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ENCODING AND DECODING MUTUAL GROOMING:
COMMUNICATION WITH A SPECIALIZED FORM OF TOUCH

BY

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B.A., Whitman College, 1996

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DISSERTATION

Submitted to the University of New Hampshire

in Partial Fulfillment of

the Requirements for the Degree of

Doctor of Philosophy

in

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2007

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DEDICATION

I dedicate this research to my loving and supportive husband Alasdair.

Alasdair groomed me and this dissertation in countless ways, making us both better in the end. Alasdair Stewart, you are my Most Valuable Primate!

I also thank the other important people who have made significant contributions to my work.

My gratitude goes to Maurice and Margot Stewart, who are responsible for the book *Grooming, Gossip and the Evolution of Language* ending up in my hands and brain. That book, more than any other, inspired me to study grooming. Long before that book made its impression, my dad's gentle influence encouraged me to observe animals carefully. I am profoundly indebted to Steve Nelson for making me the person and researcher I am today. Had he not shared his keen eye for observing how animals communicate, I may never have paid attention to the lives of animals. This research was also inspired by my mother's compulsive grooming habit. All of the times she paid an inordinate amount of attention to proper grooming, scrutinized the condition of my skin, or cleaned something way too thoroughly became burned into my brain over time. She also made me the person and researcher I am today, and had it not been for her heavy hand, I believe my research would not be as thorough as it is. I also owe thanks to my sisters who likewise groomed me in so many important ways. One of my fondest grooming memories is of two young primates sitting behind their older sister, styling her

hair in plastic barrettes and making it look absolutely ridiculous. That taught me the quality of some grooming depends not on how good it looks, but simply that it is done.

To my best friend, your “Richard Hopper Scholarship Fund” helped make all of this possible, and better, in so many ways. Thank you.

I am also thankful and in many cases profoundly so, for all of the wonderful teachers who helped me become who I am today: *Mr. Larson*, who taught me about birds and anatomy and who told me I would be a fine doctor someday; *Professor Stein*, who through Whitman College Ancient Greek Core and his intensively personal approach to teaching and writing, sculpted not only my writing ability but my entire approach to teaching; *Deborah Winter*, who as my undergraduate mentor, my colleague, and my friend, inspired me to handle problems with equanimity, just like her; *Steve Rubin*, whose passion for psychology ultimately propelled me follow in his bright neon green footsteps; and last but not least, my dissertation committee and *Becky Warner*, who as my graduate studies advisor and dissertation director wasn’t always exactly who I wanted her to be, but who was in the end, exactly who I needed. Thank you all.

Finally to my students, past, present and future – continue learning.

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ABSTRACT

ENCODING AND DECODING MUTUAL GROOMING: COMMUNICATION WITH A SPECIALIZED FORM OF TOUCH

by

Holly Nelson

University of New Hampshire, May, 2007

Although primatology research indicates that social grooming has broad social significance for primates, it has not been previously considered as a nonverbal communication channel among humans. Therefore, this research aimed to provide information about its social significance among humans in two ways. Participants completed a questionnaire in which they indicated the incidence of grooming others in several relationship contexts. Second, a different sample participated in an experiment in which they read one of several vignettes and gave their impressions. Impressions were targeted to presumed communicative functions of grooming: courtship/flirtation and attachment/pairbonding. Two variables were manipulated: type of action performed (grooming, non-grooming touch, no touch) and type of grooming performed (traditional, non-traditional, mimicry, and blemish-focused). A nested variable of three different examples was included for each type of grooming. Grooming was reported in a wide variety of relationships but was reported at a significantly higher incidence in romantic relationships. Dyads depicted grooming were identified as a romantically involved couple

more often than chance would predict by women only, a finding that would be predicted by Error Management Theory (Haselton & Buss, 2000). Grooming is a tie-sign to women, and for men acts as a tie-sign only in the form of massage. Grooming has some psychological properties that further attest to its role in pairbonding. Fitting with the theory that grooming promotes pairbonding because it is a caregiving behavior, groomers are perceived to be better parents, more committed, more caring and more in love. Among people who attributed a romantic relationship to the depicted dyad, the pair was more often inferred to be an established couple rather than a newly formed one. Groomers did not convey significantly more sexual interest or flirtation. Therefore, grooming can best be characterized as an attachment behavior used for pairbonding rather than one used in courtship for flirtation purposes.

CHAPTER I

INTRODUCTION

Social Grooming in Non-Human Primates

All species have evolved some form of ridding themselves of parasites, dirt, and other debris because it serves a vital hygienic purpose. A phylogenetically diverse array of species from insects (Moore, Angel, Cheeseman, & Robinson, 1995), to fish (Bshary & Schaffer, 2002; Poulin, Bansemer, Grutter, 2002), birds (Wachtmeister, 2000), ungulates (Kimura, 1998; Mooring & Hart, 1997; Mooring & Samuel, 1998), bats (Wilkinson, 1986), and primates (Smuts, Cheney, Seyfarth, Wrangham & Struhsaker, 1987) have evolved social grooming (or mutual grooming) as a way to maintain health. For a number of species, the significance of social grooming stretches beyond mere hygienic function. Primates provide the best example of this. Social grooming can occupy up to 20% of daytime activity (Dunbar, 1996) and with very few exceptions (Strier, 1999) occurs ubiquitously among primates. Social grooming has been studied extensively among primates, and many functions have been proposed for it. These include social bonding, coalition-building, appeasement, and reconciliation (Aureli, van Schaik, & van Hooff, 1989; Lawick-Goodall, 1968; de Waal, 1989; Smuts et al., 1987) but also resource exchange (Muroyama, 1994; de Waal, 1997), stress relief (Schino, Scucchi,

Maestriperi, & Turillazzi, 1988), and during consortships between a male and female (Hill, 1987; Seyfarth, Palombit, & Cheney, 2001). It is unknown what function social grooming serves among humans.

The form grooming takes among nonhuman primates has not generally been remarked upon probably due to its limited nature. Removal of ectoparasites and debris from the skin hair of a companion seems to be the norm; however, instances of picking at scabs and discolored bumps on the skin or even in the mouth or eyes has been observed (McGrew, 1992). One population of chimpanzees living at Mahale Mountains National Park in Tanzania has been observed to scratch others in addition to picking parasites (Nakamura, McGrew, Marchant, & Nishida, 2000). Grooming and scratching were significantly correlated, occurred together, and showed similar patterns of age and rank correlation as grooming. The authors offered several hypotheses for the function of social scratching, none of which provide any reason to believe that social scratching serves a fundamentally different purpose from grooming. Finally, though some primate species have been observed to make and use tools, tools are not routinely used in the course of grooming though there are a few observed instances of chimpanzees using sticks to probe (McGrew, 1992).

With more than 200 different species and widespread socio-ecological conditions among them, it is difficult to identify what the normative grooming pattern is among primates. Do females groom more than males? Do older primates groom more than younger ones? How do they tend to be related? Though there are bound to be exceptions to the rules, some broad patterns have been noted. First, grooming occurs primarily

among maternally related individuals, with most occurring between mothers and their offspring (Gouzoules & Gouzoules, 1987). Grooming occurs between siblings as well as more distant kin, such as aunts and nieces and grandmothers and granddaughters. There do not appear to be any well-defined sex differences in grooming among young primates. Second, primates can be considered male-bonded or female-bonded according to their kinship and natal dispersal patterns, and adult grooming usually occurs among same-sex related individuals. Thus, we observe higher adult male-male grooming among the male bonded chimpanzees than we see among the female-bonded Old World monkeys. Third, among unrelated individuals, dominance ranking influences the direction of grooming. Primates tend to groom up the hierarchy such that higher-ranking individuals are preferred grooming partners (Gouzoules & Gouzoules, 1987). As males and females have separate dominance hierarchies, grooming among distantly or unrelated adults tends to be same-sex. Fourth, there are some primate species (e.g. baboons, macaques) in which males and females form special relationships other wise known as “friendships.” Grooming occurs frequently in these relationships and may also involve mating (Smuts, 1999). Finally, male-female grooming among unrelated adults has been observed in monogamous or pairbonded primates, of which there are few, (e.g. gibbons, indris, titi monkeys, humans) (Kinzey & Wright, 1982; Robinson, Wright, & Kinzey, 1987; Wachtmeister, 2001). Thus, it is expected that among humans, participants will perceive a close personal relationship between the people depicted grooming.

Monogamous species are interesting to use for comparison with humans because, like us, they live in small family groups of a pair-bonded male and female with young

offspring. They also show pronounced male parental care of offspring that includes carrying, guarding, feeding, and grooming them. Observations of grooming in the wild indicate that male and female titi monkeys groom each other an equivalent amount of time (Kinzey & Wright, 1982). Mason (1974) suggests that the high level of grooming seen among adult male and female titi monkeys helps form and maintain their pair bonds. Kinzey and Wright propose that mutual grooming in titi monkeys serves a dual role: pair bond maintenance and parental investment on the part of the male. Whether male-female grooming is simply affiliative or also represents potential mating effort has yet to be determined. For example, males in pairbonded species may groom a female in order to demonstrate his potential skill and investment in parenting the union's potential offspring. Female primates may use this information to select the best mate, i.e. one that invests in her offspring. Determining the motives and perceptions of nonhuman primate grooming is notoriously difficult. But among humans, an answer to the question of whether grooming advertises potential parental investment can be achieved via traditionally used methods from the fields of nonverbal communication and social psychology: self-report and experiments using vignettes that depict human grooming.

Mutual Grooming Among Humans

Because humans display several forms of grooming not seen among other primates (Nelson, 2001), such as massage, clothing-oriented grooming (straightening a collar, fastening clasps, etc.), and the application of soap, lotions, and polish to clean or style

the hair and body, it will be necessary to investigate whether there are any differences in communicative function among the different forms of social grooming unique to humans.

Despite its widespread practice among primates, mutual grooming among humans has received little academic attention. It is briefly mentioned in a few ethnographic (Malinowski, 1929; Eibl-Eibesfeldt, 1989) and anecdotal reports (Schefflen, 1972; 1974), but only two scientific studies of human social grooming exist (Enhuber, 1989, Nelson, 2001). Enhuber's study, which is written in German, is an unpublished manuscript completed for a degree at a German university. According to the abstract, Enhuber's study is survey that explores whether or not various kinds of grooming are experienced as pleasurable. College level students in Germany reported ambivalent feelings about it. Aside from that, not much can be known about the study until it is translated. My previous research on mutual grooming used a survey in two separate studies to identify the form mutual grooming takes among a convenient sample of humans (young college students) and provided the first available data on its frequency, demographic predictors, and personality correlates (Nelson, 2001).

Four forms of social grooming were identified through factor analysis of the self-report Grooming and Touching Scale: traditional, non-traditional, mimicry, and blemish-focused. "Traditional" grooming included shampooing, washing, shaving, and performing nail care like manicures and pedicures. This is the only form of mutual grooming that can be considered uniquely human. The other three forms of grooming are observed to some extent in other primates and animals. These forms include what I called "non-traditional" (removing debris such as dirt, lint, food, or hairs). Stroking, scratching, and massaging, fell

into the category called “mimicry” of grooming because the actions mimic grooming in that they could conceivably remove something but rarely do in practice. The last category “blemish-focused” includes picking at or squeezing pimples, scabs, or other blemishes.

Participants in the two studies identified the person they felt closest to emotionally and then reported how often they performed and received fourteen different types of grooming with that person. Participants reported on a wide range of relationships including best friends, romantically involved, siblings, grandparents, mothers, and aunts; however most people (86%) reported about a best friend or romantic partner. All people reported at least some form of social grooming over the previous year.

Grooming occurred in a wide variety of relationships, albeit at a low level. “Mimicry” (scratches, stroking, massages) occurred more frequently than any other type of grooming. Participants reported that this type of grooming occurs roughly several times a year to several times a month or more. The next most common type of grooming is the “non-traditional” form that includes swatting away bugs, dusting off dirt or other debris, and removing lint or hair from clothing. This tends to occur slightly more often among best friends than scratching and massaging. “Traditional” grooming (shampooing hair, nail care, shaving, etc.) occurs relatively infrequently, one or two times per year among people involved romantically and less than that or never among best friends. “Blemished-focused” forms of grooming happen least often.

Although the first study found that females reported more frequent mutual grooming, the second study did not. Study two found that males and females report equivalent frequencies of social grooming. I suggested there were two possible reasons for this finding. First, study one could not investigate partners' reports of received grooming as a check against over or under-reporting grooming, so it is possible that females may have over-reported the amount of grooming they perform relative to males. However, the second study collected partner's reports and found that partners agreed upon how much grooming occurs within the relationship. Therefore, self-report of grooming frequency using this measure can be considered valid. A better explanation, according to Nelson (2007), is that in general females groom others more frequently, but in the context of a romantic or sexual relationship, males and females groom each other equivalent amounts as expected for a pairbonded species of primate.

I reasoned that if social grooming facilitates courtship and pairbonding, then romantically involved couples should groom one another significantly more often than individuals in every other kind of relationship. This hypothesis was supported. I also provided some additional tentative support for the pairbonding function of grooming. In the first study, several variables were positively correlated with grooming frequency but only among those who were romantically involved. These variables were relationship satisfaction, experience of parental and familial affection, and trust. These variables were unrelated to grooming among best friends, suggesting that people in different relationships might groom each other for different reasons.

An additional concern I did not previously address is whether grooming serves a different purpose from touch and whether other forms of touch are also related to those variables. If they are, this might suggest that grooming is not a unique form of touch with its own function. However, grooming might more readily convey certain messages than non-grooming touch. I have suggested that grooming is one of the actions couples use to display, enhance, and test their bond (Nelson, 2001). Compared to a dyad that is touching but not grooming, people should perceive a dyad that is grooming to be: more likely to be romantically involved, more committed to one another, and more in love. Finally, although factor analysis revealed four types of grooming, and there are differences in the frequency of performing these kinds of grooming actions, it is not known whether people perceive these four forms of grooming differently.

Nonverbal Communication Research on Touch

In spite of the large volume of ethological research on animal signals on one hand and psychological research on human nonverbal communication on the other, there is surprisingly little overlap between the two. Given that grooming is a form of touch, insights about the meaning of grooming and other kinds of touching behavior can be achieved from looking at the nonverbal communication research on touch. Three areas of touch research are relevant to the proposed research: 1) relative frequencies of touch according to gender, dyad composition, age, and stage of relationship, 2) perceptions or meaning of touch to observers, and 3) methods used to study touch.

Nancy Henley provided the first significant contribution to the field of nonverbal touch research (1973, 1977). She observed that in public males touched females more than females touched males. Henley is notable not only for providing this observation, but also for articulating the theory that this asymmetry in touch arises from male-female differences in power, dominance, and status. She proposed that men occupy a higher position in society and this gives them a privilege to touch. Comparing this to the research on dominance influences on primate grooming patterns, we see that whereas humans in high status positions touch subordinates more often, other primates follow the reverse pattern: Subordinates groom higher ranking individuals more often. Other primates may groom in order to form alliances that may later benefit them, but according to Henley, humans touch in order to maintain the status difference (1977).

More recently, a more nuanced understanding of touch asymmetries has emerged based on larger scale observational studies that have investigated variables such as setting, age, and stage of relationship (Major, Schmidlin, & Williams, 1990; Hall and Veccia, 1990). Major, Schmidlin, and Williams (1990) observed about 800 instances of touch in two cities of different size. They recorded only instances of intentional touch occurring in public, non-intimate settings that included shopping malls, stores, college campuses, and business districts. They also made observations in recreational settings that included parks, beaches, art galleries, and a bar. Finally, they observed greeting and leave-taking at airports and bus stations. Combining all settings, they found that same-sex dyads were more likely to touch than mixed-sex dyads and that female dyads touched most of all, about twice as often as male-male, female-male, and male-female touches. When a person

under fifteen was touched, females initiated touch more often than males. However, when the setting was considered, Major, Schmidlin, and Williams confirmed the sex asymmetry suggested by Henley. In public, non-intimate settings, females were more often the recipients of touch and cross-sex touch was more prevalent than same-sex touch. In contrast, in greeting and leave-taking, where people are presumably more intimately related and possibly in close partnerships, no asymmetry was present. Major, Schmidlin, and Williams did not investigate the effect of relationship type, so it is possible that this is an important moderating variable.

Hall and Veccia (1990) have also challenged Henley's observations. They observed 4,500 pairs of dyads interacting in public in places including shopping malls, hotel lobbies, airports, movie lines, subway stations, and on college campuses in large urban city in New England. Unlike Major, Schmidlin, and Williams, who recorded only instances of touch when they occurred, Hall and Veccia observed dyads regardless of whether or not they were touching during the time of observation. Hall and Veccia found that touching in public is a rare event. A full 85% of the 4500 dyads never touched. Of those who did touch, mixed sex dyads touched more than same sex dyads, and among them, females touched more than males. They also observed a gender asymmetry in touching that differed according to whether the touch was initiated or already in progress at the start of the observation period. Of touches initiated, males touched females significantly more often than the reverse, but for touches in progress, females touched males more than vice versa. There were no linear or other trends for age; however, Hall and Veccia observed that men initiated touches more often when they were younger than

30 than when they were older. Over age 30, men initiated significantly fewer touches with women. Males didn't touch less with age when touching other males.

