COMMUNICATION ACCOMMODATION THEORY:
UNDERSTANDING LANGUAGE USE
IN SOCIAL INTERACTION

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Abstract

Communication accommodation theory (CAT) is currently the most encompassing theory of language use in social situations. It seeks to explain not only language use, but also the social psychological processes underlying language use. At CAT’s core are three adaption strategies: convergence, maintenance, and divergence. That is, adapting toward, not adapting, or adapting away from the language used by one’s conversational partner. However, as well as describing how language changes, CAT explains why people use different strategies, and what follow-on effects use of these strategies cause.

In the Chapter 2, CAT was applied to a novel communication medium — toilet graffiti. Graffiti were collected verbatim from adjacent male toilets, female toilets, and study booths. Gender differences in language styles used in male and female toilets were generally consistent with those found in other media. These differences were mitigated in the mixed-gender context (study booths), suggesting convergence of gendered language.

Neither accommodation nor gendered language has been considered in adolescence, even though it has been argued that adolescence may be a key time for the development of such behaviour. In Chapter 3, 40 participants were paired in same- and mixed-gender dyads. Stronger gender differences were found in same-gender dyads, with clear evidence of partner effects. Taken together, these findings suggest that adolescents
do use gendered language in similar ways to adult populations, and that they also accommodate to gendered language styles.

A key untested hypothesis of CAT is that attraction or similarity should influence the amount of convergence in an interpersonal conversation. I manipulated physical attractiveness to test this hypothesis in Chapter 4, using images previously rated as high or medium attractive. 64 participants were sent randomly assigned high or medium attractive images of an opposite gender confederate netpal. Participants exchanged a series of emails with the confederate, who used either a male- or female-typical language style. As predicted, participants with a highly attractive netpal converged more than participants with a less attractive netpal.

In Chapter 5, individual differences were considered in both the use of gendered language and convergence to gendered language. Higher levels of convergence were best predicted by lower self-monitoring scores, but were also related to more feminine scores for females. Gendered language was not consistently predicted by any one variable, but an overall pattern emerged.

Finally, in Chapter 6, results were integrated with previous research and different theoretical perspectives. Numerous exciting possibilities for future research were also outlined. Overall, CAT was strengthened by my findings, but there is much research that can still be done.
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Contents

Abstract ii

Acknowledgments iv

List of Tables viii

List of Figures x

Chapter 1 Communication Accommodation Theory 1

Chapter 2 The Writing on the Stall: Gender and Graffiti 17
  Method .............................................. 23
  Sample ............................................ 23
  Procedure ....................................... 24
  Measures ......................................... 25
  Results ............................................ 27
  Discussion ...................................... 35

Chapter 3 Accommodation in Adolescence 39
  Method .............................................. 44
  Participants ..................................... 44
  Procedure ....................................... 44
  Coding ............................................ 45
Chapter 4  Does Greater Attraction Lead to Greater Convergence?  A Test of Communication Accommodation Theory  
Method  60
Participants  60
Attractiveness Stimuli  61
Procedure  61
Coding  63
Results  64
Discussion  70

Chapter 5  Individual Differences in Accommodation  75
Method  79
Participants  79
Individual Difference Measures  79
Procedure  82
Coding  85
Manipulation Check  85
Results  86
Individual Differences Analyses  87
## List of Tables

2.1 Proportion of Graffiti by Topic for Female Toilets, Study Booths, and Male Toilets .......................... 28

2.2 Frequencies of each Linguistic Feature per 100 Words for Female Toilets, Study Booths, and Male Toilets .......................... 34

3.1 Speaker Gender, Partner Gender, and Interaction Tests on Frequencies per 100 words for Language Variables .......................... 48

3.2 Means and Univariate Effects for Same-Gender and Mixed-Gender Dyads .......................... 49

4.1 Mean Frequencies per 100 Words (and Standard Errors) of Participants' Language Features for Significant Effects of Confederate Language Style, Confederate Attractiveness, and Participant Gender .......................... 67

5.1 Semantic Categories for IAT Discriminations .......................... 82

5.2 Correlations between Individual Difference Measures .......................... 83

5.3 Mean Frequencies per 100 Words (and Standard Errors) of Participants' Language Features for Confederate Language Style .......................... 88

5.4 Linear Discriminant Function Coefficients for Male and Female Convergence Measures .......................... 89
5.5 Means, Effect Sizes, and Inferential Statistics for Significant Effects of Participants’ Perceptions of their Netpal and Interaction. .................. 95

5.6 Linear Discriminant Function Coefficients for Participants’ Perceptions of their Netpal and Interaction ............ 96

A.1 Word Stimuli for each Semantic Category for the Implicit Association Tests ................................. 127

C.1 Mean Frequency of the Intended Use of Language Features for Male and Female Confederate Language Styles .... 136
List of Figures

4.1 Mean participant message length in words by participant gender and confederate attractiveness. 64
4.2 Mean number of compliments and attributive adjectives per hundred words by confederate attractiveness and language style. 66
4.3 Mean ratings of participants’ perceptions of the conversation and confederate by participant gender and confederate attractiveness. 69
5.1 Convergence to female language features as a function of gender and BSRI femininity 91
Chapter 1

Communication

Accommodation Theory

Human communication has been studied extensively, but primarily at a micro-level. As a result there is a lack of research and theoretical work looking toward broadly describing the psychological principles and processes underlying communication. Currently much knowledge has been accumulated in a relatively situation-specific and measure-specific way. Lacking is research looking for processes that would be applicable and generalisable across different situations and measures, and the integration of these processes into a global framework. I am certainly not promising a complete revolution, but I intend this thesis to be a step toward building a more comprehensive theoretical framework of communication, by attempting to test and build upon the best current candidate for a big-picture theory.

Specifically, I will be conducting rigorous empirical analyses looking at the influence of context and personal characteristics of conversants on communication. In addition to generating knowledge about specific contexts and personal characteristics, I intend to test and generate theory,
principles, and processes on the basis of my findings.

The best current attempt at an overarching framework to describe processes governing language use is communication accommodation theory (CAT; e.g., Boggs & Giles, 1999; Giles, Coupland, & Coupland, 1991; Shepard, Giles, & Le Poire, 2001). CAT grew out of speech accommodation theory (SAT) and SAT came from what was simply described as accommodation theory (see e.g., Giles, 1973; Giles, Smith, Ford, Condor, & Thakerar, 1980; Giles, Taylor, & Bourhis, 1973; Giles & Powesland, 1975; Coupland & Giles, 1988). The changes in name over the years in part reflect that accommodation is no longer just applicable to speech, but communication more generally, both in terms of nonverbal and paralinguistic features (e.g., smiling, gestures) and differing communication media (e.g., email and writing as well as speech).

‘Accommodation’ is the general term for the adaption of linguistic, paralinguistic or nonverbal behaviour. In reality, accommodation exists as a continuum; however, for ease of description it is usually broken into three basic processes: convergence, maintenance, and divergence. Convergence involves changing one’s behaviour to be more like those with whom one is communicating. Maintenance is the middle ground, where one does not adapt. Divergence refers to movement away from the behaviour of those with whom one is communicating. Boggs and Giles (1999) argue that “appropriate accommodation involves complementary matching of the partner’s behaviors” (p.229), which is consistent with the early formulations of the theory suggesting that convergence is the default process (Giles & Powesland, 1975).
Convergent accommodation, divergent accommodation, and maintenance are referred to in CAT literature as ‘approximation’ strategies (e.g., Shepard et al., 2001). This serves to distinguish them from other strategies recently incorporated into CAT: interpretability, discourse management, and interpersonal control. Attending to a conversational partner’s ability to comprehend communication is the focus of interpretability strategies, especially where the partner’s background creates special needs (e.g., partial deafness, second-language speaker). Discourse management is also partner-focused, but involves focusing on the partner’s needs and desires for the conversation (e.g., relevant topic selection, avoiding awkwardness). Interpersonal control strategies, in contrast, are self-focused, aiming to influence the conversational course to fulfill the speaker’s needs. The analysis of approximation strategies will be the main focus of this thesis.

Other more general social-psychological theories have been applied to language. However, these are often limited by the range of assumptions and predictions they make. For example, researchers primarily interested in intergroup processes have on occasion looked at language use as a dependent measure. Reid, Keerie, and Palomares (2003), for example, looked at gender salience and the use of tentative language by males and females under the rubric of self-categorization theory (SCT; Turner, 1985, 1987). Somewhat similarly, Postmes and Spears (2002) also considered the impact of gender salience on language, but framed their results in terms of the social identity and deindividuation (SIDE) model (Spears & Lea, 1992; Postmes, Spears, & Lea, 1999). A key weakness in trying to
apply theories such as these to language more generally is that they are very focused on making predictions for intergroup communication, leaving interpersonal predictions almost as the absence of the effect predicted for the intergroup scenario.

By comparison, CAT makes predictions about both intergroup and interpersonal situations. In fact, for intergroup communication, CAT should be quite reconcilable with research based on both SCT and the SIDE model. This is because CAT, SCT, and the SIDE model all share lineage back to social identity theory (SIT; e.g., Tajfel & Turner, 1979). The very distinction between interpersonal and intergroup situations has its origins in SIT. However, as there is less extant research on interpersonal communication, I will focus primarily on interpersonal communication.

Giles et al. (1991) argue that the quantity and direction of accommodation relates to social distance between interlocutors. Convergence, as a favourably-evaluated strategy, either reflects minimal social distance, or is used to reduce social distance. Maintenance and divergence, in contrast, either reflect or create social distance. However, Boggs and Giles (1999) argue that it is possible to use matching behaviours (those which would be typically marked as convergence) to reflect or create social distance. Negative strategies (nonaccommodation in Boggs and Giles’s terminology) include

...underaccommodation (some matching but not enough to be completely complementary); overaccommodation (exaggerating characteristics of the partner’s style so much that it
appears to be mimicking or mocking); and contra-accommodation (adopting contrasting communication behaviors to those of the partner). (p.230)

Where CAT is used descriptively, choice of strategy is used to ascribe motivation, social distance, and liking to communicants. The corollary of this is that motivation, social distance, and liking should predict strategy use. In intergroup work, the manipulation of motivation (e.g., manipulating group salience) is used to test theory, but this sort of work is less common in interpersonal communication research.

An alternative theoretical formulation that has a degree of overlap with CAT is Linguistic Style Matching (LSM; Niederhoffer & Pennebaker, 2002). LSM is defined as when “the words one person uses covary with those the other person uses on both a turn-by-turn level and on the broader conversational level” (p.338). This appears effectively to be convergence at a word level, which is not dissimilar to the measurement of word-level features such as intensifiers that have been used in studies of CAT (e.g., Fitzpatrick, Mulac, & Dindia, 1995; Thomson, Murachver, & Green, 2001).

The key difference between LSM and CAT is the relationship between similarity/attraction and matching/convergence. CAT predicts greater convergence with greater attraction or similarity, whereas Niederhoffer and Pennebaker (2002) conclude that LSM is not related to liking of one’s conversational partner. In Experiments 1 and 2, Niederhoffer and Pennebaker found that the quality of the interaction, both self-reported

\[1\] This is similar to the nonverbal coordination proposed by Cappella (1996)
by participants and as assessed by independent judges, was not related to LSM. However, when looking at the items they use to measure quality of the interaction, it is not clear that the items tap whether they liked the other person\(^2\). It is possible to have a smooth conversation, and become well acquainted with another person, regardless of whether you like and feel you are similar to the person you are talking to. In contrast, the analysis of Watergate transcripts in Experiment 3 shows what appears to be maintenance and divergence between President Nixon and the staff-member with whom the president had the most tense relationship, but convergence with other staff. Thus, it would appear that LSM and CAT may prove to be quite compatible, if analogous definitions are used. Whether or not liking is related to matching will be considered in Chapters 4 and 5.

There are a number of other communication theories that can also be broadly related to CAT. For example, interaction adaption theory (Burgoon, Stern, & Dillman, 1995) suggests that matching is default, similar to CAT. However, Burgoon et al. argue that this type of synchrony is biological. In contrast, CAT includes the role of more stable (non-biological) traits brought to into an interaction, such as psychological gender. Group membership, and the interplay between different groups is also quite central to CAT, but has not been included in the theoretical outline of interaction adaption. Another difference is that interaction adaption tends to focus on how changes in language behaviour influence the conversation. In contrast, changes in behaviour are typically the re-

\(^2\)Niederhoffer and Pennebaker themselves made this apparent leap from quality of interaction to liking.
result of a large variety of influences in the CAT conceptualisation of an inter-
action (Shepard et al., 2001). Similar discrepancies exist between CAT and other language theories (e.g., expectancy violations theory, Burgoon, 1993). Part of these differences may be based in the breadth of research that has seen CAT expanded so much since its original formulation.

The broad nature of CAT is also in some respects its key downfall. Since its original inception it has expanded rapidly into many novel areas, adding new processes and contextual influences. Unfortunately, this has lead to somewhat of a theoretical sprawl. This, in part, is as a result of CAT being used as a descriptive framework in which to interpret findings, rather than as a predictive model tested by experimental research. For example, CAT has been used to retrospectively explain Emperor Hiro-
hito’s interactions with Japanese farmers (Azuma, 1997). Azuma argues that the Emperor’s adoption of a dialect typical of the farmers, while simultaneously the farmers adopted a highly formal language befitting the emperor, is a classic example of over-accommodation. The fit between this explanation and CAT is more than reasonable, but not empirically testable. In many respects, fairly central tenets of the original theory are still not as well understood as they could be. Burgoon et al. (1995) go so far as to say that “[the increase in breadth] … has come at the cost of reduced parsimony and increased nonfalsifiability” (p.78).

One poorly-understood issue within CAT relates to the exact process of accommodation. Various, it has been referred to as ‘matching’ or ‘complementary matching’ (Boggs & Giles, 1999), but it is not clear how it differs from imitation. Imitation certainly does not seem to differ from
the conceptualisation of convergence. Maintenance would be failing to imitate, and divergence as some sort of negative imitation. Thus, it could be argued that accommodation differs from imitation as it is a bi-directional process.

Another related process, complementarity (e.g., Kiesler, 1983) suggests that rather than a matching or a failing to match, appropriate behaviour is to provide a different, complementary response. That is, when asked a question, responding with an answer is more appropriate than responding with a question. However, when analysing an entire conversation, not just a portion of the conversation, one person asking all the questions with another responding with all the answers produces a very asymmetric conversation. Thus, while at a localised point in time, complementarity might be appropriate, over a broader time period, matching is probably a better conversational indicator than complementarity. Complementarity has been at times suggested as a fourth strategy within CAT (Giles et al., 1980; Shepard et al., 2001), distinct from the convergence-divergence continuum. This has, however, generally escaped theoretical and empirical work with CAT. For example, Colley and Todd (2002) explain some findings as complementarity, but reference Kiesler (1983) rather than Giles et al. (1980).

Another aspect of CAT requiring further investigation involves which features are accommodated to. Language, as an almost indescribably rich phenomenon, can be measured in numerous ways. Does accommodation occur in all respects, or does accommodation only occur on some features? Theoretical outlines of CAT (e.g., Shepard et al., 2001) suggest
that accommodation may occur on some features only. However, predicting what these might be in advance remains a brave guess. One weak prediction is that some features retaining to identity may be retained (Giles & Powesland, 1975). That is, in a generally convergent situation, some features may not show convergence to highlight membership of a certain group, or some other feature of identity. One example outlined by Giles and Powesland is that in a mixed-gender interaction, some gender-typed features might be retained to highlight ‘partner-potential’. However, while this is a plausible prediction, picking which features would be used to highlight gender-identity and which would show convergence is still effectively post-hoc. Again criticising CAT, Burgoon et al. (1995) suggest that the “...the complexity of past findings showing a mix of convergence, divergence, and attunement related behaviors calls into question the theory’s ability to make precise a priori predictions” (p.78)\(^3\).

The measurement of accommodation tends to differ from study to study. This reflects both some uncertainty over theoretical definitions, as well as practical considerations in different studies. Due to the very nature of interaction, the potentially bi-directional influence of conversational partners on each other, naturalistic conversations produce inter-dependent data. This poses a methodological problem with three basic solutions. The first is to simply ignore it, using typical statistical methodology (e.g., Bilous & Krauss, 1988). The second is to use a confederate who uses a consistent language style (e.g., Hannah & Murachver, 1999; Thomson et al., 2001). This results in an asymmetric situation as the

\(^3\)It should be noted, however, that Burgoon et al. are potentially making CAT into a straw man, in order to make the case for their own theory stronger.
confederate does not accommodate, but typical statistical methods can be used on the resulting data. The third option is to use more complex and potentially elegant methods explicitly designed to deal with interdependent data (e.g., Fitzpatrick et al., 1995; Leaper, 1991).

Despite some clear gaps, research under the rubric of CAT has been quite extensive, involving the analysis of a large number of measures and different situations. For example, Buzzanell, Burrell, Stafford, and Berkowitz (1996) found that students adapted their messages to the greeting on a professor’s answerphone. Applicants made their accents more similar to the interviewer’s broad Australian accent in a real job-interview situation (Willeyns, Gallois, Callan, & Pittam, 1997). Watson and Gallois (1999) found that remembered accommodation in encounters between patients and their health professionals was linked to greater satisfaction. However, these studies are mostly applied in nature, using CAT descriptively, and inferring motivation, social distance, and liking after observing accommodation.

One way of testing the utility and validity of a theory is by applying it to novel situations, thus extending the theory’s domain. Chapter 2 applies CAT to gendered language styles in toilet graffiti. Toilet graffiti is a relatively understudied area, especially in terms of analysing it as a form of communication. Thus, observing accommodation to gendered language style in graffiti would be further evidence that CAT is applicable to all communication contexts.

Another method of assessing a theory is by testing predictions based on the theory. To date, CAT has not been subject to this sort of rigorous
experimental analysis of predictions. One key claim of CAT is that people converge towards those who they are attracted to, or feel more similar to (see, e.g., Boggs & Giles, 1999). However, typically convergence is observed, and then similarity or attraction between conversational partners is inferred post-hoc as a result of the observed convergence. In Chapter 4, the attraction between conversational partners is manipulated by making the partner appear as more or less physically attractive.

Individual differences in accommodation have not been well explored. Firstly, do all people accommodate? It seems reasonable to expect some differences in the magnitude of accommodation. Assuming the variation exists, what predicts greater accommodation? This is of theoretical interest, as understanding what makes some people accommodate more might shed more light on underlying psychological processes. Analysis of specific communicative acts, and prediction of future communicative behaviour would also be aided by a greater understanding of individual differences.

The one individual difference that has been considered in relation to accommodation is psychological gender/gender-stereotyping. Robertson and Murachver (2003) found that stronger gender stereotyping lead to less accommodation, but only in boys. Similarly, Fitzpatrick et al. (1995) saw less accommodation related to higher masculinity scores, but only in men. There is no clear explanation of why these effects are only found for men, but recent developments in measurement of implicit gender-stereotyping and psychological gender may help clarify this question.

Individual difference measures that have not been considered include
personality, self-monitoring, attributional complexity, and information processing style. It is plausible that people who are more aware of their own behaviour may be more sensitive to the behaviour of others, leading to greater convergence. Similarly, people who seek complex explanations or who are inclined to seek rational or intuitive explanations may be more likely to converge. These relationships are all speculative, with no research having been conducted in the domain of language.

In Chapter 5, I explore a number of possible predictors of individual difference. This considers self-monitoring, attributional complexity, rational-experiential thinking styles, and both explicit and implicit measures of psychological gender and gender-stereotyping.

To facilitate my research into accommodation I use a convenient, well-studied context, that of accommodation between women and men. A plethora of research has been conducted looking at the language use of women and men since Lakoff’s extremely influential Language and Women’s Place (1975). Ladegaard (1998) argues that since then research has typically fallen into three camps: deficit, dominance, and difference; more or less in that order. Lakoff (1975) is the starting point for deficit explanations “. . . that women are disadvantaged and their speech is characterised by uncertainty, lack of authority etc., whereas men’s speech is seen as the norm to which women are unable to conform” (p.21). Dominance explanations are based on the concept that language differences between men and women reflect differences in dominance or power between women and men (e.g., O’Barr & Atkins, 1980). Difference explanations often feature as having two goals, or two cultures. Tannen’s
(1990) distinction between women’s ‘rapport’ talk, and men’s ‘report’ talk; or Gray’s (1993) ‘Venus’ and ‘Mars’ are obvious examples of difference explanations. Difference explanations are popular as they do not imply that the language of men is more normative or that women’s language is inferior (Holmes, 1994) as deficit and dominance theories do. However difference explanations still imply a strong difference, whereas many (e.g., Hyde & Plant, 1995; Thomson & Murachver, 2001) would argue that “[gender] differences in behavior are small while similarities between the sexes [genders] are substantial” (p.331, Goldsmith & Dun, 1997). This overlap is not well captured by these difference explanations.

