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A Meta-Analytic Review of Gender Variations in Adults' Language Use: Talkativeness, Affiliative Speech, and Assertive Speech

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*Three separate sets of meta-analyses were conducted of studies testing for gender differences in adults' talkativeness, affiliative speech, and assertive speech. Across independent samples, statistically significant but negligible average effects sizes were obtained with all three language constructs: Contrary to the prediction, men were more talkative (*d *= –.14) than were women. As expected, men used more assertive speech (*d *= .09), whereas women used more affiliative speech (*d *= .12). In addition, 17 moderator variables were tested that included aspects of the interactive context (e.g., familiarity, gender composition, activity), measurement qualities (e.g., operational definition, observation length), and publication characteristics (e.g., author gender, publication source). Depending on particular moderators, more meaningful effect sizes (*d *> .2) occurred for each language construct. In addition, the direction of some gender differences was significantly reversed under particular conditions. The results are interpreted in relation to social-constructionist, socialization, and biological interpretations of gender-related variations in social behavior.*

Keywords: *communication; constructivism; conversation; feminism; human sex differences; interpersonal interaction; language; meta-analysis; sex roles; socialization*

The study of language in the construction and maintenance of gender divisions emerged as an active research topic during the past three decades. In 1975, the number of relevant studies was small enough for Thorne and Henley (1975) to summarize all of them in an annotated bibliography. Interest in the relation between language and gender has since greatly expanded across the social sciences. There have been narrative reviews of the research in the fields of social psychology (e.g., Aries, 1996), developmental psychology (e.g., Leaper, 1994), education (Swann, 1992), linguistics (e.g., Talbot, 1998), communications (Dindia & Canary, 2006), sociology (e.g., West & Zimmerman, 1985), anthropology (e.g., Maltz & Borker, 1982), and feminist studies (e.g., Crawford, 1995). A textbook on gender and language is now in its seventh edition (J. T. Wood, 2007), and a handbook on language and gender research was recently published (Holmes & Meyerhoff, 2003). Moreover, books aimed at the general public on gender and language style have been best-sellers (e.g., Tannen, 1990).

Studying language may be especially fruitful when examining ways that gender is negotiated and defined in social interactions (Graddol & Swann, 1989). In general, researchers have suggested that women are more likely than men to use language to form and maintain connections with others (i.e., affiliation), whereas men are more likely to use language to assert dominance and to achieve

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utilitarian goals (i.e., self-assertion).[1] However, there is considerable debate regarding the magnitude of observed gender differences as well as the types of conditions under which gender differences are most likely to occur. Meta-analytic reviews of the literature can be helpful in clarifying overall trends and possible moderators.

Gender Differences in Language Use: Talkativeness, Affiliative Speech, and Assertive Speech

First, we will review the current literature on gender differences in talkativeness, affiliative speech, and assertive speech. Afterwards, we will contrast different metatheoretical approaches that seek to explain gender variations in language use. Finally, the possible influences of moderators will be considered.

Talkativeness

In our first meta-analysis, we test the popular stereotype that women are more talkative than men (see James & Drakich, 1993). This view reflects the traditional notions that women are expressive and affiliative whereas men are stoic and independent. Three prior meta-analyses provide some support for this premise. First, in their meta-analysis of gender effects on verbal ability across the lifespan, Hyde and Linn (1988) indicated a positive effect size (d = .33) favoring females over males in tests of verbal production. The studies in the meta-analysis were based mostly on formal tests of language ability rather than observations of actual conversations. Also, the authors did not consider possible contextual moderators of gender differences in verbal production.

Second, in a recent meta-analysis of gender-related variations in children's language use, Leaper and Smith (2004) reported that girls tended to be more talkative than did boys (d = .11). When the child's age was taken into account, however, significant gender differences in talkativeness were only seen among the 1- to 2 ½-year-olds (d = .32). This may have been due to the tendency for language development to occur earlier in girls than boys (Gleason & Ely, 2002). In addition, various contextual and methodological factors significantly moderated the likelihood and magnitude of gender differences.

The third meta-analysis suggesting that women may be more talkative than men was by Leaper, Anderson, and Sanders (1998). They examined studies comparing mothers' and fathers' speech to their children and found that mothers were more talkative with their children than were fathers (d = .26). When aspects of the interactive context were taken into account, Leaper and his co-authors found that differences between mothers' and fathers' talkativeness occurred during relatively unstructured activities not assigned by the researcher (d = .30), but there was no parent gender difference during assigned problem-solving activities (d = .00). Thus, the likelihood of gender differences in talkativeness may depend on the situation.

In contrast to the previously reviewed meta-analyses, an older meta-analysis (Hall, 1984) and a narrative review (James & Drakich, 1993) reached a different conclusion about gender differences in talkativeness. They deduced that most studies of adult conversation contradict the notion that women are more talkative than men. Instead, relatively more studies indicated men were more talkative than were women. Also, this pattern appeared especially likely in mixed-gender groups pursuing specific instrumental goals. Conversely, gender differences in talkativeness appeared least likely during informal non-task-oriented contexts. However, the Leaper et al. (1998) meta-analysis of parents' speech indicated mothers were more talkative than fathers during unstructured than structured settings. Thus, both the relationship between the conversational partners as well as the activity structure may influence the direction and the magnitude of gender differences in language behavior. Possible moderators of gender differences in language use are more fully addressed later in the introduction.

Affiliative and Assertive Speech

Besides differences in talkativeness, researchers have described average differences in how women and men use words to communicate. In this regard, we distinguish between affiliative and assertive speech.[2] Affiliative language functions to affirm or positively engage the other person. Examples include showing support, expressing agreement, and acknowledging the other's contributions. Assertive language functions to advance one's personal agency in a situation. It includes directive statements, giving information, and disagreeing with or criticizing the other's contributions. Average gender differences in the uses of these language functions have been interpreted as manifestations of traditional gender divisions in society (e.g., Graddol & Swann, 1989; Leaper & Smith, 2004). As proposed, men's dominant status in society and their traditional task orientation are enacted through their use of self-assertive language strategies such as directive and instrumental speech. Women's relatively subordinate status as well as their traditional caregiver role is expressed through their use of affiliative language strategies such as showing support and agreement. Therefore, we tested if studies generally indicated, first, greater use of affiliative speech among women than men and, second, greater use of assertive speech among men than women.

Gender-related variations in affiliative and assertive language have been highlighted in prior narrative reviews of the research literature (e.g., Aries, 1996). In addition, Leaper and Smith's (2004) meta-analysis of children's language found that on the average, girls used more affiliative speech and boys used more assertive speech. A parallel pattern emerged in Leaper et al.'s (1998) meta-analysis of parents' speech to their children: Mothers used more affiliative speech and less assertive speech than did fathers. It is unclear, however, if similar patterns would be seen in interactions *between* adults. In one related meta-analysis, Roter, Hall, and Aoki (2002) reported that female physicians were more likely than male physicians to use affiliative communication (e.g., positive and emotion-focused talk). Other reviewers have attempted to summarize the average gender difference across studies. For instance, L. R. Anderson and Blanchard (1982) indicated that men tended to use certain forms of assertive communication ("active task behavior") more than did women, whereas women tended to use some forms of affiliative communication ("positive social-emotional behavior") more than did men. However, the average difference for both forms was less than 10% of total communicative acts. Other reviewers have highlighted the role of situational factors as moderators of gender differences in social interaction (e.g., Aries, 1996, 1998; Deaux & Major, 1987; Eagly, 1987; LaFrance, Hecht, & Paluck, 2003; Leaper et al., 1998; Leaper & Smith, 2004; Ridgeway & Smith-Lovin, 1999). Before addressing the issue of potential moderators in more depth, it will be helpful to review different meta-theoretical explanations for gender differences in social interaction.

Explanations for Gender Variations in Language Use

There are three major explanations for gender differences in language. They differ in how much weight is assigned to socialization, situational demands, or biological predisposition. These explanations are often viewed as complementary (e.g., see Leaper, 2000b; Leaper & Friedman, 2007; Ruble, Martin, & Berenbaum, 2006; W. Wood & Eagly, 2002). However, researchers tend to adopt particular schools of thought that emphasize the importance of one approach over others.

Two of these paradigms emphasize the influences of social factors. The *socialization* explanation stresses the cumulative influences of children's participation in gender-typed activities and their involvement in gender-segregated peer groups (e.g., see Leaper, 1994, 2000b; Maccoby, 1998; Maltz & Borker, 1982; Thorne, 1993, for reviews). According to this view, gender-segregated peer groups lead girls and boys to establish and maintain different norms, social identities, and preferences. This includes the development of gender differences in affiliation and assertion. Girls' affiliative concerns and behaviors are fostered through their greater participation in dyadic interactions involving cooperative social-dramatic activities, whereas boys' self-assertive interests and behaviors are promoted through their greater participation in solitary play as well as group interactions involving competitive or instrumental goals. Consequently, Maltz and Borker (1982) proposed that girls learn to use their words to create and maintain closeness with others through supportive and inclusive forms of speech. In contrast, the authors argued that boys learn to use their words to assert their position of dominance in relation to others through commands and challenging statements. Maltz and Borker further argued that gender differences in language use during childhood parallel observed gender differences in adulthood.

A second type of explanation for gender differences is the *social constructionist* (or contextualist) approach. Researchers guided by this paradigm emphasize the impact of interactive context rather than individual factors (Beall, 1993; Deaux & Major, 1987; Eagly, Wood, & Diekman, 2000; Leaper, 2000b). According to the social constructionist approach, women and men act differently because of the demand characteristics of the situation. One aspect of the situation considered especially important is men's greater status and power in society (see Hall, 2006a; Henley, 1977, 2001). For example, men may be more likely than women to dominate social interaction through higher rates of self-assertive speech; conversely, women may be more likely to enact their traditionally subordinate status through higher rates of affiliative speech. Accordingly, gender differences in language behavior should be most likely during mixed-gender interactions when this status effect would be most salient (Carli, 1990). Carli's (1990) research suggests this may be especially likely for gender differences in assertive speech.

In addition, the activity setting is another aspect of the context that may account for observed gender differences in behavior. To the extent that women and men discuss different topics or engage in different activities, there may be corresponding differences in their language style (e.g., see Leaper et al., 1998). In other words, the context may be partly driving what kind of language men and women use. For example, affiliative speech may be more frequent in self-disclosure tasks, whereas task-oriented activities may occasion more assertive speech.

The *biological explanation* is the third type of explanation for gender differences in language use (see Andersen, 2006; Hines, 2004). It is argued that sex-related biological differences have resulted from evolutionary pressures for men to be more aggressive and self-assertive and for women to be more nurturing and affiliative (e.g., Andersen, 2006; Lippa, 2005; Luxen, 2005; Pellegrini & Archer, 2005). A premise underlying this view is that women and men tend to differ in brain organization and functioning. Indeed, some researchers have proposed that women's brains have an advantage for language ability (see Andersen, 2006). Support for this view includes studies indicating a slight advantage for girls over boys in language development and ability. There are also some reports suggesting average sex differences in brain lateralization (e.g., see Gleason & Ely, 2002, for a review). However, the biological explanation is mitigated by Hyde and Linn's (1988) meta-analysis indicating that the magnitude of gender differences across measures of language ability was trivial ($d = .11$) and that the magnitude of gender difference in language abilities has decreased over the years.[3] The biological explanation is further complicated by some findings that men tend to be more talkative than women (Hall, 1984; James & Drakich, 1993) as well as the variability in gender differences in communication style across different situations. Thus, compared to social influences, any biological bases for gender differences in overall language ability may be negligible (Gleason & Ely, 2002) or mitigated by situational factors.

Finally, we wish to note that support for either the socialization or the social constructionist explanations in our analyses would *not* necessarily exclude possible biological influences on gender-related variations in language use. In this regard, it is useful to distinguish between strong and weak biological effects. If sex-linked biological factors account for a large proportion of the variance in language use, then substantive gender differences in language behavior should occur across studies regardless of the year of study or aspects of the interactive context. Few contemporary researchers make such a claim. Instead, biologically oriented researchers investigating gender-related social behaviors generally acknowledge that first, biological predispositions can be altered over time through experience, and second, existing dispositions can be mitigated or overridden by situational demands (e.g., Fitch & Bimonte, 2002; Hines, 2004; Lippa, 2005). These reflect relatively weak biological effects that were not amenable to testing in the present meta-analyses.

Exploring Possible Moderators of Gender Differences in Language Behavior

The tests for moderator variables are the most important and interesting aspects of the meta-analyses. We already know from narrative reviews that there are inconsistent reports of gender differences in language use. Whereas testing for average differences across studies establishes how consistent and strong these trends might be, it is more revealing to understand whether, when, and where these differences occur. Toward this larger goal, we tested 17 moderator variables. These included operational definition, aspects of the interactive context, measurement qualities, and publication characteristics.

Operational Definition

Students in research methods classes commonly learn that how a construct is measured can affect the particular results one finds. Accordingly, we considered different ways that researchers have operationally defined talkativeness, affiliative speech, and assertive speech. Some measures of talkativeness, such as mean length of utterance (MLU) or the average duration of time spoken, may be more sensitive to assessing the relative degrees that different speakers dominate the conversational floor.

There are also variations in specific types of affiliative and assertive speech. Some forms of affiliative speech are simultaneously assertive, for example, as when a person actively shows support or elaborates on another's comment (see Leaper, 1991; Penman, 1980). In contrast, other forms of affiliative speech are relatively passive, for example, as when a person obligingly goes along with the other. Next, there are types of assertive speech that are domineering and emphasize the person's power over the other as, for example, in the use of commands. However, other forms of assertion are less controlling, for example, as with many task-oriented speech acts such as giving information or making suggestions (see Leaper, 1991; Leaper & Smith, 2004; Penman, 1980). Thus, it is potentially interesting to see if the likelihood of gender differences depends on the specific type of affiliative or assertive speech.

Interactive Context

Several aspects of the interactive setting were examined as possible moderators of gender influences on adults' language behavior. Unfortunately, these did not include the socioeconomic or cultural backgrounds of the research participants. The available study samples were predominantly limited to those from middle-class European American backgrounds. The contextual factors that we did investigate included the participants' undergraduate status, the nature of the participants' relationship to one another, the number of persons in the group, the gender composition of the group, whether the researcher was present during the observation, the physical setting, and the activity. Each of these is reviewed below.

Undergraduate status. As often bemoaned in psychology research methods textbooks, our understanding of human behavior is largely based on the study of 19-year-old college students. This concern is pertinent to our meta-analyses because gender relations among young college students may differ from those among older adults. During college, students are often exploring their identities as women and men—and roles for women and men as students are somewhat similar. In contrast, older adults typically have established identities, and their roles as women and men are often differentiated in family and work. Hence, we contrasted studies based on undergraduates versus older samples.

Relationship. We expected that the participants' relationship to one another would be an influential moderator. Prior studies suggest that gender differences are more likely between strangers than between familiar persons. With strangers, gender tends to act as a diffuse status characteristic (W. Wood & Karten, 1986). Also, people tend to be more concerned about presenting themselves in socially desirable ways with strangers (Deaux & Major, 1987). When there were a sufficient number of studies, we also considered particular types of relationships (e.g., friendships, spouses, or partners).

Group size. The number of people participating in a social interaction has been implicated as a potential influence on gender-related differences in social behavior. Dyadic interactions tend to foster more intimacy and reciprocity, whereas larger group interactions may instill more competition (Bales & Borgatta, 1955; Benenson, Nicholson, Waite, Roy, & Simpson, 2001; Leaper, 1994). Therefore, group size was tested as a moderator.

Gender composition. Numerous studies demonstrate that gender-related variations in social behavior often depend on the gender composition of the dyad or group. Some gender differences may tend to emerge when same-gender pairs or groups are compared, whereas other differences may be more likely when women and men are interacting with one another. These two patterns are consistent with the socialization and the constructionist interpretations, respectively (see Carli, 1990). That is, the socialization explanation is supported if the magnitude of any observed gender differences is stronger during same-gender interactions than mixed-gender interactions. If women and men tend to have different social norms, then participants presumably would be more likely to enact those norms with partners from the same gender group. In contrast, confirmation of the social constructionist view is indicated if gender differences are larger during mixed-gender interactions. If gender differences are especially likely in mixed-gender interactions, gender is implicated as a status variable (W. Wood & Karten, 1986).

Researcher's presence. In some studies, the researcher is present while participants are interacting with one another. This may heighten people's self-consciousness and concerns with appearing in socially desirable ways—which for some people could include acting in gender-typed ways (Deaux & Major, 1987). Therefore, gender differences may be more likely when researchers are present while participants are talking. Alternatively, social desirability may lead to the opposite effect; for example, men may act in a more affiliative manner in front of a researcher.

Setting. Earlier, we acknowledged the potential limitation of research samples based on only undergraduate students. A related point is that many studies use university research laboratories to observe behavior. Relatively fewer studies look at people in more naturalistic settings. This may be an important factor, because research labs are unfamiliar situations that can exaggerate people's gender-stereotyped behavior (see Deaux & Major, 1987). Hence, we contrasted studies carried out in research labs versus other settings.