Hall and Veccia's study was cross-sectional so they could not determine whether the touch asymmetries were due to age effects or represent maturational or cohort effects. Also, they did not later interview the observed dyads to determine their relationship so some of the touch differences could be due to relationship type. When discussing their study, Hall and Veccia proposed that the finding that men touched more within younger dyads may be due to sex roles that require male gestures of female possession in less developed relationships. They also suggest that females may touch less in early relationship stages so as not to appear too forward. Of course, all of this assumes that the dyads observed were people who were romantically involved.

Two other studies of public touch confirmed the pattern of men touching more than women at earlier relationship stages. Willis and Briggs (1992) observed the first five minutes of 700 dyads interacting in public. Guerrero and Andersen (1994) observed about 200 mixed-sex dyads in public. Willis and Briggs interviewed the dyads afterward to determine their relationship; Guerrero and Andersen acquired this information using a short questionnaire. More than half of the dyads made no physical contact in Willis and Briggs' study, and Guerrero and Andersen observed touching in slightly more than half of the dyads. Willis and Briggs hypothesized that men would touch more during the "honeymoon period" but when the honeymoon period is over, women would touch more. In order to determine whether stage of relationship influenced sex asymmetries in touch, Willis and Briggs divided the dyads into two groups: those who were dating, engaged, or

cohabitating for less than one year and those who were married or cohabitating for more than one year. Guerrero and Andersen hypothesized that men would initiate more touch in casual dating relationships while women would initiate more touch in serious dating and marriage relationships. Both studies confirmed their hypotheses.

While Hall and Veccia (1990) explained their results as products of sex roles, Willis and Briggs attributed their similar pattern of results to reproductive differences between men and women. They theorized that men touch early in a relationship to initiate intimacy and sexual activity while women accept and initiate touch at later stages to establish and preserve a pairbond. Guerrero and Andersen (1994) discussed the pattern in terms of social norms that dictate that men “make the first move” in dating relationships. The proposed origins of these differences (social norms/roles vs. reproductive strategy) are compatible when one considers them as representative of proximate vs. ultimate causes of behavior. The proximate or immediate reason for the observed difference may be due to cultural norms but ultimately these norms could arise through the different reproductive strategies of men and women. In the discussion of their data, Guerrero and Andersen (1994) suggested that there may not be any sex differences in the frequency of touching according to stage of relationship because women may touch more in private early on and men may touch more in private later. This pattern would tend to equalize the total amount of touch experienced within dyads. Nevertheless, what remains is a well-established pattern of sex differences in public displays of affection.

Tie-Signs

Although he didn't discuss any sex differences in public displays of affection, Erving Goffman (1971) did propose that people in a relationship would either unconsciously or intentionally signal their togetherness. He called such nonverbal actions "tie-signs." Tie-signs can inform two parties: the individuals involved in the relationship and third-party observers. The person one is "with" does not need to be present for tie-signs to be present. For instance, pictures of the person on display where one lives, photos of the other carried in a wallet, wearing a ring on the fourth digit of the left hand, or wearing a tattoo of that person's name or likeness all constitute tie-signs. Goffman was interested in such signals of togetherness but was far more concerned with signs that exist when both parties are present. Holding hands or linking arms are obvious tie signs, but even more nuanced cues can indicate the existence of an established relationship. Goffman observed that when two people have been together for quite some time, normal courtesies are abandoned. They may dispense with politeness such as saying "please" and "thank you." Thus, a lack of attentiveness to the other can be a tie-sign.

Expanding on Goffman's work, Desmond Morris identified several other markers of a relationship that he also called tie-signs (1977). These include using "pet names" and sharing objects like towels and drinking glasses. Beyond pointing out a few other signals that operate as tie-signs, Morris proposed several signs that a relationship is "fully formed." These include reduced use of personal names. Instead of referring to each other on a "first-name basis" people who know each other well tend to use "you" or pet names like "darling." Hand-shaking declines and disappears completely between lovers.

Animated conversational smiling and nodding decrease, as does attentiveness. Topics of conversation change too. In initial stages of a relationship there is much exchange of autobiographical information and personal tastes but these topics disappear once the relationship advances. According to Morris, one of the surest signs that a relationship is advanced is that two people can occupy close physical proximity without saying a word or paying attention to each other.

No one has studied mutual grooming as a tie-sign, but in Goffman's formulation it could operate as one. Furthermore, Goffman asserted that much ambiguity exists in interpreting tie-signs in terms of the type of relationship and its stage. Neither Goffman nor later scholars on the subject (Fine, Stitt, & Finch, 1984; Afifi & Johnson, 1999) have advanced any theory as to what sort of signals might carry greater fidelity. Touching, grooming, and performing an act of caregiving or social support all involve some degree of interpersonal intimacy and should therefore be regarded as tie-signs. However, are there any differences among them in terms of the degree to which they indicate a romantic bond and to what extent people also perceive a sexual relationship? One purpose of the proposed study is to determine how mutual grooming compares as a tie-sign to other possible tie-signs, namely touching.

Previously I have argued that mutual grooming is a specialized form of touch that serves a function unique to pairbonding compared with forming other relationships such as friendships (Nelson, 2001). Based on suggestions from ethologists who drew upon animal research and theory, I also proposed that mutual grooming is a precopulatory behavior that facilitates courtship, precipitates sexual activity, and helps solidify

pairbonds. Behaviors likely to have this function include caregiving activities that parents perform routinely in the course of childcare (Eibl-Eibesfeldt, 1989; Schiefenhövel, 1997). Grooming is certainly one of these. But why should caregiving acts be useful during courtship? A mate's parenting skills are generally more important in monogamous species (Trivers, 1972), so it is expected that humans evaluate potential mates based on the quantity and quality of caregiving they provide. One of the best ways to do this is to witness the potential mate actively involved in childcare, but in the absence of that, a mate can stand in as the object of care. This suggests that grooming should represent a higher fidelity signal of romantic and sexual involvement than non-grooming forms of touch. It may also represent a specialized form of caregiving that is unique to romantic and sexual relationships.

One form of caregiving that appears to be unique to romantic relationships is mutual feeding (Miller, Rozin, & Fiske, 1998). This occurs when one person places food directly into another's mouth. Miller, Rozin, and Fiske (1998) demonstrated that this action is significantly different from sharing food. Miller, Rozin, and Fiske (1998) using videotaped scenes of professional actors dining to gather third-party perceptions of a male-female dyad who shared food, fed each other, or did not share food. Each observer viewed only one tape, thus the study followed an entirely between-subjects design. After viewing the scene, participant observers answered a questionnaire about the relationships of the people depicted on the tape. They answered several questions in the form "How likely are the two people to ...". Responses were made on a 9-point scale: "Not at all 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 Certainly." The relationships investigated included: be

serious/steady lovers, have a professional relationship, be related, recently become lovers, be casual lovers, and be friends. After the friends item, participants were asked to indicate to what extent they thought the two people were “extremely close friends” using the same scale. Thus, both the kind and stage of relationship were queried. Observers were also asked to indicate the extent to which they thought the two people were sexually involved. Results showed that participants thought that dyads with mutual feeding were more likely to be romantically and sexually involved than those who shared food, who were themselves more likely to be romantically involved than dyads that did not share food. Miller, Rozin, and Fiske did not report on any differences in perception having to do with the stage of the relationship. Parents may give food to their children and friends and work colleagues may give food to one another, but only parents-children and lovers are presumed to feed one another directly. Like mutual feeding, mutual grooming may be a strong tie-sign.

Flirting

Goffman (1971) commented on the ambiguity involved in reading tie-signs. He thought they indicate a close personal relationship but not necessarily indicate the kind or the stage of that relationship. Goffman did mention that the absence of certain cues could be telling, as when customary courtesies disappear between people with a long-standing relationship. Similarly, Morris proposed that the absence of personal information exchange and attentiveness signal an established relationship. However, is there any

reason to believe that the presence of specific signals might indicate the stage of a relationship? Miller, Rozin, and Fiske's study on mutual feeding suggests there might be.

Research on flirting and relationship initiation provides some clues about which behaviors are typical of early relationship stages. Givens (1983) and Perper (1985) identified stages of relationship initiation by watching people flirting at bars. They identified five stages: attention getting, recognition, talk, touch, and body synchrony. Morris (1977) also identified several stages of relationship formation that represent escalating intimacy. After making eye contact and then sustained mutual gaze, people talk and then finally touch. Morris goes on to detail the various stages that lead up to sexual intercourse but these aren't relevant here because grooming falls into the stage of touching and if it occurs, it should generally precede sexual activity. It may also follow sexual intercourse, but at some point for courtship to succeed the contact barrier must be broken. Grooming represents just one of many ways that individuals may do this. Being familiar with courtship scripts, participants in this study may perceive that a dyad that grooms is in the early stage of courtship rather than an established pair.

Perceptions of Touch

Two methodologies have been used to study the perceptions of touch. One relies on self-reported meanings of touch while the other, of greater interest to the proposed study, uses confederates or other stimuli to elicit third-party perceptions. Both methods offer insights on how grooming might be interpreted. Nguyen, Heslin, and Nguyen (1975) presented diagrams of the body to 40 male and 40 female college students who then

answered a question about the meaning of four different kinds of touch according to place touched. They were asked what it means when someone of the opposite sex pats, strokes, squeezes, and accidentally brushes them on specific parts of the body (head, face, shoulders, arms, hands, legs, back, genitals, etc). Participants were asked to evaluate five possible meanings (playfulness, warmth/love, friendship/fellowship, sexual desire, and pleasantness) on a four-point Likert-type scale. Nguyen et al. reported that participants relied more on the kind of touch than its location to make their perceptions. Pats were rated as most playful and friendly. Strokes were rated as most loving, sexual, and pleasant. Two of the touches Nguyen et al. queried might be considered grooming touches: strokes and brushes. The proposed study assesses the meaning of intentional touching and grooming. Nguyen's study suggests that grooming touches might be more likely than other touches to be rated as loving and sexual; however, this may only apply to the category of grooming "mimicry" that includes stroking, scratching, and massaging.

Given that there are no studies specifically concerned with grooming touches, any study that includes touches that might be considered grooming are worthy of mention. Pisano, Wall, and Foster (1986) explored self-reported meaning of performing and receiving a wide variety of touches. Of the 31 types considered, 13 fit my definition of grooming. Participants were asked to choose one of seven adjectives (friendliness, warmth/love, playfulness, dominance/control, sexual desire, comfort/reassurance, or other) that best described the meaning implied when they touch or are touched by their "most preferred opposite-sex romantic partner." Of the touches most often considered to express "warmth/love," seven were grooming touches. All fell into the category of

mimicry (stroking, rubbing, running a hand through a partner's hair). The only touch that indicated "friendliness" was a grooming touch: combing a partner's hair. Most (5 out of 6) of the touches that fell into the category meaning "sexual desire" were grooming touches: stroking, massaging, and licking (a partner's face). The location of touch (leg or behind) was responsible for some of the mimicry grooming touches to be considered "sexual." No grooming touches were represented in the categories of playfulness, dominance/control, and comfort/reassurance. As with the Nguyen et al. study, this one suggests that grooming touches might be more likely to convey sexual desire than other forms of touch as long as the location of the touch is not confounded with the type.

According to Sternberg (1986) three psychological elements compose loving, romantic relationships: intimacy, passion, and commitment. Perceptions of a male-female dyad who could potentially be lovers should therefore explore these attributes. The previously mentioned studies have addressed intimacy (warmth/love) and passion (sexual desire) but not commitment. Only one study has investigated the extent to which touch may communicate commitment. Johnson and Edwards (1991) asked 150 college students what level of commitment seven forms of touch imply. The types of touch represent escalating sexually intimate touches that one might consider a "courtship script" along the lines of Morris (1977), i.e. holding hands, kissing, "petting," "heavy petting," and sexual intercourse. None were grooming touches. Commitment was measured on 9-point scale four different ways. One was simply the "degree to which the particular touch communicated 'commitment.'" Another asked at which stage of a relationship that kind of touch occurs. Choices ranged from first date to marriage with maximal commitment

indicated by marriage. Rather than viewing this item as a measure of perception of the meaning of touch, it is more valid to consider it a measure of perceptions of when in a relationship the touch occurs. The third measure asked to what extent the touch “represents a rational decision to pursue a relationship.” The last item asked to what extent the touch “connotes an exclusive romantic relationship.” Participants were told only to imagine that the touches were mutual and were occurring for the first time with their preferred romantic partner in a private setting without the influence alcohol or other substances. Results showed no significant sex differences in the perception of commitment for touches at low levels of intimacy (which would characterize the forms of grooming except for mutual showering/bathing). For more intimate touches (ranging from petting breasts and genitals to sexual intercourse), women perceived more relational commitment. These results are difficult to interpret because it was not clear whether the participants were responding to the questions in terms of their perceptions of the other person’s level of commitment or their own. That is, they may have been thinking about what level of commitment they would have to feel in order to engage in a given behavior rather the level of commitment their partner displays for them by engaging in that behavior. Given the ambiguity of exactly who was the target, the proposed study must clearly specify who the target is.

Perceptions of touch, grooming, and caregiving are likely to be influenced by the observer’s gender (Abbey, 1982; Abbey & Melby, 1986; Haselton & Buss, 2000). From behind a one-way mirror, pairs of men and women (college students) were allowed to observe and eavesdrop on a man and woman engaged in conversation (Abbey, 1982).

Men rated the women they observed more sexually than female observers rated women. Specifically, men perceived the women to be more flirtatious, seductive, and promiscuous than women did. Men also inferred that the females they observed were more sexually interested in their male conversation partners than females did. The males who were observed also rated themselves more sexually than the females who were observed did. Abbey concluded that men are biased to perceive the world sexually because of socialization and mass media images. Another possibility is that the women in the study did in fact behave more sexually than the men. Abbey did not exercise any control over conversation partners' behavior, nor did she measure actual behavior so it is impossible to rule out this possibility. However, two of her later studies (Abbey & Melby, 1986; Abbey & Harnish, 1995) used different methodologies to exercise better control over behaviors (eye contact, touch, etc.) that might influence attributions. Abbey and Melby (1986) used three separate studies to independently investigate the influence of three nonverbal behaviors on perceptions of sexual intent. Using photographs as stimuli, Abbey and Melby found that males consistently rated female targets higher on perceived sexual desire than females did. Nonverbal cues did not influence the ratings. This pattern was replicated using vignettes (Abbey & Harnish, 1995). Therefore, the finding that men infer greater sexual intent than women represents a genuine phenomenon that should also occur with perceptions of grooming.

Haselton and Buss (2000) have advanced an evolutionary theory of error management based on costs and benefits of making false-positive and false-negative errors. The theory predicts specific biases in judging sexual intent as well as commitment.

According to their theory, the cost of an ancestral man making a false-positive error when judging a woman's sexual intent (assuming a woman was interested when she was not) was less than making a false-negative error (failing to recognize when she was interested). The latter represents a missed reproductive opportunity while the former entails only lost time. For ancestral women, the cost of failing to recognize a man's commitment (false-negative) was lower than the cost of perceiving a man to be committed when he actually was not (false-positive). The latter error could leave a woman with an unwanted or untimely pregnancy without an investing mate. This could have reduced the survival of the child and potentially her future reproductive potential. Thus, error management theory predicts a different pattern of perceptual biases for men and women.

Furthermore, these biases should be observed among men and women living today. Haselton and Buss tested their theory by asking men and women to rate their own and others intentions given 15 different behaviors (holding hands, touching the others arm, telling the person "I love you," complimenting appearance, buying an expensive gift, etc). They contrasted the perceptions of people who could be romantic partners with those that would be inappropriate (siblings). Men consistently over-inferred women's sexual intent only when they made judgments about the intent of potential dating partners. Similarly, women under-estimated the commitment intent of dating partners but not their brothers. This same pattern of perceptual biases should occur when grooming is the target behavior.

Two final studies of the perception of touch are of interest more for their method than their research question and results. One used still photographs as stimuli while the

other used vignettes. Derlega, Lewis, Harrison, Winstead, and Constanza (1989) acquired perceptions of dyads touching during greeting in order to test the theory that males refrain from tactile affection for fear of being considered homosexual. Still photograph stimulus sets were made of female-female, male-male, and female-male dyads. The dyads were shown approaching each other and then either making physical contact or standing apart while making eye contact, and then finally walking away together either side-by-side or with their arms around each other's waists. Obviously the kind of touch and the situation are not relevant for a study on grooming, however, the method used – still photographic stimuli - represent one method of acquiring perceptions of touch. Furthermore, like the proposed study, Derlega et al. were interested in perceptions of normalcy and relationship type. Specifically, they asked participants to rate the “appropriateness” and “usualness” of the behavior as well as to what extent the people pictured were family members, friends, giving each other emotional support, involved in a sexual relationship, meeting for the first time, or worked together. Ratings were made on an 11-point scale from zero to ten. Attributions of a sexual relationship were particularly high for dyads that departed with arms around each other's waist compared with hugging.

Dougherty, Turban, Olson, Dwyer and LaPreze (1996) used vignettes to investigate factors that affect perceptions of workplace sexual harassment. The vignettes manipulated four variables: amount of prior socializing, job status, setting, and whether the harassment was verbal or involved touching. Participants were undergraduate and graduate students who were mailed surveys that included one of 24 versions of the vignette. Respondents indicated their agreement (using a 5-point scale) to 15 statements

of reactions to the behavior described in the vignette. They also responded to 14 semantic differential items of the form “considerate or not considerate,” “hostile or not hostile,” etc. Results showed that respondents made different judgments depending on all four variables that were manipulated. These two studies suggest that people can attend to details of an interaction (including manipulation of touch) when presented in vignettes and still photographs.