The following features have been identified with gendered language. Females are more likely to ask questions (Colley & Todd, 2002; Fitzpatrick et al., 1995; Tannen, 1994b), disclose personal information (Thomson & Murachver, 2001; a meta-analysis by Dindia & Allen, 1992), and refer to emotion (Fitzpatrick et al., 1995; Goldsmith & Dun, 1997; Mulac, Studley, & Blau, 1990; Thomson & Murachver, 2001; but see Anderson & Leaper, 1998). Females also, on average, use a greater frequency of intensifying adverbs (Fitzpatrick et al., 1995; McMillan, Clifton, McGrath, & Gale, 1977; Mulac et al., 1990; Thomson & Murachver, 2001), modals/hedges (Fitzpatrick et al., 1995; McMillan et al., 1977; Mulac et al., 1990; Thomson & Murachver, 2001), and subordinating clauses (Mulac & Lundell, 1986). In contrast, males are more likely to give opinions (Mulac & Lundell, 1986; Mulac et al., 1990), use expletives (Bayard & Krishnayya, 2001; Limbrick, 1991; but only in single-sex groups), and use longer sentences (Mulac, 1989; Mulac et al., 1990; but cf. Mulac
Males have also been seen to talk more than women in mixed-gender contexts, but less in same-gender contexts (Bilous & Krauss, 1988; Mulac, 1989). Naturally, like most social psychology, these findings are culturally relative. The preceding summary is most relevant to English-speaking western countries, notably the US and the UK. Research has confirmed that this is applicable in other countries, including Australia and, importantly, New Zealand.

Gender differences have been found consistently across a variety of different communication media. These include face-to-face communication (e.g., Bilous & Krauss, 1988; Hannah & Murachver, 1999), literature (Janssen & Murachver, in press), internet relay chat (Rodino, 1997), email (Thomson & Murachver, 2001; Colley & Todd, 2002), and mailing lists (Herring, 1994). These differences have been found across a variety of age ranges, including children (e.g., Haas, 1981; Leaper, 1991; Leaper, Tenenbaum, & Shaffer, 1999), university students (e.g., Mulac, 1989; Thomson & Murachver, 2001), and adults (e.g., Fitzpatrick et al., 1995).

Some research on gender differences has taken a CAT perspective. This has fallen into two main camps; either dyads have been constructed of participants paired with each other, or have involved each participant interacting with a confederate. Where participants are paired with each other, all-male, all-female, and mixed-gender dyads have usually been compared. Convergence is seen as a smaller difference between males and females in the mixed-gender dyad, relative to the difference between males and females in all-male and all-female dyads. This effect has been
observed in children (Leaper, 1991; Leaper et al., 1999), university stu-
dents (Bilous & Krauss, 1988), and adults (Fitzpatrick et al., 1995). However, whether adolescents converge to gendered language has not been considered. Chapter 3 examines whether adolescents converge to gendered language.

The alternative research paradigm has been to pair each participant with a confederate trained to use either a typical male or female language style. The participant’s level of adaption to the style of the confederate is the measure of convergence in these studies. The key advantage of confederate based studies is that they facilitate the manipulation of other aspects of the communication context independent of the behaviour of the participant’s conversational partner. For example, Thomson et al. (2001) manipulated confederate gender independent of confederate language style in email discourse. Thus, it was possible to assess the extent to which participants converged to the confederate’s actual language style, or to confederate gender (suggesting that the convergence was to the participant’s stereotype of the language style associated with the confederate’s gender). Thomson et al. found that convergence was primarily to language style, an effect which has also been seen in confederate studies with face-to-face interactions involving adults (Hannah & Murachver, 1999) and children (Robertson & Murachver, 2003).

In Chapter 2, CAT is applied to a study of graffiti, looking at accommodation in men’s and women’s toilets, and a mixed-gender situation. This assesses the applicability of CAT to an as yet untested communication medium. Another area which CAT has not been applied to is ado-
lescence. Research has focused only on adults and children, and accom-
modation between adolescents and adults, not on adolescents speaking
among themselves. Thus, Chapter 3 examines whether adolescents con-
 verge to gendered language. An examination of an unanswered research
hypothesis derived from CAT features in Chapter 4, seeing if greater at-
traction between conversational partners leads to greater convergence.
Chapter 5 looks at individual variation in accommodative behaviours,
specifically looking at how gender stereotypes and identification, along
with sensitivity to the situation and information-processing dispositions
might be related to accommodation. Finally, Chapter 6 integrates the
findings of the preceding chapters, and looks to future directions for com-
munication research.
Chapter 2

The Writing on the Stall: Gender and Graffiti

Toilet graffiti is a unique window into the relationship between gender, language, and social context. However, research on toilet graffiti over the last 96 years has focused on topic at the expense of language style, and further, has been plagued with methodological problems. Also, important to our understanding of how women and men communicate, no comparable situation where both men and women write graffiti has ever been studied. This study sought to set a new benchmark: looking not just at the topic of graffiti, but also the language style in which inscriptions were written; and not only in male and female toilets, but also in an analogous mixed-gender context.

Public toilets are a context in which gender is very salient. Cues include the sign on the door, the presence of others of one’s own gender only, and the biological act of going to the toilet. Cubicles also make it private and anonymous. A naïve model would be to argue that toilet graffiti could be a gendered baseline, with no influence of the other gender.

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or of audience effects. However, the social identity and de-individuation (SIDE) model (e.g., Spears & Lea, 1992; Postmes et al., 1999) suggests that these same conditions, a salient group identity (here gender) and anonymity, would lead to behavior polarization. Spears and Lea (1992) suggest that people

...are more likely to be influenced by it [group identity] under de-individuating conditions because the visual anonymity will further reduce perceived intragroup differences, thereby increasing the salience of the group. (p.47)

For example, Postmes and Spears (Study 2, 2002) found that in a de-personalized situation with high gender salience and a masculine topic, males dominated the conversation more than situations without de-personalization and/or gender salience. Thus, because of its inherent privacy and gender salience, the toilet is an ideal context for stereotypic gendered behavior to occur. Following Postmes and Spears’s findings graffiti written by men might engage in argumentative debate, trying to dominate the discourse. For women, the stereotype of female conversation as being supportive and facilitative (e.g., Tannen, 1990), might be exaggerated in the toilet. It is less clear what might happen in a mixed-gender context, and would depend on what group cues were salient. Were gender to be salient, for example, it is possible that men could continue to try to dominate. Whether the women would continue to facilitate is a moot point, and something the present study can shed light on.

Communication accommodation theory (CAT, see Boggs & Giles, 1999, for a recent summary) focuses on how people with different lan-
language styles adapt to each other, again, especially with relation to group membership. Broadly, accommodation is the process whereby people either match (converge), or fail to match (diverge), the language style and other behaviors of those they are interacting with. In the single-gender context of the toilet, gendered norms are likely to prevail, as the language styles of those interacting are likely to be more similar than different. However, in the mixed-gender context, adaptation is likely to occur.

Previous research on graffiti has primarily focused on quantity and topic differences. Males have been seen to write far more inscriptions in numerous studies (e.g., Kinsey, Pomeroy, Martin, & Gebhard, 1953; Otta, 1993; Schreer & Strichartz, 1997; Sechrest & Flores, 1969). However, Stocker, Dutcher, Hargrove, and Cook (1972) found more graffiti was written by females than males in more liberal universities, but the reverse in more conservative universities. Studies in North American high schools have found up to 80% of graffiti written by females (Ahmed, 1981; Wales & Brewer, 1976; but see Peretti, Carter, & McClinton, 1977, 40%).

Previous comparisons of the number of inscriptions are problematic, however, as graffiti generally have not been sampled over time, and gender differences in toilet usage have not been accounted for. Two creative attempts have tried to address this problem, but each study has looked at only a single gender. Buser and Ferreira (1980) measured the quantity of toilet paper used in the women’s toilets as an indicator of use, whereas Rhyne and Ullmann (1972) had experimenters posing as plumbers check each cubicle after use. Neither of these methodologies were feasible (or
desirable) for the current study, so I have not examined quantity difference, either in number of inscriptions or words.

Extreme gender differences in quantity have then posed problems for topic comparisons. Generally speaking, it is desirable to look at proportions rather than absolute frequencies. However, in many studies the utter paucity of graffiti from one gender or the other makes this questionable. For example, Otta (1993) found 15.4% of male graffiti and 14.9% of female graffiti written on a single topic (politics). However, with 80% of the graffiti written by males, this equates to 65 and 14 inscriptions respectively. With a four-fold difference in magnitude in the absolute number of inscriptions, it becomes more dubious to conclude that men and women have a similar focus on politics. A better contrast would occur in a situation where men and women wrote more comparable numbers of inscriptions. Currently, few studies achieve this criterion.

Some previous work has also been difficult to interpret as a result of very specific (and sometimes outrageous) research questions. For example, graffiti has been used to gain insight into human sexuality (Kinsey et al., 1953), phallic expression (Landy & Steele, 1967), and even understanding teenagers (‘manifestations of the adolescent personality’, Peretti et al., 1977). However, topic categories such as ‘idealism’ and ‘references to lips’ make little sense out of their theoretical context.

Recent work has taken a more atheoretical approach to analyzing topics in graffiti. However, perhaps because of some of the quantity/usage problems outlined, the most consistent finding is that there is a gender difference, but the valence of differences on a single topic is often not
consistent between studies. For example, males have been found to write more graffiti on political topics (e.g., Loewenstine, Ponticos, & Paludi, 1982; Otta et al., 1996), females more (Schreer & Strichartz, 1997) or little difference (Otta, 1993).

Along with politics, sex is one of the most common graffiti topics. Research has found more sexual graffiti written by females (Bates & Martin, 1980), more by males (Schreer & Strichartz, 1997), or no difference (Otta et al., 1996). Some have argued for a qualitative difference, with males writing more ‘erotic’ inscriptions, and females writing more ‘romantic’ inscriptions (Ahmed, 1981; Wales & Brewer, 1976). Wales and Brewer also found that the quantity of erotic graffiti written by females increased with the socio-economic status of the population studied. Also, homosexual inscriptions are typically more frequent in male toilets (e.g., Schreer & Strichartz, 1997).

Some topic differences are more consistent. Female graffiti often contains “advice to the love-forlorn and [on] existential issues about life, marriage, and happiness” (p.308, Loewenstine et al., 1982). This forms a stark contrast with the negative topics associated with male graffiti. These include more racially prejudiced graffiti (e.g., Bruner & Kelso, 1981; Otta, 1993; Schreer & Strichartz, 1997; Stocker et al., 1972), more homophobic graffiti (e.g., Schreer & Strichartz, 1997; Stocker et al., 1972), and more insults (e.g., Bruner & Kelso, 1981; Otta, 1993; but see Bates & Martin, 1980; Solomon & Yager, 1975).
Research Question 1. Are there topic differences in graffiti, depending on whether they are written in an all-male, all-female, or mixed-gender context?

Apart from studies of topic, only one very brief research report has been published on gendered language in graffiti. Loewenstein et al. (1982) found that females used more tag questions, hypercorrect grammar, and empty adjectives in their graffiti, whereas males used more expletives\(^2\). The report contains little additional information or methodology, and was grounded in Lakoff’s (1975) analysis of gendered language. While hugely influential, Lakoff’s (1975) work does not represent current thinking, having been superseded by the twenty-five years of research it inspired. Thus, more comprehensive research incorporating recent theory and methodology would increase our understanding of gendered language styles in graffiti.

Research in other media has identified the following as features of gendered language style. Females are more likely to ask questions (Fitzpatrick et al., 1995; Tannen, 1994b), disclose personal information (a meta-analysis by Dindia & Allen, 1992), and refer to emotion (Fitzpatrick et al., 1995; Goldsmith & Dun, 1997; Mulac et al., 1990; but see Anderson & Leaper, 1998). Females also, on average, use a greater

\(^2\)Tag questions are shortened questions added to the end of declarative sentences. Hypercorrect grammar refers to the use of excessively correct grammar. Empty adjectives are adjectives that allegedly add no real content to the sentence (e.g., nice, interesting, pretty). These are all features identified by Lakoff (1975), but are no longer typically used in research. For example, tag questions have been shown to perform a variety of different functions (Holmes, 1990), so measuring overall frequencies of tag questions is no longer viewed as informative.
frequency of intensifying adverbs (Fitzpatrick et al., 1995; McMillan et al., 1977; Mulac et al., 1990), modals/hedges (Fitzpatrick et al., 1995; McMillan et al., 1977; Mulac et al., 1990), and subordinating clauses (Mulac & Lundell, 1986). In contrast, males are more likely to give opinions (Mulac & Lundell, 1986; Mulac et al., 1990), use expletives (Bayard & Krishnayya, 2001; Limbrick, 1991; but only in single-sex groups), and use longer sentences (Mulac, 1989; Mulac et al., 1990; but cf. Mulac & Lundell, 1986).

Research Question 2. Are there language style differences in graffiti, depending on whether they are written in an all-male, all-female, or mixed-gender context?

Method

Sample

The University of Otago’s Central Library was selected as the location for this study for the proliferation of graffiti commonly found in university libraries (e.g., Brockie, 1974; Schreer & Strichartz, 1997), the availability of study booths for contrast, and the fairly equivalent amounts of graffiti written by females and males. The toilets selected were adjacent male and female toilets on the first (upper) floor, with the study booths nearby. The study booths were used for the mixed gender situation in preference to desks, as they more closely replicate the context and privacy of a toilet cubicle (being enclosed on three sides). The male and female toilets were fitted with ‘graffiti boards’, which were intended to deflect writing from
the walls onto a more easily cleaned surface. The study booths were lined with linoleum. Both types of surface are easy to write on, even with a pencil or biro.

It can be assumed that participants were predominantly humanities and commerce students at the University of Otago (as there are separate libraries for science, law, and medicine). It is likely to be a largely undergraduate population, but postgraduates and staff may have contributed. Technically, the library is open to the public, but the first floor location makes casual visitors less likely. The close proximity of the study booths and the toilets means it is likely that people writing graffiti in the toilets are the same people writing graffiti in the study booths.

The final sample contained 723 inscriptions, with 189 from the female toilets, 268 from the male toilets, and 266 from the study booths. The female toilets contained fewer inscriptions overall, but with 2585 words contained slightly more than the 2398 words from the male toilets, and the 2135 words from the study booths. This relative equality in the sample enabled comparison without the absolute-versus-relative-frequency problems of previous research.

Procedure

All graffiti, including pictures, were transcribed verbatim by four trained recorders. Different authors were identified through pen and writing style changes, and were indicated in a standardized transcription procedure. Graffiti were sampled three times over a month, at two-weekly intervals. Collection took place in the early morning, just after the library
opened, to minimize contact with library patrons.

**Measures**

The number of words in each inscription was counted. It was also recorded as to whether each inscription was a reply to another inscription, and whether it contained a verb. They were then coded for topic and gendered language style.

Topic categories were derived from analysis of the data and were chosen to retain the greatest amount of meaningful information inherent in the graffiti\(^3\), rather than being theoretically driven. Categories were: sex discussions, sex requests, sex descriptions, homosexuality, rape discussions, politics, tax/student fees/debt, personal advice, racism, drinking/drugs, humor, religion, insults, love/romance, music, sport, “alternative” people, academic courses, graffiti about graffiti, presence (e.g., initials, or “I was here”), sexist remarks, philosophy, exams/study, body image, placations (e.g., “calm down”), and ‘other’. A second individual independently coded 25% of the data, with 89.7% agreement between coders.

Coded gendered-language features previously associated more with males were: expletives, and opinions (e.g., “Tax the Rich, they can afford it”). Female features were intensifiers, sub-coded as either expletive intensifiers (e.g., “There is no f***ing god”) or other intensifiers (e.g., “I can’t understand why women get so excited about All Blacks and Highlanders”); hedges (e.g., “I’m quite sure”); subordinate clauses (e.g.,

\(^3\)As no inter-category comparisons were planned, categories were not mutually exclusive, thus retaining a greater degree of information.
“Student politics is so vicious, because the stakes are so low”); emotional references (e.g., “I really love my man”); personal information (e.g., “I might be pregnant”); and questions (e.g., “Is anyone else here an epileptic?”). Additionally, the number of empathic statements (e.g., “once I had the same and realized [it] was because of guilty feelings about sex”), and the total number of adjectives was recorded, sub-coded as attributive adjectives (e.g., “Let the annual pointless hypocritical religious debates begin”) or predicate adjectives (e.g., “it was good”). Twenty five percent of the inscriptions were independently analyzed by a second coder. Reliabilities were acceptable, with all alphas being greater than 0.82.

Additionally, the Naïve Bayes classifier (for a detailed explanation see Mitchell, 1997), a computer-based text analysis tool, was used to explore gendered language for the first time. The Classifier uses a modified version of Bayes Theorem to distinguish two different language styles. It calculates the frequency of every word in each of two texts, in this case, a file of all the male graffiti and a file of all the female graffiti. From these frequencies it then calculates a gender probability for each unique word. A third text can be analyzed, here, a file of all the study booth data. Again, a frequency for each word is calculated. The observed frequency of each word in the study booth is then compared to the gender probability for that word, yielding a probability on a word by word basis, that the study booth text is either more likely to be female, or more likely to be male. These probabilities are combined to yield an overall probability that the text is male, and an overall probability that the text is female.

4The LISP source code is available from the author.
The final ‘classification’ is calculated by dividing the higher probability by the lower, producing a ratio (e.g., likely to be male 10,000:1). An output file of the frequency of each word is also generated. The most frequently occurring words for each location were studied, and the following new categories were formed on that basis: pronouns, articles, coordinating conjunctions, prepositions, and conjugations of the verbs *be*, *do* and *have*.

**Results**

*RQ 1.* Are there topic differences in graffiti, depending on whether they are written in an all-male, all-female, or mixed-gender context?

Percentages and frequencies of inscriptions written on different topics in the female toilets, study booths, and male toilets, along with statistical comparisons are summarized in Table 2.1. Statistical tests between locations were pair-wise chi-square comparisons, analyzing two locations at a time. Where an expected-frequency for a cell was less than five, the Yates correction for small expected-frequencies was used.

The most dominant topics in the male toilets were politics, plus discussions on tax levels and how these relate to tuition fees and student debt. Together these account for almost 20 percent of the male graffiti, compared with two inscriptions in the study booths, and none in the female toilets.

The male toilets also contained all of the racist graffiti in the sample.

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5Due to space constraints, and the offensive nature of some graffiti, further examples on a wide variety of topics are available from the author.
<table>
<thead>
<tr>
<th></th>
<th>Female Toilets (n=189)</th>
<th>Study Booths (n=265)</th>
<th>Male Toilets (n=268)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%  n</td>
<td>%  n</td>
<td>%  n</td>
</tr>
<tr>
<td><strong>Male-typical topics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insults</td>
<td>5.8ab 11</td>
<td>16.2b 43</td>
<td>11.9b 32</td>
</tr>
<tr>
<td>Politics</td>
<td>0.0a 0</td>
<td>0.8a 2</td>
<td>9.3b 25</td>
</tr>
<tr>
<td>Tax/Fees/Debt</td>
<td>0.0a 0</td>
<td>0.0a 0</td>
<td>9.3b 25</td>
</tr>
<tr>
<td>Racism</td>
<td>0.0a 0</td>
<td>0.0a 0</td>
<td>7.1b 19</td>
</tr>
<tr>
<td>Presence</td>
<td>0.5a 1</td>
<td>4.5b 12</td>
<td>7.1b 19</td>
</tr>
<tr>
<td><strong>Female-typical topics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rape Discussions</td>
<td>13.2b 25</td>
<td>0.0a 0</td>
<td>0.4a 0</td>
</tr>
<tr>
<td>Religion</td>
<td>13.2b 25</td>
<td>9.8b 26</td>
<td>1.5a 4</td>
</tr>
<tr>
<td>Personal Advice</td>
<td>10.6b 20</td>
<td>1.1a 3</td>
<td>0.0a 0</td>
</tr>
<tr>
<td>Love/Romance</td>
<td>7.9b 15</td>
<td>2.6a 7</td>
<td>1.9a 5</td>
</tr>
<tr>
<td>Philosophy</td>
<td>5.8b 11</td>
<td>9.8b 26</td>
<td>1.9a 5</td>
</tr>
<tr>
<td>Placation</td>
<td>3.7b 7</td>
<td>0.4b 1</td>
<td>0.0a 0</td>
</tr>
<tr>
<td>Body Image</td>
<td>3.2b 6</td>
<td>0.4a 1</td>
<td>0.4a 1</td>
</tr>
<tr>
<td><strong>Sex-related topics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex Discussions</td>
<td>19.0c 36</td>
<td>4.5b 12</td>
<td>0.4a 1</td>
</tr>
<tr>
<td>Sex Descriptions</td>
<td>0.0</td>
<td>1.1a 3</td>
<td>2.6a 7</td>
</tr>
<tr>
<td>Homosexuality</td>
<td>0.0ab 0</td>
<td>0.0a 0</td>
<td>2.6b 7</td>
</tr>
<tr>
<td>Sex Requests</td>
<td>0.0a 0</td>
<td>2.3a 6</td>
<td>9.3b 25</td>
</tr>
<tr>
<td><strong>Miscellaneous topics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humour</td>
<td>5.8a 11</td>
<td>16.2b 43</td>
<td>10.8ab 29</td>
</tr>
<tr>
<td>Drinking/Drugs</td>
<td>5.8b 11</td>
<td>8.7b 23</td>
<td>1.1a 3</td>
</tr>
<tr>
<td>Course</td>
<td>3.2ab 6</td>
<td>0.8a 2</td>
<td>7.5b 20</td>
</tr>
<tr>
<td>Graffiti</td>
<td>3.7b 7</td>
<td>2.3ab 6</td>
<td>0.4a 1</td>
</tr>
<tr>
<td>Alternativism</td>
<td>0.0a 0</td>
<td>3.8b 10</td>
<td>0.4a 1</td>
</tr>
<tr>
<td>Sexism</td>
<td>0.0</td>
<td>1.5a 4</td>
<td>0.0a 0</td>
</tr>
<tr>
<td>Exams/Study</td>
<td>0.5</td>
<td>1.9b 5</td>
<td>0.0a 0</td>
</tr>
<tr>
<td>Sport</td>
<td>1.6</td>
<td>1.9b 5</td>
<td>2.2 6</td>
</tr>
<tr>
<td>Music</td>
<td>1.1</td>
<td>0.4b 1</td>
<td>1.1a 3</td>
</tr>
<tr>
<td>Other 2</td>
<td>6.3</td>
<td>12.5 41</td>
<td>17.5 47</td>
</tr>
</tbody>
</table>

1Percentages not sharing the same subscript differ at \( p=.05 \) calculated from pair-wise chi-square comparisons calculated on the raw data, with “a” denoting the lowest percentage.