Activity. According to constructionist and contextualist models of gender, the activity is a highly influential moderator of gender-related variations in social behavior (see Deaux & Major, 1987; Leaper, 2000a; Leaper et al., 1998; Leaper & Smith, 2004). To consider activity as a moderator, distinctions were made between studies observing unstructured interactions (e.g., leaving participants in a room to discuss whatever they want) and a variety of structured tasks (e.g., assigned discussion topics, planning, toy play with children). It is unclear if the assignment of gender-typed activities either increases or decreases the magnitude of gender differences. Some studies indicate that gender-typed activities increase participants' concerns about acting in gender-typed ways (e.g., see James & Drakich, 1993). In contrast, other studies suggest that gender-related differences are actually *mediated* through the activity—and that differences in behavior are lessened when women and men are engaged in similar activities (e.g., see Leaper et al., 1998). The former pattern is more compatible with the socialization interpretation, whereasthe latter pattern is more consistent with the socialconstructionist interpretation.

Methodological factors

The meta-analysis also examined some potential methodological factors that may moderate any gender differences in language use. In addition to operational definition, the observational method for recording behavior and the length of observation were two measurement qualities that we examined. For observational method, a distinction was made between audiotape, videotape, and on-site coding. With videotape, the researcher has the advantage of making repeated viewings as well as taking into account the nonverbal context. Therefore, one would expect the use of videotape would be the most reliable method for measuring behavior. However, Fagot and Hagan (1988) offered evidence suggesting live observation may be more accurate than videotape under certain conditions. The meta-analysis will help us test if either of the recording methods is more reliably associated with larger effect sizes. In addition, the length of behavioral observation is another methodological feature that may influence the reliability and the validity of the results. Consistent behavior patterns should be more apparent with longer observation periods (see Fagot, 1985).

We additionally took into account four publication characteristics. First, this included the first author's gender. In some prior meta-analyses, the magnitude and the direction of gender differences in social behavior varied depending on the first author's gender (e.g., K. J. Anderson & Leaper, 1998; Eagly & Carli, 1981; Leaper et al., 1998). Second, we contrasted whether the study's primary research question concerned gender. Because gender is routinely included as a factor in many statistical designs, it was also possible to test for possible bias toward reporting significant results in studies designed specifically to investigate gender effects on behavior. Third, publication source was tested as a moderator. We compared studies published in top-tier journals versus other sources as a rough way to see if publication quality influenced the likelihood of gender effects. Finally, year of study was used to explore if gender differences in language behavior have possibly declined over the years.

Summary

Two general questions guided the present study: First, to what extent do women and men differ in their language use? Research suggests there are average gender differences in talkativeness, affiliative speech, and assertive speech. We tested the hypotheses that women would be more talkative, use more affiliative speech, and use less assertive speech than would men. Second, what types of factors moderate the incidence and magnitude of any observed gender effects? To this end, we tested several contextual and methodological moderator variables. We expected that the magnitude of average gender differences would be negligible and that more meaningful effects would occur when the moderators were taken into account.

METHOD

Literature Search

Studies examining gender-related effects on adults' talkativeness, affiliative language, or assertive language (defined below) were collected through a variety of sources. Most of the studies were identified through searches of the PsycInfo database. Studies were also identified through citations in these papers as well as various review articles and books. The dates of publication for the collected studies ranged from 1968 to 2004.

Three selection criteria were used: First, only studies that tested for gender effects on adults' language behavior were used. Second, only studies using quantitative observational measures were included. Therefore, self-report studies of verbal behaviors were excluded. Also, researchers' global ratings of communication style were not used. Third, only studies published in either research journals or books were included.

Language Variables

Three separate sets of meta-analyses were performed for studies of gender differences in talkativeness, affiliative speech, and assertive speech, respectively. Intercoder reliability was assessed between two researchers for classification of the specific operational definitions for each language variable ($\kappa = .84$). In each meta-analysis, all of the language measures were based on frequency, proportion, or rate scores. Each language variable is further described below.

Amount of talking. Among those studies testing for gender differences in talkativeness, there were 63 published studies. A distinction was made between the following operational definitions of amount of talking: (a) *number of words or utterances*, (b) *rate or time sampling*, (c) *MLU or words per turn*, (d) *duration of talking*, (e) *total turns*, and (f) *total statements or speech acts*. In addition, there was one study (Pillon, Degauquier, & Duquesne, 1992) that reported a MANOVA combining MLU, total words, and total turns.

Affiliative speech. Affiliative speech refers to verbal acts that affirm the speaker's connection to the listener. There were 47 published studies testing for gender differences in affiliative language. A distinction was made between the following types of affiliative speech: (a) *supportive* (e.g., praise, approval, collaboration), (b) *active understanding* (reflective comments, probing questions), (c) *agreement,* (d) *acknowledgment* (including minimal listening responses), and (e) *general* socioemotional speech (e.g., a combination of expressing solidarity, affection, and support). Researchers using the latter category were using Bales's (1970) scheme (or one similar to it).

Assertive speech. Assertive speech refers to verbal acts that seek to influence the listener. There were 39 published studies identified that tested for gender differences in assertive language. The following forms of assertive speech were coded: (a) *directive* (imperative statements or direct suggestions), (b) *giving information* (descriptive statements or explanations), (c) *suggestions* (suggestions, problem solving, or giving opinion), (d) *criticism* (criticism or disapproval), (e) *disagreement,* and (f) *general task-oriented* speech (e.g., a combination of giving suggestions, opinions, or direction). Researchers using the latter were typically using Bales's (1970) categories (or similar). In addition, there were two samples that did not fit into any of the categories. In one of these samples (Reid et al., 2003), a measure of tentative speech was used. (For the meta-analysis, the hypothesized direction was for men to score lower than women.) In the other sample (Scudder & Andrew, 1995), a measure of verbal threat was used.

According to our conceptual model (Leaper, 1991; Penman, 1980), affiliation and assertion are two dimensions underlying speech acts; that is, they are not mutually exclusive. Active understanding, verbal support, and general socioemotional speech are affiliative categories that reflect high affiliation and high assertion (i.e., their aim is both to affirm and to influence the listener), whereas agreement and acknowledgment reflect high affiliation and relatively low assertion (i.e., they affirm other but downplay one's influence). All of the assertive categories are relatively low to moderate affiliation. Directives, criticism, and disagreement are low in affiliation because they tend to distance the speaker from the listener. Offering suggestions and general task-oriented speech are moderately affiliative because they generally engage the listener. Informing speech is moderately assertive inasmuch that giving information can influence another person; it is also moderately affiliative to the extent that it maintains a connection with the listener.

Other Moderator Variables

In addition to investigating the magnitude of gender effects associated with the different language behaviors, several moderator variables were examined. Each of these factors is summarized below. Also, the characteristics for each moderator variable associated with each study are presented for each meta-analysis in Tables 1, 2, and 3.

In some studies, there was inadequate information to determine the values of some moderator values. Despite efforts to track down the missing information (e.g., contacting author), some of the moderators have missing values for a few studies. The respective numbers of these cases for each moderator are noted in the Results section.

Features of the Interactive Context

The available study samples were predominantly limited to participants with middle-class, European American backgrounds. Our analysis of contextual moderators was limited to the following seven factors: (1) the participants' *undergraduate status* (yes or no), (2) the *relationship* between the participants (strangers, classmates, friends, dating partners, spouses or cohabiting partners, parents with their child or children present), (3) the *size* of the group being observed (dyads vs. larger groups), (4) the *gender composition* of the group (same or mixed gender), (5) the *researcher's presence* (no or yes) during the observed interaction, (6) the observational *setting* (lab or other setting), and (7) the *activity* in which participants were engaged while being observed.

Activities were classified as either (a) unstructured (i.e., participants could discuss whatever they wanted), (b) an assigned self-disclosure discussion, (c) an assigned discussion about a personal disagreement, (d) an assigned discussion about a nonpersonal topic (e.g., a current news event), (e) an assigned deliberation (e.g., decision-making task or a debate), (f) a naturalistic task (e.g., observations at a public information booth), (g) a game or a test, (h) play with a child, (i) a nonplay interaction with a child, or (j) mixed or (k) unclear activities. Intercoder agreement for these 10 activity codes was acceptable ($\kappa = .81$). However, due to low occurrences, the following activity categories were combined: Naturalistic tasks and games/tests were combined to create a miscellaneous task category. Also, play and nonplay interactions with children were combined.

Methodological Characteristics

In addition to operational definition, other methodological moderators that were tested included (1) *method for recording behavior* (audiotape, videotape, or on-site coding), (2) *length of observation,* (3) *first author's gender,* (4) *gender focus* of the study, (5) *publication year,* and (6) *publication source.* For observation length, we contrasted those that were very brief (less than 10 min), somewhat short (less than 20 min), and somewhat long (at least 20 min). (There were relatively few studies that involved observation lengths much longer than 20-30 min; exploratory analyses indicated that making further distinctions was not helpful.) The gender-focus moderator refers to whether the study's primary research question addressed gender as a topic. Although most collected studies addressed gender-related variations in social behavior, some studies were not primarily concerned with gender per se but included it as an exploratory or control factor in their analyses. For publication year, we made an approximate median split and contrasted studies published before 1986 and those published in 1986 or later. When testing publication source as a moderator, a distinction was made between studies published in a top-tier journal (e.g., American Psychological Association journals such as *Journal of Personality & Social Psychology*) and other sources (including books and other journals). Although many excellent studies are

(text continues on page 344)

TABLE 1: Study Characteristics for Talkativeness Meta-Analysis

Author and Year	N *(w)*	N *(m)*	*Op Def*	*Stat Value*	G	*Auth*	*Pub*	*Gender*	*Pop*	*Rel*	*Comp*	*Size*	*Setting*	*Long*	*Res*	*Rec*	*Activity*
Argyle, Lalljee, & Cook (1968)	16	16	Rat	$p = .05$	–0.61	M	Oth	No	UG	Str	MG	2	Lab	15	No	A	A-T
Aries (1982)	53	65	Trn	$p = .02$	0.39	W	Oth	Yes	UG	Str	Both	5	Lab	10	No	V	A-D
Athenstaedt, Haas, & Schwab (2004)	30	30	Dur	$F = 4.32$	0.38	W	Oth	Yes	UG	Frn	MG	2	Lab	20	No	V	A-D
Athenstaedt et al. (2004)	38	30	Dur	$F = 2.08$	–0.35	W	Oth	Yes	UG	Frn	SG	2	Lab	20	No	V	A-D
Bilous & Kraus (1988)[a]	15	15	TW	$t = 5.59$	2.04	U	Oth	Yes	UG	Str	SG	2	Lab	10	No	A	A-D
Bilous & Kraus (1988)[a]	30	30	TW	$t = –0.98$	–0.18	U	Oth	Yes	UG	Str	SG	2	Lab	10	No	A	A-D
Brooks (1982)	222	72	Dur	*G*	–0.27	W	Oth	Yes	Oth	Oth	MG	N/A	Oth	2,880	Yes	A	N-T
Brouwer, Gerritsen, & DeHaan (1979)	309	298	TW	$p = .50$	0	W	Oth	Yes	Oth	Str	Both	2	Oth	3	No	A	N-T
Brown (1990)	16	16	Dur	$F = 6.07$	–0.62	M	Oth	Yes	UG	Str	MG	2	Lab	6	No	V	A-T
Campbell, Kleim, & Olson (1992)[b]	61	43	TW	$t = –2.99$	–0.60	M	Oth	Yes	UG	Str	MG	6	Lab	N/A	N/A	V	Unc
Campbell et al. (1992)[b]	61	43	Dur	$t = –2.84$	–0.57	M	Oth	Yes	UG	Str	MG	6	Lab	N/A	N/A	V	Unc
Carli (1990)	59	59	TW	$p = .50$	0	W	Top	Yes	UG	Str	Both	2	Lab	10	No	V	A-D
Case (1988)	5	5	TW	$p = .50$	0	W	Oth	Yes	Oth	Oth	MG	10	Oth	45	No	A	N-T
Cashdan (1998)[c]	47	29	Dur	$t = 0.74$	0.17	W	Oth	Yes	UG	Frn	SG	10	Lab	15	No	V	A-D
Cashdan (1998)[c]	49	29	Dur	$t = 0.61$	–0.61	W	Oth	Yes	UG	Oth	MG	8	Lab	15	No	V	A-D
Chelune (1976)	12	12	TW	$F = 4.5$	0.87	M	Oth	Yes	UG	Res	N/A	2	Lab	15	Yes	A	SD
Cherulnik (1979)	18	18	Dur	$p = .50$	0	M	Oth	Yes	UG	Res	Both	2	Lab	N/A	Yes	V	SD
Craig & Pitts (1990)	8	8	Dur	$p = .50$	0	U	Oth	Yes	UG	Oth	MG	5	Oth	40	No	A	N-T
Crosby, Jose, & Wong-McCarthy (1981)	48	48	TW	$p = .50$	0	W	Oth	Yes	UG	Str	MG	2	Lab	6	No	A	A-D
Dabbs & Ruback (1984)	10	10	Dur	$t = 2.58$	1.15	M	Oth	Yes	UG	Str	SG	5	Lab	20	No	V	Unst
Davis & Gilbert (1989)	60	60	Dur	$F = 12.15$	–0.64	W	Top	Yes	UG	Str	MG	2	Lab	7	No	A	A-D
Dovidio, Heltman, Brown, Ellyson, & Keating (1988)	24	24	Dur	*G*	–0.90	M	Top	Yes	UG	Str	MG	2	Lab	9	No	V	A-T
Frances (1979)	44	44	Dur	$F = 6.49$	0.543	W	Oth	Yes	Oth	Str	Both	2	Lab	14	No	V	Unst
Gall, Hobby, & Craik (1969)	19	20	TW	$t = 1.09$	0.349	U	Oth	Yes	UG	Res	Both	2	Lab	18	Yes	A	A-T
Hammen & Peplau (1978)	37	37	Rat	$p = .50$	0	W	Oth	Yes	UG	Str	Both	2	Oth	5	No	O	Unst
Hannah & Murachver (1999)	32	32	Dur	$p = .50$	0	W	Oth	Yes	UG	Res	Both	2	Lab	12	No	V	M-T
Hawkins & Power (1999)	59	39	Trn	$p = .001$	0.70	W	Oth	Yes	UG	Oth	Both	5	Lab	30	No	A	A-D
Heiss (1962)	54	54	TW	$p = .01$	0.326	M	Oth	Yes	UG	Dat	MG	2	Lab	20	No	A	A-D
Hladik & Edwards (1984)[b]	10	10	TW	$p = .50$	0	W	Oth	Yes	Par	C/S	MG	3	Oth	30	No	A	CH

(Continued)

TABLE 1: (Continued)

Author and Year	N (*w*)	N (*m*)	*Op Def*	*Stat Value*	G	*Auth*	*Pub*	*Gender*	*Pop*	*Rel*	*Comp*	*Size*	*Setting*	*Long*	*Res*	*Rec*	*Activity*
Hladik & Edwards (1984)[b]	10	10	MU	*M* and *SD*	0.20	W	Oth	Yes	Par	C/S	MG	3	Oth	30	No	A	CH
C. Johnson (1994)	71	70	Dur	$p = .50$	0	W	Oth	Yes	UG	Str	Both	3	Lab	10	No	V	M-T
Jones, Gallois, Callan, & Barker (1995)	25	25	Dur	$F = 9.17$	–0.86	W	Oth	Yes	Oth	Str	SG	2	Lab	8	No	V	A-T
Kelly, Wildman, & Urey (1982)	37	34	Dur	*G*	–0.84	M	Oth	Yes	UG	Str	MG	8	Lab	N/A	No	V	A-D
Kimble & Musgrove (1988)	64	64	Dur	$F = 4.19$	–0.36	M	Oth	Yes	UG	Str	MG	2	Lab	5	No	V	A-D
Kimble, Yoshikawa, & Zehr (1981)[b]	72	72	Dur	$p = .50$	0	M	Top	Yes	UG	Str	Both	4	Lab	10	No	A	Mix
Kimble et al. (1981)[b]	72	72	Rat	$p = .50$	0	M	Top	Yes	UG	Str	Both	4	Lab	10	No	A	Mix
Kollock, Blumstein, & Schwartz (1985)	15	15	Dur	$F = 3.2$	–0.46	M	Oth	Yes	Oth	Spo	MG	2	Oth	N/A	No	A	A-D
Leaper (1987)	76	76	MU	$p = .50$	0	M	Oth	Yes	UG	Str	MG	2	Lab	5	No	A	A-D
Leffler, Gillespie, & Conaty (1982)	28	28	Dur	$p = .50$	0	W	Oth	Yes	UG	Str	Both	2	Lab	30	No	V	M-T
Margolin & Wampold (1981)	39	39	Rat	$F = 1.42$	–0.91	W	Top	Yes	Oth	Spo	MG	2	Lab	20	No	O	DS
Markel, Long, & Saine (1976)	30	30	Dur	$F = 7.15$	0.69	M	Oth	Yes	UG	Str	Both	2	Lab	N/A	No	A	Unst
Marlatt (1970)	48	48	Rat	$F = 9.32$	–0.62	M	Top	No	UG	Res	Both	2	Lab	5	Yes	A	Unst
Martin & Craig (1983)[b]	20	20	TW	$p = .50$	0	W	Oth	Yes	UG	Str	Both	2	Lab	4	No	V	Unst
Martin & Craig (1983)[b]	20	20	MU	$p = .50$	0	W	Oth	Yes	UG	Str	Both	2	Lab	4	No	V	Unst
Martin, Davis, & Dancer (1996)	5	5	Trn	$p = .049$	–0.80	W	Oth	Yes	Oth	Oth	MG	2	N/A	5	No	V	Mix
McLaughlin (1991)[b]	22	22	Dur	$p = .50$	0	M	Oth	Yes	UG	Oth	Both	2	Lab	N/A	No	V	A-D
McLaughlin (1991)[b]	22	22	Rat	$p = .50$	0	M	Oth	Yes	UG	Oth	Both	2	Lab	N/A	No	V	A-D
McMillan, Clifton, McGrath, & Gale (1977)[a]	12	12	Sta	$t = –0.29$	–0.12	W	Oth	Yes	UG	Str	SG	6	Lab	30	No	V	Test
McMillan et al. (1977)[a]	12	12	Sta	$t = –0.63$	–0.18	W	Oth	Yes	UG	Str	MG	6	Lab	30	No	V	Test
Mehl & Pennebaker (2003)	27	20	TW	$p = .5$	0	M	Top	No	UG	Str	Both	N/A	Oth	N/A	No	A	Unst
Mehl & Pennebaker (2003)	27	20	MU	$p = .05$	–0.60	M	Top	No	UG	Str	Both	N/A	Oth	N/A	No	A	Unst
Moore, Shaffer, Goodsell, & Baringoldz (1983)	20	20	MU	$p = .50$	0	M	Oth	Yes	UG	Str	Both	2	Lab	N/A	No	A	Test
Mulac (1989)[a]	54	54	Dur	*M* and *SD*	–0.03	M	Oth	Yes	UG	Oth	SG	2	Lab	8	No	V	A-D
Mulac (1989)[a]	54	54	Dur	*M* and *SD*	–0.35	M	Oth	Yes	UG	Oth	MG	2	Lab	8	No	V	A-D
Natale, Elliot, & Jaffe (1979)	36	36	Dur	$r = .28$	–0.59	M	Top	No	UG	Str	Both	2	Lab	30	No	A	Unst
Nemeth, Endicott, J., & Wachtler (1976)	72	96	Sta	$F = 3.02$	–0.27	U	Oth	Yes	UG	Str	MG	6	Lab	120	No	V	A-D