Summary/Justification of Proposed Methods & Hypotheses

So far, I have detailed several possible perceptions of touch and grooming that include: warmth/love, playfulness, friendliness, sexual desire, and commitment. Based on the theoretical importance of caregiving and parenting to courtship and attachment, it would also be relevant to explore the perception of parenting skills. A major aim of the proposed research is to determine whether grooming differs from touching, that is whether it represents a unique form of touch with its own meaning. Given the evolutionary importance of grooming to primates, its importance to other animals during courtship, and its importance during parenting, grooming should be perceived differently from other forms of touch and should occur within the context of some relationships more than others.

This research aims to provide information about the social significance of social grooming among humans using a two-part study. First, a questionnaire will be used to assess the extent to which grooming occurs in a variety of relationships. The second uses vignettes to study the perception of grooming vis-à-vis other forms of touch. These

methods have been chosen because they are the most efficient means of gathering this information.

There are two routes to investigate in what sort of relationships grooming occurs: self-report and observation. Because grooming is a sub-set of touch and touch occurs so infrequently in public, an observational study would involve a heavy investment of time for little return. Self-report methods used to measure the frequency of behavior have been criticized for their apparent lack of validity. Respondents could inaccurately recall the frequency of having performed or received various touches or may respond in socially acceptable ways. While this method is bound to be less accurate than actually observing touch, it does allow researchers to gather information on touch that does not occur in public, as would be the case with certain forms of grooming (bathing, showering, etc.).

One of my previous studies on grooming used a self-report measure that supports the validity of self-report as a measure of grooming frequency. In that study, self-reports of performing grooming correlated positively with partners' reports of receiving it and were statistically significant (Nelson, 2001). That study asked people to identify the person they felt closest to emotionally. All questions regarding the frequency of performing and receiving grooming referred only to that person. While it did support the hypothesis that grooming occurs more often in romantic relationships, it did not ask the same people to indicate the extent to which they groomed people in other relationship contexts. Thus, the first part of this study corrects that problem by asking respondents to indicate in what types of relationships they have performed or received various kinds of touch including grooming. These relationships will be: romantic partners, best friends

of the same and opposite sex, relatives, and work colleagues. This is a method similar to the one Miller, Rozin, and Fiske (1998) used to investigate food sharing within different relationships. Food-sharing and grooming share many psychology properties, foremost of which is that they occur preferentially among very close associates.

The first aim of this study is to examine the extent to which grooming preferentially occurs in certain relationships. Because people may learn patterns of caregiving and touch from the parent who served as their primary caregiver, and because women are more often thought to be responsible for childcare, it is possible that women and men primarily cared for by their fathers may groom other people less. It is also possible that people who have children and those who do not want to have children may groom others less because they do not have the extra time needed or desire to care for others in this way. I will be investigating these as possible moderating variables by asking people who they consider their primary caregiver to have been, whether they have children, and if so, what proportion of childcare they have provided, and if no, whether the person desires to have children.

Study One, Hypothesis One:

If grooming is a specialized form of touch that serves a courtship or pairbonding function, then respondents will more often indicate grooming within romantic relationships than all other kinds of relationships.

There are several methods with which to measure the perception or meaning of grooming compared with touch and caregiving. I have chosen to use vignettes because they are efficient and do not require carefully controlling aspects of the actors' appearance that may influence perceptions. Also, previous studies have shown that several variables may be manipulated at one time and that respondents attend carefully enough to make discriminations based on whether or not touch has been manipulated (Abbey & Harnish, 1995; Turban, Olson, Dwyer & LaPreze, 1996).

My experiment follows a 3x4(3) factorial between-subjects design using vignettes that portray a man and a woman interacting. The first variable is what type of action occurs (grooming, non-grooming touch, no physical contact between the actors). The next is what form of grooming occurs (traditional, non-traditional, mimicry, blemish-focused). For each type of grooming, there will be three different exemplars of that type. For instance, in the category of mimicry, the three exemplars will be different forms of mimicry grooming, e.g. scratching, massaging, or stroking. Thus, the exact type of grooming constitutes the nested variable. Finally, the target actor for females will always be a male, and the target actor for males will always be a female. Thus, the sex of the participant reading the vignette constitutes a blocking variable. There are 36 different vignettes for women and 36 for men. Each participant read only one vignette.

Dependent measures are perceptions of the kind of relationship of the portrayed dyad and perceptions of the target actor. Respondents used a 9-point scale to indicate their perceptions of the actor on the following aspects: caring/love, flirtatiousness, desire

for sexual activity, commitment, and parenting potential. One open-ended question was asked in order to assess grooming in real-life relationships.

A manipulation check was included to verify that participants attended to the touch information that was manipulated. This was a true-false question: “Did the man/woman touch the other person?”

Study Two, Hypothesis Two:

If grooming is a tie-sign, then actors in grooming vignettes will be more likely to be rated as being romantically involved than targets who are not portrayed touching. Furthermore, actors who are portrayed grooming will more likely be rated as sexually interested if grooming plays a courtship role. Various forms of grooming will be analyzed to determine whether there are significant differences in perceptions based on them but no a priori hypotheses are made.

Study Two, Hypothesis Three:

If grooming is thought of as part of a courtship script, then actors who are depicted grooming should be rated as more flirtatious compared to actors who do not groom. Similarly, people who are depicted grooming should be rated as “a couple that has recently started dating each other” more often than “a couple in an established romantic relationship that has lasted for a long time.”

Study Two, Hypothesis Four:

If grooming is a psychologically different form of touch and caregiving that plays a role in pairbonding, then actors who groom should be rated as more caring/in love, more committed, and more likely to be a good parent compared to actors who are shown touching or performing some other act that does not involve a significant act of touch.

Study Two, Hypothesis Five:

If grooming is a tie-sign used during courtship or pairbonding, then respondents who indicate that they have been in a grooming situation like the one depicted will more often indicate that the other person was a romantic partner. (Note: This final hypothesis looks at non-experimental data collected as part of the responses for participants in the experimental portion of the study.)

CHAPTER II

METHODS

Participant Recruitment For This Research

Participants for both studies were recruited by advertising the URL of the study on three websites: the Social Psychology Network (<http://socialpsychology.org/expts.htm>), the American Psychological Society (<http://psych.hanover.edu/APS/exponent.html>), and in a different city each week at craigslist.com under the volunteers section. The list of the cities participants were recruited from through craigslist.com appears in Appendix A.

To provide incentive to participate, an Apple iPod was raffled off at the end of the study. When participants completed the last page of the survey, they were directed to the debriefing page. On this page, participants were asked if they wanted to enter the drawing for the iPod. If so, they entered an e-mail address that they could be contacted at in the event they won. These e-mail addresses were maintained separately from the data file so they could not be used to identify participants.

To augment the data collected over the Internet, it was necessary to contact faculty in the psychology departments at several colleges and universities to ask them if they would be willing to notify their students of the opportunity to participate in this research. This approach generated fewer than ten participants from each school with the

exception of Whitman College (Walla Walla, WA) where I was working at the time of data collection. Wherever it was necessary, I worked with the ethics review boards to receive approval for recruiting student participants at that institution. This was necessary only at California Polytechnic Institute, and approval was granted.

In keeping with the recommendations of Gosling, Vazire, Srivastava, and John (2004), Internet IP addresses were screened for repeats and all but the first responses were eliminated. Also, participation that generated suspicious response patterns (e.g. someone who identifies an age of 15, more than 15 siblings, and an occupation of “drug dealer”) were eliminated.

Study One - Survey of Grooming Behaviors Across Relationship Type

Participants

1,828 people (470 males / 1358 females) responded to the survey of grooming and touching behaviors. Most participants reported living in the United States with all states except ND and OK represented in the sample. About 11% (194) lived in Canada, the UK, Australia or New Zealand. A very small number of participants reported residing in some other country (e.g. Bosnia, Colombia, India, Russia, etc). Table 1 details the geographic distribution of participants in Study 1.

195 cases were eliminated because they contained only demographic data. Of the remaining 1633 respondents (396 males / 1235 females), the average age of female respondents was 28.1 (SD = 10.5). They ranged in age from 15 to 68. The average age of male respondents was 29.0 (SD = 11.6). Their age range was 16 to 69.

A majority of participants indicated their gender corresponded to their sex. 85.6% of females felt “mostly feminine” psychologically. 16 women (1.3% of the sample) felt “mostly masculine.” 13.1% felt “somewhere in between.” 85.1% of men felt “mostly masculine,” while 10 men (2.5% of the sample) felt mostly “mostly feminine.” 12.4% of men said they felt “somewhere in between.”

Participants were predominantly Caucasian/White (82.3% of men and 78.1% of women). 4.3% of men and 4.5% of women indicated their ethnicity was Black/African-American. 7.1% of men and 9.2% of women were Asian, and 4.8% of men and 4.9% of women were Latino/Hispanic. The remaining 1.5% of men and 3.3% of women indicated a mixed or “other” ethnic background. Of the 40 women and 6 men who indicated an “other” ethnic background, most responded they had more than one ethnic identity.

Participants tended to be single or not involved in a serious romantic relationship (60.2% of women and 69.7% of men). 6.4% of the female and 3.0% of the male sample was separated or divorced. Less than 1% of participants reported being widowed. The rest of the sample reported being involved in some sort of romantic relationship. 21.5% of men and 18.9% of women were married. 10.0% of men and 13.7% of women were in a serious romantic relationship but not married.

Participants represent diverse occupational categories, but nearly half of them were students (50.5% men, 46.9% women). The rest were typically employed in business (17.4% men, 13.4% women), education (6.8% men, 8.4% women), and social/public service (8.1% men, 12.6% women). 3.0% of men and 5.8% of women were

not employed. Less than 5% of participants were employed in each of the following settings: retail, medicine/health care, manufacturing, and creative arts.

About half of the participants came from college-educated families (59.1% of men, 56.3% of women). Participants reported the highest level of education attained by either parent to be: no high school or equivalent diploma (5.3% men, 5.6% women), high school or some technical school (35.6% men, 38.1% women), BA/BS (29.8% men, 24.4% women), MA/MS or other Master's level degree (18.7% men, 21.4% women), or a doctoral level degree (10.4% men, 10.3% women).

Materials

Demographic questions appeared at beginning of the survey. These included participants' sex, gender, age, location, occupation, parents' level of education, and relationship status (married, single, divorced, widowed, etc). Other questions included the number of siblings, whether the participant has children and of not, whether they would like to have children. Participants were also asked about who was their primary caregiver growing up and what proportion of childcare their child's other parent provided if they had children and what proportion they would like the other parent to provide if and when they had children.

Following the demographic questions, participants were asked to check off whether they had ever touched or been touched (during adulthood) by a variety of people in a variety of ways. The people included: mother, father, siblings, romantic partners, best friends of the same and opposite sex, and work colleagues. Types of touch included

non-sexual forms of non-grooming touches (e.g. hug, kiss, pat, tickle, etc.) and more than one kind of each of Nelson's (2001) four previously studied forms of grooming (e.g. *mimicry*: scratching, massaging, etc.; *non-traditional*: wiping crumbs, brushing off dirt, etc.; *traditional*: washing hair, nail care, etc.; and *blemish-focused*: squeezing pimples, tending to a wound). A fifth form of grooming that had not been previously included was added: *clothing-oriented* (e.g. fastening a clasp, straightening a collar, tucking a tag in, etc.).

These questions appear in Appendix B.

Study Two - Vignette Study of Perceptions of Grooming vs. Touching

Participants

1,675 participants (464 males, 1,211 females) responded to the vignette questions. This represents the participants remaining after eliminating some cases. Because some participants were inadvertently assigned to the vignette meant for the other sex, a number of cases were deleted. 56 females who read the male version of a vignette and 11 males who read the female version of a vignette were eliminated. Additionally, six consecutive responses from the same IP address were dropped, as were four consecutive responses from a different IP address. One case of a suspicious response pattern was deleted.

Participants reported residing in most states in the United States. There were also a number of respondents from Canada, the UK, and Australia. A very small number of participants reported residing in some other country (e.g. Denmark, Nigeria, Philippines, etc). Table 2 details the geographic distribution of participants in Study 2.

The average age of female respondents was 28 (range: 15-73). The average age of male respondents was 30 (range: 16-75).

A majority of participants indicated their gender corresponded to their sex. 87.5% of females felt “mostly feminine” psychologically. 10 women (0.8% of the sample) felt “mostly masculine.” 12% felt “somewhere in between.” 84% of men felt “mostly masculine,” while 3 men (0.6%) felt mostly “mostly feminine.” 15% of men felt “somewhere in between.”

Participants were predominantly Caucasian/White (79% of men and women). 4% of men and 5% of women indicated their ethnicity was Black/African-American. 6% of men and 7% of women were Asian, and 6% of men and 4% of women were Latino/Hispanic. The remaining 5% of men and 4% of women indicated a mixed or “other” ethnic background. Of the people who indicated an “other” ethnic background (fewer than 10 people), most were Native American.

Most participants were single or not involved in a serious romantic relationship (66% of men and women). 6% of the sample was divorced. About 1% of participants reported being widowed. The rest of the sample was involved in some sort of romantic relationship. 21% of men and 18% of women were married. 12% of men and 15% of women were in a serious romantic relationship but not married.

Participants represent diverse occupational categories, although a sizeable proportion of them were students (40% of women and 43% of men). The rest were typically employed in business (23% men, 17% women), education (7% men, 9% women), and social/public service (10% men, 15% women). 5% of men and 6% of women

were not employed. Less than 5% of participants were employed in each of the following settings: retail, medicine/health care, manufacturing, and creative arts.

Most of the participants came from college-educated families (81% of men, 83% of women). Participants reported the highest level of education attained by either parent to be: no high school or equivalent diploma (3%), high school or equivalent degree (16% men, 14% women), some college/A.A. degree (26% men, 25% women), BA/BS (27% men, 26% women), MA/MS or other Master's level degree (17.5% men, 21% women), or a doctoral level degree (10%).

Materials

Participants completed the same demographic questions that participants completed in study one.

After completing the demographic questions, males read and responded to one of 36 vignettes that were assigned to males using quasi-random assignment, and females read and responded to one of 36 nearly identical vignettes that were assigned to females using quasi-random assignment. The only difference between the vignette for males and females was who performed the main action (grooming, touching, or control). Females read a vignette that featured a male who performed the action, and males read a vignette in which a female performed the action. Questions addressed perceptions of the person who performed the action. These questions were focused on the: level of love/caring displayed, degree of commitment to the recipient, sexual interest in the recipient, presumed parenting ability, and how flirtatious the action was.

These questions appear in Appendix C. The vignettes are in Appendix D.

Vignette Assignment

Because the surveymonkey.com website did not permit the random assignment of materials to participants, another way to achieve random assignment of vignettes to participants was needed. Participants selected a number from 1 to 36 in order to be randomly assigned to a vignette to read and respond to. The experimenter created codes to identify the vignettes and then randomly assigned each coded vignette to a number. Male and female vignettes were coded separately. For example, a vignette could be coded T2g and paired with the number 11 for males, while the corresponding female T2g vignette might be assigned to the number five. If a male selected the number 11, then he would be directed to read and respond to the vignette that was coded T2g. If a female selected five, then she would be directed to the female version of that vignette.

Vignettes were periodically assigned to different numbers to ensure that each vignette was responded to by at least ten people. For example, if more than ten participants had already selected the number 11 and responded to the vignette assigned to that number, then later, anyone who selected number 11 was directed to a vignette that had been assigned to a number that was less frequently chosen.

Every effort was made to achieve an equal response rate for each vignette, but in the end it was not possible to keep the response rate even across vignettes. Thus, the number of participants who responded to each vignette varies considerably and ranges from 9 to 304. The average number of responses for each vignette for males was 13. The

average number of responses for each vignette for females was 34. Table 3 shows the frequency distribution of participants who responded to each vignette.

CHAPTER III

RESULTS: STUDY ONE

Data Reduction

In order to reduce the amount of data, I created several categories prior to data analysis that represent the proportion of each kind of action participants indicated doing (grooming, touch, caregiving) broken down by each of eight relationship types (mother, father, brother, sister, romantic partner, same-sex best friend, opposite-sex best friend, work colleague). In all, 24 new outcome measures were created for each participant; they represent the percentage of occurrence for each type of touch so that there are eight scores for grooming (one for each of the eight types of relationship), eight scores for touching (one for each of the eight types of relationship), and eight scores for caregiving (one for each of the eight types of relationship). A one was assigned for each specific type of action asked about (e.g. massage, hug, tending to a wound, making a snack, etc.) if the person indicated they had experienced that type of activity with the person asked about. The ones were added up and then divided by the total number of actions represented in that category to create percentage scores that represent the proportion of possible touches that were experienced. The 24 raw scores were converted to percentages because there was not an equal number of each type of action represented (i.e. there were

6 non-grooming touches, 17 grooming touches, and 8 acts of caregiving). Because the hypothesis for study one was unrelated to the activity “caregiving,” that information was not analyzed.