2No statistical comparisons were conducted for the ‘other’ category.
These were generally very hostile and offensive, and included many of the insults in the male sample. In addition to males writing almost four times more insults than females, there also appeared to be a qualitative difference. Insults in the female toilets were not always as aggressive or offensive as those in the male toilets. The study booths also contained a large number of insults.

Males drew more pictures than females, including five depictions of sex acts, six presence drawings, five swastikas and twelve ‘other’. The few pictures in the female toilets (5 smiley faces, a sad face, a winking face and a love heart), were less elaborate, but tended to convey emotive content. The study booth featured mostly presence ($n=6$) and ‘other’ drawings ($n=12$), which included everything from a house with a picket fence to mushrooms. The male toilets and study booths also contained more ‘presence’ inscriptions than the female toilets (presence essentially meaning ‘I was here’, e.g., “T.J.”, “CHETWIN”).

In contrast, inscriptions in the women’s toilets were talking about love and romance, soliciting personal advice on health issues and relationships, and discussing what exact act constitutes rape. Women also tried to placate more heated discussions (e.g., “Stop this. There is no reason to say these things. Why so much in-fighting?”). Also, in a more heated discussion, a writer reinterpreted a previous writer’s comment in a face-saving attempt (“I think what she is saying is that chick’s [sic] aren’t being as cautious as they should be”). The use of the term “in-fighting” also implies a sense of belonging to a group. This perceived sense of group was also found in graffiti about graffiti, which were writ-
ten more by women than men. For example, (in reference to previous graffiti) “Gosh we females need to work on our sense of humour – we are so serious”.

Females discussed body image more than males did. There was also a difference in focus: females listed their height and weight, whereas males listed their penis size.

More debates on religion and philosophy were found in the women’s toilets than the men’s toilets (e.g., “Does anyone know why God created evil?”). When these debates were found in the men’s toilets, they tended to be more spurious and less passionate (e.g., “Let the annual pointless hypocritical religious debates begin for the last time this millennium!”).

There was quite a high incidence of drug and drinking related graffiti in the female toilets and study booths, which was absent in the male toilets. However, the discussion in the female toilets tended to be about the morality of drug use, rather than advocacy of drugs or drinking per se.

Sex-related topics were common in both the male and female toilets. There was a difference in focus, with women typically requesting and giving advice on sex, whereas men were requesting sex, the vast bulk being homosexual (25 out of 26), and often accompanied by descriptions of homosexual sex acts. All references to homosexuality occurred in the male toilets.

Graffiti topics in the study booths generally comprised a combination of those found in the male and female toilets. These included similarities to the male toilets in levels of insults and presence inscriptions, and
absences of rape discussions, personal advice, love romance, and body image. In between frequencies were found for sex discussions. Topics largely absent in the study booths, similar to low female frequencies included racism, sex requests, politics, and homosexuality. Topics similar in frequency in the study booths to female toilets included religion, philosophy, and drinking/drugs.

There were also a number of unique topic features in the study booths. These included discussions about ‘alternatives’ (alternative life-stylers). The study booths also contained no comment on academic courses, in sharp contrast to the toilets. Humor was also a pronounced feature of the study booths, with over twice as much as the female toilets, and a non-significant increase over the male toilets.

Sexist comments were found only in the study booths (although this difference was not significant). While it is not possible to definitively pick the gender of the author\(^6\), it seemed that a fairly equal number of inscriptions were made about both males and females (although they all appeared to have been initiated by males), and that these were responded to equally. A number were highly provocative, and females appeared to use harsh insults in response. Additionally, there were several revolting sex descriptions from the study booths that may have been intended to provoke females.

Finally, there were a number of categories that were talked about occasionally, but that did not differ significantly as a function of location.

\(^6\)The sexist inscriptions were the only graffiti from the study booths to which author gender could readily be assigned. It is assumed that males would not derogate themselves from a female perspective, and vice-versa.
These were music, exams/study, and sport. Given New Zealand’s gender stereotypes (e.g., James & Saville-Smith, 1994), it is ironic to note that all male references to do with sport were on soccer, whereas those of the study booths and female toilets were concerned with rugby.

The sample overall contained a high level of inscriptions classified as ‘other’, but this is common for studies of toilet graffiti (e.g., 37% for females, Schreer & Strichartz, 1997; 25% overall, Otta et al., 1996). This category included verb-less inscriptions that defied classification (e.g., “shy”, “Rip Curl”), as well as cryptic verbed inscriptions (e.g., “Don’t tangle with a TIGER!”). Some were initially divided into finer categories, but it simply lead to a plethora of meaningless categories with one to three graffiti in each.

RQ 2. Are there language style differences in graffiti, depending on whether they are written in an all-male, all-female, or mixed-gender context?

Three Naïve Bayesian Classifications were performed. The female graffiti was found to be more like the study booth graffiti than the male graffiti ($1.5 \times 10^{18} : 1$); the male graffiti more like study booth graffiti than female graffiti ($2.2 \times 10^5 : 1$); and the study booth graffiti more like female graffiti than male graffiti ($3.6 \times 10^{12} : 1$). Taken together these results suggest that the study booth and female graffiti were most alike, at least at a word occurrence level. The male graffiti, while very unlike the female and study booth graffiti, was slightly more like the
study booth graffiti than the female graffiti.

The average length of inscription differed between locations, $F(2,719)=13.95$, $p<.001$. A post-hoc Student-Newman-Keuls comparison showed that the female toilets had longer inscriptions ($M=13.7$ words) than either the male toilets ($M=8.9$), or the study booths ($M=8.1$), whereas there was no difference between the male toilets and the study booths. The female sample (81%) contained more verbs than the male sample (68%) or the study booth sample (70%). Inscriptions in the female toilets were also more likely to be a reply to a previous inscription (74%, $n=140$), than those in the study booths (51%, $n=136$), which were more likely to be a reply than those in the male toilets (41%, $n=109$).

The relative frequencies for each gendered language feature (per hundred words), along with statistical comparisons, are shown in Table 2.2. Males used a substantially greater number of expletives than females. The gross adjective use of males was also greater than females. However, as can be clearly seen, this difference was due to a far higher usage of attributive adjectives by males, whereas there was a non-significant trend for females to use more predicative adjectives. There was a non-significant trend for males to give more opinions than females. No gender difference in the relative use of emotion references, questions, articles or co-ordinating conjunctions was found. Females used more hedging devices, subordinate clauses, pronouns, prepositions, and conjugations of the verbs *be*, *do* and *have*, than males. They also disclosed more pieces of personal information, and made more empathic references. There was
Table 2.2: Frequencies of each Linguistic Feature per 100 Words for Female Toilets, Study Booths, and Male Toilets

<table>
<thead>
<tr>
<th>Feature</th>
<th>Female Toilets (n=2585 words)</th>
<th>Study Booths (n=2135)</th>
<th>Male Toilets (n=2398)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Adjectives</td>
<td>3.87&lt;sub&gt;a&lt;/sub&gt;</td>
<td>5.11&lt;sub&gt;b&lt;/sub&gt;</td>
<td>6.34&lt;sub&gt;b&lt;/sub&gt;</td>
</tr>
<tr>
<td>Attributive</td>
<td>1.47&lt;sub&gt;a&lt;/sub&gt;</td>
<td>3.51&lt;sub&gt;b&lt;/sub&gt;</td>
<td>4.67&lt;sub&gt;b&lt;/sub&gt;</td>
</tr>
<tr>
<td>Predicative</td>
<td>2.40</td>
<td>1.59</td>
<td>1.67</td>
</tr>
<tr>
<td>Expletives</td>
<td>0.19&lt;sub&gt;a&lt;/sub&gt;</td>
<td>2.11&lt;sub&gt;b&lt;/sub&gt;</td>
<td>3.88&lt;sub&gt;c&lt;/sub&gt;</td>
</tr>
<tr>
<td>Opinions</td>
<td>1.74</td>
<td>2.72</td>
<td>2.63</td>
</tr>
<tr>
<td>Emotion References</td>
<td>0.15</td>
<td>0.23</td>
<td>0.25</td>
</tr>
<tr>
<td>Questions</td>
<td>1.93</td>
<td>2.25</td>
<td>1.67</td>
</tr>
<tr>
<td>Articles&lt;sup&gt;†&lt;/sup&gt;</td>
<td>5.30</td>
<td>6.09</td>
<td>6.38</td>
</tr>
<tr>
<td>Co-ordinating Conjunctions&lt;sup&gt;†&lt;/sup&gt;</td>
<td>2.98</td>
<td>2.48</td>
<td>2.25</td>
</tr>
<tr>
<td>Total Intensifiers</td>
<td>2.05</td>
<td>1.55</td>
<td>1.42</td>
</tr>
<tr>
<td>Expletive Intensifiers</td>
<td>0.12&lt;sub&gt;a&lt;/sub&gt;</td>
<td>0.61&lt;sub&gt;b&lt;/sub&gt;</td>
<td>0.46&lt;sub&gt;b&lt;/sub&gt;</td>
</tr>
<tr>
<td>Other Intensifiers</td>
<td>1.93&lt;sub&gt;b&lt;/sub&gt;</td>
<td>0.94&lt;sub&gt;a&lt;/sub&gt;</td>
<td>0.96&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Hedges</td>
<td>0.62&lt;sub&gt;b&lt;/sub&gt;</td>
<td>0.52&lt;sub&gt;b&lt;/sub&gt;</td>
<td>0.17&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Personal Information</td>
<td>1.24&lt;sub&gt;b&lt;/sub&gt;</td>
<td>0.56&lt;sub&gt;a&lt;/sub&gt;</td>
<td>0.54&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Subordinate clauses</td>
<td>3.33&lt;sub&gt;b&lt;/sub&gt;</td>
<td>1.92&lt;sub&gt;a&lt;/sub&gt;</td>
<td>1.96&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Empathic Statements</td>
<td>0.54&lt;sub&gt;b&lt;/sub&gt;</td>
<td>0.05&lt;sub&gt;a&lt;/sub&gt;</td>
<td>0.04&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Pronouns&lt;sup&gt;†&lt;/sup&gt;</td>
<td>12.38&lt;sub&gt;b&lt;/sub&gt;</td>
<td>9.09&lt;sub&gt;a&lt;/sub&gt;</td>
<td>7.26&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Prepositions&lt;sup&gt;†&lt;/sup&gt;</td>
<td>10.87&lt;sub&gt;b&lt;/sub&gt;</td>
<td>8.85&lt;sub&gt;a&lt;/sub&gt;</td>
<td>8.76&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Conjugations of be&lt;sup&gt;†&lt;/sup&gt;</td>
<td>6.69&lt;sub&gt;b&lt;/sub&gt;</td>
<td>7.17&lt;sub&gt;b&lt;/sub&gt;</td>
<td>4.96&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Conjugations of do&lt;sup&gt;†&lt;/sup&gt;</td>
<td>1.78&lt;sub&gt;b&lt;/sub&gt;</td>
<td>1.83&lt;sub&gt;b&lt;/sub&gt;</td>
<td>0.83&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Conjugations of have&lt;sup&gt;†&lt;/sup&gt;</td>
<td>1.70&lt;sub&gt;b&lt;/sub&gt;</td>
<td>1.03&lt;sub&gt;ab&lt;/sub&gt;</td>
<td>0.96&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

<sup>†</sup>Percentages not sharing the same subscript differ at p=.05 calculated from pair-wise chi-square comparisons calculated on the raw data, with “a” denoting the lowest percentage.

<sup>‡</sup>indicates a feature from the Naïve Bayes Classification.
a non-significant trend for females to use a greater number of intensifiers overall than males. This is the average of two distinct effects: males used more expletives as intensifiers, whereas females used more non-expletive words as intensifiers.

In the study booths, the use of hedges and conjugations of be and do was similar to that of females, being higher than that of males. Occurring in the study booths less often than in the female toilets were intensifiers (of the non-expletive kind), subordinate clauses, pronouns, prepositions, personal information disclosure, and empathic statements. The rates of these features were more similar to the male toilets. Use of expletives as intensifiers was high, similar to males rather than females, with the same male-similar pattern holding for both the total number of adjectives, and attributive adjectives. There was a non-significant trend for more opinions and less conjugations of have in the study booth compared to females, with usage similar to males. There was another non-significant trend for more questions in the study booths than either the male or female toilets. The only feature to have a usage clearly intermediate between the male and female toilets was expletives.

Discussion

Graffiti from the men’s and women’s toilets showed clear differences in topic, and more subtle differences in language style. The study booth graffiti contained a combination of topics from both the men’s and women’s toilets, plus some sexist graffiti. The language style in the study booths was broadly in between that of the male and female toilets.
Men wrote more about politics and homosexuality, and the inscriptions contained more insults and racist remarks. The tone in these topics was generally negative and argumentative. In contrast, women wrote more inscriptions discussing sex and relationship issues, and about religion and philosophy. Their tone was more positive and supportive and included attempts to calm down more heated discussions. These differences are consistent with the exaggerated gender-stereotypic behavior predicted by the SIDE model.

There were also a number of topics with no gender difference in frequency. Women and men were both likely to discuss and ridicule other courses, and to talk about exams/studying, sport, and music. Moreover, no gender difference in the proportion of inscriptions with humorous intent was found.

Sexist graffiti occurred only in the study booths. This could imply that gender was salient, and consistent with the SIDE model, males continued engaging in a negative fashion (reminiscent of the flaming behavior on the internet that SIDE has been used to explain, e.g., Lea, O’Shea, Fung, & Spears, 1992). However, the return insults from the women imply an adoption of the male norm, not stereotyped female behavior. Generally, however, the topics in the study booth were similar to those in the men’s and women’s toilets.

Differences found in language style mirrored findings in other forms of communication (e.g., Mulac et al., 1990; Thomson & Murachver, 2001). A strong exception was the presence of almost no expletives ($n=5$) in the women’s toilets. This is surprising, as two recent studies of spoken
language in the same Otago student population found only very slight
gender differences in expletives (Limbrick, 1991; Bayard & Krishnayya,
2001). Bayard and Krishnayya (2001) had expletive frequencies per hun-
dred words in unstructured conversation of 2.54 for males and 1.45 for
females, compared to 3.88 and 0.19 in the present study. This lack of ex-
pletives could be a manifestation of an exaggerated stereotype of female
politeness.

The effects of a mixed-gender context on language style were harder
to assess with the gender of authors unknown. Following CAT, conver-
gence would be most likely strategy, and the intermediary frequencies
for a number of language variables and the results from the Naïve Bayes
classifier give weak support for this.

Imitation provides another explanation that could have fueled ex-
treme gendered behavior. Over half of the inscriptions in the present
sample were a response to others. Even where not directly responding to
another graffito, toilet cubicles often had themes running through them.
For example, one male cubicle contained the bulk of the political gra-
fiti, with a number of different political discussions on different walls.
Previous research into graffiti prevention has found that where walls are
kept clean, little graffiti is written, but that where there is some grafitti
already, the rate of wall-writing is higher (Collins, Leland, Molteno, &
Leatham, 1981). An inflammatory graffito may then spawn further in-
flammatory graffiti. Conversely, a more polite interactive tone may lead
to further inscriptions in a similar style. Thus, in the present contexts,
where the walls were seldom clean, the graffiti style may have been ‘bred’
over a period of time.

This imitation explanation could be tested empirically by writing the same male- or female-typed graffito in both a male and a female cubicle and analyzing the responses. This would give some indication of the extent to which differences are attributable to localized context (i.e., the surrounding graffiti) or more group level (i.e., gender) processes.

SIDE explanations could be tested by manipulating gender salience, such that lower salience should lead to reduced gender differences, whereas higher salience would lead to greater differences. To test CAT explanations would probably have to involve identifying author gender, which might prove more difficult.

This study of gender and graffiti largely confirmed the findings of previous research, but was based on more sound methodology, giving us greater confidence in these results. Gendered language styles, similar to those found in other media were also found. Having built this sound base, the way is open for more theoretical studies to look at this intriguing interaction between gender, language and social context.
Chapter 3

Accommodation in Adolescence

Research into accommodation to gendered language styles has looked at university students (e.g., Bilous & Krauss, 1988; Hannah & Murachver, 1999; Thomson et al., 2001), adults recruited from the population more generally (e.g., Fitzpatrick et al., 1995), and children (e.g., Leaper, 1991; Leaper et al., 1999; Robertson & Murachver, 2003). However, no studies we are aware of look at accommodation in adolescents, and there are very few looking at gendered language in adolescence. This is a surprising fact, as it has been argued that adolescence is a crucial development period for gendered language behaviour (Kolaric & Galambos, 1995).

Communication accommodation theory (CAT; Boggs & Giles, 1999; Giles et al., 1991; Shepard et al., 2001) provides a model for understanding how the situation and the people one is conversing with influence language use. In a friendly interpersonal context the most frequently observed accommodation strategy is convergence (e.g., Bilous & Krauss, 1988; Fitzpatrick et al., 1995; Hannah & Murachver, 1999; Thomson et al., 2001), where linguistic and nonverbal behaviours shift to become
more like that of the conversational partner. At the other end of the spectrum is divergence, where language style becomes less like that of the partner, with maintenance (holding behaviour relative) in the middle.

There is a reasonable body of literature looking at parent-adolescent communication (e.g., Williams, 2003), but remarkably little looking at adolescents talking to other adolescents. This is perplexing, as Larson (1983) noted that parent-adolescent conversations were less common and less intimate than adolescent-adolescent conversations. It has also been suggested that “gender differences observed in the verbal and nonverbal behaviors of adults might be learned or exaggerated during adolescence, therefore making adolescence a particularly appropriate time for studying such behaviors” (p.365, Kolaric & Galambos, 1995). Supporting this contention that gender differences might be greater in adolescence is the work of Leaper (1991), showing an increase in gender differences in language use between early and middle childhood.

Kolaric and Galambos (1995) analysed adolescents talking in mixed-gender dyads only. Each dyad discussed three topics (feminine, gender-neutral, masculine) with very little evidence of a gender difference. Males were found to speak more than females on the masculine topic, whereas females spoke more than males on the feminine topic. The strongest effects were for ‘display’ behaviours such as chin-stroking (males) and hair-flipping (females). Two further studies have been published recently on adolescent language. Turkstra (2001) analysed same- and mixed-gender dyads, but considered only dyad differences, not gender differ-
ences. Turkstra, Ciccia, and Seaton (2003) analysed not only same- and mixed-gender dyads, but also participant gender. However, like Kolaric and Galambos, they found little evidence for gender effects.

One of the few other studies of adolescent language did find reasonable evidence for gender differences, however. Mulac et al. (1990) had groups of students aged 9-10, 13-14, and 17-18 years write impromptu essays. Consistent evidence of gender differences were found across age. Apart from possible media differences, it is possible that the intended recipient of the communication had an effect. The audience for an essay is typically a teacher, or here the researchers. In contrast, in the other studies just reviewed, each adolescent was talking to a member of the other gender. Another distinction between Mulac et al. (1990) and the other literature on adolescent language is the specific dependent measures analysed. The constellation of features analysed by Mulac and his colleagues have found reasonably stable gender differences in a wide range of contexts (e.g., Fitzpatrick et al., 1995; Mulac, 1989; Mulac & Lundell, 1986; Mulac, Seibold, & Farris, 2000; Mulac et al., 1990). They are also features of gendered language that have been accommodated to in both adults (Fitzpatrick et al., 1995; Thomson et al., 2001) and children (Robertson & Murachver, 2003). Thus, considering these features would be a prudent first step in looking at accommodation and gendered language style in adolescent conversations.

One explanation for the dearth of research looking at adolescent language, and particularly accommodation, is the methodological problems posed by analysing social interactions. Because two participants inter-

41
acting with each other can potentially influence each other, observations are not independent, violating a key assumption of the general linear model (GLM). Analysis of such interdependent data requires the use of special methodology, not accomplishable via normal statistical packages.

For example, Fitzpatrick et al. (1995) used a round robin design, where the unit of analysis was a group of four participants who interacted with all other members of their group. The round robin design is particularly powerful, as it is possible to assess each participant’s consistency regardless of partner, but also the effect that the participant has on their partner (Kenny, 1988). A key disadvantage is the difficulty of scheduling the multiple interactions. An alternative method for exploring interdependent data is that outlined by Kraemer and Jacklin (1979). Carli (1989a) modified this method so that ANOVA output from a typical statistics package could be used to facilitate calculation. This procedure has been used quite frequently by Campbell Leaper and colleagues (e.g., Leaper et al., 1999; Leaper, 1998) and applies to a more simple design featuring all-male, all-female, and mixed-gender dyads. Researchers not taking steps to correct for interdependence typically either ignore it and use standard GLM procedures (e.g., Bilous & Krauss, 1988), or conduct their analyses at the dyad level (i.e., use an average score for each dyad, e.g., Turkstra, 2001). Another solution is to analyse only mixed-gender dyads, but treat gender as a within-subjects factor to account for the interdependence (e.g., Kolaric & Galambos, 1995). However, only the use of more sophisticated methodology, such as the round robin design or the Kraemer-Jacklin method allows analysis of participant gender effects,
partner effects (how participants are influenced by their conversational partner, i.e., accommodation), and interaction effects (contrasting same- and mixed-gender dyads).