Pillon, Degauquier, C., & Duquesne (1992)	20	20	Oth	$F = 1.5$	–0.27	W	Oth	Yes	UG	Str	MG	2	Lab	10	No	A	Mix
Porter, Geis, Cooper, & Newman (1985)	57	57	Dur	$F = 26.59$	–0.97	W	Top	Yes	UG	Str	MG	2	Lab	10	No	A	A-D
Pushkar, Basevitz, Arbuckle, Nohara-LeClair, Lapidus, & Peled (2000)	50	47	Dur	$r = 0.24$	0.49	W	Oth	No	Oth	Str	SG	2	Lab	10	No	V	Unst
Reid, Keerie, & Palomares (2003)	21	21	Dur	*G*	0.36	M	Oth	Yes	UG	Str	MG	2	Lab	10	No	V	A-D
Resick et al. (1981)	18	18	Rat	$F = 0.14$	0.09	W	Oth	No	Oth	Spo	MG	2	Lab	7	No	V	DS
Robey, Canary, & Burggraf (1998)	20	20	Dur	$t = 0.73$	0.16	W	Oth	Yes	Oth	Spo	MG	2	Oth	7	No	A	Unst
Rosenfeld (1966)[b]	22	24	TW	$p = .50$	0	M	Top	No	UG	Str	SG	2	Lab	5	No	A	Unc
Rosenfeld (1966)[b]	22	24	MU	$F = 5.4$	–0.69	M	Top	No	UG	Str	SG	2	Lab	5	No	A	Unc
Ruback, Dabbs, & Hopper (1984)	57	43	Rat	$p = .50$	0	M	Top	No	UG	Str	MG	5	Lab	20	No	V	A-D
Rubin & Nelson (1983)	20	20	TW	$p = .50$	0	M	Oth	Yes	Oth	Res	Both	2	Oth	N/A	Yes	A	M-T
Schmid-Mast (2001)	14	14	Dur	$F = 3.47$	–0.7	W	Oth	Yes	Oth	Str	MG	4	Lab	16	No	V	A-D
Shaw & Sadler (1965)	18	18	Trn	$p = .50$	0	M	Oth	Yes	Oth	Oth	MG	2	Lab	20	No	A	A-D
Simkins-Bullock & Wildman (1991)[a]	13	13	Dur	$p = .50$	0	W	Oth	Yes	UG	Str	SG	2	Lab	15	No	A	A-D
Simkins-Bullock & Wildman (1991)[a]	13	13	Dur	$p = .01$	–0.78	W	Oth	Yes	UG	Str	MG	2	Lab	15	No	A	A-D
Stiles, Walz, Schroeder, Williams, & Ickes (1996)	38	38	TW	$p = .50$	0	M	Oth	Yes	UG	Str	MG	2	Lab	6	No	V	Unst
Stuckey, McGhee, & Bell (1982)	40	40	Rat	$p = .01$	0.52	W	Top	Yes	Par	C/S	MG	3	Oth	60	Yes	O	CH
Turner, Tjaden, & Weismer (1995)	10	10	TW	*M* and *SD*	0.28	W	Oth	Yes	UG	Str	Both	2	Lab	5	No	V	A-D
Turner et al. (1995)	20	20	TW	*M* and *SD*	–1.0	W	Oth	Yes	UG	Str	Both	2	Lab	5	No	V	A-D
M. Wood (1966)[a]	18	18	MU	$t = –6.43$	–2.14	W	Oth	Yes	UG	Str	SG	2	Lab	60	Yes	A	A-T
M. Wood (1966)[a]	18	18	MU	$t = –6.76$	–1.60	W	Oth	Yes	UG	Str	MG	2	Lab	60	Yes	A	A-T
W. Wood & Karten (1986)	16	16	Sta	$F = 5.63$	–0.59	W	Top	Yes	UG	Str	MG	4	Lab	5	No	V	A-D

NOTE: *N* (w) = number of women; *N* (m) = number of men; Op Def = operational definition (Dur = duration; MU = mean length of utterance; Rat = rate or time sampling; Sta = total statements; Trn = total turns; TW = total words; Oth = other); Stat value = statistical value (G = Effect size computed based on aggregate of similar measures for same operational definition; *M* and *SD* = effect size computed from reported means, standard deviations, and group sizes); G = index of effect size; Auth = first author's gender (M = man; W = woman; U = unclear); Pub = publication source (Top = top journal; Oth = other source); Gender = gender study (yes or no); Pop = type of population sampled (UG = undergraduate students; Par = parents; Oth = other); Rel = relationship between participants (C/S = participant with own child and spouse; Dat = dating couple; Frn = friends; Res = researcher and participant; Spo = spouses or domestic partners; Str = strangers; Oth = other); Comp = gender composition of group (Both = same gender and mixed gender combined; MG = mixed gender; SG = same gender; Oth = other); Size = group size (number of participants observed interacting together); Setting = observational setting (lab or other); Long = length of observation (in min); Res = whether the researcher was present during the observation (no or yes); Rec = method of recording interaction (A = audiotape only; O = on-site coding only; V = videotape); Activity = type of activity observed (A-D = assigned decision making or debate topic; A-T = assigned general topic(s); CH = interaction with child; DS = discussion about a disagreement; M-T = miscellaneous or mixed task activity; Mix = mixed activities; N-T = naturalistic task-oriented activity; SD = self-disclosure; Test = assigned test or puzzle; Unc = unclear; Unst = unstructured activity); N/A = information not available.

a. Reported separate tests of gender differences in talkativeness in two independent samples.

b. Reported separate tests of gender differences in talkativeness using two different operational definitions with the same sample.

c. Reported tests of gender differences in talkativeness from two different studies with independent samples.

TABLE 2: Study Characteristics for Affiliative Language

Author and Year	N (*w*)	N (*m*)	*Op Def*	*Stat Value*	G	*Auth*	*Pub*	*Gender*	*Pop*	*Rel*	*Comp*	*Size*	*Setting*	*Long*	*Res*	*Rec*	*Activity*
Caldwell & Peplau (1982)	16	10	Sup	$t = 1.84$	0.74	W	Oth	Yes	UG	Str	SG	2	Lab	6	No	A	Unc
Carli (1989)[a]	16	16	Gen	$t = 5.05$	1.79	W	Top	Yes	UG	Str	SG	2	Lab	20	No	V	A-D
Carli (1989)[a]	16	16	Gen	$t = 4.23$	1.50	W	Top	Yes	UG	Str	SG	2	Lab	20	No	V	A-D
Carli (1989)[a]	16	16	Agr	$t = 1.51$	0.53	W	Top	Yes	UG	Str	SG	2	Lab	20	No	V	A-D
Carli (1989)[a]	16	16	Agr	$T = 2.56$	0.91	W	Top	Yes	UG	Str	SG	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Gen	$t = 1.04$	0.18	W	Top	Yes	UG	Str	MG	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Gen	$t = 1.98$	0.35	W	Top	Yes	UG	Str	MG	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Agr	$t = -0.88$	–0.16	W	Top	Yes	UG	Str	MG	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Agr	$t = -1.06$	–0.19	W	Top	Yes	UG	Str	MG	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Gen	$t = 5.01$	1.26	W	Top	Yes	UG	Str	Both	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Gen	$t = 4.63$	1.16	W	Top	Yes	UG	Str	Both	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Agr	$p = .5$	0	W	Top	Yes	UG	Str	Both	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Agr	$p = .5$	0	W	Top	Yes	UG	Str	Both	2	Lab	20	No	V	A-D
Case (1988)	5	5	Agr	$p = .09$	–0.63	W	Oth	Yes	Oth	Oth	MG	10	Oth	45	No	A	N-T
Crosby, Jose, & Wong-McCarthy (1981)	48	48	Ack	$F = 3.95$	0.29	W	Oth	Yes	UG	Str	MG	2	Lab	6	No	A	A-D
Dixon & Foster (1998)	54	50	Ack	$F = 1.10$	–0.21	M	Oth	Yes	UG	Str	Both	2	Lab	8	No	V	M-T
Eskilson & Wiley (1976)	24	24	Gen	*G*	0.90	W	Oth	Yes	UG	Str	Both	3	Lab	N/A	No	V	Test
Fagot (1978)	24	24	Sup	$p = .5$	0	W	Top	Yes	Par	C/S	MG	3	Oth	300	Yes	O	CH
Frances (1979)	44	44	Ack	$p = .5$	0	W	Oth	Yes	Oth	Str	Both	2	Lab	14	No	V	Unst
Grotevant & Cooper (1985)[b]	84	84	Agr	$p = .5$	0	M	Top	No	Par	C/S	MG	3	Lab	20	No	A	A-D
Grotevant & Cooper (1985)[b]	84	84	Ack	$p = .5$	0	M	Top	No	Par	C/S	MG	3	Lab	20	No	A	A-D
Hannah & Murachver (1999)	32	32	Ack	$p = .5$	0	W	Oth	Yes	UG	Res	Both	2	Lab	12	No	V	M-T
Hauser et al. (1987)	79	79	Sup	$F = 1.82$	0.15	M	Oth	Yes	Par	C/S	Both	3	Lab	N/A	No	A	A-D
Hawkins & Power (1999)	59	39	AU	$\chi^2 = 4.28$	0.44	W	Oth	Yes	UG	Oth	Both	5	Lab	30	No	A	A-D
Heiss (1962)	54	54	Gen	$p = .01$	0.33	M	Oth	Yes	UG	Dat	MG	2	Lab	20	No	A	A-D
C. Johnson (1994)	71	70	Ack	$p = .5$	0	W	Oth	Yes	UG	Str	Both	3	Lab	10	No	V	M-T
C. Johnson, Funk, & Clay-Warner (1998)	20	20	Gen	*M* and *SD*	0.39	W	Oth	Yes	UG	Str	SG	4	Lab	11	No	V	A-D
Jones, Gallois, Callan, & Barker (1995)[b]	25	25	Agr	$F = 9.04$	0.85	W	Oth	Yes	Oth	Str	SG	2	Lab	8	No	V	A-T
Jones et al. (1995)[b]	25	25	Ack	$F = 7.04$	–0.75	W	Oth	Yes	Oth	Str	SG	2	Lab	8	No	V	A-T
Julien et al. (2000)[c]	22	16	Gen	*M* and *SD*	0.47	W	Top	Yes	Oth	Frn	SG	2	Lab	20	No	V	DS
Julien et al. (2000)[c]	22	16	Ack	*M* and *SD*	–0.01	W	Top	Yes	Oth	Frn	SG	2	Lab	20	No	V	DS
Julien et al. (2000)[c]	33	17	Gen	*M* and *SD*	–0.12	W	Top	Yes	Oth	Frn	SG	2	Lab	20	No	V	DS
Julien et al. (2000)[c]	33	17	Ack	*M* and *SD*	–0.19	W	Top	Yes	Oth	Frn	SG	2	Lab	20	No	V	DS
Kelly, Wildman, & Urey (1982)	37	34	Sup	*G*	–0.70	M	Oth	Yes	UG	Str	MG	8	Lab	N/A	No	V	A-D
Kollock, Blumstein, & Schwartz (1985)	15	15	Ack	$p = .5$	0	M	Oth	Yes	Oth	Spo	MG	2	Oth	N/A	No	A	A-D

Leaper, Carson, Baker, Holliday, & Myers (1995)[d]	18	18	Ack	M and SD	0	M	Oth	Yes	UG	Frn	SG	2	Lab	10	No	A	SD
Leaper et al. (1995)[d]	18	18	AU	M and SD	0.92	M	Oth	Yes	UG	Frn	SG	2	Lab	10	No	A	SD
Leaper et al. (1995)[d]	18	18	Ack	M and SD	0	M	Oth	Yes	UG	Frn	MG	2	Lab	10	No	A	SD
Leaper et al. (1995)[d]	18	18	AU	M and SD	–0.08	M	Oth	Yes	UG	Frn	MG	2	Lab	10	No	A	SD
Leaper (1998)[e]	25	19	Agr	$F = 2.37$	0.47	M	Oth	Yes	UG	Frn	SG	2	Lab	10	No	A	A-D
Leaper (1998)[e]	24	24	Agr	$F = 1.88$	–0.28	M	Oth	Yes	UG	Frn	MG	2	Lab	10	No	A	A-D
Leik (1963)[e]	9	9	Gen	PR	0.37	M	Oth	Yes	Par	Str	MG	3	Lab	N/A	No	O	A-D
Leik (1963)[e]	9	9	Gen	PR	0.13	M	Oth	Yes	Par	C/S	MG	3	Lab	N/A	No	O	A-D
Margolin & Wampold (1981)[b]	39	39	Sup	$F = 3.95$	0.32	W	Top	Yes	Oth	Spo	MG	2	Lab	20	No	O	DS
Margolin & Wampold (1981)[b]	39	39	Agr	$F = 0.09$	–0.05	W	Top	Yes	Oth	Spo	MG	2	Lab	20	No	O	DS
Martin & Craig (1983)	20	20	Ack	$p = .5$	0	W	Oth	Yes	UG	Str	Both	2	Lab	4	No	V	Unst
McLaughlin (1991)	22	22	Ack	$p = .5$	0	M	Oth	Yes	UG	Oth	Both	2	Lab	N/A	No	V	A-D
McLaughlin, Cody, Kane, & Robey (1981)[b]	60	60	Sup	$F = 18.15$	0.78	W	Oth	Yes	UG	Str	Both	2	Lab	30	N/A	A	Mix
McLaughlin et al. (1981)[b]	60	60	Ack	$F = 1.23$	–0.14	W	Oth	Yes	UG	Str	Both	2	Lab	30	N/A	A	Mix
McMullen, Vernon, & Murton (1995)[f]	20	20	Ack	$t = –1.69$	–0.04	W	Oth	Yes	UG	Str	SG	2	Lab	30	No	A	Unst
McMullen et al. (1995)[f]	10	10	Ack	$t = –1.69$	–0.76	W	Oth	Yes	UG	Str	MG	2	Lab	30	No	A	Unst
McMullen et al. (1995)[f]	17	17	Ack	$t = –0.19$	–0.19	W	Oth	Yes	Oth	Spo	MG	2	Oth	30	No	V	Unst
McMullen et al. (1995)[f]	17	17	Ack	$t = –2.08$	–0.50	W	Oth	Yes	Oth	Spo	MG	2	Oth	30	No	V	Unst
Moore, Shaffer, Goodsell, & Baringoldz (1983)	20	20	Sup	$p = .5$	0	M	Oth	Yes	UG	Str	Both	2	Lab	N/A	No	A	Test
Natale, Elliot, & Jaffe (1979)	36	36	Ack	$r = .04$	–0.08	M	Top	No	UG	Str	Both	2	Lab	30	No	A	Unst
Piliavin & Martin (1978)[b]	76	76	Gen	$F = 29.52$	0.62	W	Oth	Yes	UG	Str	Both	4	Lab	35	No	A	A-T
Piliavin & Martin (1978)[b]	76	76	Agr	$F = 20.78$	0.52	W	Oth	Yes	UG	Str	Both	4	Lab	35	No	A	A-T
Pillon, Degauquier, & Duquesne (1992)[b]	20	20	Gen	$p = .5$	0	W	Oth	Yes	UG	Str	MG	2	Lab	10	No	A	Mix
Pillon et al. (1992)[b]	20	20	Ack	$p = .5$	0	W	Oth	Yes	UG	Str	MG	2	Lab	10	No	A	Mix
Reid, Keerie, & Palomares (2003)	42	42	Ack	$p = .5$	0	M	Oth	Yes	UG	Str	MG	2	Lab	10	No	V	A-D
Robey, Canary, & Burggraf (1998)	20	20	Ack	$t = 1.45$	–0.32	W	Oth	Yes	Oth	Spo	MG	2	Lab	7	No	A	Unst
Roger & Nesshoever (1987)	28	28	Ack	$F = 6.89$	0.70	M	Oth	Yes	UG	Str	MG	2	Lab	8	No	V	A-D
Roger & Schumacher (1983)	36	36	Ack	$F = 9.88$	0.74	M	Top	Yes	UG	Str	SG	2	Lab	8	No	V	A-D
Roopnarine & Adams (1987)	37	37	Sup	$p = .5$	0	M	Oth	No	Par	C/S	MG	3	Lab	8	No	V	CH
Sayers & Baucom (1991)	60	60	Gen	M and SD	–0.06	M	Top	Yes	Oth	Spo	MG	2	Lab	N/A	No	V	DS
Simkins-Bullock & Wildman (1991)[e]	13	13	Sup	$p = .5$	0	W	Oth	Yes	UG	Str	SG	2	Lab	15	No	A	A-D