Descriptive Data

Descriptive information detailing the proportion of people who reported engaging in each type of touch and type of grooming broken are down by relationship type and sex of respondent in Tables 4-7. Table 4 presents the data from males’ reporting about family members; Table 5 shows females. Table 6 and 7 respectively show males and females reporting about the other types of relationships (e.g. romantic, friends, colleagues). Data appears in bold to indicate which type of relationship had the highest proportion of respondents indicating they experienced that kind of touch. Because some participants did not report having a brother or sister, the proportions are corrected so that the data given represent only the proportion of people who actually have that kind of sibling. Also, because the sample included a high number of students aged 18-20 who were not involved in a romantic relationship, data for romantic partners is broken down according to whether the person answering the survey reported being in involved in a romantic relationship at the time.

Family Members

A visual inspection of the data represented in Tables 4 and 5 shows very few differences with respect to men and women reporting touch within the family. Mothers were the person most often involved. This was followed by sisters, who were also more

likely to be involved in tickling, pinching, and traditional forms of grooming like nail care, eyebrow grooming, and body hair removal than mothers, fathers and brothers. In general, sisters appeared to be involved in more grooming and touching interactions with family members than fathers and brothers were, and fathers were involved in more interactions than brothers.

In only one case (lacing shoes) was the father indicated as the most commonly involved family member, and this was only the case for male respondents. Other exceptions include sisters “playing with each other’s hair.” This appears to be more typical of female-female pairs of siblings than other kinds of relationships. Finally, although it was rarely reported, shaving a family member’s face or legs did not generally fit the rule of occurring most with mothers. For male respondents, this was proportionately equally likely to occur with mothers, sisters, and brothers. For female respondents, shaving was equally likely to occur with mothers and sisters.

Romantic Partners, Friends & Work Associates

Males in a romantic relationship reported a mean age of 37.2 (SD = 12.8, N = 120) while males not involved in a romantic relationship reported a mean age of 25.4 (SD = 8.98, N = 276), a 12-year difference that was significant, $t(172) = 9.16$, $p < .001$, assuming unequal variances. Similarly, females involved in a romantic relationship were significantly older than those who were not (*in a relationship*: M = 32.2, SD = 10.4, N = 417; *not in a relationship*: M = 25.9, SD = 9.84, N = 818), $t(797) = 10.2$, $p < .001$, assuming unequal variances. Thus, men and women who were not involved in a romantic relationship at the time of participation tended to be younger than those who were romantically affiliated

with someone. Because of this marked difference, incidence of grooming and touch are reported separately for those participants who were in a romantic relationship at the time of the study.

A visual inspection of Tables 6 and 7 show that across the board male respondents report touching and grooming romantic partners more often than they do male and female friends and work associates. Also, in every case, those men who did not report being involved in a romantic relationship at the time of the study reported a lower proportion of touching and grooming of a romantic partner compared to men who were romantically involved with someone.

Female respondents report similar patterns, but also show some important departures. For instance, in all cases, females in a romantic relationship at the time of the study report a higher proportion of touch and grooming of romantic partners compared with women who were single. And, in most cases, romantic partners tended to be involved in touching and grooming interactions more than friends and work colleagues. However, particular kinds of grooming (painting nails and performing manicures) were seen more among same-sex best friends than even romantic partners. Furthermore, female friends were more often involved than romantic partners in some types of touch and grooming, but only for those people who reported being single at the time. The types of touch that were seen more often among female friends than romantic partners (among single respondents) include hugs, pats, hair styling, tending to wounds, and tucking a tag back into a shirt.

Participants indicated they experienced the least touching with work colleagues. However, even among this category of person, hugs and pats are not rare, and a number of people report making clothing adjustments or performing some other casual grooming for a work associate.

Comparing Tables 4 and 6, we see that men report a higher proportion of grooming and touch for a romantic partner than their mother, with the exception of hugging. Single men were also more likely to report patting their mother than a romantic partner. Turning to female respondents, females report a higher proportion of touching and grooming for a romantic partner than their mother or any other kind of relationship. The exception is single females. They report a higher incidence of hugs, pats, and casually cleaning dirt or debris for their mother than a romantic partner. Single women also report hair styling and brow care more among their female friends and sisters. Single women report a higher incidence of wound care and clothing tag adjustment with a female friend than a romantic partner. However, currently romantically involved women show a higher incidence of reporting these with a romantic partner.

Preliminary Descriptive Analyses for Study 1 Data

All significance tests use the proportion of grooming each person reported experiencing averaged across all forms of grooming as the outcome variable unless otherwise noted. Also, the assumption of homogeneity of variances (according to Levene's test) was met for all tests, unless otherwise noted. Where it wasn't met, the unequal variances version of the test is reported instead.

To check on the possibility that people cared for primarily by their fathers as children might groom less often as adults, an independent samples t-test comparing grooming in father-reared versus mother-reared people was computed on the average proportion of grooming across all relationship types. There were no significant differences between the incidence of grooming for people raised by their mother and those raised by their father, $t(1484) = 0.60$, $p = .55$. The mean for mother-reared participants was 19.8 (SD = 12.2, N = 1376); the mean for father-reared participants was 19.0 (SD = 12.3, N = 110).

An independent samples t-test was conducted to check on the possibility that people with children may groom less than people without children. The outcome variable was the average proportion of grooming across all relationship types. It revealed no significant differences, $t(1627) = 0.40$, $p = 0.69$. However, people without children who also reported that they did not want to have children reported significantly fewer incidences of grooming across relationship types, $t(984) = 4.21$, $p < .001$, $\eta^2 = .02$. Respondents who did not want to have children someday reported significantly less grooming (M = 16.3, SD = 11.5, N = 162) than those who did (M = 20.6, SD = 12.1, N = 824)

Hypothesis 1

A series of paired-samples t-tests were computed to test the hypothesis that respondents would more often indicate grooming within romantic relationships than the other 7 kinds of relationships (4 familial, 2 friends, and one work). Tests were run

separately for people who reported having children, those without children who wanted to have them someday, and those who neither had nor wanted children. In every case, respondents reported more grooming of romantic partners than in all other relationships, but because there were no relationship categories for which grooming happened more in another kind of relationship in any of the three groups, the analysis was computed without regard to parental status. Similarly, separate analyses were run for people who indicated they were and were not involved in a romantic relationship at the time of the study, but again, there were no categories for which grooming happened more in other relationship types in the two groups separately, so the analysis was computed without regard to relationship status.

A Bonferroni correction was applied to reduce the possibility of Type I error due to the large number of tests performed (9 tests). The adjusted critical value is $p = .006$ for each test ($.05/9$). Grooming occurred most often in the context of romantic relationships ($M = 41.9$, $SD = 26.7$) and was significantly greater than for mothers ($M = 32.5$, $SD = 24.4$), $t(1630) = 12.1$, $p < .001$, $\eta^2 = .08$; sisters ($M = 26.7$, $SD = 24.0$, $N = 952$), $t(951) = 15.1$, $p < .001$, $\eta^2 = .19$; brothers ($M = 12.9$, $SD = 15.9$, $N = 1025$), $t(1024) = 33.7$, $p < .001$, $\eta^2 = .53$; fathers ($M = 13.3$, $SD = 15.1$), $t(1630) = 40.5$, $p < .001$, $\eta^2 = .50$; co-workers ($M = 6.23$, $SD = 9.70$), $t(1630) = 56.3$, $p < .001$, $\eta^2 = .66$; males' grooming male friends ($M = 11.7$, $SD = 15.8$, $N = 396$), $t(395) = 19.4$, $p < .001$, $\eta^2 = .49$; females' grooming female friends ($M = 28.4$, $SD = 26.3$, $N = 1235$), $t(1234) = 19.2$, $p < .001$, $\eta^2 = .23$; males' grooming female friends ($M = 14.4$, $SD = 17.8$, $N = 396$),

$t(395) = 17.2, p < .001, \eta^2 = .43$; and females' grooming male friends ($M = 14.5, SD = 17.3, N = 1235$), $t(1234) = 39.0, p < .001, \eta^2 = .55$. Thus hypothesis one was supported. Grooming most often occurs in the context of romantic relationships.

Post-hoc Tests

Two independent-samples t-tests were conducted to explore whether there were sex differences in grooming. A Bonferroni correction to the critical values was set at $p = .025 (.05/2)$ for the two post-hoc analyses. The assumption of equal variances was not met according to Levene's test, so the version assuming unequal variances are reported in both cases. Women ($M = 21.1, SD = 12.1, N = 1235$) recalled grooming more often than men ($M = 15.1, SD = 11.5, N = 396$) did, $t(697) = 9.04, p < .001$. The effect size was moderate, $\eta^2 = .10$. Sex differences in the incidence of grooming opposite sex people who were not romantic partners were also tested. A new dependent variable was computed for this purpose. For males, the DV is the average of the percentage scores for mother grooming, sister grooming and opposite sex best friend grooming. For females, the new dependent variable is the average of the percentage scores for father grooming, brother grooming and opposite sex best friend grooming. Interestingly, the test revealed significance in an unexpected direction. Men ($M = 16.3, SD = 14.6, N = 259$), were more likely to recall instances of grooming with an opposite sex person than women ($M = 13.9, SD = 12.6, N = 775$) were, $t(393) = 2.33, p = .021$. However, the effect size was small, $\eta^2 = .01$

CHAPTER IV

RESULTS: STUDY TWO

Hypothesis Two, Part One

Because males have been shown to perceive interactions as “sexual” more often than women (Abbey, 1982; Abbey & Melby, 1986; Haselton & Buss, 2000), separate 3x4 chi-square goodness-of-fit analyses were conducted separately for males and females to test the hypothesis that people depicted grooming would more often be identified as having a romantic relationship. Participants were asked to select one of four types of relationship (romantic, friends, family members, work colleagues) after reading the vignette. Relationship selection was equally distributed for males, $\chi^2(6, N = 468) = 11.0$, $p = .09$. For females, relationship selection was not equally distributed, $\chi^2(6, N = 1224) = 65.1$, $p < .001$. The effect size was large, Cramer’s $V = .16$.

Because the chi-square for males was nearly significant and the chi-square for females was significant, a series of post-hoc analyses for men and women were conducted to isolate which forms of grooming and/or vignette examples showed statistically significant differences for relationship identification. Assessments made of grooming vignettes were compared with those made for non-grooming vignettes. Also, because participants rarely identified the vignette actors as “work colleagues” or “family

members,” the dependent variable relationship choices were condensed to two choices: “romantic” and “non-romantic” (family member, work colleague, friend). Consequently, nonparametric 2x2 chi-square analyses were used for the post-hoc tests. A Bonferroni correction was applied due to the number of tests. An adjusted alpha of .012 (.05/4) was used for each post-hoc test for type of grooming, and where the outcome was significant, an adjusted alpha of .017 (.05/3) was used to determine which of the three grooming examples were involved.

Female Post-hoc Tests

For the grooming category labeled “non-traditional” (brushing away or cleaning off dirt, crumbs, insects, or other debris), actors in grooming vignettes were more often identified as being in a romantic relationship than actors in non-grooming vignettes, $\chi^2 (1, N = 503) = 11.2, p < .001$. 58% versus 39% of the people who read grooming and non-grooming vignettes, respectively, labeled the dyad “romantically involved.” The effect size was large, Cramer’s $V = .15$. Of the three examples of non-traditional grooming, only example two reached statistical significance. In example two (swatting away a bug), grooming actors were more often classified as romantic partners than non-grooming actors, $\chi^2 (1, N = 333) = 7.21, p = .007$. The effect size was large, Cramer’s $V = .15$. Example one of the non-traditional grooming vignettes was nearly significant, $\chi^2 (1, N = 88) = 3.99, p = .046$. Example three of the non-traditional grooming vignettes was non-significant, $\chi^2 (1, N = 81) = .009, p = .92$. Table 8 shows the observed frequencies and percentages for the non-traditional grooming vignettes for females.

For the grooming category labeled “traditional” (e.g. shampooing, shaving, hair cutting/styling, etc.) actors in grooming vignettes were significantly less often identified as being in a romantic relationship than actors in non-grooming vignettes, $\chi^2 (1, N = 309) = 16.7, p < .001$. Non-grooming actors in vignettes that depicted traditional grooming were more often classified as romantic partners (59%) than grooming actors (47%) in those vignettes. The effect size was large, Cramer’s $V = .23$. Of the three examples of traditional grooming, only example one reached statistical significance. In example one (hair cut) actors were less often classified as romantic partners than non-grooming actors, $\chi^2 (1, N = 137) = 6.54, p = .011$. The effect size was large, Cramer’s $V = .22$. Example two of the traditional grooming vignettes was non-significant, $\chi^2 (1, N = 98) = 1.21, p = .27$. Example three of the traditional grooming vignettes was non-significant, $\chi^2 (1, N = 71) = .851, p = .36$. Table 9 shows the observed frequencies and percentages for the traditional grooming vignettes for females.

For the grooming category labeled “mimicry” (massage, scratching, playing with hair, etc.), actors in grooming vignettes were significantly more often identified as being in a romantic relationship than actors in non-grooming vignettes, $\chi^2 (1, N = 209) = 8.21, p = .004$. Grooming actors in vignettes that depicted mimicry grooming were more often classified as romantic partners (82%) than non-grooming actors (62%) were. The effect size was large, Cramer’s $V = .20$. Of the three examples of grooming mimicry, only example three reached statistical significance. In example three (stroking a sore neck) grooming actors were more often classified as romantic partners than non-grooming

actors, $\chi^2(1, N = 73) = 19.8, p < .001$. The effect size was large, Cramer's $V = .52$. Example one of the grooming mimicry vignettes was non-significant, $\chi^2(1, N = 56) = .015, p = .90$. Example two of the grooming mimicry vignettes was also non-significant, $\chi^2(1, N = 80) = .287, p = .59$. Table 10 shows the observed frequencies and percentages for the mimicry grooming vignettes for females.

The chi-square test yielded non-significant results for blemish-focused grooming. Actors who groomed in those vignettes were not any more or less likely than non-grooming actors to be labeled romantic partners, $\chi^2(1, N = 203) = .052, p = .82$.

Male Post-hoc Tests

For the grooming category labeled "non-traditional" (brushing away or cleaning off dirt, crumbs, insects, or other debris), grooming actors were not any more or less often identified as being in a romantic relationship than non-grooming actors were, $\chi^2(1, N = 124) = 3.30, p = .069$. The "traditional" grooming category (shampooing, shaving, hair cutting/styling, etc.) also revealed non-significant results, $\chi^2(1, N = 113) = 3.04, p = .081$; as did "blemish-focused" grooming (squeezing pimples or blisters, tending to wounds, etc.), $\chi^2(1, N = 130) = .203, p = .653$.

However, actors depicted in "mimicry" grooming vignettes were more often labeled as romantically involved, $\chi^2(1, N = 101) = 7.91, p = .005$. Of the men who responded to a mimicry grooming (massage, scratching, playing with hair, etc.) vignette, 72% labeled the grooming dyad as "romantically involved" compared with 43% who labeled the non-grooming actors this way. The effect size was large, Cramer's $V = .28$.

Of the three examples of mimicry grooming, none of the post-hoc chi-square tests yielded significant results. Example one of the mimicry grooming vignettes did not reach significance, $\chi^2(1, N = 41) = 3.16, p = .075$. Example two of the mimicry grooming vignettes was non-significant, $\chi^2(1, N = 46) = .421, p = .52$, as was the third example, $\chi^2(1, N = 43) = .196, p = .66$. Table 11 shows the observed frequencies and percentages for the mimicry grooming vignettes for males.

Hypothesis Two, Part Two

The second part of hypothesis two states that if grooming plays a courtship role, then grooming actors will more likely be identified as sexually interested in the recipient of the touch. A 2(Sex)x3(Type of Touch) factorial ANOVA was performed, with contrasts, to determine whether the grooming actor was perceived to show more sexual interest in the dyad partner than the non-grooming actors. Type III Sums of Squares computation was used for all analyses because cells tended to have unbalanced numbers of participants. The dependent variable was the participants' summed response to the two questions about the level of sexual attraction the vignette actor displays toward the recipient of the action in the vignette. The assumption of homogeneity of variances (according to Levene's test) was met for all tests, including post-hocs, unless otherwise noted.

Significant main effects were found for both sex, $F(1, 1686) = 16.3, p < .001$; and type of touch, $F(2, 1686) = 14.7, p < .001$. The interaction was non-significant, $F(2, 1686) = 2.36, p = .095$. Across all vignettes, women were significantly more likely than

men to infer the depicted actors were sexually interested in the other dyad actor, females: $M = 10.3$, $SE = .12$; males: $M = 9.35$, $SE = .19$. Note that this difference is not in the predicted direction. The observed effect size was small, $\eta^2 = .010$. Contrasts performed on the Type of Touch main effect revealed that grooming ($M = 10.2$, $SE = .19$) and touch ($M = 10.2$, $SE = .22$) were both rated as more expressive of sexual interest than the control ($M = 8.97$, $SE = .18$), Scheffé mean difference, grooming = 1.24, $p < .001$; Scheffé mean difference, touch = 1.37, $p < .001$. However, the observed effect size was small, $\eta^2 = .017$. Grooming was not perceived to be significantly more sexual than touch, Scheffé mean difference = .136, $p = .88$.