We set out to conduct a more comprehensive study of gender and language in adolescent conversations. In contrast to previous research, we looked at both dyad and participant level effects, and investigated whether adolescents accommodate to the language style of their partner. Based on previous research showing both gendered language and accommodation in children and adults, we predicted that similar patterns would be found for adolescence. We also predicted gender differences in talk time, because it has been found in unstructured conversation that female dyads talk more than male dyads, but women speak less than men in mixed-gender contexts (Bilous & Krauss, 1988; Mulac, 1989).

Hypotheses

1. Gender differences in language would be found in informal adolescent conversations.

2. Convergence to partner’s language style would lead to mitigated gender differences in mixed-gender dyads, as compared to same-gender dyads.

3. Females would talk more than males in same-gender dyads, but males would talk more than females in mixed-gender dyads.
Method

Participants

Forty high school students (20 males, 20 females, age range=14.8–16.5) participated in the research. Volunteers took a letter of invitation and a consent form home for their parents’ approval. Each participant was paired with a male and a female partner. Two participants failed to complete their mixed-gender conversation, but the data from their same-gender conversations were included in the analysis. This resulted in 10 male dyads, 10 female dyads, and 19 mixed gender dyads\(^1\). Participants received a small gift on completion of the experiment.

Procedure

The experiment took place in a resource room at the school, during school hours. The room was set up with two chairs angled toward each other, and a third chair in the middle to provide a comfortable distance. A topic primer sheet was placed on the middle chair (topics included: music, sport, hobbies, books, movies, careers, and food).

Each participant engaged in two separate sessions, on average 13 days apart. Each session consisted of an initial ice-breaker conversation, followed by two eight-minute discussions. The first conversation was an informal discussion with no set topic (although the topic primer sheet was available), followed by a discussion on a set topic. Only data from the first conversation is presented in this paper. Due to scheduling con-

\(^{1}\)To maximise power to test the interaction effect in the Kraemer-Jacklin method it is necessary to have approximately the same number of mixed-gender dyads as the total number of same-gender dyads (Kenny, 1988; here 19 ≈ 20).
straints, the first session always involved a same-gender pair, whereas the second session was mixed-gender. Following the second session, participants were fully debriefed. There is potential for participant gender and dyad effects to be confounded by order. However, the impact of this problem is mitigated by a gap of some weeks or months between sessions one and two. Tests of partner gender (accommodation) are not impacted by order.

Coding

The number of words uttered by each participant was counted. Participants’ utterances were then coded for the following language features: (a) references to emotion, (b) requests for information (questions), (c) requests for information from the topic sheets (topic questions), (d) answers or references to previous messages, (e) personal information, (f) opinions, (g) self-derogatory statements, (h) compliments, (i) humour (j) laughter, (k) hedges, (l) intensifiers, (m) expletives used as intensifiers\(^2\), (n) expletives, (o) focus adverbs, (p) attributive adjectives, (q) predicative adjectives, and (r) subordinating clauses. Two coders independently coded 25% of the messages with interrater reliabilities (alphas) all exceeding .84.

Results

The current study employed a multi-partner design (that is, each participant interacted with a male and a female), but unfortunately we

\(^2\) Expletives used as intensifiers were also counted as expletives, but not as intensifiers. Green (2003) suggests that males use more expletives as intensifiers, whereas females use more non-expletives as intensifiers
are not aware of an analysis which deals with interdependent data for this particular structure. Hence, we rely on Carli’s (1989a) calculations for the Kraemer-Jacklin method, which does not factor in the multi-partner nature of our design (see Carli (1989b) for a correction). Mean scores for each same-gender dyad are analysed in an analysis of variance (ANOVA) with gender serving as a between-subjects factor. Then, in a separate ANOVA for mixed-gender dyads, gender is treated as a within-subject factor. Mean square error terms from the two ANOVAs are then combined for each variable to create a new error term (see Eq. 3.1), where \( n \) is the number of observations (i.e., the number of male dyads, plus the number of female dyads, plus twice the number of mixed-gender dyads).

\[
\text{Error} = \sqrt{\frac{2MS_{e}(\text{same-gender}) + 2MS_{e}(\text{mixed-gender})}{n}} \quad (3.1)
\]

\[
\text{Speaker Gender} = (M_{SG(F)} + M_{MG(F)}) - (M_{SG(M)} + M_{MG(M)}) \quad (3.2)
\]

\[
\text{Partner Gender} = (M_{SG(F)} + M_{MG(M)}) - (M_{MG(F)} + M_{SG(M)}) \quad (3.3)
\]

\[
\text{Dyad (Interaction)} = (M_{SG(F)} + M_{SG(M)}) - (M_{MG(F)} + M_{MG(M)}) \quad (3.4)
\]

This error term is used to calculate \( t \) values for three sets of mean contrasts. The speaker gender effect is female behaviour minus male behaviour (hence positive values indicate higher use for females; Eq. 3.2). The partner gender effect is behaviour when paired with a female minus behaviour when paired with a male (Eq. 3.3), hence positive values indicate that a behaviour occurs more frequently when paired with a female. The interaction/dyad effect is same-gender behaviour minus
mixed-gender behaviour (Eq. 3.4), so positive values indicate higher use in same-gender dyads. Contrasts are calculated from the mean for girls in same-gender pairs ($M_{SG(F)}$) and mixed gender pairs ($M_{MG(F)}$); and the mean from boys in same-gender pairs ($M_{SG(M)}$) and mixed gender pairs ($M_{MG(M)}$). The mean contrast is divided by the error term to produce a $t$ value, evaluated with $n - 2$ degrees of freedom. For a more complete explanation, see Carli (1989a, 1989b) or Leaper et al. (1999).

Analyses were conducted on raw scores for the number of words spoken in each conversation, but all other variables were analysed as frequencies per hundred words to correct for verbosity. Speaker gender, partner gender, and dyad effects are summarised in Table 3.1. Means for each variable by gender for same- and mixed-gender dyads are presented in Table 3.2, along with univariate effects from the ANOVAs used to calculate the error terms. Simple effects of speaker gender were compared using these univariate tests for same-gender and mixed-gender pairs (see Table 3.2). Differing partner gender effects were considered using $t$ tests separately for male and female participants. Simple effects for speaker gender and partner gender are only noted where they differ by dyad-type and participant gender, respectively.

On average, across dyads, there was no difference in the number of words spoken by males and females. In contrast, there was a strong effect of partner gender, such that participants spoke more when paired with a female. Participants also spoke more in same-gender contexts than mixed-gender contexts. The marginal gender difference in same-gender dyads (see Table 3.2) and a smaller non-significant difference in
Table 3.1: Speaker Gender, Partner Gender, and Interaction Tests on Frequencies per 100 words for Language Variables

<table>
<thead>
<tr>
<th></th>
<th>Participant Gender$^a$</th>
<th>Partner Gender$^b$</th>
<th>Interaction$^c$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$t(55)$</td>
<td>$t(55)$</td>
<td>$t(55)$</td>
</tr>
<tr>
<td>Words spoken$^d$</td>
<td>1.30</td>
<td>4.06***</td>
<td>3.35**</td>
</tr>
<tr>
<td>References to Emotion</td>
<td>7.37***</td>
<td>5.91***</td>
<td>4.77***</td>
</tr>
<tr>
<td>Questions</td>
<td>0.12</td>
<td>-6.95***</td>
<td>-2.48*</td>
</tr>
<tr>
<td>Personal Information</td>
<td>-0.63</td>
<td>2.21*</td>
<td>-2.17*</td>
</tr>
<tr>
<td>Opinions</td>
<td>-0.48</td>
<td>0.42</td>
<td>-0.55</td>
</tr>
<tr>
<td>Topic Questions</td>
<td>-4.40***</td>
<td>-3.08**</td>
<td>-1.76†</td>
</tr>
<tr>
<td>Apologies</td>
<td>3.19**</td>
<td>-1.61</td>
<td>0.14</td>
</tr>
<tr>
<td>Self-derogatories</td>
<td>1.92†</td>
<td>1.12</td>
<td>-1.84†</td>
</tr>
<tr>
<td>Compliments</td>
<td>-1.25</td>
<td>2.41*</td>
<td>-1.05</td>
</tr>
<tr>
<td>Hedges</td>
<td>-9.62***</td>
<td>0.92</td>
<td>-6.40***</td>
</tr>
<tr>
<td>Intensifiers</td>
<td>8.83***</td>
<td>4.40***</td>
<td>1.07</td>
</tr>
<tr>
<td>Expletives</td>
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<td>-0.78</td>
<td>-0.22</td>
</tr>
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<td>-0.29</td>
<td>1.15</td>
</tr>
<tr>
<td>Predicative Adjectives</td>
<td>1.51</td>
<td>0.51</td>
<td>-1.03</td>
</tr>
<tr>
<td>Laughter</td>
<td>11.35***</td>
<td>1.46</td>
<td>3.00**</td>
</tr>
<tr>
<td>Humour</td>
<td>1.24</td>
<td>3.46**</td>
<td>0.47</td>
</tr>
<tr>
<td>Subordinate Clauses</td>
<td>0.10</td>
<td>5.60***</td>
<td>-1.44</td>
</tr>
<tr>
<td>Expletive Intensifiers</td>
<td>-2.49*</td>
<td>-1.24</td>
<td>3.34**</td>
</tr>
</tbody>
</table>

Note: Degrees of freedom are based on the number of observations. That is male dyads ($n=10$), female dyads ($n=10$), girls in mixed-gender dyads ($n=19$), and boys in mixed-gender dyads ($n=19$). Significance levels are two-tailed.

$^a$Positive values indicate a higher frequency for females than males.

$^b$Positive values indicate higher frequencies when paired with a female.

$^c$Positive values indicate a higher frequency in same-gender dyads compared to mixed gender dyads.

$^d$Tests for words spoken were carried out on raw frequencies. † $p<.10$ *

$p<.05$ **$p<.01$ ***$p<.001$
### Table 3.2: Means and Univariate Effects for Same-Gender and Mixed-Gender Dyads

<table>
<thead>
<tr>
<th></th>
<th>Same-Gender Dyads</th>
<th></th>
<th>Mixed-Gender Dyads</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td>F(1,18)</td>
<td>d</td>
</tr>
<tr>
<td>Words Spoken</td>
<td>887.2</td>
<td>726.4</td>
<td>3.11†</td>
<td>0.79</td>
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<td>0.02</td>
<td>9.79**</td>
<td>1.40</td>
</tr>
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<td>Questions</td>
<td>2.13</td>
<td>3.44</td>
<td>13.66**</td>
<td>-1.65</td>
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<td>Personal Information</td>
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<td>3.15</td>
<td>0.20</td>
<td>0.20</td>
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<td>Opinions</td>
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<td>1.46</td>
<td>0.00</td>
<td>-0.01</td>
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<td>0.21</td>
<td>9.14**</td>
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<td>0.01</td>
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<td>0.31</td>
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<td>2.62</td>
<td>0.72</td>
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<td>0.01</td>
<td>0.32</td>
<td>0.25</td>
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<td>Hedges</td>
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<td>1.50</td>
<td>7.31*</td>
<td>-1.21</td>
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<td>0.52</td>
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<td>3.07</td>
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<td>0.53</td>
<td>0.22</td>
<td>0.21</td>
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<td>1.87</td>
<td>0.45</td>
<td>0.30</td>
</tr>
<tr>
<td>Laughter</td>
<td>2.58</td>
<td>0.89</td>
<td>14.97**</td>
<td>1.73</td>
</tr>
<tr>
<td>Humour</td>
<td>0.23</td>
<td>0.11</td>
<td>1.33</td>
<td>0.52</td>
</tr>
<tr>
<td>Subordinate Clauses</td>
<td>1.13</td>
<td>0.81</td>
<td>3.12</td>
<td>0.79</td>
</tr>
<tr>
<td>Expletive Intensifiers</td>
<td>0.02</td>
<td>0.04</td>
<td>0.71</td>
<td>-0.38</td>
</tr>
</tbody>
</table>

† p<.10 * p<.05 **p<.01 ***p<.001
mixed-gender dyads suggests that participants converged to the number of words spoken by their partners. However, looking at simple effects for partner gender, testing the difference between single-gender and mixed-gender dyads by gender, females converged, $t(27)=2.26$, $p=.04$, but not males, $t(27)=-0.33$, $ns$.

Speaker Gender Effects

As predicted, evidence for gender differences in the language use of adolescents was found. Female participants on average referred to emotion more and used more intensifiers than males, but only in same-gender dyads. Females apologised more, made self-derogatory statements more, and laughed more than males regardless of dyad type. In contrast, males were more likely than females to use hedges and expletives as intensifiers. In same-gender dyads, males also asked more topic questions than females. Comparing average (absolute) effect sizes, gender differences were on average larger in same-gender dyads ($M_d=0.84$) than mixed-gender dyads ($M_d=0.40$)\(^3\).

Partner Effects

Participants used greater frequencies of compliments, intensifiers, humour, and subordinate clauses when paired with a female relative to a male. This is clear evidence of convergence, because compliments, intensifiers, and subordinate clauses have been associated with female language, and females used these features less when paired with a male and males used them more when paired with a female. Examination

\(^3\)This comparison does not include effect sizes for the number of words spoken.
of the means in Table 3.2 suggests that convergence often resulted in over-accommodation. For example, male mixed-gender use of humour was similar to that of female same-gender language, and female mixed-gender was similar to that of male same-gender.

Convergence with respect to emotion saw females match the lower level of males in mixed-gender dyads, \( t(27)=2.58, p=.02 \), but males stayed static, \( t(27)=-0.61, ns \). A similar pattern was seen for topic questions, with females matching males’ higher use of topic questions, \( t(27)=-1.99, p=.07 \), but males not adapting, \( t(27)=.43, ns \). Males were asked more questions by their partners than were females. As questions are not typically associated with males, and no gender difference was found for questions, it might be a result of a real or perceived need to facilitate a male partner.

**Interaction Effects**

References to emotion, laughter, and the use of expletives as intensifiers were more common in same-gender than mixed-gender dyads. In contrast, questions, personal information, topic questions, self-derogatories, and hedges were features found more often in mixed-gender dyads than same-gender dyads.

**Discussion**

This study yielded three main findings. Firstly, as predicted, gender differences were found in the language use of adolescents. Second, these differences were mitigated in mixed-gender dyads relative to same-gender dyads, with strong influences of partner gender. Thus, adoles-
cents do converge in relation to the gendered language of their conversa-
tional partner. Thirdly, we found that females spoke more than males in
same-gender dyads, but that males and females spoke similar amounts
in mixed-gender dyads. An additional feature of our results was the
richer interaction patterns we were able to consider due to our use of the
Kraemer-Jacklin method.

The gender differences found were generally consistent with those
used by adults in a variety of media (e.g., Fitzpatrick et al., 1995; Thom-
son & Murachver, 2001; Green, 2003). There were some exceptions,
however, with males using more hedges and asking more questions (al-
beit questions on topics provided). These might reflect a lower degree of
suggested that “the developmental task of establishing heterosexual re-
lations is a daunting one that creates uncertainty and discomfort in ado-
lescents in female-male interactions” (p. 375). Even allowing for these ex-
ceptions, it seems clear that fifteen year olds are already well advanced in
displaying the gendered language exhibited by university samples (who
are typically only four or five years older, e.g., Thomson & Murachver,
2001) and those taken from wider population samples (e.g., Fitzpatrick
et al., 1995). This study further confirms the distinction made in Green
(2003) between expletive intensifiers and non-expletive intensifiers, as we
again found that males were more likely to use expletives as intensifiers,
whereas females used non-expletives as intensifiers.

Accommodation to gendered language occurred in the mixed-gender
dyads. This was evidenced both in terms of a lower overall effect size
for gender in mixed-gender than same-gender dyads, and partner gender effects. Participants showed convergence for the frequency of personal information, compliments, intensifiers, humour, and subordinating clauses. There was also some evidence of a gender difference in convergence, with females converging more than males for references to emotion and topic questions. This is consistent with Fitzpatrick et al. (1995) who found that women accommodated more than men.

Research has generally shown that, in contrast to the stereotype of women as very talkative, women speak less in the presence of men (e.g., Bilous & Krauss, 1988; Mulac, 1989). However, we found a more egalitarian state in this study. It may be that fifteen year olds have not fully developed the patterns likely to emerge in adult life. Alternatively, it could be that we have a new generation for whom gender equality is a more real possibility. Both of these considerations are highly speculative, and would require considerable effort to make any real conclusions.

Our consideration of the interdependence in our data and use of alternative methodology to conduct our analyses enabled us to test a richer variety of hypotheses than previous work examining language use in adolescence. Previously, studies of adolescents interacting found limited evidence for gender differences (Kolaric & Galambos, 1995; Turkstra et al., 2003). The clearest evidence for the use of gendered language in adolescence has been Mulac et al. (1990). However, by not studying social interaction, interdependence was not an issue in the Mulac et al. research. Hence, our study, with its consideration of speaker, partner, and dyad effects, is the most comprehensive work with adolescents to
date. The limitations of staying within the usual parameters of analysis of variance have hobbled previous researchers’ ability to test accommodation hypotheses. The findings of the present study clearly demonstrate that while accounting for interdependence is more time-consuming than ignoring it or working around it, the benefits are considerable. This is consistent with the meticulous work of Fitzpatrick et al. (1995), which is perhaps the benchmark study of accommodation in dyads to date.

Although overall males were more similar to females, we found evidence for the use of gendered language styles in casual interactions among adolescents. Further, we found that adolescents are able to adapt their language styles in relation to their conversational partner. This also underlined the importance of studying dyadic interaction, and considering multiple levels of influence.
Chapter 4

Does Greater Attraction Lead to Greater Convergence? A Test of Communication Accommodation Theory

Communication accommodation theory (CAT, e.g., Boggs & Giles, 1999; Giles et al., 1991) provides a framework to explain how we change our language in relation to others. A key assumption of CAT is that this accommodation (language change) is “influenced by the amount of attraction and/or similarity between partners in interpersonal encounters” (p.230, Boggs & Giles, 1999). However, the attraction or similarity between partners has always been assumed post-hoc as a result of language change. That is, convergence has been observed, and researchers have concluded that this was due to similarity or attraction between conversants. We sought to empirically test this relationship by manipulating

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1This chapter is under review as Green, J., & Murachver, T. (2003). Does Greater Attraction Lead to Greater Convergence? A Test of Communication Accommodation Theory. Manuscript submitted for publication.
perceived attractiveness.

CAT has three basic processes at its heart: (a) convergence – “changing one’s linguistic features ... to be more similar to those of one’s conversational partner” (p.229, Boggs & Giles, 1999); (b) maintenance – keeping one’s language style the same (not adapting in relation to one’s conversational partner); and (c) divergence – making one’s language style more different from the conversational partner. These strategies exist as a continuum, with convergence usually being positively evaluated, ranging to divergence, which is generally viewed negatively. In intergroup situations, choice of strategy is governed by intergroup processes, but in interpersonal encounters, “Convergence signals liking and the desire to be socially closer to the partner” (p.230, Boggs & Giles, 1999), whereas divergence would signal dislike and social distance. Thus, Giles and Powesland (1975) predicted that in a friendly context, convergence would be the default strategy. Consistent with this, much research has found convergence occurring in media as diverse as face-to-face conversation and emails. However, where convergence has occurred, attraction or similarity has been inferred as the cause post-hoc.

Bilous and Krauss (1988) analysed same- and mixed-gender pairs of university students and argued that the language change they found in mixed-gender situations was “... to secure a favourable evaluation from their opposite-sex partners” (p. 191). Similarly, Buzzanell et al. (1996) found that students adapted their language in messages left on a professor’s answer phone in relation to the recorded greeting on the answer phone. Their interpretation was that the status difference led to the
student’s wanting to leave a message that would “...create positive impressions but are restrained by norms against blatant self-promotion” (p.329). Thomson et al. (2001) found in two experiments that students altered their language style toward that of a confederate in an email discourse. In all these instances attraction, similarity or liking was inferred post-hoc from the observed accommodation.

If attraction causes convergence, then the manipulation of attraction should mediate the amount of convergence. That is, if one’s conversational partner is perceived to be more attractive, then one should converge more. One possible, theoretically curious, way to manipulate attraction would be to alter the perceived physical attractiveness of a conversational partner. Thus, if one’s conversational partner is more physically attractive, one should converge more.

Physical attractiveness has been hypothesised to act in a number of ways in an interaction. It can influence the initial perception of a target person, which then leads to differential treatment of the target based on those perceptions. This different treatment of the target then influences the target’s behaviour, and long-term, these behaviours are internalised as a more stable trait\(^2\). A recent meta-analysis by Langlois et al. (2000) supports a number of these hypotheses. Attractive adults were perceived to be more socially appealing and interpersonally competent. Further, attractive people received more attention, reward, positive interaction, and positive impression management from others. In terms of actual behaviour, attractive people were more popular, had more dating and

\(^2\)This is clearly analogous to cultural explanations of gender differences in behaviour.
sexual experience, and better occupational success. However, the evidence for this differential treatment and behaviour of attractive people leading to the formation of stable traits was more mixed. Langlois et al. also noted a marked absence of causal links between each of these sets of findings. For example, while people were seen to treat attractive people differently, there was little evidence linking it to changes in the attractive person’s behaviour. Further, very few studies looked at how actual interactions were influenced by attractiveness (Langlois et al., 2000).