(Continued)

TABLE 2: (Continued)

Author and Year	N *(w)*	N *(m)*	*Op Def*	*Stat Value*	G	*Auth*	*Pub*	*Gender*	*Pop*	*Rel*	*Comp*	*Size*	*Setting*	*Long*	*Res*	*Rec*	*Activity*
Simkins-Bullock & Wildman (1991)[e]	13	13	Sup	$p = .5$	0	W	Oth	Yes	UG	Str	MG	2	Lab	15	No	A	A-D
Stets & Burke (1996)[b]	278	278	Agr	$p = .05$	–0.10	W	Oth	Yes	Oth	Spo	MG	2	Lab	15	No	V	DS
Stets & Burke (1996)[b]	278	278	Ack	$p = .5$	0	W	Oth	Yes	Oth	Spo	MG	2	Lab	15	No	V	DS
Stiles, Walz, Schroeder, Williams, & Ickes (1996)[b]	38	38	Agr	$p = .5$	0	M	Oth	Yes	UG	Str	MG	2	Lab	6	No	V	Unst
Stiles et al. (1996)[b]	38	38	Ack	$p = .5$	0	M	Oth	Yes	UG	Str	MG	2	Lab	6	No	V	Unst
Stiles et al. (1997)	19	19	Gen	$t = 0.65$	0.15	M	Oth	Yes	UG	Str	MG	2	Lab	6	No	V	Unst
Turner, Tjaden, & Weismer (1995)	10	10	Agr	*G*	0.31	M	Top	Yes	UG	Str	Both	2	Lab	5	No	V	A-D
Turner et al. (1995)	20	20	Agr	*G*	0.78	M	Top	Yes	UG	Str	Both	2	Lab	5	No	V	A-D
W. Wood & Karten (1986)	16	16	Gen	*G*	0.67	W	Top	Yes	UG	Str	MG	4	Lab	5	No	V	A-D
Yamada, Tjosvold, & Draguns (1983)[e]	28	28	Gen	$p = .5$	0	W	Oth	Yes	UG	Str	SG	2	Lab	N/A	No	V	Unc
Yamada et al. (1983)[e]	32	32	Gen	$F = 7.4$	0.48	W	Oth	Yes	UG	Str	MG	2	Lab	N/A	No	V	Unc

NOTE: *N* (w) = number of women; *N* (m) = number of men; Op Def = operational definition (Ack = acknowledge or minimal listening response; Agr = agreement; AU = active understanding; Gen = general affiliation; Sup = support, praise, or approval); Stat value = statistical value (G = effect size computed based on aggregate of similar measures for same operational definition; *M* and *SD* = effect size computed from reported means and standard deviations); G = index of effect size; Auth = first author's gender (M = man; W = woman); Pub = publication source (Top = top journal; Oth = other source); Gender = gender study (yes or no); Pop = type of population sampled (UG = undergraduate students; Par = parents; Oth = other); Rel = relationship between participants (C/S = participant with own child and spouse; Dat = dating couple; Frn = friends; Oth = other; Res = researcher and participant; Spo = spouses or domestic partners; Str = strangers); Comp = gender composition of group (Both = same gender and mixed gender combined; MG = mixed gender; SG = same gender; Oth = other); Size = group size (number of participants observed interacting together); Setting = observational setting (lab or other); Long = length of observation (in min); Res = whether the researcher was present during the observation (no or yes); Rec = method of recording interaction (A = audiotape only; O = on-site coding only; V = videotape); Activity = type of activity observed (A-D = assigned decision making or debate topic; A-T = assigned general topic(s); CH = interaction with child; DS = discussion about a disagreement; M-T = miscellaneous or mixed task activity; Mix = mixed activities; N-T = naturalistic task-oriented activity; SD = self-disclosure; Test = assigned test or puzzle; Unc = unclear; Unst = unstructured activity); N/A = information not available.

a. Carli (1989) tested for gender differences in affiliative speech using different operational definitions separately for same-gender groups, mixed-gender groups, and both groups combined. The average effects associated with general affiliative speech for same-gender groups and for mixed-gender groups were used when using independent samples as the unit of analysis.

b. Reported separate tests of gender differences in affiliative speech using two or more different operational definitions with the same sample.

c. Reported findings from two separate studies with independent samples. For each study and sample, gender differences in affiliative speech were tested using two different operational definitions.

d. Tested gender differences in affiliative speech using two operational definitions in two independent samples.

e. Reported separate tests of gender differences in affiliative speech in two or more independent samples.

f. McMullen et al. (1995) reported findings from two separate studies. The first study included two independent samples. The second study included one sample with two separate tests using a similar operational definition (which was averaged when independent samples were used as the units of analysis).

TABLE 3: Study Characteristics for Assertive Language

Author and Year	N *(w)*	N *(m)*	*Op Def*	*Stat Value*	G	*Auth*	*Pub*	*Gender*	*Pop*	*Rel*	*Comp*	*Size*	*Setting*	*Long*	*Res*	*Rec*	*Activity*
Adams (1980)	64	64	Dir	*M* and *SD*	–0.01	W	Top	Yes	UG	Str	Both	2	Lab	N/A	No	A	A-D
Athenstaedt, Haas, & Schwab (2004)[c]	30	30	Dir	$F = 0.02$	0.03	W	Oth	Yes	UG	Res	MG	2	Lab	20	No	V	A-D
Athenstaedt et al. (2004)[c]	30	38	Dir	$F = 10.32$	0.79	W	Oth	Yes	UG	Str	SG	2	Lab	20	No	V	A-D
Carli (1989)[a]	16	16	Task	$t = 5.27$	1.86	W	Top	Yes	UG	Str	SG	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Task	$t = -1.82$	–0.32	W	Top	Yes	UG	Str	MG	2	Lab	20	No	V	A-D
Carli (1989)[a]	16	16	Task	$t = 3.58$	1.27	W	Top	Yes	UG	Str	SG	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Task	$t = 0$	0	W	Top	Yes	UG	Str	MG	2	Lab	20	No	V	A-D
Carli (1989)[a]	16	16	Dis	$t = 3.07$	1.09	W	Top	Yes	UG	Str	SG	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Dis	$t = 1.46$	–0.26	W	Top	Yes	UG	Str	MG	2	Lab	20	No	V	A-D
Carli (1989)[a]	16	16	Dis	$t = 2.32$	0.82	W	Top	Yes	UG	Str	SG	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Dis	$t = -0.81$	–0.14	W	Top	Yes	UG	Str	MG	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Task	$p = .5$	0	W	Top	Yes	UG	Str	Both	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Task	$t = 2.57$	0.64	W	Top	Yes	UG	Str	Both	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Dis	$p = .5$	0	W	Top	Yes	UG	Str	Both	2	Lab	20	No	V	A-D
Carli (1989)[a]	32	32	Dis	$p = .5$	0	W	Top	Yes	UG	Str	Both	2	Lab	20	No	V	A-D
Case (1988)[b]	5	5	Dir	$p = .09$	0.63	W	Oth	Yes	Oth	Oth	MG	10	Oth	45	No	A	N-T
Case (1988)[b]	5	5	Crit	$p = .09$	0.63	W	Oth	Yes	Oth	Oth	MG	10	Oth	45	No	A	N-T
Davis & Gilbert (1989)	60	60	Sug	$F = 5.03$	0.41	W	Top	Yes	UG	Str	MG	2	Lab	7	No	A	A-D
Eskilson & Wiley (1976)	24	24	Task	G	0.48	W	Oth	Yes	UG	Str	Both	3	Lab	N/A	No	V	Test
Fagot (1978)	24	24	Crit	$F = 7.61$	–0.56	W	Top	Yes	Par	C/S	MG	3	Oth	300	Yes	O	C-N
Grotevant & Cooper (1985)[b]	84	84	Inf	$F = 3.15$	0.19	M	Top	No	Par	C/S	MG	3	Lab	20	No	A	A-D
Grotevant & Cooper (1985)[b]	84	84	Inf	$F = 3.04$	0.19	M	Top	No	Par	C/S	MG	3	Lab	20	No	A	A-D
Grotevant & Cooper (1985)[b]	84	84	Sug	$F = 3.61$	0.21	M	Top	No	Par	C/S	MG	3	Lab	20	No	A	A-D
Hauser et al. (1987)[b]	79	79	Sug	$F = 10.67$	0.37	M	Oth	Yes	Par	C/S	Both	3	Lab	N/A	No	A	A-D
Hauser et al. (1987)[b]	79	79	Inf	$F = 0.56$	0.08	M	Oth	Yes	Par	C/S	Both	3	Lab	N/A	No	A	A-D
Heavey, Layne, & Christensen (1993)	29	29	Dir	$F = 4.37$	–0.39	M	Top	Yes	Oth	Spo	MG	2	Lab	14	No	V	DS
Heiss (1962)[b]	54	54	Inf	$p = .01$	0.33	M	Oth	Yes	UG	Dat	MG	2	Lab	20	No	A	A-D
Heiss (1962)[b]	36	36	Crit	$p = .28$	–0.08	M	Oth	Yes	UG	Dat	MG	2	Lab	20	No	A	A-D
Hladik & Edwards (1984)[b]	10	10	Inf	*M* and *SD*	–0.32	W	Oth	Yes	Par	C/S	MG	3	Oth	30	No	A	CH
Hladik & Edwards (1984)[b]	10	10	Dir	*M* and *SD*	0.32	W	Oth	Yes	Par	C/S	MG	3	Oth	30	No	A	CH
Jones, Gallois, Callan, & Barker (1995)	25	25	Dis	$F = 6.22$	0.71	W	Oth	Yes	Oth	Str	SG	2	Lab	8	No	V	A-T
Julien et al. (2000)[c]	16	22	Crit	*M* and *SD*	0.52	W	Top	Yes	Oth	Frn	SG	2	Lab	20	No	V	DS
Julien et al. (2000)[c]	17	33	Crit	*M* and *SD*	–0.15	W	Top	Yes	Oth	Frn	SG	2	Lab	20	No	V	DS
Leaper (1987)	76	76	Inf	$p = .5$	0	M	Oth	Yes	UG	Str	MG	2	Lab	5	No	A	A-D
Leaper (1998)[d]	19	25	Sug	$F = 0.02$	0	M	Oth	Yes	UG	Frn	SG	2	Lab	10	No	A	A-D
Leaper (1998)[d]	19	25	Dis	$F = 0.18$	0.13	M	Oth	Yes	UG	Frn	SG	2	Lab	10	No	A	A-D
Leaper (1998)[d]	24	24	Sug	$F = 0.49$	0.14	M	Oth	Yes	UG	Frn	MG	2	Lab	10	No	A	A-D
Leaper (1998)[d]	24	24	Dis	$F = 2.01$	–0.29	M	Oth	Yes	UG	Frn	MG	2	Lab	10	No	A	A-D

(Continued)

TABLE 3: (Continued)

Author and Year	N *(w)*	N *(m)*	*Op Def*	*Stat Value*	G	*Auth*	*Pub*	*Gender*	*Pop*	*Rel*	*Comp*	*Size*	*Setting*	*Long*	*Res*	*Rec*	*Activity*
Leaper et al. (1989)	32	32	Crit	$p = .5$	0	M	Oth	Yes	Par	C/S	MG	3	Lab	N/A	No	A	A-D
Leik (1963)[c]	9	9	Task	PR	0.12	M	Oth	Yes	Par	Str	MG	3	Lab	N/A	No	O	A-D
Leik (1963)[c]	9	9	Task	PR	0.04	M	Oth	Yes	Par	C/S	MG	3	Lab	N/A	No	O	A-D
Margolin & Wampold (1981)[b]	39	39	Sug	$F = 1.35$	–0.19	W	Top	Yes	Oth	Spo	MG	2	Lab	20	No	O	DS
Margolin & Wampold (1981)[b]	39	39	Dir	$F = 0.62$	–0.13	W	Top	Yes	Oth	Spo	MG	2	Lab	20	No	O	DS
Margolin & Wampold (1981)[b]	39	39	Dis	$F = 0.09$	–0.05	W	Top	Yes	Oth	Spo	MG	2	Lab	20	No	O	DS
Margolin & Wampold (1981)[b]	39	39	Crit	$F = 3.13$	–0.28	W	Top	Yes	Oth	Spo	MG	2	Lab	20	No	O	DS
Mikolic, Parker, & Pruitt (1997)[b]	37	35	Sug	$F = 9.27$	0.72	M	Top	Yes	UG	Str	Both	3	Lab	50	Yes	A	Test
Mikolic et al. (1997)[b]	37	35	Dir	$F = 6.95$	–0.62	M	Top	Yes	UG	Str	Both	3	Lab	50	Yes	A	Test
Mikolic et al. (1997)[b]	37	35	Dis	$F = 18.99$	–1.03	M	Top	Yes	UG	Str	Both	3	Lab	50	Yes	A	Test
Mikolic et al. (1997)[b]	37	35	Crit	$F = 9.52$	–0.73	M	Top	Yes	UG	Str	Both	3	Lab	50	Yes	A	Test
Moore, Shaffer, Goodsell, & Baringoldz (1983)	20	20	Inf	$p = .5$	0	M	Oth	Yes	UG	Str	Both	2	Lab	N/A	No	A	Test
Mulac, Wiemann, Widenmann, & Gibson (1988)[d]	12	12	Dir	*M* and *SD*	0.46	M	Oth	Yes	UG	Str	SG	2	Lab	20	No	A	A-D
Mulac et al. (1988)[d]	24	24	Dir	*M* and *SD*	0.11	M	Oth	Yes	UG	Str	MG	2	Lab	20	No	A	A-D
Nemeth, Endicott, & Wachtler (1976)[b]	72	96	Sug	$F = 5.26$	0.36	U	Oth	Yes	UG	Str	MG	6	Lab	120	No	V	A-D
Nemeth et al. (1976)[b]	72	96	Sug	$F = 5.81$	0.38	U	Oth	Yes	UG	Str	MG	6	Lab	120	No	V	A-D
Nemeth et al. (1976)[b]	72	96	Inf	$F = 8.73$	0.46	U	Oth	Yes	UG	Str	MG	6	Lab	120	No	V	A-D
Nemeth et al. (1976)[b]	72	96	Dis	$F = 0.05$	–0.03	U	Oth	Yes	UG	Str	MG	6	Lab	120	No	V	A-D
Pellegrini, Brody, & Stoneman (1987)[c]	18	18	Inf	*M* and *SD*	–0.25	M	Oth	No	Par	C/S	MG	3	Lab	36	No	A	CH
Pellegrini et al. (1987)[c]	18	18	Inf	*M* and *SD*	–0.60	M	Oth	No	Par	C/S	MG	3	Lab	36	No	A	CH
Pellegrini et al. (1987)[c]	18	18	Inf	*M* and *SD*	0.30	M	Oth	No	Par	C/S	MG	3	Lab	36	No	A	CH
Piliavin & Martin (1978)[b]	76	76	Task	$F = 25.17$	0.58	W	Oth	Yes	UG	Str	Both	4	Lab	35	No	A	A-T
Piliavin & Martin (1978)[b]	76	76	Sug	$F = 9.77$	0.36	W	Oth	Yes	UG	Str	Both	4	Lab	35	No	A	A-T
Piliavin & Martin (1978)[b]	76	76	Sug	$F = 15.91$	0.46	W	Oth	Yes	UG	Str	Both	4	Lab	35	No	A	A-T
Piliavin & Martin (1978)[b]	76	76	Sug	$F = 5.22$	0.26	W	Oth	Yes	UG	Str	Both	4	Lab	35	No	A	A-T
Pillon, Degauquier, & Duquesne (1992)[b]	20	20	Inf	$p = .5$	0	W	Oth	Yes	UG	Str	MG	2	Lab	10	No	A	Mix
Pillon et al. (1992)[b]	20	20	Dis	$p = .5$	0	W	Oth	Yes	UG	Str	MG	2	Lab	10	No	A	Mix
Porter et al. (1985)	57	57	Sug	$F = 10.3$	0.60	W	Top	Yes	UG	Str	MG	2	Lab	10	No	A	A-D
Reid, Keerie, & Palomares (2003)	21	21	Oth	G	0.34	M	Oth	Yes	UG	Str	MG	2	Lab	10	No	V	A-D
Resick et al. (1981)	18	18	Dis	$F = 0.03$	–0.04	W	Oth	No	Oth	Spo	MG	2	Lab	7	No	V	DS
Resick et al. (1981)	18	18	Crit	$F = 0.04$	0.05	W	Oth	No	Oth	Spo	MG	2	Lab	7	No	V	DS
Robey, Canary, & Burggraf (1998)	20	20	Crit	$t = 0.9$	–0.20	W	Oth	Yes	Oth	Spo	MG	2	Oth	7	No	A	Unst