Post-hoc Tests

A series of four 2x3 factorial ANOVAs with contrasts were conducted to explore whether there were differences in perception of grooming versus touch depending on the type of grooming involved. A Bonferroni correction to the critical values was set at $p = .0125$ ($.05/4$). The four tests yielded non-significant results on type of touch main effects and interactions for non-traditional grooming, traditional grooming, and blemish-focused grooming. Only grooming mimicry showed a significant main effect for type of touch, $F(2, 304) = 11.4$, $p < .001$. Mimicry grooming (e.g. massaging, stroking, scratching) indicated more sexual interest ($M = 10.8$, $SE = .38$) than an equivalent non-grooming touch ($M = 9.44$, $SE = .40$). Significant main effects for sex were found for traditional (e.g. shampooing, shaving, hair cutting) and mimicry grooming. These types of grooming were perceived to be sexual by women more so than by men, traditional: $F(1, 416) = 8.58$, $p = .004$; mimicry: $F(1, 304) = 6.98$, $p = .009$.

On closer examination of the three examples of grooming mimicry, using a Bonferroni corrected critical value of $p = .017 (.05/3)$, none of the three examples yielded a significant main effect for sex, so a one-way ANOVA was computed for each example of mimicry grooming. Grooming ($M = 10.2, SE = .66$) conveyed more sexual interest than touch ($M = 7.89, SE = .66$) in example one (massage back), $F(2,87) = 6.48, p = .002$. Grooming also conveyed more sexual interest ($M = 11.7, SE = .53$) than touch ($M = 9.00, SE = .64$) in example three (stroke back), $F(2,100) = 13.8, p < .001$. Back scratches were not perceived to be significantly more sexual than an equivalent non-grooming touch.

Hypothesis Three, Part One

Hypothesis three extends the previous one by further testing whether grooming plays a role during courtship using a different outcome variable: the summed response to the two questions about how flirtatious the actor is. Again, a $2(\text{Sex}) \times 3(\text{Type of Touch})$ factorial ANOVA was performed, with contrasts, to determine whether the grooming actor was perceived to be more flirtatious than the non-grooming actors. Type III Sums of Squares computation was used for all analyses because cells tended to have unbalanced numbers of participants. The main effect for sex and the interaction were both non-significant, sex: $F(1, 1686) = .23, p = .63$; interaction: $F(2, 1686) = 1.21, p = .30$. Consequently, a one-way ANOVA was computed for the effect of type of touch. A significant main effect was found for type of touch, $F(2, 1689) = 35.2, p < .001$. The effect size was small, $\eta^2 = .040$. The assumption of equal variance was not met for the ANOVA according to Levene's test, $F(5,1689) = 12.7, p < .001$, so the contrast for type

of touch uses the Games-Howell test that does not assume equal variances. According to the Games-Howell contrasts, grooming ($M = 7.21$, $SE = .19$) and touch ($M = 8.01$, $SE = .22$) were both perceived to be more flirtatious than scenarios not involving touch, ($M = 5.85$, $SE = .16$), grooming: mean difference = 1.36, $p < .001$; touch: mean difference = 2.16, $p < .001$. However, contrasting grooming and touch, grooming was found to be significantly less flirtatious than non-grooming touch, mean difference = .802, $p = .023$.

Post-hoc Tests

A series of four one-way ANOVAs with contrasts were conducted to explore whether there were differences in perception of grooming versus touch depending on the type of grooming involved. The assumption of equal variances was not met according to Levene's test so all contrasts used the Games-Howell test which assumes unequal variances. A Bonferroni correction to the critical values was set at $p = .0125$ ($.05/4$) for the four post-hoc analyses and their contrasts. Significant main effects for type of touch were found for all of the four forms of grooming, non-traditional: $F(2, 624) = 11.1$, $p < .001$, $\eta^2 = .034$; traditional: $F(2, 419) = 8.84$, $p < .001$, $\eta^2 = .040$; mimicry: $F(2, 307) = 18.5$, $p < .001$, $\eta^2 = .11$, and blemish-focused, $F(1, 330) = 10.8$, $p < .001$, $\eta^2 = .062$.

Post-hoc Contrasts: Non-traditional Grooming Vignettes

Actors in vignettes that depicted non-traditional forms of grooming (e.g. swatting away bugs, brushing off dirt, debris, etc.) were seen as significantly more flirtatious if they groomed or touched the other person. Grooming ($M = 6.63$, $SE = .33$) and non-grooming touch ($M = 7.25$, $SE = .38$) were both perceived to be more flirtatious than the non-touch control vignettes ($M = 5.47$, $SE = .19$), grooming: mean difference = 1.16, $p =$

.012; touch: mean difference = 1.78, $p < .001$. However, grooming was not significantly different from non-grooming touch, mean difference = .62, $p = .53$.

Post-hoc Contrasts: Traditional Grooming Vignettes

Actors in vignettes that depicted traditional forms of grooming (e.g. shampooing, hair cutting, shaving, etc.) were seen as significantly less flirtatious ($M = 8.64$, $SE = .36$) if they groomed rather than touched ($M = 11.2$, $SE = .48$) the other person, mean difference = 2.53, $p < .001$. However, there were no significant differences between the control ($M = 9.55$, $SE = .43$) and the vignettes that depicted grooming and non-grooming touch.

On closer examination of the three examples of traditional grooming, using a Bonferroni corrected critical value of $p = .017$ ($.05/3$), none of the three examples yielded a significant main effect for sex, so a one-way ANOVA was computed on type of touch for each example of traditional grooming. The assumption of equal variances was not met according to Levene's test so all contrasts used the Games-Howell test which assumes unequal variances. A significant difference was found only for example one (hair cutting), $F(2,178) = 16.5$, $p < .001$, $\eta^2 = .16$. Grooming ($M = 6.25$, $SE = .35$) was considered to be significantly less flirtatious than touch ($M = 9.79$, $SE = .63$) in this example, mean difference = 3.55, $p < .001$. Back scratches and back stroking were not perceived to be significantly less, nor more, flirtatious than an equivalent non-grooming touch.

Post-hoc Contrasts: Grooming Mimicry Vignettes

Actors in vignettes that depicted mimicry grooming (e.g. massaging, scratching, stroking, etc.) were perceived to be significantly more flirtatious if they groomed or

touched the other person. Grooming ($M = 7.91$, $SE = .36$) and non-grooming touch ($M = 6.80$, $SE = .36$) were both perceived to be more flirtatious than the non-touch control vignettes ($M = 4.79$, $SE = .37$), grooming: mean difference = 3.12, $p < .001$; touch: mean difference = 2.01, $p < .001$. However, grooming was not significantly different from non-grooming touch, mean difference = 1.11, $p = .11$.

Post-hoc Contrasts: Blemish-focused Grooming Vignettes

Actors in vignettes that depicted blemish-focused grooming (e.g. squeezing blisters or pimples, tending to wounds etc.) were not perceived to be significantly more flirtatious if they groomed the other person. Grooming ($M = 5.06$, $SE = .31$) was not significantly different from non-grooming touch ($M = 6.36$, $SE = .39$), mean difference = 1.30, $p = .043$. Grooming actors were also not seen as any more or less flirtatious than actors in the control ($M = 4.06$, $SE = .31$), mean difference = .99, $p = .049$. Only actors who touched in a non-grooming way were considered more flirtatious than those who did not touch at all, mean difference = 2.30, $p < .001$.

Hypothesis Three, Part Two

The second part of hypothesis three deals with the perceived stage of relationship of the people depicted in the vignette in order to determine whether grooming is recognized to be part of a script for courtship. Separate nonparametric chi-squares were computed for male and female responses to the forced choice item: If you think these people might be romantically involved, do you think they are more likely to have recently started dating each other or have an established relationship that has lasted for a long

time? Of those who identified the depicted dyad was a romantically involved couple, most (78%) thought the depicted dyads represented established couples in a long term-relationship as opposed to being couples who had recently started dating (22%). However, men were not statistically more likely to label the grooming dyads an established couple compared with the non-grooming dyads, $\chi^2 (1, N = 250) = 1.98, p = .16$. 83% of grooming dyads were labeled an established couple in a long-term relationship compared with 78% of non-grooming dyads. Women, however, were statistically more likely to label the grooming dyads as an established couple compared to non-grooming dyads, $\chi^2 (1, N = 627) = 13.7, p < .001$. 87% of grooming dyads were thought to represent an established couple compared with 74% of non-grooming dyads. The effect size was large, Cramer's $V = .15$.

Hypothesis Four

The fourth hypothesis further explores the possibility that grooming is a psychologically different form of touch that plays a role in pairbonding. If so, then actors who groom in vignettes should be rated as more caring/in love, more committed, and more likely to be a good parent compared to actors who are shown touching or performing some other act that does not involve touch.

Three separate 2(Sex)x3(Type of Touch) factorial ANOVAs were performed along with contrasts. Type III Sums of Squares computation was used for all analyses because cells tended to have unbalanced numbers of participants. The dependent variables were the participants' summed responses to each of the two questions about the

level of care/love, commitment, and parenting ability displayed by the vignette actor toward the recipient of the action in the vignettes. The assumption of homogeneity of variances (according to Levene's test) was met for all tests, including post-hocs, unless otherwise noted. When the assumption was not met, Games-Howell tests were used for contrasts instead of Scheffé's test because the Games-Howell test does not assume equal variances.

For level of care/love shown, significant main effects were found for both sex, $F(1, 1686) = 10.1, p < .001$; and type of touch, $F(2, 1686) = 51.0, p < .001$. The interaction was non-significant. Women perceived more love and caring ($M = 12.1, SE = .10$) in the vignettes than men did ($M = 11.6, SE = .15$). The effect size for sex was small, $\eta^2 = .006$. The effect size for type of touch was small to moderate, $\eta^2 = .057$. Contrasts revealed that grooming ($M = 12.7, SE = .15$) and touch ($M = 12.2, SE = .17$) conveyed more caring and love than the control ($M = 10.7, SE = .14$), grooming: mean difference = 2.15, $p < .001$; touch: mean difference = 1.52, $p < .001$. Moreover, grooming demonstrated significantly more love and caring than touch, mean difference = .63, $p = .013$.

For level of commitment displayed by vignette actors, significant main effects were found for both sex, $F(1, 1686) = 73.2, p = .007$; and type of touch, $F(2, 1686) = 53.0, p < .001$. The interaction was non-significant. Women perceived more commitment ($M = 12.9, SE = .10$) in the vignettes than men did ($M = 12.5, SE = .15$). The effect size for sex was very small, $\eta^2 = .004$. The effect size for type of touch was small to moderate, $\eta^2 = .059$. Contrasts revealed that grooming actors ($M = 13.7, SE = .15$) and

touching actors ($M = 12.8$, $SE = .17$) conveyed more commitment than the non-touching control actors ($M = 11.6$, $SD = .14$), grooming: mean difference = 2.08, $p < .001$; touch: mean difference = 1.18, $p < .001$. Moreover, grooming demonstrated significantly more commitment than touch, mean difference = .90, $p < .001$.

For the level of parenting ability displayed by vignette actors, only the main effect for type of touch was significant, $F(2, 1686) = 57.4$, $p < .001$, $\eta^2 = .064$. The main effect for sex and the interaction were both non-significant. Therefore, a one-way ANOVA was computed for the type of touch main effect on perceptions of parenting ability. This was significant, $F(2, 1689) = 92.3$, $p < .001$, $\eta^2 = .099$. Contrasts revealed that grooming actors ($M = 13.1$, $SE = .12$) and touching actors ($M = 11.8$, $SE = .14$) were both perceived to be better potential parents than the control actors ($M = 10.9$, $SE = .10$), grooming: mean difference = 2.17, $p < .001$; touch: mean difference = .88, $p < .001$. Moreover, grooming demonstrated significantly more parenting ability than touch, mean difference = 1.29, $p < .001$.

Post-hoc Tests: CARING/IN LOVE

To isolate in which of the four types of grooming there were sex differences in the perception of care/love and also differences in the perception of grooming versus touch, a series of 2(Sex)x3(Type of Touch) ANOVA were computed along with contrasts. A Bonferroni correction to the critical values was set at $p = .0125$ ($.05/4$) to correct for the elevated risk of Type 1 error when multiple tests (four) are performed. Sex differences in the perception of caring/love were significant only for traditional forms of grooming. Women thought actors in those vignettes showed more love and care than men did, $F(1,$

416) = 6.99, $p = .009$. The effect size for sex was small, $\eta^2 = .017$. There were no sex differences in the perception of care/love in the other forms of grooming. All four interactions were also non-significant. Of the four types of grooming depicted in the vignettes (non-traditional, traditional, mimicry, and blemish-focused), all tests performed to determine whether grooming was seen as more caring than non-grooming touch turned out to be non-significant except for blemish-focused grooming, $F(2, 327) = 12.5, p < .001$. For all forms of grooming, grooming was seen as more caring and indicative of love than non-grooming touch. However, only blemish-focused forms of grooming ($M = 13.0, SE = .28$) were perceived to be significantly more caring than touch ($M = 11.7, SE = .34$). The effect size was small to moderate, $\eta^2 = .071$. Differences between touching and grooming in the three examples of blemish-focused grooming were examined using a series of one-way ANOVAs with contrasts. A Bonferroni corrected critical value of $p = .017 (.05/3)$ was used for each test. Results reached statistical significance only for example one (pimple squeezing), $F(2, 118) = 10.7, p < .001$. The effect size was large, $\eta^2 = .15$. Grooming ($M = 13.0, SE = .51$) in this scenario was viewed as more demonstrative of caring and love than non-grooming touch ($M = 9.74, SE = .59$).

Post-hoc Tests: COMMITMENT

A set of four 2(Sex)x3(Type of Touch) ANOVAs were performed along with contrasts to explore in which of the four types of grooming there were sex differences in the perception of commitment and also differences in the perception of grooming versus touch. A Bonferroni correction to the critical values was set at $p = .0125 (.05/4)$ to correct for the elevated risk of Type 1 error when multiple tests (four) are performed. Sex

differences in the perception of commitment were significant only for traditional forms of grooming. Women thought actors in those vignettes showed more commitment than men did, $F(1, 416) = 10.0, p = .002$. The effect size for sex was small, $\eta^2 = .023$. There were no sex differences in the perception of commitment in the other forms of grooming. All four interactions were also non-significant. Of the four types of grooming depicted in the vignettes (non-traditional, traditional, mimicry, and blemish-focused), all tests performed to determine whether grooming was seen as more committed than non-grooming touch turned out to be non-significant except for blemish-focused grooming, $F(2, 327) = 10.1, p < .001$. For all forms of grooming, grooming was seen as more committed than non-grooming touch. However, only blemish-focused forms of grooming ($M = 13.5, SE = .29$) were perceived to be significantly more expressive of commitment than touch ($M = 12.2, SE = .35$). The effect size was small to moderate, $\eta^2 = .058$. Differences between touching and grooming in the three examples of blemish-focused grooming were examined using a series of one-way ANOVAs with contrasts. A Bonferroni corrected critical value of $p = .017 (.05/3)$ was used for each test. Results reached statistical significance only for example one (pimple squeezing), $F(2, 118) = 13.4, p < .001$. The effect size was large, $\eta^2 = .18$. Grooming ($M = 13.6, SE = .51$) in this scenario was viewed as more demonstrative of commitment than non-grooming touch ($M = 10.2, SE = .59$).

Post-hoc Tests: PARENTING

To investigate whether there were differences in perception depending on the type of grooming involved for the outcome variable “potential parenting ability,” four one-way post-hoc ANOVAs were computed along with contrasts. This test was chosen because

hypothesis testing showed that there was not a significant main effect for sex of person responding to the vignettes. A Bonferroni correction to the critical values was set at $p = .0125$ ($.05/4$) to correct for the elevated risk of Type 1 error when multiple tests (four) are performed.

All tests showed significant differences between grooming and touch in the perception of parenting ability for all of the forms of grooming. Non-traditional forms of grooming signaled greater parenting skill than non-grooming touch, $F(2, 624) = 32.5$, $p < .001$, $\eta^2 = .094$; as did traditional grooming, $F(2, 419) = 15.5$, $p < .001$, $\eta^2 = .069$; grooming mimicry, $F(2, 307) = 30.3$, $p < .001$, $\eta^2 = .165$; and blemish-focused grooming, $F(2, 330) = 21.5$, $p < .001$, $\eta^2 = .115$.

Given that all four forms of grooming turned out to signal significantly greater parenting ability than non-grooming touch (both of which were also significantly different from the control for all forms of grooming), another set of one-way ANOVAs were conducted, with contrasts, to determine in which vignettes the differences between grooming and non-grooming touch were apparent for each of the four forms of grooming. A Bonferroni corrected critical value of $p = .017$ ($.05/3$) was used.

There were no significant differences in perceptions of parenting ability between grooming and touching in any of the examples of non-traditional grooming and traditional grooming. For mimicry grooming (massaging, scratching, etc), grooming ($M = 12.8$, $SE = .44$) was rated as significantly more indicative of parenting ability than non-grooming touch ($M = 10.8$, $SE = .53$) only for the third vignette example (stroking sore neck muscles), mean difference = $.90$, $p = .016$. Grooming was also considered to be more

parental than non-grooming touch for two of the examples of blemish-focused grooming: example one (squeezing a pimple), mean difference = 2.55, $p = .001$; grooming: $M = 12.7$, $SE = .44$; touch: $M = 10.1$, $SE = .51$; and example three (removing a sliver), mean difference = 1.95, $p = .012$; grooming: $M = 13.6$, $SE = .34$; touch: $M = 11.7$, $SE = .55$.