One of the few studies to analyse actual interactions found evidence for differences in perception, and behaviour toward and from the target (Snyder, Tanke, & Berscheid, 1977). Men, shown a Polaroid picture of an attractive woman with whom they were to have a telephone conversation, anticipated that they would

... interact with comparatively sociable, poised, humourous, and socially adept women; by contrast, men faced with the prospect of getting acquainted with relatively unattractive partners fashioned images of rather unsociable, awkward, serious, and socially inept women (p.661).

Further, the behaviour of the women (who were not aware that their perceived attractiveness was being manipulated) whose conversational partners had seen an attractive Polaroid, were rated by naïve judges as more friendly, likeable, and sociable in the interaction. This shows that people appear to adapt their behaviour in relation to how attractive they perceive the person they are talking to. Because attractiveness was randomly assigned (by the use of the photographic stimuli), this
indicates a causal link between the perception of attractiveness and the perception of subsequent behaviour. However, this study only analysed the perception of subsequent behaviour by the naïve judges, rather than measuring actual behaviour.

It is plausible that manipulating physical attractiveness will influence the use of accommodation strategies. If people perceive their opposite-gender email partner as very attractive, they should be more motivated to affiliate with them. If they want to affiliate more, they should converge more. Although gender differences in language vary somewhat between studies, there are a number of features which have emerged consistently as indicative of gendered language (for reviews, see Holmes, 1995; Lakoff, 1990; Tannen, 1993, 1994a), and numerous studies have found convergence between males and females (e.g., Bilous & Krauss, 1988; Fitzpatrick et al., 1995).

However, Giles and Powesland (1975) suggested that in mixed-gender dyads “there may be a conflict between accommodative tendencies and constraints to behave according to sexual [gender] norms and stereotypes” (p.167). This implies that where there may be some ‘partner potential’, there may be an alternative pressure to behave in gendered ways, thus emphasising oneself as a person of the other gender. Therefore, while it is still likely that convergence will occur in order to increase affiliation, some clear gender markers may be retained to emphasise membership of the opposite gender.

To test these predictions, we used an email paradigm where convergence to gendered language styles has previously been found (Thomson
et al., 2001). A key advantage of email as an experimental medium is the ability to use strong manipulations with far less interference from nonverbal cues (accent, eye contact, etc., and of course, physical appearance). In the Thomson et al. study the perceived gender and behaviour of a confederate were independently manipulated to assess the relative influence of these variables. The present study used similar manipulations, such that a confederate wrote to each participant in either a male- or female-typical language style, and always appeared to be the opposite gender to the participant. Additionally, the physical attractiveness of the confederate was manipulated by presenting participants with a digital image of their netpal.

Hypotheses

1. Perceived physical attractiveness would influence language style.

2. Participants would converge their language style toward the confederate’s language style.

3. Participants would converge more to the language style of a more attractive confederate than to a less attractive confederate.

4. Attractiveness would lead to more favourable perceptions of the confederate netpal and the interaction.

Method

Participants

Sixty-four students (32 males, 32 females, mean age=20.5) from the University of Otago, Dunedin, New Zealand completed the email require-
ments for this experiment. Participants either volunteered to fulfil part of their undergraduate psychology course \((n=46)\) or were recruited through the university’s student job agency, and were paid $15 \((n=18)\).

**Attractiveness Stimuli**

All images were taken against a white backdrop, and were head-and-shoulder shots of student-age males and females. Initially, 75 third-year psychology students rated these images for attractiveness on a nine point Likert scale anchored at 1 (highly unattractive) and 9 (highly attractive). Twelve images were selected as suitably representing higher and lower attractiveness ratings.

These 12 images were then shown with 11 new images, which were rated by a further 26 students. Four of the new 11 were selected to bring the total number of images to 16 — four male and four female highly attractive images, and four male and four female less attractive images. Males rated highly attractive female images \((M=6.07)\) as more attractive than less attractive images \((M=3.71)\), \(F(1,10)=99.60, p<.001, \eta^2_p=.91\). Females rated highly attractive male images \((M=6.05)\) as more attractive than less attractive male images \((M=4.07)\), \(F(1,14)=186.33, p<.001, \eta^2_p=.93\).

**Procedure**

Participants were told that we were interested in looking at how people interact via email. Each participant was given a user code giving access to an internal psychology network and Pegasus Mail software. At an initial session, participants were familiarised with logging on to the
network, sending and receiving mail, and opening image attachments. A
digital photograph of each participant was taken against the same white
backdrop as the attractiveness stimuli. Participants were told to expect
an email from the experimenter containing an email address and digital
image of their netpal, and that they were to send at least five messages
to this netpal over a two-week period. Additionally, participants were
informed that there were no limits on length or content of messages,
and that the experimenters could access their accounts and read their
messages.

Participants’ netpals were in fact one of the experimenters. Each con-
federate netpal was randomly assigned to appear as either more or less
attractive (manipulated by sending them either a more or a less attractive
digital image), and to have either a male-typical or female-typical lan-
guage style. Netpals were always the opposite gender to the participant
(as indicated by the digital image, and the name the confederate gave,
e.g., Jane, Carl). Confederate language styles were constructed using
the same template methodology as Thomson et al. (2001), with the tem-
plates being based on frequencies of gender-preferential language features
previously identified in email messages (Thomson & Murachver, 2001).
Average confederate message length was 95.9 words, and did not vary
as a function of participant gender or the confederate’s language style
or attractiveness. To verify the language style manipulation, confeder-
ate messages were coded in an identical fashion to participant messages
and analysed with a Multivariate Analysis of Variance (MANOVA) with
all independent variables as between subjects factors. A strong main
effect of language style, $F(11,46)=61.41, p<.001, \eta^2_p=.94$, indicated the manipulation was successful. Confirming this, there were no statistically significant effects of participant gender, confederate attractiveness, or interactions on confederate email messages. The content of confederate messages was based in part on topics introduced by participants, with novel topics from the confederate on common student topics, such as recreation, parties, current events, and university coursework.

Before participants were debriefed at the conclusion of the experiment, they completed a brief questionnaire. This included questions on (a) their perception of the interaction: how well they felt they got to know their netpal, how well their netpal got to know them, and how comfortable they felt about the interaction; (b) their netpal’s personality: how self-confident, likeable, competent, intelligent, attractive, popular, humourous, and masculine/feminine (a bipolar scale) their netpal was; and (c) about how close a relationship the participant would want with their netpal. These were assessed on Likert scales from 1 to 7 (with some items reverse-scored).

Coding

The number of words in each message for participant and confederate messages was calculated. Messages were also coded for 11 language features: (1) references to emotion, (2) requests for information, (3) answers or references to previous messages, (4) personal information, (5) opinions, (6) self-derogatory statements, (7) compliments, (8) hedges, (9) intensifiers, (10) focus adverbs, and (11) attributive adjectives. Two
coders independently coded 25% of the messages with interrater reliabilities (alphas) all exceeding .86.

Results

The factorial design for all following analysis of variance models had participant gender (Gender), confederate language style (Style), and confederate attractiveness (Attractiveness) as between subjects factors. Post-hoc Student-Newman-Keuls (SNK) tests were used to interpret interactions. An analysis of variance (ANOVA) on participant message length revealed a statistically marginal Gender X Attractiveness interaction, $F(1,56)=3.76, p=.06, \eta^2_p=.06$. As Figure 4.1 shows, male participants wrote slightly shorter messages to less attractive confederates, whereas attractiveness had no impact on the length of female participants’ messages.

![Figure 4.1: Mean participant message length in words by participant gender and confederate attractiveness.](image)

Figure 4.1: Mean participant message length in words by participant gender and confederate attractiveness.
Frequencies of the variables coded in participant messages were converted into frequencies per hundred words. A MANOVA was then calculated for these eleven participant language variables. Strong effects of confederate style, $F(11,46)=3.72$, $p<.001$, $\eta^2_p=.47$, and confederate attractiveness, $F(11,46)=4.14$, $p<.001$, $\eta^2_p=.50$, were qualified by a Style X Attractiveness multivariate interaction, $F(11,46)=2.07$, $p=.04$, $\eta^2_p=.33$. There was also a marginal effect of participant gender, $F(11,46)=1.95$, $p=.06$, $\eta^2_p=.32$.

The multivariate interaction of attractiveness and style was driven by a pattern across most language variables, rather than any strong univariate effects. To illustrate this pattern, marginal interactions for compliments, $F(1,56)=3.32$, $p=.07$, $\eta^2_p=.06$, and attributive adjectives, $F(1,56)=2.99$, $p=.09$, $\eta^2_p=.05$, are depicted in Figure 4.2. SNK post-hocs revealed that female-style confederates (who complimented the participants more than male-style confederates) were complimented more by participants only if the confederate was more attractive. Male-style confederates used a greater number of attributive adjectives than female-style confederates, and this lead to participants with a more-attractive male-style confederate using a greater number of attributive adjectives than participants with a less-attractive male-style confederate.

Means, standard errors, and test statistics of significant univariate effects for confederate language style, confederate attractiveness, and participant gender are presented in Table 4.1. Female-style confederates elicited more references to previous messages, more personal information, more compliments, and fewer opinions from participants than male-style
confederates did. Participants who perceived that they had a less attractive netpal used more focus adverbs than those with a more attractive netpal did. Finally, male participants asked marginally more questions, gave more opinions, referred to previous messages more, and gave fewer compliments than female participants did.

Participants’ perceptions of their netpals, assessed through the debrief questionnaire, were analysed with a MANOVA calculated for the twelve questionnaire items. There was a statistically significant multivariate Gender X Attractiveness interaction, $F(12,31)=2.14$, $p=.04$, $\eta^2_p=.45$, qualifying significant main effects of gender, $F(12,31)=7.25$, $p<.001$, $\eta^2_p=.74$, and attractiveness, $F(12,31)=2.14$, $p=.04$, $\eta^2_p=.45$. Significant univariate effects for the Gender X Attractiveness interaction included how competent the netpal was perceived to be, $F(1,42)=6.85$, $p=.01$, 

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3Fourteen participants failed to complete the debrief questionnaire within a reasonable period after the experiment.
Table 4.1: Mean Frequencies per 100 Words (and Standard Errors) of Participants’ Language Features for Significant Effects of Confederate Language Style, Confederate Attractiveness, and Participant Gender

<table>
<thead>
<tr>
<th>Language Feature</th>
<th>Confederate Language Style***</th>
<th>Male</th>
<th>Female</th>
<th>F(1,56)</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Information***</td>
<td></td>
<td>3.88 (.17)</td>
<td>4.74 (.17)</td>
<td>13.39</td>
<td>.19</td>
</tr>
<tr>
<td>References to previous messages*</td>
<td></td>
<td>1.82 (.14)</td>
<td>2.27 (.14)</td>
<td>5.30</td>
<td>.09</td>
</tr>
<tr>
<td>Compliments*</td>
<td></td>
<td>.02 (.01)</td>
<td>.07 (.03)</td>
<td>5.07</td>
<td>.08</td>
</tr>
<tr>
<td>Opinions**</td>
<td></td>
<td>1.12 (.13)</td>
<td>.72 (.09)</td>
<td>7.15</td>
<td>.11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Confederate Attractiveness***</th>
<th>Medium</th>
<th>High</th>
<th>F(1,56)</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus Adverbs***</td>
<td>.74 (.07)</td>
<td>.39 (.08)</td>
<td>11.66</td>
<td>.17</td>
</tr>
<tr>
<td>Compliments***</td>
<td>.00 (.00)</td>
<td>.09 (.03)</td>
<td>13.36</td>
<td>.19</td>
</tr>
<tr>
<td>Attributive Adjectives*</td>
<td>1.32 (.13)</td>
<td>1.82 (.16)</td>
<td>6.34</td>
<td>.10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participant Gender†</th>
<th>Male</th>
<th>Female</th>
<th>F(1,56)</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions†</td>
<td>1.39 (.15)</td>
<td>1.02 (.14)</td>
<td>3.63</td>
<td>.06</td>
</tr>
<tr>
<td>Compliments*</td>
<td>.02 (.01)</td>
<td>.08 (.03)</td>
<td>6.10</td>
<td>.10</td>
</tr>
<tr>
<td>Opinions*</td>
<td>1.09 (.14)</td>
<td>.75 (.08)</td>
<td>5.27</td>
<td>.09</td>
</tr>
<tr>
<td>References to previous messages**</td>
<td>2.32 (.15)</td>
<td>1.77 (.12)</td>
<td>8.17</td>
<td>.13</td>
</tr>
</tbody>
</table>

Note. Standard errors are in parentheses.
† p<.10 * p<.05 **p<.01 ***p<.001
\( \eta_p^2 = .14 \), how close a relationship the participant wanted with the netpal, \( F(1, 42) = 6.27, p = .02, \eta_p^2 = .13 \), for the perception of femininity/masculinity in the netpal, \( F(1, 42) = 16.84, p < .001, \eta_p^2 = .29 \), and marginal effects for how well the participant knew the netpal, \( F(1, 42) = 3.06, p = .09, \eta_p^2 = .07 \), how comfortable the participant was with the netpal, \( F(1, 42) = 2.97, p = .09, \eta_p^2 = .07 \), and how attractive the participant found the netpal, \( F(1, 42) = 3.78, p = .06, \eta_p^2 = .08 \). As can be seen from the panels in Figure 4.3, attractiveness influenced perception of the netpal only for male participants for all variables except femininity/masculinity. These effects were such that male participants viewed more attractive female confederates as more competent and attractive, that they knew the confederate better, that they were more comfortable with them, and that they desired a closer relationship, than male participants with less attractive confederates. Female participants did not vary in their reported perceptions on these measures as a function of attractiveness. However, highly attractive female confederates were viewed as more feminine than less attractive female confederates, whereas highly attractive male confederates were viewed as more masculine than less attractive male confederates.

The only univariate effect for gender, for the perception of masculinity/femininity was qualified by the Gender X Attractiveness univariate effect previously mentioned. The multivariate effect of Attractiveness was underpinned by two univariate effects (in addition to those qualified by the interactions above). More attractive confederates were perceived to have more friends than less attractive confederates, \( M = 5.28 \) versus \( M = 4.40, F(1, 42) = 9.82, p = .003, \eta_p^2 = .19 \). All participants also thought
Figure 4.3: Mean ratings of participants’ perceptions of the conversation and confederate by participant gender and confederate attractiveness.
more attractive confederates knew them (the participant) better than less attractive confederates, $M=4.36$ versus $M=3.56$, $F(1,42)=5.36$, $p=.03$, $\eta_p^2=.11$.

The accuracy of two of these perceptions can be tested through examination of the data. If male participants really knew more attractive confederates better than less attractive confederates, this should be reflected in the amount of personal information disclosed by the confederate (which would also suggest that the language style manipulation had failed). Examination of the univariate $F$s from the manipulation check suggests this was not the case, $F(1,56)=.07$, $p=.8$. Similarly, if the more attractive confederates were to know the participants better, then the participants would have to tell the confederates more personal information. Again, examination of the univariate $F$s from the MANOVA looking at participants’ language shows that this was not born out by the data, $F(1,56)=.36$, $p=.6$.

**Discussion**

Consistent with the hypotheses, participants changed their language to be more like that of their confederate netpal, and also adapted some aspects of their language when they perceived their netpal to be more attractive. Further, participants changed some aspects of their language more if their confederate netpal was perceived to be more attractive. Language use also differed somewhat between male and female participants, and participant gender had a strong impact on whether the attractiveness of the confederate influenced participant’s perceptions of the conversation.
and confederate. Contrary to predictions, attractiveness only influenced the male participants’ reported perceptions of the interaction and their netpal.

These findings support the hypothesis that attraction does influence the choice of accommodation strategies, as proposed by CAT. Here, where participants were positively motivated by having a more attractive confederate to converse with, participants showed greater matching trends on a number of language features, notably compliments and attributive adjectives. Where a participant had a confederate who complimented them (female-style), participants complimented the confederate more when the confederate was more attractive. Participants who interacted with a confederate who used a greater number of attributive adjectives (male-style) reciprocated by using a greater number of adjectives when the confederate was perceived to be more attractive. The size of the effect was moderate, but as convergence is typically found in friendly email exchanges (e.g., Thomson & Murachver, 2001; Thomson et al., 2001), it is possible that there may have been some ceiling effect.

The effects of attractiveness per se were more subtle than seen in previous research (e.g., Langlois et al., 2000; Snyder et al., 1977). This may be because the attractiveness of the confederate was manipulated independently of behaviour in this study. Here, the confederate behaved in one of two specific predefined ways, regardless of perceived attractiveness. In previous research, even where the attractiveness of a confederate was manipulated, the behaviour of the confederate was not controlled, so they responded naturally. Thus, a confederate perceived to be more
attractive would be treated better, leading the confederate to respond more warmly, enhancing the favourable impression of the confederate. In contrast, the present study provides clear support for a causal link between attractiveness and actual behaviour\(^4\).

Weak gender effects are characteristic of studies involving convergence to gendered language styles. This is because typically convergence is a stronger influence than gender per se. For example, Thomson et al. (2001) found no influence of participant gender in Study 1, where participants adapted clearly toward the gendered-style and gender-label of the confederate. The marginal effect of gender in the present study does, however, support the prediction of Giles and Powesland (1975) that there might be some retention of gendered behaviour in mixed-gender dyads, to mark membership of the opposite gender group.

The finding that higher confederate attractiveness lead only males to perceive the confederate and interaction more favourably was surprising. The finding is consistent with mate selection mechanisms suggesting that men pay more attention to the attractiveness of women, whereas women focus on the resources of men (e.g., Buss, 1992), but is not consistent with the lack of gender differences in previous meta-analyses looking at the perception and influence of attractiveness (Eagly, Ashmore, Makhijani, & Longo, 1991; Langlois et al., 2000). The gender difference in the influence of attraction in the present study appears more like an effect of social desirability. The females did not differ as a function of attractiveness on the most conscious measures (for example, rating the confederate’s

\(^4\)Not just the subjective perception of behaviour measured by Snyder et al. (1977).
competence and attractiveness on a Likert scale), but were influenced by attractiveness on the more subtle language change measures. In contrast, males were influenced by the attractiveness on both language change and rating measures.

To further bolster the present study’s support for the influence of similarity and attraction on accommodation strategies in interpersonal contexts, manipulating perceived similarity seems an obvious next step. Operationally, the confederate could either be similar or dissimilar to participants on a variety of levels, and could include a potential change in similarity during the course of the exchange.

Another interesting future direction would be to replicate much of the present study, but gauge the impact of physical attractiveness on same-gender dyads. The present study considered only mixed-gender dyads, as it was expected that this might lead to a larger, more detectable effect. However, given the lack of evidence for gender differences in the treatment and behaviour toward attractive and unattractive targets (Langlois et al., 2000), this assumption may have been unnecessary. Further, as the experimental manipulation of attractiveness was not common in the research summarised by Langlois et al., this replication would be well justified.

Communication accommodation theory stands further strengthened by the finding that greater physical attractiveness causes increased convergence. This reinforces the previously untested hypothesis that similarity or attraction between conversants mediates the use of accommodation strategies, allowing CAT to be used more predictively. This study shows
the benefit of a research design experimentally manipulating attractiveness, analysing the behaviour exhibited by the target, and analysing interactive behaviour, not just perceptions.
Chapter 5

Individual Differences in Accommodation

Research looking at gender and language has tended to focus on how language might differ between males and females, and how adaptation in relation to one’s conversational partner might influence language style. However, with the exception of considering psychological gender as well as physical sex, individual differences in the use of gendered language and adaptation to one’s conversational partner have not been studied.

Small but relatively consistent gender differences in language use have been found on a broad number of linguistic features (for reviews, see e.g., Holmes, 1995; Lakoff, 1990; Mulac, Bradac, & Gibbons, 2001; Tannen, 1993, 1994a). The gender differences that are found are typically of a small magnitude, and feature substantial overlap between men and women. For this reason Fitzpatrick et al. (1995) labeled them gender-preferential language styles, to indicate that while they differ as a function of gender, they are by no means dichotomous.

Observed gender differences have also been found to be greater in single-gender contexts, relative to mixed-gender contexts (e.g., Fitzpat-
This smaller difference in mixed-gender contexts is often explained in terms of processes outlined by communication accommodation theory (CAT, e.g., Boggs & Giles, 1999; Giles et al., 1991; Shepard et al., 2001). According to CAT, people generally converge their language style to be more like that of their conversational partner. Thus, in a single-gender context, interlocutors’ styles are more likely to be similar (e.g., both broadly female) and so any adaptation will maintain a generally (e.g., female) gender-preferential language style. In contrast, in a mixed-gender context, the male is likely to adapt to the female, and vice-versa, leading to mitigated gender differences relative to single-gender contexts.

Individual differences are predicted in both gender preferential language and accommodation. By definition, the substantial overlap between males and females implies individual variation. In their summary of CAT, Shepard et al. (2001) argue that there is variation in individuals’ predisposition to converge. However, there has been little research looking at what predicts this variation in either gendered language or convergence.

Psychological gender and gender-stereotyping have been related to males’ use of convergence. Robertson and Murachver (2003) found that stronger gender stereotyping predicted less accommodation, but only for boys. Similarly, Fitzpatrick et al. (1995) found that men higher in masculinity accommodated less to women. Fitzpatrick and her colleagues also found overall that women converged more. Other studies, however, have not found gender differences in accommodation (e.g., Robertson &
Murachver, 2003; Thomson et al., 2001).