Roopnarine & Adams (1987)[b]	37	37	Sug	$F = 4.19$	–0.34	M	Oth	No	Par	C/S	MG	3	Lab	8	No	V	CH
Roopnarine & Adams (1987)[b]	37	37	Inf	$F = 5.6$	–0.39	M	Oth	No	Par	C/S	MG	3	Lab	8	No	V	CH
Sayers & Baucom (1991)	60	60	Crit	*M* and *SD*	0.1	M	Top	Yes	Oth	Spo	MG	2	Lab	N/A	No	V	DS
Scudder & Andrews (1995)	80	62	Oth	$F = 1.51$	0.21	M	Oth	Yes	UG	Oth	SG	2	Lab	N/A	No	A	A-D
Simkins-Bullock & Wildman (1991)[c]	13	13	Sug	$P = 0.5$	0	W	Oth	Yes	UG	Str	SG	2	Lab	15	No	A	A-D
Simkins-Bullock & Wildman (1991)[c]	13	13	Sug	$p = .5$	0	W	Oth	Yes	UG	Str	MG	2	Lab	15	No	A	A-D
Stets & Burke (1996)	278	278	Crit	$p = .01$	–0.14	W	Oth	Yes	Oth	Spo	MG	2	Lab	15	No	V	DS
Stiles (1996)[b]	38	38	Inf	$P = 0.5$	0	M	Oth	Yes	UG	Str	MG	2	Lab	6	No	V	Unst
Stiles (1996)[b]	38	38	Dir	$p = .5$	0	M	Oth	Yes	UG	Str	MG	2	Lab	6	No	V	Unst
Turner, Tjaden, & Weismer (1995)	10	10	Inf	*M* and *SD*	–0.77	W	Oth	Yes	UG	Str	SG	2	Lab	5	No	V	A-D
Turner et al. (1995)	20	20	Inf	*M* and *SD*	–0.12	W	Oth	Yes	UG	Str	MG	2	Lab	5	No	V	A-D
W. Wood & Karten (1986)	16	16	Task	G	0.81	W	Top	Yes	UG	Str	MG	4	Lab	5	No	V	A-D
Yamada et al. (1983)[c]	28	28	Task	$P = 0.5$	0	W	Oth	Yes	UG	Str	SG	2	Lab	N/A	No	V	Unc
Yamada, Tjosvold, & Draguns (1983)[c]	32	32	Task	$F = 3.08$	0.31	W	Oth	Yes	UG	Str	MG	2	Lab	N/A	No	V	Unc

NOTE: *N* (w) = number of women; *N* (m) = number of men; Op Def = operational definition (Crit = criticize; Dir = directs or commands; Dis = disagrees or challenges; Inf = gives information; Sug = suggestion; Task = general task-oriented statements; Oth = other) Stat value = statistical value (*M* and *SD* = effect size computed from reported means and standard deviations; G = effect size computed based on aggregate of similar measures for same operational definition); G = index of effect size; Auth = first author's gender (M = man; W = woman; U = unclear); Pub = publication source (Top = top journal; Oth = other source); Gender = gender study (yes or no); Pop = type of population sampled (UG = undergraduate students; Par = parents; Oth = other); Rel = relationship between participants (C/S = participant with own child and spouse; Dat = dating couple; Frn = friends; Oth = other; Res = researcher and participant; Spo = spouses or domestic partners; Str = strangers); Comp = gender composition of group (Both = same gender and mixed gender combined; MG = mixed gender; SG = same gender and mixed gender combined); Size = group size (number of participants observed interacting together); Setting = observational setting (lab or other); Long = length of observation (in min); Res = whether the researcher was present during the observation (no or yes); Rec = method of recording interaction (A = audiotape only; O = on-site coding only; V = videotape); Activity = type of activity observed (A-D = assigned decision making or debate topic; A-T = assigned general topic(s); CH = interaction with child; DS = discussion about a disagreement; M-T = miscellaneous or mixed task activity; Mix = mixed activities; N-T = naturalistic task-oriented activity; SD = self-disclosure; Test = assigned test or puzzle; Unc = unclear; Unst = unstructured activity); N/A = information not available.

a. Carli (1989) tested for gender differences in assertive speech using different operational definitions separately for same gender groups, mixed gender groups, and both groups combined. The average effects associated with general assertive speech for same-gender groups and for mixed-gender groups were used when using independent samples as the unit of analysis.

b. Reported separate tests of gender differences in assertive speech using two or more different operational definitions with the same sample.

c. Reported separate tests of gender differences in assertive speech in two or more independent samples.

d. Tested gender differences in assertive speech using two or more operational definitions in two independent samples.

e. McMullen et al. (1995) reported findings from two separate studies with independent samples. For each study's sample, there were two separate tests using a similar operational definition (which were averaged when independent samples were used as the units of analysis).

often published in other sources, these top-tier journals consistently publish work considered of very high quality, and this classification method did not require making subjective evaluations of a given study's quality.

Statistical Analyses

Effect Sizes

B. Johnson's (1989, 1993) DSTAT software was used to carry out the statistical analyses. DSTAT reports Cohen's *d* index of effect size, which represents the average group difference in standard deviation units. According to Cohen (1988), an effect size below .2 (i.e., more than 85% overlap between women and men) is considered negligible. Meaningful effect sizes are characterized as small when $d \geq .2$ (i.e., 85% or less overlap between women and men), medium when $d \geq .5$ (i.e., 66% or less overlap), and large when $d \geq .8$ (i.e., less than 53% overlap). Based on the hypothesized direction of gender differences, average effects were positive (1) if women were higher than men in talkativeness, (2) if women were higher than men in affiliative speech, and (3) if men were higher than women in assertive speech.

Inferential Statistics

The DSTAT software converts the inferential statistics used to test for a gender difference (e.g., *t, F, r, p,* or *M* and *SD*) into Hedges' *g* standardized effect measure. DSTAT subsequently computes the combined effect size (Cohen's *d* or correlation coefficient *r*) across studies as well as focused comparison tests of effect sizes on blocked moderator variables using fixed effects. Between-study variance of blocked variables is modeled using the analog to the analysis of variance technique (B. Johnson, 1989). Similar to the one-way ANOVA, this technique handles categorical independent variables that are used to group effect sizes into mutually exclusive categories (Lipsey & Wilson, 2001). This procedure partitions the total variance into the portion explained by the categorical variable (Q_B), and the residual pooled within-groups portion (Q_W). Each of these *Q* values is distributed as a chi-square statistic. Interpretation of the fit of the categorical models is twofold: (1) a significant Q_B statistic indicates that the mean effect sizes across groups differ by more than sampling error; (2) a nonsignificant Q_W indicates homogeneity of effect sizes within the groups indicating no further variation among effect sizes. If a model indicates a significant Q_W for a level of a categorical variable, that variable alone is not sufficient for understanding its constituent effect sizes (Lipsey & Wilson, 2001). Thus, the influence of other independent variables may be investigated within the heterogeneous level of the original variable. This is analogous to testing for simple main effects in an ANOVA. When significant heterogeneity remained at particular levels of a moderator, follow-up tests were performed. That is, we explored if the effect of one moderator was specific to the particular condition of a second moderator. However, none of these analyses revealed any noteworthy findings, and therefore are not described later.

Trimming

To ensure that the overall effect sizes for each of the analyses accurately represented the overall distribution of effects, a trimming procedure was used to examine the stability of the overall effect size. Two separate analyses were performed to exclude the most extreme 10% and 20% of sampled studies to test overall effects with these reduced samples. These procedures did not appreciably alter the findings; thus, overall effect sizes were not dependent on a small proportion of the samples included in the meta-analyses (see Results).

Units of Analysis

Independent samples. The independent sample is a unit of analysis based on each independent group for which a gender comparison was made. For example, several studies reported gender effects separately for same-gender and mixed-gender groups. These were treated as two independent samples and entered separately into the meta-analysis. The independent sample was the unit of analysis used to test each of the moderator variables except for operational definition (explained next).

Test. In some studies, more than one measure of a given language construct was analyzed. For example, a study may have tested different types of assertive speech. When test is used as the unit of analysis, the effect sizes for each individual statistical test for a given language construct are included. Studies with more than one operational definition of the construct attain more weight in the average computation of the effect than those that include only one operational definition. Therefore, test is not an appropriate unit of analysis when analyzing other moderators. This unit of analysis was used only when examining operational definition as a moderator. In the other analyses, the effect sizes were averaged when there was more than one test for a sample.

"File Drawer Problem"

Some authors advocate including unpublished studies in meta-analyses out of concern for the file-drawer problem. This refers to a potential bias toward

TABLE 4: Stem and Leaf Display of Mean Effect Sizes for Gender Differences in Talkativeness

Stem	
–2.1	4
–2.0	
–1.9	
–1.8	
–1.7	
–1.6	
–1.5	9
–1.4	
–1.3	
–1.2	
–1.1	
–1.0	
–0.9	0 1 6 7
–0.8	0 4 6
–0.7	0 8
–0.6	1 1 2 2 4
–0.5	4 8 9 9
–0.4	6
–0.3	0 4 5 5 6
–0.2	7 7 7
–0.1	2 8 8
–0.0	3
0.0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 9
0.1	0 6 7
0.2	8
0.3	3 5 6 8 9
0.4	9
0.5	2
0.6	9
0.7	0
0.8	7
0.9	
1.0	
1.1	5
1.2	
1.3	
1.4	
1.5	
1.6	
1.7	
1.8	
1.9	
2.0	4

TABLE 5: Stem and Leaf Display of Mean Effect Sizes for Gender Differences in Affiliative Talk

Stem	
–0.7	0 6
–0.6	3
–0.5	4
–0.4	
–0.3	2
–0.2	1 2 8
–0.1	
–0.0	4 6 6 7 8
0.0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 7 7
0.1	3 5 5 9
0.2	9
0.3	1 1 3 7 9
0.4	2 4 7 8
0.5	9
0.6	7
0.7	0 2 4 4 8
0.8	
0.9	0
1.0	
1.1	
1.2	
1.3	
1.4	
1.5	6

TABLE 6: Stem and Leaf Display of Mean Effect Sizes for Gender Differences in Assertive Talk

Stem	
–0.7	7
–0.6	0
–0.5	6
–0.4	1 2
–0.3	6 9
–0.2	5
–0.1	0 2 4 6
–0.0	0 1 7
0.0	0 0 0 0 0 0 0 0 0 3 4 7
0.1	1 2 2 5
0.2	0 1 3 6
0.3	0 1 4
0.4	1 6 8
0.5	2
0.6	0 3
0.7	0 1 9
0.8	1
0.9	
1.0	
1.1	
1.2	3

the publication of significant results with many null results going unpublished (and thereby residing in researcher's file drawers). Tracking down unpublished studies, however, can be time-consuming and expensive (in cases of ordering microfiches). Some researchers have called into question the necessity of including unpublished studies in all meta-analyses. Recent reviews indicate that it is common to find meta-analyses based only on published studies (Sharpe, 1997), and that comparisons of meta-analyses with published and unpublished studies usually do not differ in results (Sutton, Duval, Tweedie, Abrams, & Jones, 2000).

There are four reasons why the file-drawer problem does not appear relevant in the present set of meta-analyses. First, including unpublished studies is primarily warranted when reviewing a research area with few published studies (Sharpe, 1997)—which was not the case here (see Results). Second, the present set of

TABLE 7: Gender Effects on Talkativeness, Affiliative Speech, and Assertive Speech for Independent Samples

	k	N	d	*95% Confidence Interval*	r	Q_W
Talkativeness	70	4,385	–.14***	–.19/–.08	–.07	243.42***
Affiliative speech	54	2,781	.12***	.06/.18	.06	99.27***
Assertive speech	50	2,541	.09***	.02/.15	.04	83.47***

NOTE: Positive effect sizes reflect higher scores for women with talkativeness, women with affiliative speech, and men with assertive speech. Thus, the negative average effect size associated with talkativeness indicates that contrary to prediction, men tended to be more talkative than women.
***$p < .01$.

sampled studies indicated no shortage of null results. This is depicted in the stem-and-leaf plots of the effect sizes for each of the meta-analyses presented in Tables 4, 5, and 6. This point is underscored by the negligible average effect sizes for all three language measures (see Results). Finally, if there was a publication bias toward reporting significant gender effects, then one might expect the bias to be more likely in studies focusing on gender than those that did not. This was not found with any of the three language constructs (see Results). Thus, the analyses do not indicate that there was a file-drawer problem—with the prevalence of null results perhaps being the most compelling point.

RESULTS

Three sets of meta-analyses were performed examining average gender differences in talkativeness, affiliative language, and assertive language, respectively. Furthermore, focused comparison tests of significance levels and effect sizes were carried out for various moderators with each language variable. The results are summarized in Tables 7 to 11. Table 7 presents the average gender effects on talkativeness, affiliative speech, and assertive speech. Table 8 presents the results associated with the operational definition moderator for each language construct. The effects of the other categorical moderator variables are presented separately for talkativeness, affiliative speech, and assertive speech in Tables 9, 10, and 11, respectively.

Talkativeness

Overall Gender Effects

The meta-analysis of gender differences in talkativeness was based on a total of 70 independent samples with a total $N = 4,385$ participants. We tested the hypothesis that women would be more talkative than would men. Among these investigations, there was a statistically significant mean effect size of $d = –.14$ (95% confidence interval [CI] = –.19 / –.08). The negative direction of the effect size indicates that contrary to prediction, men were significantly more talkative than were women.

Trimming

When 10% of the sampled scores were trimmed, there were 63 remaining samples with a statistically significant average effect size of $d = –.11$ (95% CI = –.17 / –.05). When 20% of sampled scores were trimmed, there were 56 remaining studies with a statistically significant gender difference and an effect size of $d = –.14$ (95% CI = –.20 / –.08). Thus, trimming 10% or 20% of the scores did not appreciably affect the overall finding, which means that there was no apparent bias from outlier scores.

Moderators

When classifying the relationship between partners, some studies combined familiar partners and strangers, which we refer to here as mixed-familiarity groups. Some independent samples were excluded when testing certain moderators as follows (with the reasons in parentheses): author gender, $k = 1$ (only initials for first name); length of observation, $k = 10$ (9 studies with missing information and 1 outlier with 2,880 min); researcher's presence, $k = 1$ (unclear procedure); setting, $k = 1$ (unclear setting); relationship, k = 2 (1 was a study between professor and students; 1 did not describe the nature of the relationship); group size, $k = 1$ (size not specified); gender composition, $k = 23$ (combined scores for same and mixed gender); activity, $k = 5$ (mixed activities or unclear activity).