Hypothesis Five

Hypothesis five investigates whether grooming is a tie-sign used during courtship and pairbonding in real life. If respondents answered “yes” to the question “Has something like this ever happened to you?” after reading and answering the questions associated with the vignettes, they were asked to describe the interaction and identify the relationship they had with the other person. Only the twelve vignettes featuring grooming were included. Answers were coded into the following categories: romantic partner, best friend, family member, and other (work colleagues and strangers were identified). However, family members, work colleagues, and strangers were so infrequently identified that all non-romantic relationships were lumped into the same group. Thus, responses were coded into two groups: romantic relationships and non-romantic relationships. A nonparametric chi-square was used to determine whether the proportion of relationships identified as romantic when in grooming situations differed significantly from .5. A one-way table was used because only the people who identified they had experienced a similar grooming interaction were asked with whom they had the experience. Males and females were analyzed separately. The test yielded non-significant results for both male and female participants, *males*: $\chi^2 (1, N = 118) = .54$, p

= .46; *females*: χ^2 (1, N = 241) = 2.59, p = .11. 53% of men and 55% of women reported the other person involved in the grooming interaction was a romantic partner. For the rest, the person was not a romantic partner. Post-hoc tests for males and females who answered yes to the experimental manipulation check question about whether touch occurred in the vignette also yielded non-significant results. 91% of men and 86% of women correctly identified that a touch had occurred in the grooming vignettes.

Table 12 summarizes the results of all hypothesis tests.

CHAPTER V

DISCUSSION

The incidence of grooming and touch reported by survey respondents suggests at least two broad conclusions. First, people recall grooming in a wide variety of relationships including family members, friends, work colleagues, and importantly, romantic partners. Second, grooming is recalled most often in the context of romantic relationships. The hypothesis that people would more often indicate having groomed within romantic relationships than all of the other kinds of relationships was confirmed and the effect sizes were generally quite large. This lends some support to the theory that grooming is a specialized form of touch that plays a role during courtship and/or pairbonding.

The results of study two clarify these putative roles of grooming in human relationships by experimentally manipulating variables in vignettes to determine whether grooming signals information relevant in romantic relationships. Two aspects were central: courtship (sexual interest, flirtation) and pairbonding (caring/love, commitment, parenting potential).

Grooming As a Tie-Sign

Vignette dyads involved in a grooming interaction were not significantly more likely to be labeled a romantic couple by men, though that was often the relationship identified. The only form of grooming that men did take to be a sign that the dyad had a romantic relation was mimicry grooming (i.e. massage, stroking, and back scratching), and the effect size was large for that type of grooming. Women, however, were more likely to consider a grooming dyad to be a romantic couple than those dyads who touched instead. The effect sizes were all large. Grooming appears to be a tie-sign primarily to women. Men do not appear think grooming is a tie-sign (except for mimicry grooming).

It should be pointed out that women were assessing men touching women while men assessed women touching men. That men did not generally assume a romantic relationship when a woman touched a man could be attributed to women having greater freedom to touch an opposite sex person in non-romantic relationships. Unfortunately this is an area without a lot of research. Only one study (Major et al., 1990) is even marginally relevant here. They found that at least in public, non-intimate settings, females were more often the recipients of touch from men than vice versa in mixed-sex dyads. However, they studied non-reciprocal touch in public settings and did not measure the type of relationship, so it is impossible to know whether this finding applies equally to reciprocal touch that occurs in private in non-romantic relationships.

Interestingly, the results of study one could shed some light on this issue. If post-hoc analyses indicated that women groom men more often than men groom women non-romantically, then we could reason that men did not attach tie-sign significance to women

grooming men because women groom a variety of men non-romantically. However, post-hoc analyses revealed that although women recall more instances of grooming than men do, when it comes to opposite sex-grooming in non-romantic relationships (the kind men thought was happening in the vignettes), men actually recall more instances of grooming with women than women do with men. If the retrospective data from study one represents the relative frequency of actual grooming in the relationships studied, and there is little reason to be confident of this, then we can infer that men groom women more often in non-romantic contexts than women do with men. We can alternately infer that non-romantic opposite-sex grooming is more salient to men than women when it happens. Thus, we cannot infer that men failed to make relationship assessments in these vignettes because women touch a variety of men without it being romantic.

Some other explanation is needed. Haselton and Buss's Error Management Theory (2000) would predict that men would have failed to infer a romantic/sexual relationship in the vignettes because a failure to interpret a dyad as romantically involved may be advantageous to them for spotting mating opportunities. Although EMT did not test sex differences in the interpretation of tie-signs, the error should apply to that type of signal as well because tie-signs send information about the availability of the members of a dyad. According to the theory, males would have more to lose reproductively for failing to identify a potential sex partner's availability than females would. This theory does not explain why men thought mimicry grooming (massages, stroking, back scratches) was the only kind of grooming that indicated a romantic relationship.

Nguyen et al.'s study (1975) suggests that grooming touches might be more likely than other touches to be rated as loving and sexual; however, their study also suggests this might only apply to the "mimicry" category of grooming. If a touch is perceived to be "loving" and "sexual," then it stands to reason that its occurrence would also tend to signify the relationship is a romantic one. Both men and women thought actors in the massage vignette had a romantic relationship. Turning to the perception of the massage in terms of the sexual interest and love it conveyed, men and women did not perceive it to be more indicative of love compared with a touch on the back. They did, however, perceive it to be more indicative of sexual interest than the touch. The fact that the setting was in a bedroom cannot explain the tendency for men and women to impute relationship significance to the act because the touch and the control were also set in the bedroom. It also cannot be said that people thought the massage was a tie-sign because they thought the dyad would stay in bed and proceed to sexual activity, a not unreasonable expectation; the massage vignettes say that the actor gets up to wash the dishes after the touch.

Like mutual feeding, mutual grooming may be a strong tie-sign. However, this appears to be the case mostly for women and for particular kinds of grooming. For example, women generally made romantic relationship attributions to grooming dyads and did so with very large effect sizes for all of the forms of grooming except blemish-focused grooming. Post-hoc analyses revealed that this was true especially for particular vignettes featuring particular kinds of grooming, namely massage and an example of non-traditional grooming that involved a man swatting a bug away from a woman's face. The effect size

was large for this situation. The reason women may have considered the bug-swatting to be a tie-sign can be attributed to an error made in writing the vignette. With 72 different vignettes to keep track of, making sure that all touches were parallel with respect to location of the touch was challenging. Unfortunately the bug-swatting example was the only set of vignettes without a parallel touch; the grooming touch occurred on face, but the non-grooming touch happened on back. This mistake was particularly unfortunate because this vignette also accounts for 66% of the responses to the non-traditional vignettes. It had 334 responses of the 503 because when the target number of female responses was reached for this vignette (which happened quickly) it was allowed to sit and collect more responses rather than having female respondents get redirected a different vignette. In retrospect, I would have rather redirected female respondents to other vignettes to balance out cells much sooner in the data collection process. Type III Sums of Squares computation adjusts for unequal cell numbers, so at least statistically speaking, the heavily unbalanced cell numbers should not have had a great impact on the overall significance test.

An important caveat to the rule that women think grooming is a tie-sign regards their perception of traditional grooming. Of this form of grooming and this one only, women thought dyads that touched were more likely to be romantically involved than those who groomed. The effect size was large. Post-hoc tests showed that the difference was most salient in the vignette that depicted a hair cut. This result is quite puzzling. In retrospect, we might have predicted that in order for woman to allow a man to cut her hair, even if it was only a trim in the back (as depicted in the vignette), he would either

have to be stereotypically gay, particularly talented (and therefore stereotypically gay), or a very trusted straight man. Perhaps women who read this vignette assumed the man was homosexual and therefore not eligible to be a romantic partner to the woman in the vignette. Alternately the hair cut, a “trim in the back,” may be viewed as less “intimate” than a touch in nearly the same location (back of the head).

On the subject of whether grooming is a tie-sign in real-life, there is not a truly convenient and accurate way to find out. This study attempted to achieve an answer by asking people to indicate their relationship with someone they had identified having a grooming experience with that was similar to those depicted in the grooming vignettes. If people more often identified a romantic partner than a non-romantic one, this would taken as circumstantial evidence that grooming might operate as a real-life tie-sign. In retrospect, this was a ridiculous proposal. The very function of a tie-sign is to indicate that a dyad is a romantically attached couple. Asking people to identify who comes to mind when they think of their own grooming experiences does not assess the utility of grooming as a tie-sign. In any case, even if it did, a romantic partner was not named more often than a non-romantic partner in real-life recollections of grooming interactions. A better way to assess the utility of grooming as a tie-sign in real life is identified later on in the section on future studies.

Is Grooming A Courtship Signal?

Two outcome variables are relevant here: how sexually interested and also how flirtatious with the other person the actor seemed to be. Contrary to the predictions of Error Management Theory (EMT), men did not perceive the actors to be more sexually

interested or more flirtatious than women perceived them to be. Men did not over-perceive sexual intent in the vignettes, rather, it was actually women who perceived greater sexual intent in them. This was limited to perceptions of sexual intent and not flirtatiousness. Women and men did not differ in how flirtatious they thought the actors in the vignettes were. This should not be taken as evidence against EMT because unlike Haselton & Buss's (2000) test of EMT, this study did not ask participants to assume the actor depicted in the vignettes could be a potential romantic partner. Rather than refuting EMT, the lack of greater male perception of sexual intent can be attributed to the context not being relevant to testing EMT theory. On the other hand, Abbey's line of research (Abbey, 1982; Abbey & Melby, 1986; Abbey & Harnish, 1995), all of which used stimuli analogous to the stimuli used here, would also have predicted that men would infer greater sexual interest from female actors than women would. Another important difference exists between these study designs and the one used here. Abbey's and Haselton & Buss's studies compare the difference between men evaluating women and women evaluating women. This study compares men evaluating women and women evaluating men. This could be the reason why the predicted main effect was not found in the predicted direction. In any case, whatever the source of the effect, it was small ($\eta^2 = .01$).

Regardless of whether men and women rated the actors differently in terms of the courtship signals they sent, the results of this experiment demonstrate that grooming communicates signals relevant to courtship. Both grooming and touch were perceived to be more expressive of sexual interest and also more flirtatious to third-party viewers than

the control condition in which no touch occurred. However, because grooming was not perceived to be any more expressive of sexual desire and was actually perceived to be less flirtatious than non-grooming touch, grooming appears to be just another form of touch when it comes to sexual courtship and may actually be less effective in courtship than non-grooming touch in some cases, notably hair cuts.

There are some exceptions though. Looking specifically at the four forms of grooming, mimicry, specifically a back massage and a stroke on the back of the neck, was perceived to be more expressive of sexual intent than non-grooming touch. Mimicry was also perceived to be more flirtatious than not touching, but there were no differences between the perceived flirtatiousness of grooming and non-grooming touch. This was true for non-traditional grooming as well. Blemish-focused grooming neither indicated sexual interest nor flirtation compared with the control. It was proposed that in general, grooming is part of a courtship script and functions to hasten sexual activity. In other words, grooming was theorized to be flirtatious and a form of foreplay.

While this study shows that grooming and touch generally do express more sexual desire and flirtatiousness than not touching, only the forms of grooming that are massage (e.g. a back massage and stroking the back of the neck) appear to constitute a more effective form of foreplay than analogous non-grooming touches. For all other forms of grooming, touch appears to be just as effective as grooming. Moreover, traditional forms of grooming (in particular hair cutting) may actually kill any incipient passion that might be budding in a dyad because it is perceived to be less flirtatious. Whether in practice massage is a better form of foreplay than an analogous touch remains to be seen, but it is

likely given the theory that expressions of investment should more successfully precipitate sexual activity. Massage involves a greater level of investment because it theoretically requires more attention, skill, and effort than analogous touches. It is also likely to be more effective because it could be more pleasurable than other forms of grooming.

Grooming was theorized to be effective as foreplay because it constitutes a form of caregiving and investment that when performed appeals to people on an instinctive level because it suggests the person will be a good mate choice. However, the only form of grooming that signals more sexual desire than touch is grooming mimicry. If that form of grooming is also the most pleasurable and/or arousing form of grooming, then it is more likely that massaging forms of grooming would be effective foreplay because they are pleasurable and arousing, not because they signal investment. Any stimulus that creates pleasure or elevates arousal could strengthen the perception that a potential mate is appealing. Some classic research in the social psychology of attraction supports this idea. Dutton and Aron (1974) found that men who had been exposed to an anxiety-provoking situation (crossing an unstable bridge high over a canyon) were more likely than those who had not been to think that a woman who greeted them at the end of the bridge was sexually interested in them. To the extent that grooming is pleasurable and arousing, it should stimulate sexual desire. There could be individual differences with regard to what kind of grooming is considered pleasurable or sexually arousing, and these may very well be dependent on the context and who performs the grooming. In the wrong context or

from the wrong person, even massage could be highly unpleasant and not at all sexually appealing.

The role of grooming in courtship was also assessed in this experiment by asking people to identify the stage of the relationship of any grooming dyads they identified as romantic partners. If grooming primarily plays a role in courtship and early stages of relationship formation rather than in attachment and pairbonding in later stages, then grooming dyads should have been more often identified as recently romantically involved than an established couple. This was not supported by the data. Men did not make relationship stage attributions for the grooming dyads when they considered them to be romantically involved. Women did, however, but they tended to identify the dyad as an established couple. Grooming may very well be an activity that women associate with pairbonding but men do not. Women are more likely than men to assume a grooming couple is an “old married couple” which makes sense if the grooming plays a role in pairbonding, another proposed function of it. Why women perceive grooming to be a pairbonding activity but men do not remains an open question, but I would venture a guess that grooming might be a more important or salient signal of pairbonding to women than men. But if so, why?

Error Management Theory (Haselton & Buss, 2000) suggests that women would be expected to err on the side of over-inferring the depth of a dyad’s pairbond because doing so would save a woman the risk of infiltrating a mateship only to wind up pregnant and without a committed partner when she later realizes that the couple was more committed than they appeared to be. EMT also suggests that a man might play down the

level of commitment and the degree of pairbonding he perceives in a dyad because doing so would be a relatively more advantageous error than over-perceiving the depth of a couple's pair bond in the event that he wanted to infiltrate the relationship and poach the other man's mate. If a man over-perceives the depth of the dyad's bond, then he might give up and move on without even trying. He would risk missing a potential mating opportunity. However, if he under-perceived the depth of the bond, he'd lose only the time spent flirting with the person, but potentially gain an opportunity to mate if it turned out he was right about the dyad's tenuous bond. One shortcoming of EMT is the lack of emphasis it places on the risk men take when pursuing already mated people. While passing a live opportunity by is surely a cost, so is the cost associated with enraging the jealousy of the person's mate. If a potential mate poacher under-perceives the bond of a mated pair, he risks running afoul of the person's mate, a potentially deadly mistake. EMT does not address the difference between making inferences about mated versus unmated people. Future communication research should look at the insider/outsider perspective in making inferences about a potential partner's intentions. The research presented here suggests that at least some features of error management might apply to the assessment of a dyad in which the rater is not personally involved.

Regardless of why there is a sex difference in the perception of the relationship stage of a grooming dyad, the findings about grooming in courtship when taken together suggest that grooming plays little role in courtship. However, grooming does play a role in pairbonding.

Does Grooming Play A Role in Pairbonding?

With regard to pairbonding, grooming and touch were both perceived to express more caring, love, commitment, and parenting skill than the control. But more importantly, grooming was more indicative of those qualities than was touch. Therefore, grooming is a better signal of qualities important to attachment than is touch. Mutual grooming is widely regarded to promote bonding among primates and has been called the social cement of the primate world (Jolly, 1972). According to human ethologist Eibl-Eibesfeldt, "Social body care is one of the most deeply rooted bonding rituals" (1989, p. 436). But why would grooming promote attachment?

Grooming is a caregiving behavior that parents regularly perform in the course of childcare. According to Eibl-Eibesfeldt, behaviors likely to promote pairbonding include caregiving activities (1989). Although he did not articulate a theory about why caregiving promotes attachment, Eibl-Eibesfeldt observed that these behaviors occur during courtship and proposed that they occur because humans have evolved to respond to childlike appeals for care regardless of whether they come from children or adults. The need for care essentially acts as a releaser for the adult's caregiving. Although we might consider parent-child grooming to be adaptive and even an adaptation, it would be a mistake to assume that adult-adult grooming is an adaptation as well. If adult-adult grooming is a product of evolutionary forces, it is more likely to be an exaptation (Gould & Vrba, 1982) from infant attachment for maintaining adult relationships in the form of pairbonds. Eibl-Eibesfeldt proposes that affectionate behavior in general occurs between adults wherever brood care behavior exists (1989). Thus affectionate behavior in the form

of grooming can be expected to occur among humans, too, especially among human cultures where mothers receive help caring for their children. Still unarticulated is the reason why caregiving/grooming promotes attachment.

Allo-grooming is “deeply rooted in our animal past and is based on a set of motivational mechanisms which overlap with parental care and sexual behavior,” says Schiefenhövel, a human ethologist (1997, p. 73). This overlap between courtship on one hand and caregiving/parenting behavior on the other hand arises because behaviors that signal parental skill or investment could reasonably be expected to facilitate courtship when two criteria are met: 1) individuals exercise mate choice and 2) individuals prefer mates who will invest in offspring by actively caring for them. If an individual desires caregiving investment from a potential mate but cannot actually observe how he or she cares for children, he or she can at least estimate the level of parental care the potential mate might make by offering himself or herself as an object of care. People can thus be stand-in children to judge how the person will care for their children when they have them.