The only study to date that appears to have related any other form of individual difference measure and convergence is the work of Natale (1975). Natale found that dyads containing individuals scoring highly on a measure of social desirability had higher matching in terms of vocal intensity.

Given this relative paucity of research, it would seem appropriate to cast a fairly wide net in the search for predictors of gendered language and convergence. The Bem Sex Role Inventory (BSRI; Bem, 1974) measures masculinity and femininity, and has been related to convergence (Fitpatrick et al., 1995). The Pacific Attitudes Toward Gender (PATG) scale (Vaillancourt & Leaper, 1997), a measure of gender stereotyping, served as an analogue to the child stereotyping procedure used by Robertson and Murachver (2003). To complement these explicit measures, a recent innovation in the measurement of self-identity, stereotyping, and prejudice, the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) was used. As the name implies, the IAT measures implicit rather than explicit attitudes, and it has been suggested that it might better tap underlying beliefs with less influence of social desirability. For example, Rudman and Kilianski (2000) found that women showed less prejudice than men, but only on explicit measures, not the IAT. Further supporting this thesis, in the only work so far linking an IAT and actual behaviour, the IAT predicted racially biased behaviour better than explicit measures (McConnell & Leibold, 2001). Thus, as a predictor of gendered language and convergence, the IAT may be more
powerful than the explicit measures.

Based on the work of Fitzpatrick et al. (1995) we were able to make specific predictions that women would accommodate more than men, and that higher scores on masculinity measures would predict less accommodation in men. Similarly, in line with Robertson and Murachver (2003), greater stereotyping should also predict less accommodation in men.

Hypothesis 1. Females would converge more than males.  
Hypothesis 2. Male participants scoring lower on measures of masculinity would converge more than those scoring higher on these measures.  
Hypothesis 3. Male participants scoring lower on measures of gender-stereotyping would converge more than those scoring higher on these measures.

A number of additional measures were selected on the grounds that they could potentially predict gendered language and convergence. The revised self-monitoring scale (Lennox & Wolfe, 1984) produces two measures: self-monitoring and concern for appropriateness. It seems plausible that people with greater awareness of their own behaviour or greater desire to behave appropriately might be more likely to accommodate. Somewhat similarly, people who create more complex explanations for the behaviour of others (attributional complexity; Fletcher, Danilovics, Fernandez, Peterson, & Reeder, 1986) or who base their thinking on rational or experiential (intuitive) explanations (Pacini & Epstein, 1999) might make differing judgements of their conversational partner and
hence change the extent to which they alter their behaviour in different situations. However, without previous research, open-ended research questions seem more appropriate than specific hypotheses.

Research Question 1. What individual difference measure(s) predict gender preferential language? Likely candidates include BSRI masculinity or femininity, Pacific Attitudes toward Gender, and IAT measures of gender identity/stereotyping.

Research Question 2. What individual difference measure(s) predict convergence to the gender-preferential language style of the participants’ conversational partner? Likely measures include self-monitoring or concern for appropriateness, attributional complexity, and rational or experiential thinking.

Method

Participants

Forty students (20 males, 20 females, mean age=20.9) from the University of Otago, Dunedin, New Zealand completed the email requirements for this experiment. Participants either volunteered to fulfil part of their undergraduate psychology course (n=15) or were recruited through the university’s student job agency, and were paid $15 (n=25).

Individual Difference Measures

Explicit Measures. The Bem Sex-Role inventory (BSRI; Bem, 1974), Pacific Attitudes toward Gender (PATG; Vaillancourt & Leaper, 1997),
Attributional Complexity Scale (ACS; Fletcher et al., 1986), Revised Self-Monitoring (RSM; Lennox & Wolfe, 1984), and the Rational-Experiential Inventory (REI, Pacini & Epstein, 1999) were presented in a series of random orders. The BSRI yields a separate score for masculinity and femininity. Similarly, the RSM consists of a self-monitoring scale and a concern for appropriateness scale. The REI also produces two scores, one for rational thinking, and one for experiential thinking. The items for these scales are presented in Appendix B.

Seven participants missed a single response on one of these measures. These missing data points were estimated using expectation maximisation through SPSS MVA. Average scores on each scale were then calculated, with items reverse scored where appropriate. All measures were standardised to facilitate comparison. Reliabilities (alphas) for the scales were as follows: BSRI masculinity .85; BSRI femininity .54; PATG .82; ACS .90; RSM self-monitoring .77; RSM concern for appropriateness .79; REI rational thinking .88; and REI experiential thinking .87. The reliability for the BSRI femininity was lower than typical (e.g., .80 and .82; (Bem, 1974)).

IAT Measures. Seven IATs (Greenwald et al., 1998) were used to assess different aspects of psychological gender and gender stereotyping. Each IAT requires the participant to make category judgements on two dichotomous categories (e.g., female versus male and strong versus weak),

1 The Rationality sub-scale is based on Cacioppo and Petty’s (1982) Need for Cognition scale.

2 This also serves to centre the measures, a requirement for the testing and interpretation of interactions in regression analyses (see Aiken & West, 1991, for details).
and consists of five blocks of trials. Continuing the example, the first block would consist of a series of 12 trials; each trial would have a strong or weak word presented, with the participant pressing the “E” key with their left hand for strong words, and the “I” with their right hand for weak words. Block two is 12 trials with female and male words, with participants responding with their left and right hands respectively. In block three these two tasks are combined. A total of 26 trials with randomly selected strong, weak, male, female words are presented with left-hand responses for strong and female, and right-hand for weak and male. Block four is the same as block two, except the responses are reversed, thus male words are indicated by the left hand and female words by the right hand. Block five is similar to block three, but with the reversal of female and male; 26 randomly selected trials with left-hand responses for strong and male, and right-hand for weak and female3.

Conceptually, the IAT effect is the difference in association strength measured in blocks three and five. That is, participants who have faster reaction times responding to female+strong (left-hand) male+weak (right-hand) than they do responding to male+strong and female+weak associate females with strength and males with weakness. Mathematically, it is computed as the mean difference of reaction times from blocks three and five, divided by the standard deviation of all trials from blocks three and five (not the pooled standard deviation, see Greenwald, Nosek, & Banaji, 2003, for details). Incorrect trials were deleted, as were trials

3The order of blocks three and five is counterbalanced across subjects. Typically the IAT is run with 20 trials in blocks one, two, and four, and 60 in three and five, but this shorter form of the IAT has been found to exhibit similar properties to the traditional longer form (Green, Janssen, Murachver, & Robertson, 2003).
Three IATs assessing psychological gender and four assessing gender stereotyping were used. The discrimination pairs are presented in Table 5.1. For convenience, IATs were named for the association indicated by higher scores\(^4\). Stimulus words for each semantic category are presented in Appendix A. Correlations between IATs and other explicit individual difference measures are presented in Table 5.2.

**Procedure**

Participants were told that we were interested in looking at how people interact via email. At an initial session, participants were told to expect an email from the experimenter containing two email addresses belonging to their two netpals, to whom they were to send at least five messages to over a two-week period. Additionally, participants were informed that there were no limits on length or content of messages, and

\(^4\)Note that for each IAT there is an alternative name that could equally be applied. For example, high self+female scores could also be referred to as high other+male scores. The associations denoted by higher scores are also arbitrary.
### Table 5.2: Correlations between Individual Difference Measures

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<tbody>
<tr>
<td>1 self+female</td>
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<td>.26</td>
<td>-.25</td>
<td>.27</td>
<td>.10</td>
<td>.58**</td>
<td>-.12</td>
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<td>.27</td>
<td>.06</td>
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<td>.15</td>
<td>.22</td>
<td>-.33*</td>
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<td>2 self+warm</td>
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<td>-.35*</td>
<td>.06</td>
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<td>-.12</td>
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<td>-.09</td>
<td>.02</td>
<td>-.10</td>
<td>-.18</td>
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<td>3 self+strong</td>
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<td></td>
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<td>-.16</td>
<td>-.32*</td>
<td>.24</td>
<td>.08</td>
<td>-.05</td>
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<td>4 female+warm</td>
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<td>-.18</td>
<td>.52**</td>
<td>.20</td>
<td>-.16</td>
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<td>-.08</td>
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<td>.48**</td>
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<td>5 female+strong</td>
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<td>-.19</td>
<td>-.41**</td>
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<td>6 female+positive</td>
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<td>.19</td>
<td>.12</td>
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<td>7 female+domestic</td>
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<td>8 BSRI femininity</td>
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<td>9 BSRI masculinity</td>
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<td>10 PATG</td>
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<td>-.03</td>
<td>.29</td>
<td>-.14</td>
<td>-.34*</td>
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<td>11 REI rationality</td>
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<td></td>
<td>.14</td>
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<td>12 REI experientiality</td>
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<td>13 ACS</td>
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<td>.26</td>
<td>-.12</td>
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<tr>
<td>14 Self-monitoring</td>
<td></td>
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<td>15 Concern for Appropriateness</td>
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</table>

* *p<.05 **p<.01
that they were to carbon-copy each message to the experimenter. Any questions from the participants were answered, and then they completed the questionnaire booklet, followed by the IAT measures.

Before participants were debriefed at the conclusion of the experiment, they completed a brief questionnaire on each of their netpals. This included questions on (a) their perception of the interaction: how well they felt they got to know their netpal, how well their netpal got to know them, and how comfortable they felt about the interaction; (b) their netpal’s personality: how likeable, confident, intelligent, attractive, popular, humorous, and masculine/feminine (a bipolar scale) their netpal was; and (c) about how close a relationship the participant would want with their netpal. These were assessed on Likert scales from 1 to 7.

Participants’ netpals were in fact one of the experimenters. Each participant had one male netpal (male name, e.g., Carl; with a male-style) and one female netpal (female name, e.g., Jane; with a female-style) who wrote messages from a non-identifying email address (e.g., scarfie@nzoomail.com, dnkiwi@ihug.co.nz). Confederate language styles were constructed using the same template methodology as Thomson et al. (2001), with the templates being based on frequencies of gender-preferential language features previously identified in email messages (Thomson & Murachver, 2001). The templates (see Appendix C) were modified slightly from those used in Thomson et al. (2001) and Chapter 4 to keep the levels of features more consistent between messages. The content of confederate messages was based in part on topics introduced by participants, with novel topics from the confederate on common stu-
dent topics, such as recreation, parties, current events, and university coursework.

Coding

The number of words in each message for participant and confederate messages were calculated. Messages were then coded for the following language features: (a) references to emotion, (b) requests for information (questions), (c) answers or references to previous messages, (d) personal information, (e) opinions, (f) empathic statements, (g) self-derogatory statements, (h) compliments, (i) hedges, (j) intensifiers, and (k) attributive adjectives, and (l) subordinating clauses. Two coders independently coded 25% of the messages with interrater reliabilities (alphas) all exceeding .80.

Manipulation Check

Average confederate message length was 105 words, and did not vary as a function of participant gender or the confederate’s language style. To verify the language style manipulation, confederate messages were coded in an identical fashion to participant messages and analysed with a Multivariate Analysis of Variance (MANOVA) with all experimental manipulations as between subjects factors. A strong main effect of language, $F(12,27)=397.04, p<.001, \eta_p^2=.99$, indicated the manipulation was successful. There were also clear univariate effects for each language variable, all values of $F(1,38)>107.92, p<.001, \eta_p^2 > .74, d>2.3$. There were, however, also smaller effects of participant gender, $F(12,27)=2.29, p=.04, \eta_p^2=.50$, and an interaction between the style manipulation and partic-
ipant gender, $F(12,27)=3.05, p=.01, \eta^2_p=.58$, suggesting that the manipulation varied somewhat in strength for different participants. Looking at the effect sizes for the significant univariate effects, it becomes clear that there were a few minor anomalies rather than a failure of the manipulation. The manipulation of empathics was slightly stronger in messages to females ($M_{Male-style(Ms)}=0.01$ versus $M_{Female-style(Fs)}=1.01, d=5.1$) than males ($M_{Ms}=0.00$ versus $M_{Fs}=0.80, d=4.6$). Similarly, the manipulation was again slightly stronger for intensifiers in messages to females ($M_{Ms}=0.35$ versus $M_{Fs}=2.36, d=4.1$) than males ($M_{Ms}=0.44$ versus $M_{Fs}=1.92, d=4.0$). The confederate disclosed more personal information in messages to males than females, $M_M=3.62$ versus $M_F=3.41, d=0.7$, and used more subordinate clauses in messages to males than females, $M_M=1.32$ versus $M_F=1.09, d=0.7$. Also, no individual differences measures predicted the discriminant function derived from the manipulation check MANOVA$^5$. 

**Results**

As an initial step, the length of participants’ messages were scrutinized in a mixed design analysis of variance (ANOVA) with participant gender (between) and confederate gender (within) serving as factors. Female participants wrote marginally longer messages than males, $M=154.1$ versus $M=122.4, d=0.6, F(1,38)=4.00, p=.053, \eta^2_p=.10$. Participants also wrote longer messages to female confederates than male confederates, $M=151.8$ versus $M=124.7, d=0.5, F(1,38)=20.80, p<.001$.

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$^5$This method of analysis is described in more detail in the Results section.
\( \eta^2_p = .35 \). The interaction term was not significant.

Language features were converted to frequencies per hundred words, and were analysed with a mixed design multivariate analysis of variance (MANOVA), again with participant gender and confederate gender as factors. Replicating Thomson et al. (Experiment 1, 2001), there was a strong multivariate effect of confederate gender, \( F(12,27) = 5.51, p < .001, \eta^2_p = .71 \), but no effect of participant gender or interaction.

As can be seen from the means, effect sizes, and inferential statistics in Table 5.3, significant univariate effects of confederate language style were found for almost all manipulated variables, except for hedges and intensifiers. Additionally, with the exception of questions, the significant effects were all in the direction predicted by the confederates’ behaviour. Writing to a female-style confederate participants disclosed more personal information, made more empathic references, talked about emotion more, referred back to previous messages more, made more self-derogatory statements about themselves, and used more subordinate clauses. In contrast, participants asked more questions, gave more opinions, and used more attributive adjectives when writing messages to their male-style netpal.

**Individual Differences Analyses**

In order to simplify the analysis of individual differences, we sought to create an overall measure of convergence. However, as relatively fewer male-preferential features were manipulated, it was considered plausible that generating a single measure of accommodation might not be sensitive
Table 5.3: Mean Frequencies per 100 Words (and Standard Errors) of Participants’ Language Features for Confederate Language Style.

<table>
<thead>
<tr>
<th>Language Feature</th>
<th>Female Style</th>
<th>Male Style</th>
<th>F(1,38)</th>
<th>η²</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Information***</td>
<td>5.08 (0.15)</td>
<td>4.12 (0.17)</td>
<td>24.00</td>
<td>0.39</td>
<td>0.9</td>
</tr>
<tr>
<td>Empathic Statements**</td>
<td>0.56 (0.07)</td>
<td>0.31 (0.06)</td>
<td>11.32</td>
<td>0.23</td>
<td>0.6</td>
</tr>
<tr>
<td>Emotion References**</td>
<td>0.26 (0.05)</td>
<td>0.12 (0.03)</td>
<td>8.06</td>
<td>0.17</td>
<td>0.6</td>
</tr>
<tr>
<td>References**</td>
<td>2.18 (0.13)</td>
<td>1.75 (0.12)</td>
<td>10.16</td>
<td>0.21</td>
<td>0.5</td>
</tr>
<tr>
<td>Self-derogatory Statements*</td>
<td>0.25 (0.04)</td>
<td>0.13 (0.03)</td>
<td>8.19</td>
<td>0.18</td>
<td>0.5</td>
</tr>
<tr>
<td>Compliments†</td>
<td>0.07 (0.02)</td>
<td>0.02 (0.01)</td>
<td>3.07</td>
<td>0.07</td>
<td>0.4</td>
</tr>
<tr>
<td>Subordinate Clause†</td>
<td>1.68 (0.11)</td>
<td>1.40 (0.14)</td>
<td>3.05</td>
<td>0.07</td>
<td>0.3</td>
</tr>
<tr>
<td>Intensifiers</td>
<td>1.16 (0.11)</td>
<td>1.08 (0.10)</td>
<td>0.48</td>
<td>0.01</td>
<td>0.1</td>
</tr>
<tr>
<td>Hedges</td>
<td>1.31 (0.09)</td>
<td>1.37 (0.12)</td>
<td>0.35</td>
<td>0.01</td>
<td>-0.1</td>
</tr>
<tr>
<td>Questions*</td>
<td>0.86 (0.09)</td>
<td>1.18 (0.15)</td>
<td>5.24</td>
<td>0.12</td>
<td>-0.4</td>
</tr>
<tr>
<td>Attributive Adjectives*</td>
<td>1.35 (0.11)</td>
<td>1.71 (0.14)</td>
<td>6.81</td>
<td>0.15</td>
<td>-0.5</td>
</tr>
<tr>
<td>Opinions***</td>
<td>0.53 (0.08)</td>
<td>1.18 (0.13)</td>
<td>19.86</td>
<td>0.34</td>
<td>-1.0</td>
</tr>
</tbody>
</table>

Note. Standard errors are in parentheses.
† p<.10 * p<.05 **p<.01 ***p<.001

to convergence to male features. Thus, two convergence indicators were generated, one indicating convergence to female features, and one to male features. These were discriminant functions from a MANOVA on female features and a MANOVA on male features, with confederate language style as a single within-subjects factor. Language variable weightings for these functions are displayed in Table 5.4. The two indicators were moderately correlated, \( r = .42, p = .01, r^2 = .18 \). Further justifying their separation, the female indicator was found to be near identical to a discriminant function derived from all language variables, \( r = .98, p < .001, r^2 = .96 \), whereas the male indicator only had a moderate degree of over-

---

6Gender was not included as a factor in the MANOVA as gender was used as a predictor of the resulting discriminant function.
lap, \( r=.53, p<.001, r^2=.28 \).

Table 5.4: Linear Discriminant Function Coefficients for Male and Female Convergence Measures.

<table>
<thead>
<tr>
<th>Language Feature</th>
<th>Unstandardised Weight</th>
<th>Standardised Weight</th>
<th>Correlation with function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Female Convergence Function</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotion References</td>
<td>1.55</td>
<td>0.36</td>
<td>0.32</td>
</tr>
<tr>
<td>Questions</td>
<td>0.10</td>
<td>0.06</td>
<td>-0.26</td>
</tr>
<tr>
<td>References</td>
<td>0.56</td>
<td>0.33</td>
<td>0.36</td>
</tr>
<tr>
<td>Personal Information</td>
<td>0.59</td>
<td>0.52</td>
<td>0.55</td>
</tr>
<tr>
<td>Empathic Statements</td>
<td>1.33</td>
<td>0.44</td>
<td>0.38</td>
</tr>
<tr>
<td>Self-derogatory Statements</td>
<td>3.50</td>
<td>0.67</td>
<td>0.32</td>
</tr>
<tr>
<td>Compliments</td>
<td>2.24</td>
<td>0.24</td>
<td>0.20</td>
</tr>
<tr>
<td>Subordinate Clauses</td>
<td>0.55</td>
<td>0.40</td>
<td>0.20</td>
</tr>
<tr>
<td>Hedges</td>
<td>-0.16</td>
<td>-0.08</td>
<td>-0.07</td>
</tr>
<tr>
<td>Intensifiers</td>
<td>-0.34</td>
<td>-0.18</td>
<td>0.08</td>
</tr>
<tr>
<td><strong>Male Convergence Function</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinions</td>
<td>1.28</td>
<td>0.86</td>
<td>0.92</td>
</tr>
<tr>
<td>Attributive Adjectives</td>
<td>0.62</td>
<td>0.39</td>
<td>0.54</td>
</tr>
</tbody>
</table>

**H1.** Females would converge more than males.

A simple regression with gender as a predictor of convergence to female language features revealed that males converged more than females, \( B=-0.95, t(38)=-2.22, p=.03, s^2_p=.11^7 \) (as a dichotomous variable this can also be viewed as a mean difference, \( M_{male}=2.46 \) versus \( M_{female}=1.51, d=0.7 \)). No relation was found between convergence to male language features and gender.

\(^7\)The squared part correlation \( (s^2_p) \) is an estimate of the amount of variance uniquely explained by the predictor variable.
$H2$. Male participants scoring lower on measures of masculinity would converge more than those scoring higher on these measures.

$H3$. Male participants scoring lower on measures of gender-stereotyping would converge more than those scoring higher on these measures.

BSRI and PATG scores, along with the IATs were used as predictors of convergence to male and female language features. To consider whether there were differing relationships for female and male participants, multiple regressions were calculated using each individual difference measure, gender, and their interaction product as predictors. One significant interaction was observed for convergence to female language features and BSRI femininity, \( B = 0.89, t(36) = 2.19, p = .04, s^2_p = .10 \). Post-hoc probing of the interaction, following the procedure for slope testing described by Aiken and West (1991), revealed a strong relationship for females, \( B = 0.62, t(36) = 2.25, p = .03 \), but not for males, \( B = 0.22, t(38) = .97, p = .34 \). As can be seen in Figure 5.1, higher femininity scores predicted greater convergence in females, whereas femininity was unrelated to convergence in males.

Research Question 1. What individual difference measure(s) predict gender preferential language?