The analyses revealed seven significant (or marginally significant) moderators of gender differences in talkativeness speech (see Tables 8 and 9). First, operational definition accounted for variations in effect sizes. The effect sizes associated with measures using MLU ($d = –.37$), total statements ($d = –.28$), and duration ($d = –.24$) were significantly different than were measures using either total words ($d = .01$) or total turns ($d = .40$). Rate ($d = –.14$) was significantly different from total turns but not any of the other measures. The

TABLE 8: Gender Effects on Talkativeness, Affiliative Speech, and Assertive Speech by Operational Definition

Type of Analysis	k	N	d	*95% Confidence Interval*	r	Q_W	Q_B
Talkativeness							38.45***
Total turns	4	239	$.40_a$**	.15/.65	.00	5.98	
Total words	18	1,350	$.01_b$	–.09/.11	.00	44.44***	
Rate	9	571	$–.14_{bc}$	–.29/.01	–.07	27.17***	
Duration	33	2,107	$–.24_c$**	–.32/–.16	–.12	100.11***	
Miscellaneous	1	20	$–.26_{abc}$	–.88/.36	–.13	0.00	
Total statements	4	220	$–.28_c$**	–.53/–.03	–.14	0.86	
Mean length of utterance	8	313	$–.37_c$**	–.56/–.17	–.18	37.53***	
Affiliative speech							24.47***
Active understanding	3	152	$.41_a$**	.10/.72	.20	4.07	
General socioemotional	16	667	$.35_a$**	.21/.48	.17	29.43**	
Support	10	554	$.16_{ab}$**	.01/.32	.08	26.15***	
Agree	13	818	$.08_b$	–.03/.18	.04	33.18***	
Acknowledge	26	1,577	$–.01_b$	–.09/.08	.00	30.95	
Assertive speech							40.32***
Criticize	12	672	$–.13_a$**	–.25/–.02	–.07	15.07	
Disagreements	10	499	$–.06_{ab}$	–.22/.09	–.03	29.64***	
Directives	11	467	$.00_{ab}$	–.15/.16	.00	20.51**	
Informs	15	779	$.07_b$	–.04/.19	.04	21.32	
Miscellaneous	2	163	$.23_{bc}$	–.06/.53	.12	0.12	
Suggestions	13	934	$.27_c$**	.16/.38	.13	20.28*	
General task	9	386	$.38_c$**	.20/.56	.19	18.26**	

NOTE: The moderating effect of operational definition on gender differences in each of the language constructs was analyzed using test as the unit of analysis. With talkativeness and affiliative speech, a positive effect size indicates a higher mean score for women than men. With assertive speech, a positive effect size indicates a higher mean score for men than women.
*$p \leq .10$. **$p < .05$. ***$p < .01$.

operational definitions associated with significant effect sizes included MLU, total statements, duration, and total turns. Of these, total number of turns was the only measure associated with greater talkativeness among women than men. The latter effect is based on only four samples and therefore should be viewed cautiously.[4]

Second, the relationship between the participants was significant. A sizable *positive* effect size (i.e., women more talkative) was seen in studies of classmates (d = .54) and parents with their children (d = .42), which were significantly different than the *negative* effect sizes (i.e., men more talkative) seen between spouses or partners (d = –.38), mixed-familiarity groups (d = –.23), and strangers (d = –.17). Also, interactions between friends (d = .06) were significantly different than those between classmates or spouses/partners. (Only one study examined dating partners, and therefore it is not mentioned here.) A follow-up analysis was performed to test the overall effect of familiarity. Friends, dating partners, spouses or partners, and parents with children were combined to create a *close-relationship* category. In the subsequent test, interactions between close relationships (d = .04) were different than between strangers, $Q_B(1) = 5.07$, $p < .05$; classmates, $Q_B(1) = 6.11$, $p < .05$; or mixed-familiarity groups, $Q_B(1) = 3.79$, $p = .05$.

Third, group size was a marginally significant ($p < .10$) moderator of gender differences in talkativeness. Men's greater talkativeness was more likely during dyadic interactions (d = –.16) than group interactions (d = –.07). Fourth, effect sizes were significantly larger in mixed gender groups (d = –.28) than same gender groups (d = –.08). Fifth, gender effects were larger with studies that took place in a university lab (d = –.17) than those that took place elsewhere (d = –.03).

Sixth, effect sizes varied with the activity. There were small to moderate and positive effect sizes during child-oriented activities (d = .43) or self-disclosure (d = .32). Both of these activities reflect feminine-stereotyped socioemotional contexts. Given this commonality as well as the small number of studies in each activity, we combined the two activities (d = .39) to make subsequent contrasts. They were significantly different than the moderate and negative effect sizes associated with discussions of nonpersonal topics (d = –.79), $Q_B(1) = 32.74$, $p < .01$; or disagreements (d = –.56), $Q_B(1) = 14.25$, $p < .01$. Child-oriented, self-disclosure, nonpersonal topics, and disagreements were all significantly different from the negligible effect sizes associated with miscellaneous tasks (d = –.05), unstructured activities (d = –.07), or deliberations (d = –.13).

TABLE 9: Comparison Tests of Moderator Variables of Gender Effects on Talkativeness

Moderator	k	N	d	*95% Confidence Interval*	r	Q_W	Q_B
INTERACTIVE CONTEXT							
Student status							0.65
Undergraduate	54	3,011	$-.15^{**}$	–.22/–.09	–.08	197.62^{***}	
Other	16	1,374	$-.10_{a}$	–.20/.00	–.05	45.16^{***}	
Relationship							32.97^{***}
Classmates	3	111	$.54_{a}^{**}$	.17/.91	.26	2.45	
Parents and child	2	50	$.42_{ab}^{**}$	.03/.82	.21	0.70	
Dating partners	1	54	$.32_{ab}$	–.06/.70	.16	0.00	
Friends	3	174	$.06_{bc}$	–.22/.34	.03	4.38	
Strangers	50	3,303	$-.17_{cdc}^{**}$	–.23/–.10	–.08	187.48^{***}	
Mixed familiarity	5	302	$-.23_{cd}^{**}$	–.43/–.02	–.11	4.96	
Spouses/partners	4	92	$-.38_{d}^{**}$	–.67/.08	–.19	9.48^{*}	
Group size							3.15^{*}
Dyad	49	2,783	$-.16_{a}^{**}$	–.23/–.10	–.08	179.12^{***}	
Group	19	1,261	$-.07_{a}$	–.18/.04	–.03	59.85^{***}	
Gender composition							5.39^{**}
Same gender	13	669	$-.08_{a}$	–.22/.09	–.04	71.17^{***}	
Mixed gender	34	1,630	$-.28_{b}^{**}$	–.36/–.20	–.14	94.64^{***}	
Researcher present							1.87
Yes	9	623	$-.24_{a}^{**}$	–.40/–.07	–.12	56.45^{***}	
No	60	3,658	$-.11_{a}^{**}$	–.17/–.05	–.06	180.35^{***}	
Setting							4.22^{**}
Lab	58	3,220	$-.17_{a}^{**}$	–.23/–.10	–.08	227.24^{***}	
Other	11	1,160	$-.03_{b}$	–.15/.08	–.02	11.37	
Activity							44.38^{***}
Child oriented	2	50	$.43_{a}^{**}$	.03/.83	.21	0.70	
Self-disclosure	2	60	$.32_{ab}$	–.20/.83	.16	2.39	
Miscellaneous tasks	11	1,291	$-.05_{b}$	–.16/.06	–.03	3.34	
Unstructured	11	652	$-.07_{b}$	–.22/.08	–.03	38.77^{***}	
Deliberation	30	1,757	$-.13_{b}^{**}$	–.22/–.05	–.07	114.81^{***}	
Disagreement	2	57	$-.56_{c}^{**}$	–.94/–.18	–.27	5.68^{*}	
Nonpersonal topic	7	199	$-.79_{c}^{**}$	–1.05/–.54	–.37	26.71^{***}	
METHODOLOGICAL FACTORS							
Type of recording							0.46
Video	35	2,197	$-.16_{a}^{**}$	–.24/–.08	–.08	82.83^{***}	
Audio	32	2,035	$-.12_{a}^{**}$	–.20/–.04	–.06	141.60^{***}	
On site	3	153	$-.11_{a}$	–.37/.16	–.05	18.53^{***}	
Length							4.12
3-9 min	21	1,500	$-.19_{a}^{**}$	–.28/–.10	–.09	42.10^{***}	
10-18 min	20	1,258	$-.05_{a}$	–.16/.05	–.03	81.31^{***}	
20-120 min	19	876	$-.08_{a}$	–.21/.04	–.04	90.93^{***}	
First-author gender							0.28
Woman	42	2,929	$-.13_{a}^{**}$	–.20/–.06	–.06	176.10^{***}	
Man	27	1,448	$-.18_{a}^{**}$	–.25/–.06	–.08	67.05^{***}	
Gender study							0.32
Yes	62	3,893	$-.13_{a}^{**}$	–.19/–.07	–.07	222.26^{***}	
No	8	492	$-.18_{a}^{**}$	–.36/–.01	–.09	20.84^{***}	
Publication source							15.97^{***}
APA journal	13	859	$-.36_{a}^{**}$	–.48/–.24	–.18	48.08^{***}	
Other source	57	3,526	$-.08_{b}^{**}$	–.14/–.02	–.04	179.36^{***}	
Publication year							0.04
1960-1985	35	2,638	$-.14_{a}^{**}$	–.21/–.06	–.07	139.05^{***}	
1986-2005	35	1,747	$-.14_{a}^{**}$	–.22/–.05	–.07	104.37^{***}	

NOTE: APA = American Psychological Association. For each moderator variable, mean effect sizes (*d*) with different subscripts are significantly different ($p < .05$).
$^{*}p \leq .10$. $^{**}p < .05$. $^{***}p < .01$.

TABLE 10: Comparison Tests of Moderator Variables of Gender Effects on Affiliative Speech

Moderator	k	N	d	*95% Confidence Interval*	r	Q_W	Q_B
INTERACTIVE CONTEXT							
Student status							10.66***
Undergraduate	37	1,800	$.20_{a}$**	.12/.29	.10	69.91***	
Other	17	981	$–.01_{b}$	–.11/.08	–.01	6.64	
Relationship							11.79*
Classmates	2	103	$.34_{ab}$	–.05/.73	.17	1.92	
Dating partners	1	54	$.32_{ab}$	–.06/.70	.16	0.00	
Strangers	32	1,620	$.18_{a}$**	.09/.27	.09	64.46***	
Friends	6	210	$.09_{ab}$	–.15/.34	.05	5.07	
Parents and child	6	321	$.07_{ab}$	–.11/.24	.03	0.93	
Mixed familiarity	1	44	$.00_{ab}$	–.59/.59	.00	0.00	
Spouses/partners	6	429	$–.06_{b}$	–.20/.08	–.03	3.05	
Group size							1.20
2	40	1,889	$.09_{a}$**	.01/.16	.04	54.25	
3 or more	14	892	$.17_{a}$**	.05/.29	.08	31.76***	
Gender composition							10.09***
Same gender	12	510	$.33_{a}$**	.15/.51	.16	20.91**	
Mixed gender	27	1,062	$.01_{b}$	–.07/.10	.01	33.50	
Researcher present							0.13
Yes	52	2,637	$.11_{a}$**	.04/.17	.05	85.80***	
No	1	24	$.00_{a}$	–.57/.57	.00	0.00	
Setting							2.63*
Lab	50	2,720	$.12_{a}$**	.06/.19	.06	82.81***	
Other	4	61	$–.18_{a}$	–.54/.18	–.09	1.78	
Activity							18.42***
Nonpersonal topic	2	202	$.44_{a}$**	.16/.72	.21	2.53	
Deliberation	23	999	$.21_{bc}$**	.10/.32	.10	43.29***	
Self-disclosure	2	54	$.20_{abc}$	–.26/.67	.10	1.05	
Miscellaneous tasks	6	402	$.03_{c}$	–.16/.23	.02	10.14	
Child oriented	2	61	$.00_{c}$	–.35/.35	.00	0.00	
Disagreement	5	465	$–.03_{c}$	–.16/.11	–.01	1.36	
Unstructured	9	344	$–.10_{c}$	–.28/.09	–.05	4.58	
METHODOLOGICAL FACTORS							
Type of recording							1.08
Audio	21	1,025	$.16_{a}$**	.05/.26	.08	24.14	
Video	29	1,675	$.08_{a}$	.00/.17	.04	61.63***	
On site	4	81	$.11_{a}$	–.19/.42	.06	0.38	
Observation length							6.54**
4-8 min	14	538	$.21_{a}$**	.07/.35	.10	22.87*	
10-15 min	13	834	$.01_{b}$	–.11/.12	.00	6.64	
20-300 min	16	867	$.18_{a}$**	.07/.30	.10	30.17***	
First-author gender							1.30
Woman	32	1,703	$.14_{a}$**	.06/.22	.07	53.80***	
Man	22	1,078	$.07_{a}$	–.04/.17	.03	32.12*	
Gender study							1.42
Yes	51	2,588	$.13_{a}$**	.06/.19	.06	85.71***	
No	3	193	$–.02_{a}$	–.24/.20	–.01	0.09	
Publication source							0.19
APA journal	11	519	$.14_{a}$**	.00/.28	.07	21.13**	
Other source	43	2,262	$.10_{a}$**	.03/.18	.05	65.91***	
Publication year							4.76**
1960-1985	20	1,099	$.20_{a}$**	.10/.31	.10	38.02***	
1986-2005	34	1,682	$.06_{b}$	–.03/.14	.03	44.45	

NOTE: APA = American Psychological Association. For each moderator variable, mean effect sizes (*d*) with different subscripts are significantly different ($p < .05$).
*$p \leq .10$. **$p < .05$. ***$p < .01$.

TABLE 11: Comparison Tests of Moderator Variables of Gender Effects on Assertive Speech

Moderator	k	N	d	*95% Confidence Interval*	r	Q_W	Q_B
INTERACTIVE CONTEXT							
Student status							11.08***
Undergraduates	29	1,537	$.19_a$	.10/.27	.09	44.64*	
Other	21	1,004	$–.03_b$	–.13/–.06	–.02	27.75	
Relationship							18.88***
Classmates	2	147	$.23_a$	–.10/.55	.11	0.20	
Strangers	26	1,302	$.22_a$**	.12/.31	.11	45.85***	
Dating partners	1	54	$.12_{abc}$**	–.26/.50	.06	0.00	
Friends	5	186	$.05_{abc}$	–.21/.31	.03	2.61	
Parents and child	10	408	$.00_{bc}$	–.15/.15	.00	13.42	
Spouses/partners	6	444	$–.12_c$	–.25/.01	–.06	2.64	
Group size							0.26
2	33	1,663	$.02_a$	.00/.15	.04	53.59**	
3 or more	17	878	$.11_a$**	–.01/.23	.06	29.62**	
Gender composition							7.64**
Same gender	11	550	$.29_a$**	.12/.46	.15	21.70**	
Mixed gender	33	1,393	$.03_b$	–.05/.11	.01	42.86	
Researcher present							9.08***
Yes	2	96	$–.46_a$**	–.83/–.10	–.23	0.13	
No	48	2,445	$.10_b$**	.04/.17	.05	74.26**	
Setting							3.21*
Lab	46	2,482	$.10_a$**	.03/.16	.05	77.55***	
Other	4	59	$–.24_a$	–.61/.12	–.12	2.71	
Activity							30.30***
Nonpersonal topic	2	202	$.48_a$**	.20/.76	.23	0.71	
Deliberation	26	1,371	$.20_b$**	.11/.29	.10	34.18	
Unstructured	2	58	$–.07_b$	–.43/.30	–.03	0.24	
Miscellaneous tasks	4	165	$–.01_b$	–.32/.29	–.01	6.19	
Disagreement	7	512	$–.10_b$*	–.22/.03	–.05	5.97	
Child oriented	6	125	$–.28_b$**	–.53/–.03	–.14	4.95	
METHODOLOGICAL FACTORS							
Type of recording							5.07*
Audio	25	1,319	$.14_a$**	.04/.23	.07	27.24	
Video	21	1,141	$.06_{ab}$	–.03/.16	.03	49.08***	
On site	4	81	$–.22_b$	–.53/.09	–.11	2.09	
Observation length							3.29
5-8 min	10	355	$.08_a$	–.08/.24	.04	19.18**	
10-15 min	9	512	$–.02_a$	–.15/.10	–.01	15.58*	
20-300 min	20	860	$.13_a$**	.02/.24	.07	40.96***	
First-author gender							1.12
Woman	27	1,342	$.11_a$**	.02/.20	.05	61.88***	
Man	22	1,031	$.04_a$	–.06/.14	.02	19.17	
Gender study							1.40
Yes	44	2,348	$.10_a$**	.03/.17	.05	74.15***	
No	6	193	$–.03_a$	–.23/.17	–.01	7.92	
Publication source							0.30
APA journal	14	721	$.11_a$	–.01/.23	.06	39.22***	
Other source	36	1,820	$.05_a$	.00/.15	.04	43.95	
Publication year							3.89**
1960-1985	16	928	$.18_a$**	.07/.29	.09	18.98	
1986-2005	34	1,613	$.04_b$	–.04/.12	.02	60.60***	

NOTE: APA = American Psychological Association. For each moderator variable, mean effect sizes (*d*) with different subscripts are significantly different ($p < .05$).
*$p \le .10$. **$p < .05$. ***$p < .01$.

Finally, besides operational definition (previously described), publication source was another significant methodological moderator. Studies published in top-tier journals (d = –.36) had larger effect sizes than those published in other sources (d = –.08).

Follow-Up Regression Analysis

To explore the relative impact of these factors, multiple regression was carried out using the standardized *g* measures of effect size. Contextual factors that significantly moderated gender differences in talkativeness (described above) were dummy coded for the regression as follows: familiarity (1 = stranger, 0 = other), gender composition (1 = mixed gender, 0 = other), setting (1 = lab, 0 = other), and activity (1 = nonpersonal topic or disagreement, 0 = other). The resulting model was significant, $R^2 = .23$, $F(4, 65) = 4.91$, $p < .01$. Two significant predictors occurred in the model, which were activity, $\beta = -.37$, $t = -3.33$, $p < .01$; and gender composition, $\beta = -.25$, $t = -2.14$, $p < .05$. (As previously explained, the average effect size for gender differences in talkativeness was negative, with men generally being more talkative; therefore, the betas indicate that these two factors were related to men's greater talkativeness.)

Affiliative Speech

Overall Gender Effects

Across all studies testing for gender differences in affiliative speech, there was a total of 54 independent samples with a total $N = 2{,}781$. The hypothesis was that women would use more affiliative speech than would men. Among these investigations, there was a significant mean effect size of $d = .12$ (95% CI = .06 / .18). The positive direction of the effect size indicates that as predicted, women used significantly more affiliative speech than men.