This study demonstrates that both men and women believe that people who groom will be better parents. Grooming is a form of parental investment and when directed at another person, whether a mate, friend, or family member, signals that the person will be a good caregiver. To the extent that people expect their mate to be a good parent, we can expect them to be attuned to the quality of caregiving their mate provides in the form of grooming, even if it occurs at a relatively subconscious level. Grooming promotes attachment because people think grooming signals parental investment.

Moreover, grooming promotes attachment because humans make a considerable amount of parental investment in their offspring, the most of any primate. For that reason, grooming should be a more important contribution to pairbonding for humans than any other species of primate, including other socially monogamous species like gibbons and titi monkeys.

Grooming also likely promotes attachment because it communicates commitment, caring, and love. According to Simpson (1991), grooming communicates the promise of a future commitment to the grooming partner. Individuals who groom their mates or are groomed by them should be more committed to the relationship. Although this study did not test whether that is the case, it does demonstrate that people who groom their mates signal their commitment by doing so. People may prefer to establish meaningful, long-lasting bonds with people they know they can rely on and who love and care for them emotionally. To the extent that is the case, grooming is likely to be one ingredient for establishing lasting bonds.

Looking at specific forms that grooming may take, one, blemish-focused, stands out as particularly noteworthy because it is the only form of grooming that was uniquely indicative of all three variables relevant to pairbonding. Moreover, this was the case for only one particular kind of blemish-focused grooming: squeezing a pimple. Not to make a mountain out of a puss hill, but this does provide an occasion to think about grooming as a costly signal. According to costly signaling theory, in order for grooming to be an honest signal it must be costly (Zahavi, 1975). Of all of the forms of grooming used in this experiment, pimple squeezing is arguably the most costly in the classic use of the

term. When pimples are squeezed, puss comes out. Puss, like any other body fluid, is considered to be disgusting around the world (Curtis & Biran, 2001). Puss is disgusting because it is a potential disease vector. Curtis and Biran argue that humans evolved disgust and behavioral avoidance of substances that trigger it in order to reduce the possibility of getting sick. Grooming someone in a way that causes one self to come into contact with a potentially contaminating substance is the definition of costly.

Evidence that the cost of grooming matters to humans is provided by Nelson (2006) who found that self-reported investment in a romantic partner was associated with grooming that partner more often in costly ways but was not associated with grooming a partner in non-costly ways. Additionally, people who preferred an unrestricted mating strategy characterized by less investment in a partner also reported significantly less costly grooming even though they were also less sensitive to disgust and therefore had less psychological barrier to performing costly grooming. People who reported more sensitivity to disgust as measured by Haidt, McCauley, and Rozin's scale (1993) and who also reported more investment in their romantic partner were also more likely to report grooming that person in costly ways.

This study suggests that people who are willing to groom a romantic partner in a costly way, whether it is squeezing a pimple, cleaning a wound, or wiping up urine or feces, are also likely to be more invested in the person as well as more in love and committed to his or her well-being than someone who is not willing to provide this kind of care. Thus, the acid test of true love and commitment might very well be whether a person is willing to perform such costly forms of grooming.

By focusing on grooming within romantic partners I do not mean to imply that grooming is only relevant to forming bonds within that type of relationship. Grooming is also likely to promote attachment in non-romantic relationships for the same reasons it promotes attachment in romantic ones. We cannot be certain that humans have always relied on a male partner to provide the extra parental care human infants require. Ancestral humans may have relied on family members and friends to provide the extra care. Furthermore, this study demonstrates that it is not necessary for people to assume the person is a romantic partner in order for them to perceive that grooming signals parental skill, care, love, and commitment.

Finally, the effect sizes for squeezing pimples on the perception of care/love, commitment and parenting skill are generally large which suggests that this particular kind of grooming might be especially involved in pairbonding. Future studies will have to investigate whether this is the actually the case. The effect sizes of the other forms of grooming on these elements of pairbonding range from moderate to large. Even if grooming had only trivial but still statistically significant effects on the perception of these important qualities, grooming might remain important in practice to people with anxious attachment styles in particular. This is possible because Fraley, Niedenthal, Marks, Brumbaugh & Vicary (2006) report that anxiously attached people tend to make abrupt decisions about the meaning of nonverbal communication. They can be viewed as being hyperactive in their response to the behavior of their romantic partners, which suggests they might be more likely than more securely attached people to assign meaning to relatively subtle behaviors.

Theories of Grooming in Non-Romantic Relationships

The fact that grooming still occurs in non-romantic relationships (with mothers and sisters the next most frequently involved dyads) deserves an explanation. Clearly the meaning and purpose of grooming is not limited to romantic pairbonding. Although theories of grooming in romantic relationships can also apply to non-romantic ones, two theories from evolutionary biology can explain why grooming occurs in general: kin selection (Hamilton, 1964) and reciprocal altruism (Trivers, 1971).

Hamilton's rule states that a kin selected trait, such as grooming, can increase in frequency if the cost (in individual fitness) to the bearer of it is less than the benefit (in fitness) to his or her kin, weighted by their degree of genetic relatedness. Kin selection theory can be invoked to explain a wide variety of behaviors from parental care of offspring to cooperation and altruism. Kin selection theory, as its name advertises, applies only to apparently altruistic behavior between relatives.

Reciprocal altruism, on the other hand, does not require individuals to be genetically related. Trivers' theory of reciprocal altruism can explain grooming among friends and co-workers. According to his theory, individuals will behave altruistically to those who have previously helped them. In order for the behavior to be considered altruistic, the benefit to the recipient must outweigh the cost to the performer, just as with kin selection. However, unlike with kin selection, the benefit must be repaid more often than not. Reciprocal altruism can be described as a tit-for-tat exchange of benefits, a sort of "I'll scratch your back if you scratch mine." The very presence of this metaphor for reciprocal altruism in our language suggests that the behavior is important to humans.

The reciprocal exchange of grooming benefits has been demonstrated in numerous species from vampire bats (Wilkinson, 1986) and impalas (Mooring & Hart, 1997) to primates (Seyfarth & Cheney, 1984). Mutual grooming is also reciprocal in humans (Nelson, 2001).

In order for kin selection and reciprocal altruism to be taken seriously as theoretical explanations of human grooming, the cost of grooming to the individual performing it must be shown to be less than its benefit to the recipient. Although grooming can theoretically be costly to the groomer in the case of blemish-focused grooming or other forms of grooming in which the groomer might be exposed to pathogens, in most cases grooming is not particularly costly to individual fitness. The time spent grooming is arguably the largest and most likely cost imposed on groomers. Time spent grooming another individual is time not spent taking care of oneself, foraging (or earning a living), and scanning for predators (or protecting the home territory from intruders). No time budget studies of grooming have been conducted for grooming among humans, but the self-reported grooming frequency of grooming was small in two samples of college students in the United States (Nelson, 2001; Nelson, 2006).

Given that grooming is not very costly in the classic biological sense, it is very likely to be outweighed by the benefit recipients of it receive. Because grooming is often reciprocal among primates, any benefit to performing grooming is likely to apply to receiving grooming as well. The observed benefits of grooming are numerous. Primate grooming has been shown to help build alliances and when they falter, grooming helps repair them (Aureli, van Schaik, & van Hooff, 1989; Lawick-Goodall, 1968; de Waal,

1989; Smuts et al., 1987). Grooming is also a commodity that is exchanged for other resources, which include infant care, food, and sex (Muroyama, 1994; de Waal, 1997).

Grooming is also physiologically rewarding. Keverne, Martensz, and Tuite (1989) experimentally demonstrated that grooming stimulates the release of beta endorphin, a hormone known to reduce pain, lower anxiety, and increase pleasure. Furthermore, Schino, Scucchi, Maestripieri, and Turillazzi (1988) found that displacement behaviors, a behavioral indicator of anxiety in humans and animals, decreased after monkeys were groomed by a conspecific. Although no one has measured whether grooming stimulates the release of beta-endorphin in humans, that possibility exists. Regardless of whether grooming is physiologically relaxing or rewarding to humans, it is difficult to argue that people would be substantially physiologically different from nonhuman primates to experience no physiological benefit from grooming.

With regard to massage specifically, a large body of research attests to its benefits. Tiffany Field has been a pioneer in demonstrating the positive effects of massage. She and numerous colleagues have shown that massage alleviates symptoms of various medical conditions including cystic fibrosis (Hernandez-Reif, Field, Krasnegor, Martinez, Mavunda, & Schwartzman, 1999), burns (Field, Peck, Hernandez-Reif, Krugman, Burman, & Ozment-Schenck, 2000), PMS (Hernandez-Reif, Martinez, Field, Quintino, Hart, & Burman, 2000), autism (Escalona, Field, Singer-Strunk, Cullen, & Hartshorn, 2001), and cerebral palsy (Hernandez-Reif, Field, Lergie, Diego, Manigat, Seonanes, Bornstein, & Waldman 2005). Massage has also been shown to improve immune system function (Ironson, Field, Scafidi, Hashimoto, Kumar, M., Kumar, A., Price, Goncalves,

Burman, Tetenman, Patarca, & Fletcher, 1996; Field, 2002; Hernandez-Reif, Field, Ironson, Beutler, Vera, Hurley, Fletcher, Schanberg, Kuhn, & Fraser, 2005).

The studies of primate grooming that have shown physiological benefits of grooming investigated grooming in the form traditionally practiced by nonhuman primates, e.g. louse removal and stroking the hair and skin. No one has studied to what extent this form of grooming and non-massage forms of it are relaxing among humans but that information would certainly be useful for articulating the proximate benefits of grooming in order to draft a more complete and accurate theory for why people groom one another. Aside from physiological benefits and mate retention (e.g. pairbonding) benefits, human grooming is also likely to be beneficial in other ways typical of primates, namely alliance formation and the formation and maintenance of friendships.

Study one showed that female friends reported certain types of touch that were generally seen more often among female friends than romantic partners (among single respondents). These include hugs, pats, hair styling, tending to wounds, and tucking a tag back into a shirt. This raises the possibility that certain forms of grooming might be useful for maintaining friendly affiliations while others are more useful or least more appropriately done in the context of romantic or kin based relationships.

Participants in study one indicated they experienced the least grooming with work colleagues. Whether this is because people tend to not form friendships with their work colleagues or do so only superficially or because they have greater difficulty recalling instances of touch independent of its frequency, a number of people report making clothing adjustments or performing some other casual grooming for a work associate.

Another reason grooming may not occur more often among work colleagues has to do with the sexual meaning of touch in Western/American culture. The majority of respondents were from the United States, where over the last 20 years, sexual harassment has come to be a major concern in the workplace. It is possible that grooming is thought to be enough of a sexual act that any desire to perform it has been inhibited out of the desire to avoid sexual harassment, a potential cost of grooming in that environment.

All in all, the two evolutionary biology theories of grooming, kin selection and reciprocal altruism, provide good explanations for the altruistic behavior of grooming in general and in non-romantic relationships in particular. In order for these two theories to apply to human grooming, grooming must be shown to be an act that is performed at minimal cost to one self with a variety of benefits for the recipient. This has been clearly shown, but remains to be shown empirically. The present study has provided some support for the theory that grooming is an effective pairbonding behavior that promotes attachments by communicating care, love, commitment, and parental investment.

Internet Recruitment

Because participants in the two studies were recruited online rather than through a more traditional means using a convenience sample of undergraduate students taking a psychology class, a few supportive remarks about the legitimacy of recruiting through the internet are warranted.

The Internet is quickly becoming a means for psychologists and other researchers to collect data because it offers several advantages over traditional methods. Recently,

two groups of psychologists have reviewed the costs and benefits associated with doing research online (Gosling et al., 2004; Kraut, Olson, Banaji, Brickman, Cohen, & Cooper, 2004). Both agree that a huge advantage is the large amount of data that can be gathered at a greatly reduced cost. Printing costs, which can eat up a huge portion of a study's budget, can be reduced to nothing. Data entry also becomes unnecessary and in many cases, data can be easily merged into statistical software packages like SPSS. Sometimes a researcher's presence can contaminate the results. Collecting data over the Internet takes the researcher out of the equation because he or she does not need to be present. Furthermore, instructions can be delivered systematically, eliminating another source of error.

All of these benefits do not come without costs. Gosling et al. (2004) reviewed the challenges posed by Internet research. One concerns the generalizability of the sample. However, Gosling et al. assert that the large and diverse samples that have been achieved online are preferable to the typical college student convenience samples used in much psychology research. Gosling et al. have compared samples and data collected online and those using traditional paper and pencil laboratory based research. They have found that the ratio of male to female participants is more balanced online and more people from minority groups participate. In fact, about six times as many minority participants are represented in online research compared to traditional samples. Although Internet samples are skewed toward higher income participants, Gosling et al. point out that by virtue of using a college student population, traditional samples are also skewed toward more educated, higher income families. Internet samples are drawn from a larger

geographic region than is the case for traditional samples. Traditional samples typically rely on only one locale, but according to Gosling et al., Internet samples are drawn from all over the United States as well as other countries. They found that the response rate from people in different states closely matched the states total population. In terms of age, online research participants still tend to be young, but are on average about four years older than traditional samples according to Gosling et al. Overall, Internet based research draws on at least as diverse a sample as traditional methods and can be more representative of the population researchers wish to generalize to.

Another major concern with Internet research is the quality of the data gathered. Unlike in laboratory settings, researchers lose control over the environment in which the research is conducted. Participants may not complete the experiment or survey questions diligently. This is also a risk in laboratory settings, but online, it is not possible for researchers to monitor what goes on during the session. Kraut et al. (2004) suggest that researchers collecting data online should carefully screen data for anomalous response sets. Another potential risk is that online participants might complete the study more than once. Gosling et al. advocate tracking IP addresses and eliminating all but the first response from each address. They also suggest adding a question to ask participants a simple “yes” or “no” question as to whether they have completed the study before. In their sample, only 3% of people had completed the survey before. Thus, even if people participate more than once, few actually do and those who do can be eliminated from analyses.

In addition to protecting data quality, online research must protect the rights of the research participants. Kraut et al. (2004) assert that Internet data collection poses no more significant risks than traditional methods. However, there are a few special concerns. They believe that confidentiality is the biggest concern with doing online studies. Therefore they suggest researchers not ask identifying information, and, if personal markers (such email addresses) are collected in order to match participants from one session to another or to allow researchers to contact participants later to compensate them for their participation, then this information should be kept separately. According to Kraut et al, much Internet research involves no greater magnitude of harm or discomfort than that ordinarily present in daily life and many questions or experimental manipulations are innocuous or transient.

Remaining concerns include debriefing and informed consent procedures. In online research participants can be redirected to another page where the researcher has posted debriefing materials and even results as they become available. If a survey is long or appears on multiple pages, a button can be included that says something like “leave study now” which then loads the debriefing page. As far as informed consent issues, Kraut et al. advise IRBs to waive written documentation of consent in favor of allowing participants to click a button on an online form to indicate that they have read and understood the consent form. They assert this is especially appropriate for minimal risk research and for research in which the informed consent document is the only link between the research data and the identity of the participant.

A copy of the consent and debriefing pages I used for the studies appears in Appendix E for study one and in Appendix F for study two. These informed consent statements model the typical consent page for Internet research that have already been conducted online and were approved by the sponsoring institutions' review boards.

Limitations

Although this research followed the recommendations of Kraut et al. (2004) and Gosling et al. (2004) for the collection of data over the Internet, some concerns remain. First, there are sampling issues, foremost of which is the fact that this sample was self-selected and not drawn randomly from the population. Participants represent those who saw the advertisement of the study, followed the link to the surveymonkey.com site that hosted the studies, and then went on to complete the study. There may be differences between those who completed the study and those who did not as well as differences between those who access the websites that advertised the study and those people who do not visit those sites. If those differences are in any way associated with any of the variables examined in the study we should be much less confident of the generalizability of the results even in spite of the more representative samples gathered through online studies. The self-selected, non-random sampling used in study one is less of a concern for the experimental portion of this research because participants were still randomly assigned to treatment groups. If there were unmeasured participant characteristics that influenced their responses, these should have been equally distributed across the treatment groups by virtue of random assignment. However, the results of these studies

are really only generalizable to people who use craigslist.com, the route through which many people participated, and it is unknown how well craigslist.com users represent the population of the United States.

Another limitation of this research concerns the first study in particular.

Participants in study one were asked to indicate whether they had ever touched and groomed people in a variety of ways as an adult. This raises a couple of concerns about recall.

One surrounds the issue of whether or not people reported on touches limited to adulthood. It is possible that some people may have vaguely recalled a touch and thought it happened during adulthood when it actually occurred during childhood. This may be why males recalled their fathers having tied their shoes. This sort of clothing-adjustment grooming is more likely to have occurred during childhood than adulthood. To the extent that people recorded touches that happened during childhood as well as during adulthood, the incidence of touch is likely to be inflated. This is primarily a concern for the touch reported in familial relationships because those are the only ones for which childhood recollections are likely to have impacted responses. However, even if the incidence of grooming was inflated for familial touches, touch among family members was still reported significantly less often than for romantic relationships so the conclusion that grooming has its highest incidence in romantic relationships is still valid. The only remaining concern about the impact of childhood recollections has to do with whether females were more likely than men to have included childhood recollections. If so, this could account for the sex difference observed in reporting grooming. However, even if

women recall grooming instances more readily than men, we could conclude that grooming is more salient to women and would then have to wonder why it is more salient to them. Grooming might be more salient to women if it is more important to them than it is to men. That would not invalidate the findings or conclusions of this study; it would only reinforce them. Alternately, grooming could be more salient because of its rarity. It would be a surprising finding that grooming occurs more rarely for women than for men, but given the self-report nature of the studies on grooming, this cannot be entirely ruled out. A naturalistic observational study would help.