Participants’ behaviour was averaged across confederate netpal for each variable. These scores were then predicted in a series of simple regressions using the individual difference variables. Only significant relationships are reported.
BSRI femininity predicted more language features than any other measure of individual difference. High femininity scores were related to greater usage of empathic statements, $B=0.15$, $t(38)=3.52$, $p=.001$, $s_p^2=.25$, and self-derogators, $B=0.06$, $t(38)=2.35$, $p=.02$, $s_p^2=.13$, but decreased usage of hedges, $B=-0.27$, $t(38)=-3.31$, $p=.002$, $s_p^2=.22$. Gender was the second most effective predictor, with females making more references to emotion than males, $B=0.12$, $t(38)=2.04$, $p=.05$, $s_p^2=.10$, and females using fewer opinions than males, $B=-0.38$, $t(38)=-2.65$, $p=.01$, $s_p^2=.16$.

Concern for appropriateness, an experiential thinking style, BSRI masculinity, female+strong, self+strong, and self+warm were not related to the use of any language features. The remaining individual difference measures were related to a single language feature. Associating female+career predicted a greater number of questions, $B=-0.47$, and
Lower self-monitoring predicted more references to previous messages, $B = -0.23$, $t(38) = -2.20$, $p = .03$, $s_p^2 = .11$. Fewer opinions were predicted by higher female+self scores, $B = -0.34$, $t(38) = -2.78$, $p = .01$, $s_p^2 = .17$, and also by lower female+negative scores, $B = 0.27$, $t(38) = 2.07$, $p = .05$, $s_p^2 = .10$. Higher attributional complexity was related to higher frequencies of empathic statements, $B = 0.12$, $t(38) = 2.50$, $p = .02$, $s_p^2 = .14$. More compliments were predicted by higher female+warm scores, $B = 0.07$, $t(38) = 2.38$, $p = .02$, $s_p^2 = .13$. Subordinate clauses were predicted by higher PATG scores, $B = 0.20$, $t(38) = 2.03$, $p = .05$, $s_p^2 = .10$. Lower rationality scores were associated with greater use of hedges, $B = -0.19$, $t(38) = -2.20$, $p = .03$, $s_p^2 = .11$. No individual difference measures predicted the average frequency of personal information disclosure, intensifiers, or attributive adjectives.

Opinions, empathic statements, and hedges were predicted by multiple individual difference measures. Relationships between predictors were explored in multiple regression models. For opinions, gender, female+self, and female+negative were found to be highly redundant. The $R^2$ for the three predictor model was .18, which is only fractionally higher than any one predictor individually. This is not surprising as females tended to have higher female+self scores, $r(40) = .66$, $p < .001$, lower female+negative scores than males, $r(40) = -.59$, $p < .001$, and participants who had higher female+self scores had lower female+negative scores, $r(40) = -.58$, $p < .001$. A multiple regression model for empathic statements suggested that BSRI femininity and attributional complexity independently explained unique portions of the variance, with an $R^2$ of
.32 for the two-predictor model. Finally, both BSRI femininity and rationality explained unique parts of the variance in use of hedges, with an $R^2$ for the two-predictor model of .29.

Research Question 2. What individual difference measure(s) predict convergence to the gender-preferential language style of the participants’ conversational partner?

Accommodation to Female Language Features. Initial analyses were performed using each individual difference measure as a predictor in a simple regression. Lower self-monitoring scores predicted higher convergence, $B=-0.59$, $t(38)=-2.82$, $p=.01$, $s^2_p=.21$ (as did being male, see $H1$).

More complex relationships were considered using backward and stepwise multiple regressions to predict convergence to female language features. The backward solution was rejected as it selected six variables, which was considered to be an overfitted solution given the relatively small $n$, adjusted $R^2=.42$. The more parsimonious stepwise solution included three of the six predictors from the backward solution, and accounted for slightly less variance, adjusted $R^2=.34$. The three predictors all had slightly higher part correlations than zero-order correlations, making it likely that there was a degree of error suppression involved. Again, higher self-monitoring predicted less convergence, $B=-0.87$, $t(36)=-4.31$, $p<.001$, $s^2_p=.32$, while higher BSRI masculinity was associated with higher convergence, $B=0.62$, $t(36)=2.97$, $p=.005$, $s^2_p=.15$, as was a more expe-
Accommodation to Male-preferential Language Features. No single individual difference measure predicted convergence to male language features, \( p > .15 \). Searching for more complex relationships, the backward solution revealed a pattern of error suppression, involving the female+strong IAT and the female+domestic IAT, adjusted \( R^2 = .11 \). Higher female+strong scores predicted higher convergence, controlling for female+domestic \( B = 1.18, t(37) = 2.26, p = .03, s^2_p = .11 \). Similarly, higher female+domestic scores predicted higher convergence, controlling for female+strong, \( B = 1.17, t(37) = 2.16, p = .04, s^2_p = .12 \).

Perceptions of the Interaction

Participants perceptions of their netpals were analysed in a mixed model MANOVA with participant gender (between) and confederate language style (within) as factors. There were significant multivariate effects for both participant gender, \( F(11,23) = 2.70, p = .02, \eta^2_p = .56 \), and confederate language style, \( F(11,23) = 10.03, p < .001, \eta^2_p = .83 \), but not the interaction. As can be seen in Table 5.5, univariate effects for participant gender revealed that females liked their netpals more than males, and also thought their netpals were more popular and more confident.

Univariate effects of confederate language style were found for all variables except confidence, intelligence, and humour, as summarised in Table 5.5. Female style netpals were perceived to be more likeable,

---

8These results for accommodation to female-language features are very similar to those found using a single indicator of accommodation.

9Five participants did not complete the questionnaire within a reasonable time after the conclusion of the experiment.
Table 5.5: Means, Effect Sizes, and Inferential Statistics for Significant Effects of Participants’ Perceptions of their Netpal and Interaction.

<table>
<thead>
<tr>
<th>Participant Gender</th>
<th>Female</th>
<th>Male</th>
<th>F(1,33)</th>
<th>$\eta^2_p$</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netpal confidence*</td>
<td>5.08</td>
<td>4.53</td>
<td>4.68</td>
<td>0.12</td>
<td>0.7</td>
</tr>
<tr>
<td>Netpal likeability*</td>
<td>5.13</td>
<td>4.36</td>
<td>5.31</td>
<td>0.14</td>
<td>0.8</td>
</tr>
<tr>
<td>Netpal popularity**</td>
<td>5.24</td>
<td>4.34</td>
<td>9.51</td>
<td>0.22</td>
<td>1.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Confederate</th>
<th>Male-style</th>
<th>Female-style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know netpal**</td>
<td>4.00</td>
<td>3.29</td>
</tr>
<tr>
<td>Netpal knows participant**</td>
<td>4.23</td>
<td>3.74</td>
</tr>
<tr>
<td>Interaction comfort*</td>
<td>5.49</td>
<td>4.91</td>
</tr>
<tr>
<td>Netpal likeability***</td>
<td>5.13</td>
<td>4.43</td>
</tr>
<tr>
<td>Netpal competence***</td>
<td>5.29</td>
<td>4.77</td>
</tr>
<tr>
<td>Relationship closeness***</td>
<td>4.37</td>
<td>3.51</td>
</tr>
<tr>
<td>Netpal popularity***</td>
<td>5.26</td>
<td>4.40</td>
</tr>
<tr>
<td>Netpal femininity***</td>
<td>5.51</td>
<td>2.80</td>
</tr>
</tbody>
</table>

1Higher scores indicate femininity, lower scores indicate masculinity.
*p<.05  **p<.01  ***p<.001

Participants also felt they knew their female style netpal better, that their female style netpal knew them better, and that they were more comfortable interacting with their female style netpal than their male style netpal. Finally, participants also wanted a closer relationship in the future with their female style netpal than their male style netpal.

The discriminant function from a MANOVA with confederate language style (within) as a factor was calculated (function weightings are presented in Table 5.6). Higher self-monitoring, $B=-0.55$, $t(33)=-2.13$, $p=.04$, $s^2_p=.12$, and concern for appropriateness, $B=-0.63$, $t(33)=-2.40$, $p=.02$, $s^2_p=.15$, both predicted less difference in perception between their male and female style netpals. Regressions considering differing rela-
Table 5.6: Linear Discriminant Function Coefficients for Participants’ Perceptions of their Netpal and Interaction

<table>
<thead>
<tr>
<th>Language Feature</th>
<th>Unstandardised Weight</th>
<th>Standardised Weight</th>
<th>Correlation with function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know netpal</td>
<td>1.02</td>
<td>0.86</td>
<td>0.28</td>
</tr>
<tr>
<td>Netpal knows participant</td>
<td>-0.95</td>
<td>-0.60</td>
<td>0.26</td>
</tr>
<tr>
<td>Interaction comfort</td>
<td>-0.74</td>
<td>-0.71</td>
<td>0.20</td>
</tr>
<tr>
<td>Netpal confidence</td>
<td>0.23</td>
<td>0.27</td>
<td>0.00</td>
</tr>
<tr>
<td>Netpal likeability</td>
<td>-0.58</td>
<td>-0.45</td>
<td>0.30</td>
</tr>
<tr>
<td>Netpal Competence</td>
<td>0.62</td>
<td>0.32</td>
<td>0.32</td>
</tr>
<tr>
<td>Netpal intelligence</td>
<td>0.50</td>
<td>0.36</td>
<td>0.08</td>
</tr>
<tr>
<td>Relationship Closeness</td>
<td>-0.05</td>
<td>-0.04</td>
<td>0.31</td>
</tr>
<tr>
<td>Netpal Popularity</td>
<td>0.34</td>
<td>0.34</td>
<td>0.29</td>
</tr>
<tr>
<td>Netpal humour</td>
<td>0.11</td>
<td>0.10</td>
<td>0.07</td>
</tr>
<tr>
<td>Netpal Femininity</td>
<td>1.07</td>
<td>1.35</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Relationships for males and females revealed no further significant effects. A further multiple regression also revealed that self-monitoring and concern for appropriateness explained unique variance, with no redundancy.

**Discussion**

This study had two main findings. Firstly, that convergence to gendered language style could be predicted by individual difference measures, and contrary to expectations, higher convergers were less likely to score highly on measures indicating awareness of their own behaviour or motivations. Secondly, features of gendered language were related to individual difference measures, but there was no consistent pattern indicating that a single measure would predict a number of features of gendered language. Additionally, higher femininity scores were found to
predict convergence, but only for women. Surprisingly, however, males were found to converge more overall.

No previous research has considered what personal characteristics might be related to accommodation. We anticipated that people who were aware of their own behaviour, the behaviour of others, made complex attributions, or used rational explanations might be more inclined to converge. However, our findings suggest the inverse of this relationship. Low self-monitoring was the single best predictor of convergence to features of female language. That is, people who reported being least able to modify their self presentation were most likely to modify their own behaviour in relation to that of the confederate. Somewhat relatedly, experiential thinkers (those who responded that they relied on their intuition) were also more likely to converge (when controlling for BSRI masculinity and self-monitoring).

Psychological gender also predicted convergence. Women, identifying as more feminine on the BSRI, converged more. This contrasts with the findings of Fitzpatrick et al., who saw a relationship for men using BSRI masculinity, with no effect for women, on either BSRI masculinity or femininity. Contrary to expectations, based on Robertson and Murachver (2003), we did not find that gender-stereotyping was related to accommodation. In summary, our findings add further support to a relationship between psychological gender and accommodation to gendered language. However, further research will be required to tease apart the contrasting results of different studies.

Against our prediction, men converged more than women. Our find-
ings suggest that this is due to women being higher in self-monitoring on average than men, as gender was not a significant predictor when controlling for self-monitoring. One possible explanation for our somewhat surprising findings is that it is possible that converging in relation to the male-style confederate may have required participants to behave in a way that they might consider rude. Thus, participants who were more aware of their own behaviour might consciously choose not to match the male-style confederate. Similarly, women, who are generally regarded as more polite than men, might also choose not to match the male-style confederate to the same degree as men. This politeness hypothesis is strengthened by the finding that participants high in self-monitoring also reported less difference in their perceptions of the two netpals.

A further consideration of the findings of the present study is whether the predictors we found for accommodation to gendered language are predictors of accommodation more generally. Research should consider individual differences in accommodation to language styles other than gender.

Predictors of variation in gendered language use were highly variable. BSRI femininity, the single best predictor, was significantly related to the use of more empathic statements, more self-derogatories, and fewer hedges. The relationships observed do point to a role for psychological gender, and possibly other measures to explain observed variability in gendered language. Future research might involve the prediction of individual variation in contexts not featuring strong confederate manipulations. It should be noted that the effects found here compare favourably
to a recent examination of individual differences in language use more generally. Pennebaker and King (1999) considered the relationship between a number of linguistic features (not related to gender) and measures of personality, finding smaller correlations than found here.

In summary, the present research outlines a potentially important role for the consideration of individual differences in both the use of gendered language, and the use of accommodation strategies. Future work should extend this base into other communication media, experimental paradigms, and other language features.
Chapter 6

Future Directions

Communication accommodation theory has been tested and extended on a number of different fronts. Its domain has been extended to a new communication medium — toilet graffiti — and a new population group — adolescents. A key causal hypothesis that attraction leads to greater convergence has been tested for the first time, reinforcing the predictive power of CAT. Further, we now have made a start toward understanding which personality traits might be related to accommodation. Here, I seek to integrate previous research with my findings, and consider issues for the future study of communication.

At first glance, toilet graffiti seems an unlikely context for the study of communication\(^1\). However, the gendered language styles found in men’s and women’s toilets were generally consistent with those found in other forms of communication. In addition to being the first modern study of graffiti and language style, a mixed-gender context was analysed, enabling the consideration of accommodation. The patterns of language observed were consistent with convergence occurring in a mixed-gender context. However, the observational nature of the data collected meant that it was not possible to identify author gender for most inscriptions in

\(^1\)And judging by the looks I have received, I think I am justified in saying that.
the mixed-gender context, making this conclusion tentative. Topic differences in graffiti were also analysed, and found to be much larger than those found for language style. The topic differences were consistent with the SIDE model, which predicts behaviour polarisation in anonymous conditions where a group membership is salient. The magnitude of the differences found make it very plausible that this is the case, or at least that there are different processes occurring for each gender (whether they be explicitly gender-linked, or simply differing as a function of gender).

Adolescents overall spoke in gendered language styles similar to adults. Kolaric and Galambos (1995) suggested that adolescence may be a particularly critical time for the development of language style, but my findings do not support this contention. Adolescents did, however, have a tendency to over-converge, and it is possible that this is an age at which they may not have fully developed the ability to produce optimal matching. An alternative explanation is that adolescents are very strongly compelled to conform, and thus converge more than adults. Further research looking at adolescents of different ages might better clarify developmental trends. Ideally, future work should consider children, adolescents, and adults simultaneously, using the same methodology. Additionally, my findings were consistent with Fitzpatrick et al. (1995), in that there was some evidence for women accommodating more than men.

In Chapter 4, I tested a thirty year old hypothesis from CAT, and have provided the first evidence for a causal link between interpersonal attraction and higher levels of convergence. Since its inception, accommodation has been linked to the level of attraction or similarity between
conversational partners. Traditionally, attraction or similarity have been inferred post-hoc, or participants have been grouped according to real or perceived similarity. Here, the physical attractiveness of a confederate partner was manipulated, and higher levels of confederate attractiveness lead to participants showing somewhat greater levels of matching of the confederate’s language style.

Finally, I considered individual differences in both gendered language and tendency to accommodate. Predictors of gendered language were generally relatively weak, with the femininity score from the Bem Sex Role Inventory being the single best predictor. Individual differences in the use of convergence were also observed, with lower levels of self-monitoring best predicting greater convergence. Higher femininity, also predicted greater convergence, but only for females, and overall, males converged more than females.

Taken together, these results generally support CAT, reinforcing the theory’s ability to explain language use in social situations. However, perhaps inevitably, the results are not perfectly consistent, and raise new questions deserving further consideration.

In Chapter 3, women appeared to accommodate slightly more than men, whereas, in Chapter 5, men accommodated more than women. Previous research has found women accommodate more (e.g., Fitzpatrick et al., 1995), no difference (e.g., Robertson & Murachver, 2003; Thomson et al., 2001), or mixed results for different measures (e.g., Bilous & Krauss, 1988). There are several possible explanations for this. Firstly, it is entirely likely that gender differences in accommodation are context-
dependent. For example, population and topic are both likely influences. Kolaric and Galambos (1995) had participants discuss masculine, gender-neutral, and feminine topics, and found that men spoke more on masculine topic and women on feminine topics. However, studies looking at accommodation in different populations are relatively few: Leaper (1991) compared children of different ages, and Niederhoffer and Pennebaker (2002) contrasted students with presidential aides. Secondly, it is also possible that studies not finding differences did not have enough power to detect an effect. However, if effects are not being detected due to a lack of statistical power, it also suggests that the size of the effect is smaller than the other effects being observed. Thus, assuming future research has reasonable statistical power, context-based explanations seem both more promising and more interesting theoretically.

Accommodation, and particularly convergence, are still relatively undefined concepts, despite all the research conducted under the rubric of accommodation over the last 30 years. Throughout this thesis, I have at times referred to convergent behaviour as matching or imitation. Convergence has been defined as “complementary matching” (p.230, Boggs & Giles, 1999), but how does it differ from imitation? Does the ‘complementary’ nature of the matching imply a more conscious higher-order explanation? Also, Thakerar, Giles, and Chesire (1982) argued that the appropriate level of matching is not determined by actual behaviour, but by how the listener perceives the behaviour. For example, high levels of convergence can be viewed as patronising. Future research could look at how different levels of matching or imitation are perceived, in order to
assess what constitutes optimal accommodation.

Different studies also operationalise accommodation in different ways. For example, in Chapters 2 and 3, a smaller gender difference in mixed-gender contexts relative to single-gender contexts was equated with convergence occurring. In contrast, in Chapters 4 and 5, convergence was how participants adapted their language use in response to the language style of the confederate. Other researchers have also used correlational measures (e.g., Fitzpatrick et al., 1995; Niederhoffer & Pennebaker, 2002). However, most studies tend to only use one measure of accommodation (albeit over a combination of different language features). Further insight could be gained by assessing multiple different measures of accommodation within single studies. For example, accommodation could be assessed in terms of difference (or absolute difference) between conversational partners, as a correlation between conversational partners on a variety of measures, and through ANOVA-type analyses all within a single study. Then, a comparison of the performance of each of these measures could be conducted across studies. Such a comparison would also help delineate what constitutes optimal accommodation.

Another important issue relating to accommodation that has not been fully explored is its temporal properties. There is some evidence that convergence increases over time (e.g., Natale, 1975). However, in addition to the possibility that accommodation might generally tend to increase over time, does it plateau? Do people who have known each other for a longer time stop accommodating to each other? Fitzpatrick et al. (1995) found that married couples still converged toward each other, but
studies typically feature only strangers (e.g., Thomson et al., 2001) or people who are already well-acquainted (e.g., Fitzpatrick et al., 1995). Thus, it is hard to assess whether people who have known each other for a longer time accommodate more or less than those who have only recently met. One way to tap this would be to study newly acquainted friends conversing, with a series of follow-up sessions over subsequent months.

CAT is also not strong on whether accommodation happens on a turn-by-turn level, or at a conversation level. Niederhoffer and Pennebaker (2002) found co-ordination occurring at both levels. Generally, however, accommodation is assessed at a static conversational level, looking at similarities using average scores for the entire conversation for each partner (e.g., Bilous & Krauss, 1988; Fitzpatrick et al., 1995; Hannah & Murachver, 1999; Thomson et al., 2001). Consideration of dynamic turn-by-turn level coordination can reveal different trends in interaction (Cappella, 1996), and is another aspect of accommodation that should be incorporated into future research.

Another poorly studied temporal aspect relates to how accommodation would change as the social-psychological antecedents of accommodation change. For example, in Chapter 4, participants had a consistent perception of the physical attractiveness of their conversational partner. However, in reality, the picture could have come from a ‘good hair day’ or have been particularly unflattering. Similarly, someone who is perceived initially as very similar could reveal further information about themselves making them more dissimilar (or vice-versa). There are a number
of possible consequences from such changes. It might be that first impressions set a relatively long-lasting accommodative trend, or it could be that people would immediately change their level of accommodation. Future research could look at both manipulating changes in similarity or attraction part way into a conversation. Analysis of natural conversation could also assess the impact on accommodation of information disclosure influencing the perception of similarity.

In Chapter 4, I have provided evidence for a causal link between interpersonal attraction and higher levels of convergence. However, since that data was collected two new studies have independently queried the link between similarity, attraction, and convergence. As mentioned in Chapter 1, Niederhoffer and Pennebaker (2002) argued that liking was not related to their correlational measure of matching, and I questioned the appropriateness of their liking measure. In another study with similar findings, McGarva and Warner (2003) studied patterns of speech and silence. They argue that an optimal state is where one person talks, followed by the other person talking, with higher coordination entailing fewer pauses and interruptions. McGarva and Warner found that dyads composed of more similar individuals did have greater liking for each other, but that this did not relate to dyad coordination. McGarva argues that this sort of vocal coordination may be deeper and less socially malleable than accommodation processes (personal communication, 22 June 2003).

There are clear differences between the evidence presented here for a causal link between interpersonal attraction and convergence and the
evidence presented by Niederhoffer and Pennebaker (2002) and McGarva and Warner (2003). The studies differ in terms of how they operationalise attraction. I experimentally manipulated physical attractiveness, whereas Niederhoffer and Pennebaker used a measure of conversational quality to infer attraction. McGarva and Warner paired participants based on attitude similarity or dissimilarity. These studies also differ on the types of the behaviour they measure and how they define convergence on the measure. I defined convergence as adaptation in relation to confederate language style. Niederhoffer and Pennebaker defined convergence as correlations between dyad members on a series of counts of specific words. McGarva and Warner defined convergence as alternating periods of speaking. I also used an aggregate measure, looking at accommodation over the entire discourse, McGarva and Warner used a turn-level measure, and Niederhoffer and Pennebaker used both types of measure. Considering these differences then, it is not surprising that the results are not entirely consistent.