Trimming

When 10% of the sampled scores were trimmed, there were 49 remaining studies with a statistically significant gender difference with an effect size of $d = .08$ (95% CI = .01 / .15). When 20% of sampled scores were trimmed, there were 44 remaining studies with a nonsignificant effect size of $d = .03$ (95% CI = –.04 / .10). Thus, trimming 10% or 20% of the scores did not appreciably affect the magnitude of the average effect size.

Moderators

We excluded some independent samples when testing the following moderators for the cited reasons: gender composition, $k = 15$ (combined scores for same and mixed gender); researcher's presence, $k = 1$ (unclear procedure); length of observation, $k = 11$ (information not indicated); and activity, $k = 5$ (mixed or unclear activities).

There were eight significant or marginally significant moderators of gender differences in affiliative speech (see Tables 8 and 10). First, the operational definition predicted variations in effect sizes. Significant average effect sizes (i.e., women greater than men) occurred with general active understanding ($d = .41$), general socioemotional speech ($d = .35$), and support ($d = .16$). The effect sizes for active understanding and general socioemotional speech were significantly larger than those for agreement ($d = .08$) and acknowledgment ($d = -.01$). The effect size for supportive speech did not significantly differ from any other definitions.

The results implicated five contextual moderators of gender differences in affiliative speech. First, gender differences were more likely in studies of undergraduates ($d = .20$) than those focusing on other populations ($d = -.01$). Second, gender differences among strangers ($d = .18$) was significantly greater than the difference among spouses or partners ($d = -.06$). More generally, when close relations were combined into a single category (friends, dating partners, spouses, spouse and children), the contrast between strangers ($d = .20$) and close relations ($d = .02$) was significant, $Q_B(1) = 5.78$, $p < .05$. Third, there was a significant gender difference among studies of same-gender groups ($d = .33$), but not those of mixed-gender groups ($d = .01$). Fourth, there was a trend ($p = .10$) suggesting that studies in university labs ($d = .12$) differed from those in other settings ($d = -.18$). Finally, gender differences in affiliative speech were sizable among studies looking at conversations about nonpersonal topics ($d = .44$), self-disclosures ($d = .20$), and deliberations ($d = .21$). These were significantly different than the negligible differences associated with studies examining miscellaneous tasks ($d = .03$), child-oriented activities ($d = .00$), disagreements ($d = -.03$), or unstructured activities ($d = -.10$).

Besides operational definition, publication year and observation length were two other methodological moderators. First, effect sizes were significantly larger among studies published prior to 1985 ($d = .20$) than those published more recently ($d = .06$). Second, there was a curvilinear association between observation length and effect size. Gender differences occurred in studies based on very brief (4-8 min) observations ($d = .21$) and somewhat long (20-300 min) observations ($d = .18$), but not in studies based on somewhat short (10-15 min) observations ($d = .01$).

Follow-Up Regression Analysis

Once again, we performed a multiple regression to test the relative influence of the significant contextual moderators. We dummy coded the following factors that were previously indicated to be significant moderators of gender differences in affiliative speech: student status (1 = undergraduate, 0 = other), gender composition (1 = same gender, 0 = other), and activity (1 = nonpersonal topic, deliberation, or self-disclosure, 0 = other). The resulting model was significant, $R^2 = .24$, $F(3, 50) = 5.17$, $p < .01$. Two of the predictors were significant: activity, $\beta = .27$, $t = 2.12$, $p < .05$; and gender composition, $\beta = .26$, $t = 2.05$, $p < .05$. In addition, student status was marginally significant, $\beta = .23$, $t = 1.85$, $p < .08$.

Assertive Speech

Overall Gender Effects

Among those studies testing for gender differences in assertive speech, there was a total of 50 independent samples with a total $N = 2{,}541$. Assertive speech was hypothesized to be more likely among men than women. There was a statistically significant but negligible mean effect size of $d = .09$ (95% CI = .02 / .15). The positive direction of the effect size indicates that as predicted, men used significantly more assertive speech than did women.

Trimming

When 10% of the sampled scores were trimmed, there were 45 remaining studies with a statistically significant gender difference with an effect size of $d = .09$ (95% CI = .02 /.17). When 20% of sampled scores were trimmed, there were 40 remaining studies with a statistically significant gender difference and an effect size of $d = .13$ (95% CI = .05 / .20). Thus, trimming 10% or 20% of the scores indicated no appreciable bias from outlier scores.

Moderators

Some independent samples were excluded when testing certain moderators as follows: gender composition, $k = 6$ (studies combined scores for same and mixed gender); activity, $k = 3$ (unclear activity or mixed activities); observation length of, $k = 11$ (information not indicated); and first-author gender, $k = 1$ (ambiguous first name).

There were several significant or marginally significant moderators of gender differences in assertive speech (see Tables 8 and 11). First, operational definition was a significant factor. Effect sizes were significantly larger for general task-oriented speech ($d = .38$) and suggestions ($d = .27$) than other measures; also, both of these measures had significant average effect sizes. Criticism ($d = –.13$) also had a significant average effect size, and the difference favored women. There were no average differences associated with informing ($d = .07$), directives ($d = .00$), or disagreements ($d = –.06$).

Besides operational definition, there were six significant contextual moderators and two other methodological moderators of gender differences in assertive speech. Among the contextual factors, first, average gender differences were larger among undergraduates ($d = .19$) than among others ($d = –.03$). Second, interactions between classmates ($d = .23$) or strangers ($d = .22$) were significantly different from those of parents with their children ($d = .00$) or spouses/partners ($d = –.12$). Also, when all close relationships (friends, dating partners, spouses, spouses with children) were combined, there was a significant difference between strangers ($d = .22$) and close relations ($d = –.04$), $Q_B(1) = 15.18$, $p < .01$. Third, gender differences were larger for same-gender groups ($d = .29$) than for mixed-gender groups ($d = .03$). Fourth, effect sizes were significantly different depending on whether the researcher was present ($d = –.46$) or not ($d = .10$) during the interaction. (However, the researcher was present in only 2 out of 50 studies, and therefore this result should be viewed cautiously.) Fifth, studies occurring in a research lab ($d = .10$) tended to be different ($p < .10$) than those occurring elsewhere ($d = –.24$).

Finally, the activity was the last aspect of the interactive context that moderated gender differences in assertive speech. There was a significant difference between studies examining discussions of nonpersonal topics ($d = .48$) than other activities. This difference should be viewed cautiously, however, because only two studies looked at nonpersonal topics. Perhaps more meaningful is that significant and positive effect sizes in assertive speech (i.e., men higher than women) occurred only among studies examining discussions of nonpersonal topics ($d = .48$) or deliberations ($d = .20$). In contrast, significantly negative effect sizes (i.e., women higher than men) occurred in studies of child-oriented activities ($d = –.28$). Negligible effect sizes were associated with unstructured activities ($d = –.07$) and disagreements ($d = –.10$).

In addition to operational definition (described earlier), one other methodological factor was implicated. Effect sizes were significantly larger among older studies ($d = .18$) than more recent studies ($d = .04$).

Follow-Up Regression Analysis

A regression analysis tested the relative influence of the significant contextual moderators of gender differences in assertive speech. For this purpose, we dummy coded the following factors: student status (1 = undergraduate, 0 = other), familiarity (1 = stranger or classmates, 0 = close relations), gender composition (1 = same gender, 0 = other), and activity (1 = nonpersonal topic or deliberation, 0 = other). A significant regression model was obtained, $R^2 = .24$, $F(4, 45) = 3.64$, $p < .05$. Familiarity was a significant predictor, $\beta = .41$, $t = 2.22$, $p < .05$; and activity was marginally significant, $\beta = .27$, $t = 1.85$, $p < .08$.

DISCUSSION

Statistically significant average gender differences in talkativeness, affiliative speech, and assertive speech were revealed in the present meta-analyses. However, the most interesting findings were the influence of the various moderators on these gender differences. We will first review the overall gender differences in language use. Then we will focus on the impact of the various moderator variables. We will also consider the relevance of the results to possible explanations for gender differences in language use.

Overall Gender Differences

Separate sets of meta-analyses were carried out to examine possible gender differences in talkativeness, affiliative speech, and assertive speech. Average effect sizes were statistically significant, though negligible ($d < .2$), for each of the three measures. Contrary to prediction, men tended to talk significantly more than women. However, as predicted, women tended to use more affiliative speech. Also, a negligible effect size was found for assertive speech, with men statistically more likely than women to use assertive speech. As discussed later, more meaningful effect sizes occurred when particular factors were taken into account. But given the small average effect sizes, we stress that women's and men's verbal behavior were generally quite similar.

The finding that men tended to be more talkative than women contradicts the popular stereotype that women are more verbose than men (see James & Drakich, 1993) as well as a meta-analysis suggesting that females are more verbally skilled than males (Hyde & Linn, 1988). The observed pattern is also opposite to the finding from a meta-analysis comparing mothers' and fathers' talkativeness with their children. Leaper et al. (1998) found an average effect size of $d = .20$ with mothers being more talkative than fathers. Furthermore, the average difference in the present analysis differs from still another meta-analysis examining gender differences in children's language use: Leaper and Smith (2004) found that girls were more talkative than boys ($d = .11$). Whereas the findings from the present meta-analysis may differ from these three meta-analyses, they are consistent with the conclusion reached in two other previous reviews of gender differences in talkativeness (Hall, 1984; James & Drakich, 1993). Possible reasons for the discrepancies between these various reviews will be addressed later when we discuss the moderator effects.

The results for gender differences in affiliative and assertive speech were in the expected directions and extend previous research in these areas. Women were more likely than men to use affiliative speech and less likely to use assertive speech, though the effect sizes were negligible for both. These findings, along with Leaper et al.'s (1998) findings that mothers use more affiliative speech and less assertive speech than fathers, provide converging evidence for gender-typed patterns in affiliative and assertive speech that map onto traditional gender divisions in our society. Gender-typed women may use more affiliative speech to connect with others, whereas gender-typed men may use more assertive speech to establish dominance and control (Aries, 1998; also see Hall, 2006b; Henley, 2001; LaFrance et al., 2003, for analogous gender differences in nonverbal behavior). However, as previously noted, the average differences were negligible in magnitude. Moreover, as discussed next, both contextual and methodological factors strongly influenced the extent and the manner with which women and men were found to differ in their verbal communication.

Moderators of Gender Differences in Language Use

Consistent with prior meta-analyses of language and gender (K. J. Anderson & Leaper, 1998; Leaper et al., 1998; Leaper & Smith, 2004), the present meta-analyses of adults' speech indicated that various factors moderated the likelihood and the magnitude of gender differences in talkativeness, affiliative speech, and assertive speech. These included the operational definition of the language construct, various aspects of the interactive context, and other methodological factors.

Operational Definition

Operational definition was a significant moderator for all three language constructs. For talkativeness, six specific definitions were contrasted: total words, total turns, total statements, rate, duration, and MLU or turn. Of these, there was no average gender difference in measures of total words spoken. The largest gender differences favoring men were obtained when measuring MLU, total statements, or duration. All three of these measures reflect how much speakers use the conversational floor. The amount that people talk is often linked with their relative power. Henley (1977, 2001) posited that people in authority typically talk more than their subordinates. She then drew a parallel to findings that men talk more than women in mixed-sex interactions—and argued that this was a manifestation of male dominance. This proposal is consistent with Schmid-Mast's (2002) meta-analysis indicating a positive average association between speaking time and trait dominance. (Moreover, the association between trait dominance and speaking time was stronger for men than women.)

Total number of turns was the only measure of talkativeness associated with a significant gender difference favoring women. This may reflect a higher rate of mutual engagement and support among women participating in a group (e.g., see Tannen, 1994). A related point is that women may be more likely than men to observe a norm that one speaker does not hold the floor too long. Given that the gender effect on total turns was based on only two samples, the result and our interpretation must be viewed cautiously.

Gender differences in affiliative speech also varied with the operational definition. General measures of affiliative speech and two specific measures—active understanding and verbal support—were associated with significant average effect sizes favoring women. No gender differences occurred with agreements or acknowledgments. It is notable that both active understanding and supportive behavior reflect the coordination of affiliation and self-assertion, whereas agreements and acknowledgments affirm the other but tend to downplay the self (see Leaper, 1991, 1994, 2000a; Leaper, Carson, Baker, Holliday, & Myers, 1995; Leaper & Smith, 2004; Penman, 1980). Thus, relative to men, women do not typically act in unassertive ways when demonstrating relatively high levels of affiliation in their speech.

Variations in effect sizes related to operational definition also occurred with assertive speech. There were no average differences in informing speech. Perhaps this should not be a surprise given this is a relatively neutral speech act (e.g., see Leaper, Tenenbaum, & Shaffer, 1999). Average gender differences were also negligible for directives and disagreements, which were surprising given that these were the most power-assertive speech forms. Whereas men and women did not differ in the average use of domineering speech, they did differ in their use of instrumental speech. First, men were more likely to give suggestions. In addition, the largest average effect size occurred with general task-oriented measures of assertive speech. The present findings suggest a greater tendency among men than women to approach social interactions in task-oriented ways. This is consistent with earlier interpretations of the research literature (see Aries, 1996). In contrast, it does not appear that men were generally domineering in their speech styles. However, there was still significant heterogeneity in the effect sizes for both directives and disagreements. Therefore, gender differences in these highly power-assertive speech forms may depend more on some of the situational factors reviewed later.

Contrary to prediction, women made significantly more critical statements than did men, although the magnitude of the size of the difference was negligible. Criticism may be part of the socioemotional work in relationships often associated more with women than men (see Aries, 1996). For example, researchers studying marital interaction have reported that wives tend to complain and make demands more than do husbands, whereas husbands tend to withdraw (Heavey, Layne, & Christensen, 1993; Noller, 1993). In this light, the observed pattern may be consistent with certain patterns of gender typing.

Impact of the Interactive Context

According to socialization explanation, gender differences are a result of men and women having grown up in different sociocultural contexts. Alternatively, social constructionists view gender differences as a result of interactions between men and women in which differences in status and power are expressed. As reviewed below, there is support for both approaches, which is consistent with the view that no single approach adequately explains gender differences in language use (see Leaper, 2000b; Leaper & Friedman, 2007; Leaper & Smith, 2004).

Undergraduate status. Student status was a significant factor with affiliative and assertive speech. Among undergraduates, women used more affiliative speech and less assertive speech than did men. There was no difference among nonstudents, who were generally older and more likely to be familiar with one another. Due to relatively few studies examining either familiar undergraduates or unfamiliar older adults, it was not possible to separately test these two factors. We suspect that self-presentation concerns may diminish with age, however, as individuals become more comfortable with their personal identities. (LaFrance et al., 2003, similarly found a decrease in gender differences in smiling with age.) For that reason, perhaps when being observed, the younger women were especially concerned with appearing "nice" (i.e., using affiliative speech), and the younger men were concerned with appearing "in control" (i.e., using assertive speech). As discussed next, however, the nature of the relationship between participants rather than age or student status appeared as a more influential factor.

Relationship between participants. According to contextual and social-role models, gender is most salient when people are not familiar with one another (Aries, 1996, 1998; Berger & Zelditch, 1998; Deaux & Major, 1987; Eagly, 1987). In the absence of specific status information, people tend to rely on diffuse status characteristics, such as gender, to guide their behavior (e.g., W. Wood & Karten, 1986). This pattern was seen in each of the three sets of meta-analyses. That is, women's greater use of affiliative speech, men's greater talkativeness, and men's greater use of assertive speech were more likely during interactions between strangers than close relations. In their meta-analysis, LaFrance et al. (2003) found an analogous effect of familiarity on gender differences (favoring women) in smiling.

When specific relationship types were considered, some interesting subtleties occurred with talkativeness. First, the largest difference in talkativeness favoring men occurred during interactions between spouses or partners. The finding suggests that marriage may be a relationship context where men tend to dominate the conversational floor. Given the common incidence of communication problems in dating relationships (e.g., Leaper & Anderson, 1997) and marriages (e.g., Gottman & Carrere, 1994), future researchers may want to consider relative talkativeness as a possible index of relationship satisfaction.

In contrast, studies of two parents with their children were associated with greater talkativeness among women than men. In their meta-analysis of parent gender differences in speech to children, Leaper et al. (1998) also found more talkativeness among mothers than fathers. To the extent that child care has traditionally been the domain of women, it is particularly striking that interacting with children was the one relationship context in which women were more talkative than men.

Group size. Competition and jockeying for status tend to be greater in groups—especially among men (and boys)—than during more intimate contexts (Bales & Borgatta, 1955; Benenson et al., 2001; Maccoby, 1998). Also, self-presentation concerns are heightened in larger groups (Deaux & Major, 1987). Contrary to these notions, however, group size did not significantly moderate gender differences in assertive speech.

Gender composition. We proposed that gender composition was a key moderator for testing and contrasting the social constructionist or the socialization interpretations. Confirmation for the social constructionist explanation was expected if effect sizes were significantly larger during mixed-gender than same-gender interactions (see Carli, 1990; Henley, 2001). That is, during mixed-gender interactions, the relative status of the two genders would be relevant. In contrast, support for the socialization explanation was presumed if gender differences were greater during same-gender than mixed-gender interactions (see Carli, 1990). That is, with same-gender partners, women and men would be more likely to enact shared gender-typed social norms.

