smiling and Dominance Main Effects

A simple examination of whether assigned dominance is related to smiling is the kind of main effect analysis that is likely to hide moderators. Indeed, we found that being assigned a dominant or subordinate position did not affect how much participants smiled. This finding is in accordance with other research described earlier, and it contradicts Henley's hypothesis that smiling is characteristic of low dominance individuals but not of high dominance individuals (Henley, 1977; Henley & LaFrance, 1984). Moreover, there was no overall relation between smiling and trait dominance, perceived dominance, or felt dominance, and only a marginally significant negative relation between smiling and dominance preference.

Assigned Dominance, Dominance Preference, and Gender

Assigned dominance showed an interesting interaction effect with dominance preference and gender. Preference for a high or low dominance position was (negatively) related to smiling in women assistants only, and this relation held true even when we controlled for trait dominance. The latter finding means that dominance preference includes more than just trait dominance. Situational factors such as the topic to discuss (Fallon & Guo, 1994) or the gender of the interaction partner (Megargee, 1969; Nyquist & Spence, 1986) among others, likely influence whether people wish to be in a dominant or in a subordinate position. Dominance preference indeed seems to be the situation-specific manifestation of trait dominance. In women, trait dominance was marginally associated with smiling, but this relation could be fully explained by dominance preference. Although it is very plausible that people behave differently in assigned roles according to whether they wanted the role or not, the wish to be in a dominant or subordinate position is new in research on assigned dominance roles.

Smiling and Perceived Dominance

As for perceived dominance, smiling more was seen as a sign of lower dominance in women, whereas smiling more was seen as a sign of higher dominance in men. This finding may explain why in a study where women and men are grouped together a relation between smiling and being viewed as dominant may not emerge (Deutsch et al., 1987). It is interesting that controlling for trait dominance (and

dominance preference) did not change these relations. The results for perceived dominance might indicate that observers hold different stereotypes about the dominance–smiling relation in women and men. They may see smiling as a reflection of self-confidence (therefore dominance) in men, but assume that smiling in women means something else; this reflects the stereotypic associations between women's behavior and weakness. Also, smiling may have been associated with different additional behaviors in men and in women. For example, when women smiled, they might have shown deferent behaviors on top of smiling, whereas when men smiled, they might have shown dominant behaviors on top of smiling, and perceivers could have picked up on those additional cues. Alternatively, because, in general, women smile more than men, smiling in men might have been perceived as counterstereotypical, and observers could have concluded that only dominant men can afford to behave counterstereotypically. The finding for male targets also stands in striking contrast to Henley's original theory (Henley, 1977) and to empirical evidence that smiling and perceived dominance are negatively related (Halberstadt & Saitta, 1987; Keating et al., 1981). In comparison to these latter studies that used photographs, our study involved people in a much more ecologically representative setting (videotaped dyadic interaction), where smiling was not presented in isolation but as a naturalistic cue embedded in an array of multiple behaviors. Judgments of photographs might be more prone simply to reflect a stereotypical belief—the dominance–smiling hypothesis—than judgments of real interactions might. Burgoon and Le Poire (1999), whose study was also based on naturalistic interaction, also found a positive relation between smiling and perceived dominance, but they did not report results separately for male and female targets.

The Effect of Felt Dominance

The fact that, overall, no statistically significant relation between feeling dominant and smiling was found replicates the finding of Hall et al. (2002). However, Deutsch (1990) reported a marginally negative relation between feeling dominant and smiling in one group.

The Group for Which the Dominance–Smiling Hypothesis Holds True

The supposed negative relation between dominance and smiling was almost exclusively apparent for one particular group: women in subordinate positions (marginally so also for women in dominant positions with respect to trait dominance). For women in a subordinate position, dominance preference made a difference in how much they smiled. Also, for them, and only for them, the less they smiled the more they were perceived as dominant. The finding is comparable to Frances' result of a positive relation between smiling and deference as a trait in women only (Frances, 1979). Could it have happened that the dominance–smiling hypothesis was developed with this particular group (low dominance women) in mind and then erroneously generalized to everybody and all possible situations? Given the fact that women are overrepresented in low dominance positions in society and that fewer women than men strive for high dominance positions (Eagly, Karau, Miner, & Johnson, 1994), women in low dominance positions who want to be there might be the prototypical reference group we think of when we think of the relation between dominance and smiling. These women indeed smiled more than anybody else in our study. There are many possible explanations as to why this particular group smiled so much (or why the other groups did not smile as much), and future researchers will have to try to sort them out. One explanation might be a simple synergistic effect of having a subordinate motivation (preference for the assistant role) combined with a subordinate opportunity (assignment of assistant role) but only for women, which would fit with the negative relation between perceived dominance and smiling we found for women only.

Limitations and Future Perspectives

The present results suggest interesting new perspectives on the question of how smiling is related to dominance. Our study, however, is only a first step in uncovering the influence of moderators on the dominance–smiling relation, and future researchers should explore additional potential moderators. We have, for instance, not looked at how different operationalizations of smiling or different types of smiles (e.g., Duchenne vs. non-Duchenne smiles) could affect the dominance–smiling relation, though in Hecht and LaFrance (1998) the relation of assigned dominance to smiling did not differ between Duchenne and non-Duchenne smiles. We measured frequency of smiling because most of the previous studies used this same operationalization (e.g., Deutsch, 1990; Dovidio et al., 1988; Hall & Friedman, 1999; Johnson, 1994)

but, of course, we do not know whether the results would have come out differently if duration of smiles was assessed. Moreover, people's perception of how much power is related to a high dominance position might be domain-specific. Because art is a more female-typical domain, being owner of an art gallery might be less attractive and therefore symbolize less power for men than for women. Therefore, being assigned owner of an art gallery might be a higher dominance position for women than for men. We do not have any indication that this was the case in our study; on the contrary, male owners felt marginally more dominant than female owners. However, future researchers might want to test whether the gender typicality of the manipulated dominance positions might function as yet another moderator of the dominance–smiling relation.

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