The strength of the evidence in Chapter 4 lies in the manipulation of attractiveness and the implication of a causal link, but some weakness exists in the comparative artificiality of the confederate paradigm. A key issue with using a confederate is that typically the confederate maintains a consistent language style throughout the interaction, meaning any accommodation is entirely asymmetrical, that is, only the participant accommodates. This might not necessarily be evaluated favourably by the participant, and could mitigate their desire to adapt. Future work could also look at the analysis of research like my own using the LIWC
program used by Pennebaker and his colleagues (Pennebaker, Francis, & Booth, 2001), to see if analysing the same data with alternate measures of convergence leads to the same conclusions. Empirically manipulating similarity (or perception of similarity) and attractiveness amongst pairs of participants could also serve as a further test of this hypothesis.

Curiously, a recent study by Reid et al. (2003) may have tested whether the manipulation of the perception of similarity in mixed-gender dyads is related to convergence. Reid et al. manipulated gender salience, by either emphasising that the study was concerned with looking at differences between males and females (high gender salience), or by emphasising that the study was looking at differences between university and high school students (low gender salience). However, high gender salience could equally be interpreted as emphasising dissimilarity between the man and woman in each dyad, whereas emphasising a common identity, that of a university student, could make the dyad perceive each other as more similar in the low gender salience condition. The finding of less tentative language use by women in the low gender salience condition could then be interpreted as convergence by women where similarity had been emphasised. Similarly, it could be argued that the high gender salience condition produced an intergroup interaction (leading to maintenance or divergence) and that the low gender salience group produced an interpersonal interaction (leading to convergence). One of the characteristics of an intergroup interaction is that individuals feel more dissimilar to members of the other group. That an intergroup context can be a dissimilar context, and an interpersonal/low group salience context can be a simi-
lar context suggests that CAT and SCT are not necessarily contrasting explanations. It can also be argued that Reid et al.'s findings suggest that the empirical manipulation of similarity influences convergence.

In a similar fashion, my attractiveness findings in Chapter 4 could be reinterpreted in line with the SIDE model. Deindividuation is a key ingredient in behaviour polarisation in SIDE. By providing a photograph to participants, the confederate is individuated, that is, their identity as an individual with unique characteristics becomes more salient. Individuation would make behaviour polarisation less likely to occur, and hence convergence would be predicted. A comparison between the magnitude of convergence in my work here with a photograph, and the analogous cases from Experiment 2 of Thomson et al. (2001), suggests a trend for greater convergence where participants had visual information (albeit false) of their netpal\(^2\). However, in a related study, looking at only the presence or absence of real photographic information, Walther, Slovak, and Tidwell (2001) found that photographic information enhanced communication in the short-term, but was damaging over longer periods.

The fit between different levels of explanation evident in the previous paragraphs suggest that the reintegration of primarily intergroup theories such as SIT, SCT, and the SIDE model with CAT would be timely. This would be beneficial from the point of view of CAT, leading to an array of

\(^2\)Average effect sizes were calculated for all variables in both studies for the effect of confederate style (with positive scores indicating convergence). Only mixed-gender dyads from Thomson et al. (2001) were used, because Chapter 4 had only mixed-gender dyads. The mean effect size for convergence was greater where participants had a photograph \((M_d=.37)\) than where participants had no photograph \((M_d=.34)\). This difference is quite small, but might be due to the highly interpersonal rather than intergroup nature of the interactions in these experiments.
new hypotheses and considerations relating to language use. Intergroup research could also make use of language as a dependent measure, and the clearly delineated accommodation processes, in order to understand group influence. For example, a key SIDE process is behaviour polarisation, which in language terms is likely to be evidenced as divergence. SIDE is frequently invoked in describing internet behaviour (e.g., Lea et al., 1992; Postmes & Spears, 2002), which is predominantly text-based communication.

Another issue for future work is the dependent variables considered in different studies. Currently, there is not a high level of consistency. Specific language features are selected as being particularly relevant by a researcher, or to keep consistency with a certain area of previous research. Most language research is still being hand-coded, but as computer-based coding — as briefly trialled here in Chapter 2 and by Niederhoffer and Pennebaker (2002) — continues to improve, more and more studies might have exactly the same coding criteria for a larger class of language features. This would greatly enhance our ability to compare and contrast studies across different media, paradigms, and experimental populations.

While my primary focus in this thesis has been CAT, it is pertinent to consider how my findings relate to gender and language. All four studies showed, on average, some difference between the language used by men.

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3This is not to advocate that computer-based coding should necessarily become the only method of coding, but that it has an appeal in that different studies can be contrasted more easily. Also, additional features not previously considered might be noted, as computer-based programs facilitate the coding of a far greater number of features than typically included by researchers.
and women. Chapter 3 revealed the first evidence of gender differences in language style in adolescent speech being similar to those of adults. I also demonstrated that gendered language styles exist in graffiti in Chapter 2. In contrast, the evidence for gendered language in the email-based studies using confederates saw male and female participants behaving in remarkably similar ways. This is further evidence that gendered language is context dependent, because participants exposed to the same context show the same behaviour. Hence, differences in more naturalistic studies might be the product of subtle differences in context experienced by men and women as a function of their gender. That is, whereas the confederate behaved in a similar fashion irrespective of participant gender, in day-to-day situations, people might be treated in a subtly different fashion because they are perceived as male or female.

I also found greater use of female language features to be related to higher femininity for females. Similarly, two IATs relating to masculine identity (male+self and male+positive) predicted the use of opinions. This suggests that if femininity and masculinity are socialised, gendered language is also socialised.

Gender differences in language use were of smaller magnitude than the influences of other factors, such as accommodation or physical attractiveness. This makes it clear that gender differences in language are small, not like Gray’s (1993) ‘Mars’ and ‘Venus’ comparison. Evidence for overlap between the behaviour of men and women was not just substantial, but in some contexts, indistinguishable.

Our understanding of language and social interaction is enhanced by
the research reviewed here. I have demonstrated that CAT is applicable in new contexts, consistent with the assumption that CAT is applicable to all communication. In this thesis I have also demonstrated conditions under which accommodation is likely to occur in interpersonal situations, notably that greater attractiveness between conversational partners causes somewhat greater convergence, and that lower self-monitoring is related to convergence. The evidence for whether males or females accommodate more, and the relationship between convergence and gender identity was more mixed, however. In some respects, this thesis highlights how little we still know about language and social interaction, but clearly indicates that robust empirical study will take us further down that road.
References


Pennebaker, J. W., Francis, M. E., & Booth, R. J. (2001). *Linguis-


Table A.1: Word Stimuli for each Semantic Category for the Implicit Association Tests

<table>
<thead>
<tr>
<th>Male Words</th>
<th>Female Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>male, man, boy, son, brother</td>
<td>female, woman, girl, daughter, sister</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strong words</th>
<th>Weak Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>strong, robust, assertive, hardy, durable</td>
<td>malleable, accommodating, quiet, gentle, sensitive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Warm Words</th>
<th>Cold Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>warm, sympathetic, considerate, loyal, understanding</td>
<td>self-reliant, independent, analytical, ambitious, competitive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self Words</th>
<th>Other Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>I, me, mine, my, myself</td>
<td>they, them, their, it, other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Positive Words</th>
<th>Negative Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>smile, happiness, truth, fun, health</td>
<td>gloom, boring, pain, disease, death</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Career Words</th>
<th>Domestic Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>career, salary, work, wage-earner, job</td>
<td>domestic, home, family, caregiver, household</td>
</tr>
</tbody>
</table>
Appendix B

Questionnaires for Chapter 5

Note. * Denotes reverse scored items.

Attributional Complexity Scale

Anchored at (-3) strongly disagree (-2) moderately disagree (-1) slightly disagree (0) neither agree or disagree (1) slightly agree (2) moderately agree (3) strongly agree.

1. I don't usually bother to analyze and explain people's behaviour.
2. Once I have figured out a single cause for a person's behaviour I don't usually go any further.*
3. I believe it is important to analyze and understand our own thinking processes.
4. I think a lot about the influence that I have on other people's behaviour.
5. I have found that the relationships between a person's attitudes, beliefs, and character traits are usually simple and straightforward.*
6. If I see people behaving in a really strange or unusual manner I usually put it down to the fact that they are strange or unusual people and don't bother to explain it any further.*
7. I have thought a lot about the family background and personal history of people who are close to me, in order to understand why they are the sort of people they are.
8. I don't enjoy getting into discussions where the causes for people's behaviour are being talked over.*
9. I have found that the causes for people's behaviour are usually complex rather than simple.
10. I am very interested in understanding how my own thinking works when I make judgements about people or attach causes to their behaviour.
11. I think very little about the different ways that people influence each other. a

12. To understand a person’s personality/behaviour I have found it is important to know how that person’s attitudes, beliefs, and character traits fit together.

13. When I try to explain other people’s behaviour I concentrate on the person and don’t worry too much about all the existing external factors that might be affecting them. a

14. I have often found that the basic cause for a person’s behavior is located far back in time.

15. I really enjoy analyzing the reasons or causes for people’s behavior.

16. I usually find that complicated explanations for people’s behavior are confusing rather than helpful. a

17. I give little thought to how my thinking works in the process of understanding or explaining people’s behavior. a

18. I think very little about the influence that other people have on my behavior. a

19. I have thought a lot about the way that different parts of my personality influence other parts (e.g., beliefs affecting attitudes or attitudes affecting character traits).

20. I think a lot about the influence that society has on other people.

21. When I analyze a person’s behaviour I often find the causes form a chain that goes back in time, sometimes for years.

22. I am not really curious about human behaviour. a

23. I prefer simple rather than complex explanations for people’s behavior. a

24. When the reasons I give for my own behaviour are different from someone else’s, this often makes me think about the thinking processes that lead to my explanations.

25. I believe that to understand a person you need to understand the people who that person has close contact with.

26. I tend to take people’s behaviour at face value and not worry about the inner causes for their behaviour (e.g., attitudes, beliefs, etc.). a

27. I think a lot about the influence that society has on my behaviour and personality.

28. I have thought very little about my own family background and personal history in order to understand why I am the sort of person I am. a
Rational-Experiential Inventory

Anchored at (1) definitely not true of myself (5) definitely true of myself.

Rationality Scale

1. I try to avoid situations that require thinking in depth about something. a
2. I'm not that good at figuring out complicated problems. a
3. I enjoy intellectual challenges.
4. I am not very good at solving problems that require careful logical analysis. a
5. I don't like to have to do a lot of thinking. a
6. I enjoy solving problems that require hard thinking.
7. Thinking is not my idea of an enjoyable activity. a
8. I am not a very analytical thinker. a
9. Reasoning things out carefully is not one of my strong points. a
10. I prefer complex problems to simple problems.
11. Thinking hard and for a long time about something gives me little satisfaction. a
12. I don't reason well under pressure. a
13. I am much better at figuring things out logically than most people.
14. I have a logical mind.
15. I enjoy thinking in abstract terms.
16. I have no problem thinking things through carefully.
17. Using logic usually works well for me in figuring out problems in my life.
18. Knowing the answer without having to understand the reasoning behind it is good enough for me. a
19. I usually have clear, explainable reasons for my decisions.
20. Learning new ways to think would be very appealing to me.

Experientiality Scale

1. I like to rely on my intuitive impressions.
2. I don't have a very good sense of intuition. a
3. Using my gut feelings usually works well for me in figuring out problems in my life.
4. I believe in trusting my hunches.
5. Intuition can be a very useful way to solve problems.
6. I often go by my instincts when deciding on a course of action.
7. I trust my initial feelings about people.
8. When it comes to trusting people, I can usually rely on my gut feelings.
9. If I were to rely on my gut feelings, I would often make mistakes.ª
10. I don’t like situations in which I have to rely on intuition.ª
11. I think there are times when one should rely on one’s intuition.
12. I think it is foolish to make important decisions based on feelings.ª
13. I don’t think it is a good idea to rely on one’s intuition for important decisions.ª
14. I generally don’t depend on my feelings to help me make decisions.ª
15. I hardly ever go wrong when I listen to my deepest gut feelings to find an answer.
16. I would not want to depend on anyone who described himself or herself as intuitive.ª
17. My snap judgements are probably not as good as most people’s.ª
18. I tend to use my heart as a guide for my actions.
19. I can usually feel when a person is right or wrong, even if I can’t explain how I know.
20. I suspect my hunches are inaccurate as often as they are accurate.ª

Revised Self-Monitoring Scale

Anchored 5 = certainly, always true, 4 = generally true, but with exception, 3 = somewhat true, but with exception, 2 = somewhat false, but with exception, 1 = generally false, 0 = certainly, always false.

Self-Monitoring Scale

1. In social situations, I have the ability to alter my behaviour if I feel that something else is called for.
2. I am often able to read people’s true emotions correctly through their eyes.
3. I have the ability to control the way I come across to people, depending on the impression I wish to give them.
4. In conversations, I am sensitive to even the slightest change in the facial expression of the person I’m conversing with.
5. My powers of intuition are quite good when it comes to understanding others’ emotions and motives.
6. I can usually tell when others consider a joke to be in bad taste, even though they may laugh convincingly.
7. When I feel that the image I am portraying isn’t working, I can readily change it to something that does.
8. I can usually tell when I've said something inappropriate by reading it in the listener's eyes.

9. I have trouble changing my behaviour to suit different people and different situations. 

10. I have found that I can adjust my behaviour to meet the requirements of any situation I find myself in.

11. If someone is lying to me, I usually know it at once from that person's manner of expression.

12. Even when it might be to my advantage, I have difficulty putting up a good front. 

13. Once I know what the situation calls for, it's easy for me to regulate my actions accordingly.

**Concern for Appropriateness Scale**

1. I tend to show different sides of myself to different people.

2. It is my feeling that if everyone else in a group is behaving in a certain manner, this must be the proper way to behave.

3. I actively avoid wearing clothes that are not in style.

4. In different situations and with different people, I often act like very different persons.

5. At parties I usually try to behave in a manner that makes me fit in.

6. When I am uncertain how to act in a social situation, I look to the behaviour of others for cues.

7. Although I know myself, I find that others do not know me.

8. I try to pay attention to the reactions of others to my behaviour in order to avoid being out of place.

9. I find that I tend to pick up slang expressions from others and use them as part of my own vocabulary.

10. Different situations can make me behave like very different people.

11. I tend to pay attention to what others are wearing.

12. The slightest look of disapproval in the eyes of a person with whom I am interacting is enough to make me change my approach.

13. Different people tend to have different impressions about the type of person I am.

14. It’s important to me to fit in to the group I’m with.

15. My behaviour often depends on how I feel others wish me to behave.

16. I am not always the person I appear to be.

17. If I am the least bit uncertain as to how to act in a social situation,
I look to the behaviour of others for cues.

18. I usually keep up with clothing style changes by watching what others wear.

19. I sometimes have the feeling that people don’t know who I really am.

20. When in a social situation, I tend not to follow the crowd, but instead behave in a manner that suits my particular mood at the time.

Pacific Attitudes Toward Gender Scale

Anchored at (1) strongly disagree and (6) strongly agree.

1. I believe it is better for a daycare or a preschool teacher to be a woman than to be a man.

2. I believe the husband should have primary responsibility for the financial support of the family.

3. I believe using obscene language is worse for a girl than for a boy.

4. I believe women are too easily offended by certain jokes.

5. I believe feminists are making entirely reasonable demands of men.

6. I believe only men should be allowed to participate in military combat.

7. I believe a man should be expected to pay the expenses on a date with a woman.

8. I believe sexual harassment is a serious problem in the workplace.

9. I believe it should be equally acceptable for girls and boys to play rough sports like hockey or football.

10. I believe it is all right for a woman to take the first steps to start a relationship with a man.

11. I believe a woman employed outside of the home can establish as warm and secure a relationship with her children as a mother who is not employed outside of the home.

12. I believe discrimination against women in the labour force is no longer a problem.

13. I believe it should be equally acceptable for a man or a woman to stay home and care for the children while the other spouse works.


15. I believe it should be equally acceptable for women and men to have sex with casual acquaintances.

16. I believe it is wrong for boys to play with dolls.
17. I believe a woman should be careful not to appear smarter than the man she is dating.
18. I believe there are certain jobs that are inappropriate for women.
19. I believe girls should have greater limits placed on them than boys when they go out of the house.
20. I believe many women in the paid workforce are taking jobs away from men who need the jobs more.
21. I believe when men show special courtesies only to women (like holding open the door), it reinforces the stereotype that women are helpless.
22. I believe it is more difficult to work for a woman than a man.
23. I believe men and women should be able to make choices about their lives without being restricted by their gender.
24. I believe women should be more concerned with clothing and appearance than men.
25. I believe it should be equally acceptable for men and women to cry in front of other people.
26. I believe when both parents are employed and their child gets sick at school, the school should call the mother first rather than the father.
27. I believe it should be equally acceptable for a woman to go to a bar alone as it is for a man.
28. I believe society has reached a point where women and men have equal opportunity for achievement.

**Bem Sex Role Inventory**

Anchored at (1) never or almost never true and (7) always or almost always true.

<table>
<thead>
<tr>
<th>Masculine</th>
<th>Feminine</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. self reliant</td>
<td>2. yielding</td>
<td>3. helpful</td>
</tr>
<tr>
<td>4. defends own beliefs</td>
<td>5. cheerful</td>
<td>6. moody</td>
</tr>
<tr>
<td>7. independent</td>
<td>8. shy</td>
<td>9. conscientious</td>
</tr>
<tr>
<td>10. athletic</td>
<td>11. affectionate</td>
<td>12. theatrical</td>
</tr>
<tr>
<td>13. assertive</td>
<td>14. flatterable</td>
<td>15. happy</td>
</tr>
<tr>
<td>16. strong personality</td>
<td>17. loyal</td>
<td>18. unpredictable</td>
</tr>
<tr>
<td>19. forceful</td>
<td>20. feminine</td>
<td>21. reliable</td>
</tr>
<tr>
<td>22. analytical</td>
<td>23. sympathetic</td>
<td>24. jealous</td>
</tr>
<tr>
<td>25. has leadership abilities</td>
<td>26. sensitive to the needs of others</td>
<td>27. truthful</td>
</tr>
</tbody>
</table>

136
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>28. willing to take risks</td>
<td>29. understanding</td>
<td>30. secretive</td>
</tr>
<tr>
<td>31. makes decisions easily</td>
<td>32. compassionate</td>
<td>33. sincere</td>
</tr>
<tr>
<td>34. self-sufficient</td>
<td>35. eager to soothe hurt feelings</td>
<td>36. conceited</td>
</tr>
<tr>
<td>37. dominant</td>
<td>38. soft-spoken</td>
<td>39. likeable</td>
</tr>
<tr>
<td>40. masculine</td>
<td>41. warm</td>
<td>42. solemn</td>
</tr>
<tr>
<td>43. willing to take a stand</td>
<td>44. tender</td>
<td>45. friendly</td>
</tr>
<tr>
<td>46. aggressive</td>
<td>47. gullible</td>
<td>48. inefficient</td>
</tr>
<tr>
<td>49. acts as a leader</td>
<td>50. childlike</td>
<td>51. adaptable</td>
</tr>
<tr>
<td>52. individualistic</td>
<td>53. does not use harsh language</td>
<td>54. unsystematic</td>
</tr>
<tr>
<td>55. competitive</td>
<td>56. loves children</td>
<td>57. tactful</td>
</tr>
<tr>
<td>58. ambitious</td>
<td>59. gentle</td>
<td>60. conventional</td>
</tr>
</tbody>
</table>
Appendix C

Message Templates for Chapter 5

Table C.1: Mean Frequency of the Intended Use of Language Features for Male and Female Confederate Language Styles

<table>
<thead>
<tr>
<th></th>
<th>Male Messages</th>
<th>Female Messages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1  2  3</td>
<td>1   2  3</td>
</tr>
<tr>
<td>Emotion</td>
<td>0  0  0</td>
<td>1   1  1</td>
</tr>
<tr>
<td>Questions</td>
<td>1  1  1</td>
<td>3   2  3</td>
</tr>
<tr>
<td>References</td>
<td>0  1  0</td>
<td>2   3  2</td>
</tr>
<tr>
<td>Personal Information</td>
<td>2  2  1</td>
<td>5   5  4</td>
</tr>
<tr>
<td>Opinions</td>
<td>4  3  4</td>
<td>0   1  0</td>
</tr>
<tr>
<td>Self-derogatory</td>
<td>0  0  0</td>
<td>1   1  1</td>
</tr>
<tr>
<td>Compliments</td>
<td>0  0  0</td>
<td>0   1  0</td>
</tr>
<tr>
<td>Empathic Statements</td>
<td>0  0  0</td>
<td>1   1  1</td>
</tr>
<tr>
<td>Subordinate Clauses</td>
<td>0  1  1</td>
<td>3   3  3</td>
</tr>
<tr>
<td>Modals/Hedges</td>
<td>0  1  0</td>
<td>2   3  2</td>
</tr>
<tr>
<td>Intensifiers</td>
<td>1  0  1</td>
<td>3   3  3</td>
</tr>
<tr>
<td>Attributive Adjectives</td>
<td>5  5  6</td>
<td>2   1  2</td>
</tr>
</tbody>
</table>