The social constructionist model was most consistent with observed gender differences in talkativeness. Men were more talkative than were women during mixed-gender interactions. In contrast, there was no significant difference during same-gender interactions. This suggests that some men may attempt to dominate the social interaction with women through holding the conversational floor (see Henley, 2001). Future research should consider how other factors, such as the relationship between the conversation partners, affects the likelihood of this pattern.

In contrast, the pattern associated with the socialization interpretation characterized gender differences in affiliative and assertive speech. First, women were more likely than men to use affiliative speech during same-gender interactions; no significant difference occurred in mixed-gender interactions. This pattern parallels those reported in meta-analyses testing for gender differences in self-disclosure (Dindia & Allen, 1992) and smiling (LaFrance et al., 2003). In the first case, the authors found that women tended to disclose more than men, and that the difference was likely in same-gender but not mixed-gender interactions. The other study found women smiled more than did men, and that the effect was larger in same-gender than cross-gender interactions. These two reports and the present meta-analysis therefore suggest that gender differences in affiliative or expressive behavior may reflect gender-typed social norms. As developmental research has highlighted, affiliation is emphasized during girls' socialization in the family (Leaper, 2002; Leaper et al., 1998) and the peer group (Leaper & Friedman, 2007; Leaper & Smith, 2004).

The socialization interpretation also fit the findings for assertive speech. Whereas men used more assertive speech than women in same-gender pairs, there was essentially no difference in mixed-gender dyads. This pattern is surprising in light of prior suggestions that gender differences in assertive speech are more likely in mixed-gender than same-gender interactions (e.g., Aries, 1998; Carli, 1990). The latter argument is based on the premise that men use power-assertive speech to dominate women. However, perhaps men are more concerned with competing for dominance when interacting with *other men* (Maltz & Borker, 1982)—especially with either strangers or in larger groups (previously discussed). Indeed, some gender differences in nonverbal behavior (e.g., gaze, smiling, interpersonal distance) are more likely in same-gender than mixed-gender interactions (Hall, 1984; LaFrance et al., 2003). Also, during mixed-gender interactions, perhaps women tend to accommodate to men's more assertive speech style, and thereby women and men end up using comparable amounts of assertive speech (e.g., see Miller, Danaher, & Forbes, 1986). In this regard, this might be a pattern of women having learned to play by the men's rules (i.e., masculine-stereotyped norms).

Having offered the above interpretations of the observed gender composition effects, one caveat is worth noting: Testing for gender effects in same-gender and mixed-gender groups typically involves different types of statistical analyses. Tests of gender differences in same-gender groups are generally between-group effects, whereas tests of gender differences within mixed-gender groups are always within-group effects. Therefore, we should be cautious when comparing and contrasting the relative effect sizes from these two conditions.

Researcher's presence. The presence of the researcher during the participants' observed interaction was a significant moderator of gender differences in assertive speech. When the researcher was not present, men tended to use more assertive speech than did women. In contrast, if the researcher was present, women were the ones who used more assertive speech. Perhaps in the presence of an authority figure (i.e., the researcher), some men toned down their efforts to be in control and some women were more comfortable asserting themselves. However, this finding and interpretation need to be viewed cautiously, because there were only two samples when the researcher was present.

Setting. As previously noted, gender differences in social behavior are generally more likely in unfamiliar situations (Deaux & Major, 1987), and that includes laboratory settings. This was seen in all three sets of meta-analyses. Women's greater use of affiliative speech and men's greater talkativeness and use of assertive speech tended to be more likely when the research transpired in a university lab than another location. In their meta-analysis of gender differences in smiling, LaFrance et al. (2003) also found a larger effect size in lab settings. One obvious implication of this pattern of results is that researchers may be more likely to elicit gender-typed behavior when their studies are situated in their research labs.

Activity. Many gender-related behaviors are mediated through the type of activity being pursued. Hence, when studies are based on unstructured contexts in which the participants choose their own activities, one might assume that people select different activities based on their roles, expectations, and preferences. For example, studies suggest that women are more likely than men to discuss socioemotional-oriented topics with one another, whereas men are more likely to discuss instrumental-oriented topics (Bischoping, 1993). According to the socialization explanation, larger gender differences might be anticipated during gender-typed activities wherein women and men are often expected to enact normative behavior for their gender. Conversely, based on the social constructionist account, one would assume that women and men behave similarly when placed in the same situation. Therefore, gender differences in social behavior may be diminished when the type of activity is controlled (e.g., LaFrance et al., 2003; Leaper et al., 1998). In the present meta-analysis, gender differences in talkativeness, affiliative speech, and assertive speech did vary according to the activity setting. Moreover, activity was the only factor to emerge as a significant (or nearly significant) predictor in the exploratory regression analyses for all three language constructs.

Large effect sizes favoring greater talkativeness among men were observed in studies in which participants were assigned to discuss nonpersonal topics or disagreements. Why would men be especially more talkative when specific topics were assigned to discuss? One interpretation is that many men tended to approach an assigned topic as an opportunity to lecture about their views or as a task to accomplish. In contrast, perhaps it was more likely for women to talk about an assigned topic in a more relaxed, back-and-forth manner. It is interesting that there was a negligible average gender difference when an explicitly instrumental task (deliberation) was assigned. Perhaps these instrumental tasks involved stronger demand characteristics that affected men's and women's behavior in a similar manner.

Self-disclosure and child-oriented activities were two activities in which women were more talkative than men. Both of these are feminine-stereotyped activities, and therefore it is notable that they were the situations in which women were more talkative than men. To the extent that they generally spend time in these activities, women may be more comfortable than men talking in these contexts. Also, some men may tend to view these socioemotional activities as "women's work" and therefore become less engaged than do most women (Aries, 1998).

In conjunction with the relative absence of a gender difference in talkativeness during unstructured activities, the results indicate that gender differences in talkativeness are not absolute but rather depend on the social context. Thus, there were contexts where either men were more talkative, women were more talkative, or no average difference was seen. This pattern strongly supports a social-constructionist interpretation. In other words, variations in talkativeness likely depend on how individuals interpret particular situations. At the same time, however, how women and men interpret situations likely depends on their socialization (Leaper, 2000b).

The activity was also an aspect of the context that moderated gender effects on affiliative speech. Women's greater use of affiliative speech was limited to instrumental activities that included a combination of deliberations, assigned nonpersonal topics, and other tasks. There was no average difference in the other settings. This pattern was not anticipated; our interpretation is therefore speculative: Perhaps women are more likely than men to offer verbal support to their partners in the cooperative pursuit of the exercises. In contrast, men may be more likely to approach instrumental activities in a competitive manner, and thereby emphasize control and emotional restraint (Deaux & Major, 1987; Miller et al., 1986).

Finally, the activity was also a moderator of gender differences in assertive speech. Men's greater use of assertive speech was specific to discussions of nonpersonal topics and deliberations. In contrast, there were negligible differences for other types of activities, including unstructured activities and disagreements. There was a sizable effect size favoring women over men in the use of assertive speech during interactions with children. These results suggest yet another way in which the interpersonal context may have moderated not only the magnitude but also the direction of gender differences in assertive speech. Thus, in instrumental activities, men tended to use more assertive speech; in more interpersonal-oriented contexts, women used more assertive language.

Other Methodological Moderators

As highlighted in any research methods textbook, how an investigator measures a construct can influence the findings that ensue. The present meta-analyses underscore this point. Besides operational definition (previously discussed), several methodological factors moderated the magnitude and the direction of gender difference in language use. These included two measurement qualities (observation length and recording method) and four publication characteristics (author gender, gender focus of study, publication source, and year of study). Each of these factors is discussed below.

To examine whether observation length was a significant moderator, we contrasted studies in which the observations were very brief (4-8 min), short (10-15 min), and somewhat long (20-300 min). If gender differences in language are due more to people's self-presentation concerns, then one might expect that effect sizes would be more likely in briefer encounters. That is, self-monitoring of one's image might be more salient at the outset of an interaction. Indeed, some studies have suggested that gender differences in social behavior are more likely in shorter interactions (Eagly & Karau, 1991; Fagot, 1985; Wheelan & Verdi, 1992). Alternatively, if gender differences in communication reflect underlying stylistic preferences, then one might anticipate larger effect sizes with longer interactions. As an interaction progresses, people's personal styles are more likely to emerge (e.g., Deaux & Major, 1987). Our results indicated that observation length was a significant moderator of gender differences in affiliative speech. A curvilinear pattern occurred whereby women used more affiliative speech during very brief observations and somewhat long observations, but no gender differences were found during intermediate observations. This pattern suggests that gender differences may be influenced both by self-presentation concerns (i.e., in very brief encounters) and gender-related social norms (i.e., in longer encounters).

The method for recording behavior (video recording, audio recording, or on-site coding) significantly moderated gender differences in assertive speech. What we found was that audio and video recordings were significantly different than on-site coding. (Only four studies employed on-site coding; this result therefore should be viewed cautiously.) The ability to transcribe and review observations gives audio and video recordings more accuracy than on-site coding (Bordens & Abbott, 2002; Fagot & Hagan, 1988). However, audio-only recordings are potentially subject to biased coding when evaluating assertiveness due to the tonal qualities such as loudness and voice deepness that may favor men (Hall, 1984).

Next, we turn to the publication characteristics that were investigated. In the present meta-analysis, there were no apparent biases toward reporting gender differences based on either the author's gender or the study's focus on gender. Some prior meta-analyses of gender differences in language use have reported that author gender moderated the effects (K. J. Anderson & Leaper, 1998; Leaper et al., 1998), whereas others have not (Leaper & Smith, 2004).

Another tested moderator was the publication source. This factor was not related to average gender differences in either affiliative or assertive speech. However, the average effect size for gender differences in talkativeness (favoring men) was larger in studies published in top-tier journals than those published in other sources. This may reflect a bias toward publishing studies that illustrate a large gender difference rather than either a small difference or no difference. We do not consider it a serious confound due to the number of studies examining gender differences in talkativeness as well as the inclusion of several studies with no gender difference (see Table 4).

Finally, we examined whether year of study moderated gender differences. Given the dramatic changes in women's status and roles in North American society during the past half century, we anticipated average gender differences would be smaller in more recent studies. Other meta-analyses have similarly indicated some areas in which gender differences have been declining over the years, such as measures of language ability (Hyde & Linn, 1988), mathematics performance (Hyde, Fennema, & Lamon, 1990), gender attitudes (Twenge, 1997a), and agentic self-concept (Twenge, 1997b). Leaper and Smith's (2004) meta-analysis found that gender differences in boys' and girls' talkativeness, affiliative speech, and assertive speech had declined over the years. In the present meta-analysis, the cohort-related effect was seen with affiliative and assertive speech: In both cases, significant average gender differences occurred among studies published before 1985, but there was no difference among studies published since 1985. During the early years of the feminist movement, it was primarily women's gender roles that changed through the adoption of masculine-stereotyped roles and behaviors (Twenge, 2001). Perhaps our results indicate that North American men are increasingly adopting feminine-stereotyped behaviors through a greater use of affiliative speech. The trend may be especially likely among college students who represent a high proportion of the samples in the studies.

General Discussion

With all three language measures, the findings for the contextual moderators lend support to social constructionist models of gender to the extent that the incidence, the magnitude, and sometimes the direction of gender difference depended on particular situations. One argument among some researchers who take a social constructionist approach is that gender differences in communication are the manifestation of men's dominance over women (e.g., Henley, 1977, 2001) as well as individuals' self-presentation concerns (e.g., Berger & Zelditch, 1998; Deaux & Major, 1987; Eagly, 1987). If men are using language to control women, Carli (1990) reasoned that support for the dominance explanation would be indicated if gender effects were more likely during mixed-gender than same-gender interactions. This was the observed pattern for gender differences in talkativeness, but the opposite pattern was found with both affiliative or assertive speech forms. The results therefore suggest that gender differences in talkativeness may reflect a tendency among some men to control the conversational floor when interacting with women. The finding is compatible with the meta-analysis of K. J. Anderson and Leaper (1998) that found men were more likely than women to interrupt their conversational partners.

The situational influences revealed in the meta-analyses are also consistent with expectation-states theory (Berger & Zelditch, 1998) and the contextual-interactive model of gender (Deaux & Major, 1987). A postulate in both models is that gender differences in social behavior are more likely in situations when the participants' concerns for self-presentation are heightened—particularly in uncertain or ambiguous social settings. For example, this includes interactions with strangers. Overall, gender-typed differences in both affiliative and assertive speech were more likely during interactions between strangers than between close relations. In addition, gender differences in all three language constructs tended to be more likely in research labs than in more naturalistic settings. (Also, studies in labs tend to involve strangers.) Given both the unfamiliar nature of a lab setting as well as possible concerns with appearing "normal," gender may take on more salience in this context. Thus, women and men may tend to rely on socialized gender scripts to guide their behavior—but mostly in unfamiliar social situations. In these ways, gender differences in social behavior appear to be less fixed within the person and more a matter of other people's expectations (Berger & Zelditch, 1998; Deaux & Major, 1987; Eagly et al., 2000). Also, when interacting with same-gender peers, shared gender norms may additionally contribute to the likelihood of engaging in some forms of gender-typed behavior.

Support for the socialization explanation was also found. Most notably, this was indicated by the greater likelihood of gender differences in affiliative and assertive speech during same- than mixed-gender interactions. The underlying rationale is that group differences are more likely when speakers are interacting with others who share the same background and social norms. At the same time, gender differences in all three language measures varied according to other features in the interactive context, such as the relationship between the participants or the type of activity. In these ways, both individual and situational variables influenced people's behavior.

Finally, the pattern of results associated with the meta-analysis of gender effects in language behavior did not support the strong-effects biological explanation but provided partial confirmation to both the socialization and the social-constructionist explanations. The strong biological explanation for gender differences in language was undermined by the negligible overall effect sizes for gender. The socialization explanation was somewhat supported by the greater talkativeness of women than men during socioemotional activities and the greater talkativeness of men during the relatively more instrumental activities. However, some researchers might interpret the latter findings as providing support for the weak-effects version of the biological explanation. Also, it is possible that some weak sex-linked biological influences are subject to modification by past experience or situational demands.

In conclusion, we propose the results of the meta-analyses bolster arguments for social rather than strong biological influences on the incidence and the magnitude of gender differences in language use. The social constructionist explanation was upheld by the consistent pattern of findings indicating the context-specific nature of the gender effects. The socialization explanation was supported by findings of possible historical changes as well as indications that certain gender differences occurred only in same-gender dyads or groups. As proposed in this article and elsewhere (Leaper, 2000b; Leaper & Friedman, 2007; Leaper & Smith, 2004; W. Wood & Eagly, 2002), the social-constructionist and the socialization approaches may offer complementary explanations for the manifestation and the maintenance of gender-related variations in social behavior. From early childhood, dominant cultural practices establish conditions that often call for different roles and statuses for girls and boys. These different opportunities foster corresponding gender differences in expectations, preferences, and competencies. Thus, to best understand the gender-related variations in social behavior, we will need to better formulate and take into account a combination of cultural, institutional, interpersonal, individual, and biological factors.

NOTES

1. Studies of nonverbal communication point to analogous gender-related variations (e.g., see Hall, 2006b; Henley, 2001; LaFrance, Hecht, & Paluck, 2003). However, as Hall (2006a) noted, "nonverbal behavior is notoriously ambiguous in meaning" (p. 388). In contrast, the meaning of verbal behavior is relatively easier to interpret.

2. Other authors have described affiliative and assertive interpersonal behavior using a variety of terms. Some notable examples include task-oriented and socioemotional activity (Bales, 1950), instrumental and expressive behavior (Parsons & Bales, 1955), dominance and love (Leary, 1957), control and affection (Schutz, 1958), agency and communion (Bakan, 1966), power and affiliation (McClelland, 1987; Wiggins, 1973), and other-transforming and self-transforming orientations (Selman & Demorest, 1984), respectively. Although assertion and affiliation are not mutually exclusive psychological acts, they can be viewed as separate dimensions (see Leaper, 1991, 1994, 2000a; Leaper, Tenenbaum, & Shaffer, 1999; Penman, 1980). According to this scheme, a speech act may be both assertive and affiliative when it is collaborative. Examples would include suggestions for joint activity ("Let's go for a walk") or elaborating in relevant ways on the other speaker's topic. Speech acts that are assertive but low in affiliation are controlling (e.g., directives, criticism). Speech acts that are affiliative but low in assertion are obliging (e.g., agreements). Finally, speech acts that are low in both affiliation and assertion indicate withdrawal.

3. Earlier, it was noted that the effect size for gender differences in tests of language production was $d = .33$. Language production was one type of language measure examined, and it was the one that had the largest effect size. Other measures included tests of general verbal ability ($d = .20$), anagrams ($d = .22$), essay writing ($d = .09$), reading comprehension ($d = .03$), vocabulary ($d = .02$), SAT-Verbal ($d = -.11$), and analogies ($d = -.16$).

4. Total turns may be most useful as an index of talkativeness when considering a group of individuals. Within a dyad, the number of turns is necessarily equal (unless one person does a monologue). Within a larger group, it is possible for group members to vary in taking conversational turns. Accordingly, a follow-up test was carried out to consider if group size moderated the gender effect among studies using total turns. The contrast was significant, $Q_B(1) = 4.00$, $p < .05$, with a greater number of turns among women than men in groups ($k = 2$; $d = .52$, $p < .05$) but not in dyads ($k = 2$; $d = -.13$, *n.s.*).

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