The second concern about response bias concerns over-reporting grooming touches. Is there any reason to suspect people might recall instances of touch and grooming more when they occur with some types of people than with others? Yes, if grooming is a signal that provides people useful information about the quality of a mate or potential mate, we might expect them to catalogue that information and hold it in long-term memory more when it comes from a romantic partner than from other people. Grooming, if it is a useful signal, should be more relevant and therefore more accessible to recall when it happens with relevant people than with non-relevant people. Here, as with ferreting out the source of sex differences in the self-reported occurrence of grooming, a naturalistic observational study combined with follow-up questions at some point in time later would help.

With regard to the experimental portion of this research, one specific concern surrounds the wording of vignettes. Although every effort was made to keep the setting of the scenes as neutral as possible, people may have been more inclined to label a dyad

as “romantically involved” if the vignette implied they lived together, as was the case with one vignette (mimicry, example one). Although college students do have opposite-sex roommates that they are not romantically involved with, there may still be an assumption on the part of both college students and others that a man and woman who live together are romantically involved. This would be much more of a concern if only the grooming version of the vignette mentioned the dyad lived together, however, both the control and non-grooming touch mimicry/example one vignettes stated the dyad lived together. This was also the case for another setting (a dyad having a picnic on a blanket) that may have inflated the labeling of dyads as “romantic.” Therefore, the finding that dyads in these two vignettes were more often labeled as romantically involved is due to the presence of grooming and not the setting.

A more pressing concern involves a couple of vignettes that did not have exactly parallel grooming and non-grooming touches with regard to the body part touched. For example, non-traditional grooming vignette examples one and two both have grooming touches that occur on the face but the non-grooming touches occur on the back. The face is a more intimate part of the body than the back (Jourard, 1963). If the body part touched, rather than the fact that grooming occurred, is responsible for the vignette actors being considered part of a romantic couple, more caring/in love, more committed, and a better parent, then we would expect to see significant differences in those outcome variables for both of the non-traditional grooming vignettes in question. Post-hocs tests revealed significant differences in ratings between grooming and touch only for the second example and only with regard to assumptions of the type of relationship of the dyad.

Thus, the fact that the grooming touch occurred on a more intimate part of the body in this vignette can account for the conclusion that grooming is a tie-sign in this vignette only. However, the fact that the grooming touch occurred on a more intimate part of the body in the second vignette example of non-traditional grooming cannot account for the conclusion that grooming signals pairbonding in that vignette because no significant differences were found between grooming and touch in that specific vignette with regard to the three pairbonding variables.

All in all, limitations of this research primarily concern its generalizability and the self-report nature of study one.

Strengths

A major strength of this research lies with the diversity and size of the sample. The participants were older than those drawn from college student populations but were still young (late twenties). They also tended to be single. These participant characteristics were nearly ideal for testing hypotheses about the involvement of grooming in courtship and pairbonding. A much younger or much older sample would not have been as ideal for testing hypotheses about grooming as a reproductively relevant signal.

The sample size was large for both studies and was also drawn from a large geographic area. Participants came from every state in the United States. Most participants who were not from the U.S. came from western or industrialized countries. Although participants tended to be Caucasian/White, a number of them were non-White

(20% of the sample). Because of these factors we can be more confident the results are at least generalizable to Western cultures.

Regarding methodology one strength of the self-report study, compared with previous self-report studies of grooming (Nelson, 2001; Nelson, 2006), is that it used a repeated-measures design. Previous research on grooming behaviors only asked participants to indicate the frequency of grooming one person in particular. There was no way to know for sure whether the previous finding that people report more grooming in romantic partners was due to a real effect or rather was a product of a sampling bias in which people who had romantic partners tended to groom more than people who did not. This research asked each person to indicate grooming in several types of relationships. This allows for valid comparisons of the incidence of grooming across different relationships and permits us to validly conclude that the greater incidence of grooming in romantic relationships is due to a real effect rather than a sampling bias.

A methodological strength of study two lies with its use of an experimental design. The vignettes allowed for the control of variables that might have influenced perceptions of grooming. With the exception of the previously mentioned flaws in vignette wording, all information available for participants to draw upon for making perception was held standard. The only information that varied was the information about whether grooming or non-grooming touch occurred. Thus, for those vignettes, we can be certain that the effects are due to the touch. If videos could be created that were similarly standardized across treatment conditions, they would be preferable to the vignettes used here because they would provide more external validity. The vignettes

used here do not represent real-life settings as well as videos would, but they also pair down the information available to participants to the bare minimum they need to make judgments without introducing potentially contaminating information. Such information includes other nonverbal behavior such as facial expression, posture, and tone of voice that would be difficult if not impossible to adequately control.

Future Studies

A number of studies could be conducted to make methodological improvements to the present one and to answer questions raised by this one.

First, there is the question about recall effects raised by study one. This raises two questions that could be addressed by a future study. Do women recall grooming better than men do? Do people in romantic relationships recall grooming better than single people do? If they do, this might account for the finding that a higher incidence of grooming was found in romantic relationships and among women. To answer this question, people would have to be observed grooming or not grooming and then followed up later to see how well they recall it.

This sort of longitudinal study could be used to address other research questions pertinent testing the theory that grooming aids pairbonding. For instance, grooming and non-grooming dyads could be followed up with to determine whether grooming dyads stay together at a higher rate than non-grooming ones. That would be a compelling test of the theory that grooming acts as a sort of relationship cement. That theory assumes that individuals prefer mates who will invest in offspring by actively caring for them. A true

test of theory would ask people whether they prefer their mate to participate actively in child care and would then expect those people in particular to select and retain as a mate an individual who grooms them.

Second, the experimental portion of this study used inferences men made about women and women made about men, which made some comparisons impossible (e.g. comparing men versus women assessing female behavior). An immediate follow-up study using essentially the same vignettes could be set up with minimal trouble by simply directing male participants to read and respond to the vignettes that females read for the experiment and directing females to read and respond to the vignettes that males responded to. Doing so would allow for basic comparisons that were not possible here.

The experimental portion of this research did not assess whether grooming operates as a tie-sign by couples in real life. Figuring out who is romantically attached and who is not among actual dyads would be challenging but could theoretically be done by using confederates in a field experiment. Grooming and non-grooming dyads could be staged in a public place that receives a lot of traffic. Passers-by could be selected at random and asked to identify what the relationship of the dyads are. Controlling for extraneous variables would be challenging in this sort of field study but it would offer more authenticity than in the vignettes.

A naturalistic observation would also be useful to find out if people who groom in public tend to be romantically related more often than not. People who are observed grooming could be asked what their relationship is.

This study raises the question that inferences about the level of caring, love, commitment, and parenting skill shown by grooming might be limited to third party viewers and not to the people who ought to be most influenced by those signals. The vignettes and instructions used for study two could be reworded so that participants are asked to imagine being touched and groomed by the person depicted in the vignettes. Participants could be asked to imagine they are being touched and then would answer questions in the form, “Do you think the person is sexually interested in you,” “If you had a child with this person, would you feel comfortable having this person help take care of that child” and so on. For this type of study, the participants’ attachment styles would have to be measured because attachment style has been shown to affect judgments of a romantic partner’s nonverbal behavior (Noller, 2005).

Although this study did not find a lot of support for the theory that grooming plays a role in courtship by signaling sexual interest and flirtation, it did find some support for the idea that massage, as a particular form of grooming, does. One can then wonder whether massage is a more effective signal of sexual interest and more likely to precipitate sexual activity than other forms of foreplay, in particular verbal forms that are colloquially known as “pillow talk.” Primatologist Robin Dunbar has argued that language, and gossip in particular, has come to substitute grooming as a means of bonding among humans (1996). Whether language more effectively bonds people together than grooming does has not yet been determined. But, at least according to Dunbar, language is not wholly adequate for bonding at an emotional level (1996). Future research, whether using vignettes or not, could explore to what extent grooming sends stronger signals

relevant to courtship and pairbonding than does language. There is also a need to assess whether grooming strengthens a felt bond more than gossiping or conversations do.

“Bond-facilitating” hormones such as oxytocin and vasopressin are implicated in the close tactile affiliation between mothers and their infants, between post-coital romantic partners, and monogamously mated species (Carter, 1992; Hrdy, 1999, Lim & Young, 2004; Lim, Murphy, & Young, 2004). This raises the question of whether grooming and touching stimulates oxytocin release. If so, that would provide a physiological basis for the feeling of attachment that grooming is thought to promote. Physiological research would be an exciting supplement to self-report and behavioral inquiries of the role of grooming in attachment.

Implications

Grooming has wide-ranging social significance for primates, including humans. Most evidence points at the role of grooming in maintaining alliances. In essence, grooming is an attachment behavior. Among monogamous species like humans, grooming might facilitate bonding more effectively than non-grooming touch. More research is needed to determine whether this is the case in actual relationships, however, the evidence presented here suggests that if grooming does have this effect, it may be a particularly effective bonding behavior because it communicates several qualities important for relationship maintenance above and beyond what non-grooming touch conveys. Grooming communicates more love and commitment and importantly, more parenting ability, than non-grooming touch. The superior communication of parenting ability

supports the theory that grooming works to cement bonds in a monogamous species in which both partners assume responsibility for childcare because pairs in those species preferentially retain partners who show evidence they will be good parents and grooming demonstrates that.

To the extent that monogamous primates, including humans, can be expected to prefer mating partners who demonstrate good parenting skills, grooming should be a signal relevant to both mate selection (attraction) and retention (attachment) if it conveys parenting ability. Thus, the aim of this research was to explore to what extent grooming is involved with attraction/courtship as well as attachment/pairbonding. Recently, an evolutionary anthropologist (Helen Fisher) teamed up with a social psychologist (Arthur Aron) and neurologist (Lucy Brown) to review evidence for their theory that romantic love (e.g. attachment) is one of three primary brain systems that evolved in birds and mammals to regulate reproduction (Fisher, Aron, & Brown, 2006). The other two brain systems are sex drive and attraction (e.g. lust). Because grooming was not shown to communicate sexual attraction or flirtation, we cannot be sure that it plays much of a role in mate attraction or what some call lust. It is more likely that grooming plays a role in love and may even have a specific brain system devoted to it, perhaps one involving oxytocin. More research is needed to determine whether recipients of grooming, as opposed to third party observers, feel heightened love and commitment from grooming. If so, that would be very exciting and could potentially lead to new discoveries about the role of grooming in monogamous nonhuman primates.

Some may wonder about practical applications of this research. I would not go so far as to say that grooming kills the passion in a relationship, but I would not recommend it for couples who feel the need to reignite a faded spark. Most grooming acts are not likely to stimulate lust, passion, or sexual activity. I would, however, recommend grooming for people who feel the need to reaffirm a bond they might feel has slipped away, for instance after a long period of separation or when trying to rebuild a bond after it has been damaged by infidelity. This study raises the possibility that grooming could be used deceptively by individuals who wish to feign their love and commitment to a partner. Even if the person is not truly committed or in love, their behavior sends the message that they are. As mentioned earlier, the cost of signal is what keeps it honest, so anyone who is in doubt about whether the person who grooms really is in love and is committed should pay attention to the type of grooming they receive.

Finally, grooming does appear to be involved in pairbonding but it is not unique to romantic partners. Family members and best friends groom one another too. It is important to remember that humans can court and bond with others, not just romantic partners, using the same or similar behaviors that are effective with romantic partners. Grooming conveys caring, love, commitment, and parenting ability to observers and probably also to recipients of it. Why grooming should have this effect on family members and friends probably has to do with the range of people humans have come to rely on for help with childcare. Though parents provide much of the care for their children, when they cannot provide that care other people are needed to assume the responsibility. Humans appear to be psychologically prepared to groom a wide variety of

others as a demonstration of care, commitment (e.g. reliability), and parenting ability whether consciously or unconsciously. All of this fits with primatologist Sarah Hrdy's theory that ancestral humans raised children communally rather than in nuclear families made up of a male and female and their offspring. If the latter were the case, I would expect to see grooming limited primarily to romantic partners. Much grooming reported in this study did occur among romantic partners, and people in the United States do still largely raise children in a nuclear family setting, but rather than the behavior of grooming being solely a product of evolutionary forces, I would argue that our tendency to raise children in nuclear families has directly or indirectly caused us to shift the bulk of our grooming to romantic partners. In ancestral times and in cultures where children are raised communally, grooming was probably more widely distributed to other types of relationships and concentrated among those we expect and hope to help us take care of our children.

LIST OF REFERENCES

- Abbey, A. (1982). Sex differences in attributions for friendly behavior: Do males misperceive females' friendliness? *Journal of Personality and Social Psychology*, 42(5), 830-838.
- Abbey, A. & Melby, C. (1986). The effects of nonverbal cues on gender differences in perceptions of sexual intent. *Sex Roles*, 15(5/6), 283-298.
- Afifi, W. A. & Johnson, M. L. (1999). The use and interpretation of tie signs in a public setting: Relationship and sex differences. *Journal of Social and Personal Relationships*, 16(1), 9-38.
- Aureli, F., van Schaik, C., & van Hooff, J. (1989). Functional aspects of reconciliation among captive long-tailed macaques (*Macaca fascicularis*). *American Journal of Primatology*, 19, 39-51.
- Bshary, R., & Schaeffer, D. (2002). Choosy reef fish select cleaner fish that provide high-quality service. *Animal Behaviour*, 63(3), 557-564.
- Carter, C. (1992). Oxytocin and sexual behavior. *Neuroscience & Behavioral Reviews*, 1, 131-144.
- Curtis, V. & Biran, A. (2001). Dirt, disgust, and disease: Is hygiene in our genes? *Perspectives in Biology and Medicine*, 44(1), 17-31.
- Derlega, V. J., Lewis, R. J., Harrison, S., Winstead, B. A., & Constanza, R. (1989). Gender differences in the initiation and attribution of tactile intimacy. *Journal of Nonverbal Behavior*, 13(2), 83-96.
- Dunbar, R. (1996). *Grooming, gossip and the evolution of language*. London: Faber and Faber.
- Dutton, D. & Aron, A. (1974). Some evidence for heightened sexual attraction under conditions of high anxiety. *Journal of Personality and Social Psychology*, 30, 510-517.
- Eibl-Eibesfeldt, I. (1989). *Human ethology*. New York: Aldine de Gruyter.
- Enhuber, C. (1989). *Soziale Hautpflege beim Menschen. Eine Fallstudie in einer modernen Industriegesellschaft (Social grooming in humans. A case study in a modern industrialized society)*. Diploma. Technical University, Munich, Germany.
- Escalona, A., Field, T., Singer-Strunk, R., Cullen, C., & Hartshorn, K. (2001). Brief report: Improvements in the behavior of children with autism following massage therapy. *Journal of Autism and Developmental Disorders*, 31, 513-516.
- Field, T. (2002). HIV-exposed newborns and massage therapy effects on the HIV-exposed newborn and adult. In M. S. Micozzi (Ed.), *AIDS and complimentary & alternative medicine: Current science and practice* (pp. 161-174). New York: Churchill Livingstone.

Field, T., Peck, M., Hernandez-Reif, M., Krugman, S., Burman, I., & Ozment-Schenck, L. (2000). Postburn itching, pain, and psychological symptoms are reduced with massage therapy. *Journal of Burn Care and Rehabilitation*, 21, 189-193.

Fine, G. A., Stitt, J. L., & Finch, M. (1984). Couple tie-signs and interpersonal threat: A field experiment. *Social Psychology Quarterly*, 47(3), 282-286.

Fisher, H., Aron, A., & Brown, L. (2006). Romantic love: A mammalian brain system for mate choice. *Philosophical Transactions of the Royal Society B*, 361, 2173-2186.

Fraley, R. C., Niedenthal, P. M., Marks, M. J., Brumbaugh, C. C., & Vicary, A. (2006). Adult attachment and the perception of emotional expressions: Probing the hyperactivating strategies underlying anxious attachment. *Journal of Personality*, 74, 1163-1190.

Givens, D. B. (1978). The nonverbal basis of attraction: Flirtation, courtship, and seduction. *Psychiatry*, 41, 346-359.

Gould, S. & Vrba, E. (1982). Exaptation: A missing term in the science of form. *Paleobiology*, 8(1), 4-15.

Gouzoules, S. & Gouzoules, H. (1987). "Kinship." In B. Smuts, D. Cheney, R. Seyfarth, R. Wrangham & T. Struhsaker (Eds.), *Primate Societies* (p. 299-305). Chicago: University of Chicago Press.

Guerrero, L. K. & Andersen, P. A. (1994). Patterns of matching and initiation: Touch behavior and touch avoidance across romantic relationship stages. *Journal of Nonverbal Behavior*, 18(2), 137-153.

Haidt, J., McCauley, C., & Rozin, P. (1993). Individual differences in sensitivity to disgust: A scale sampling seven domains of disgust elicitors. *Personality and Individual Differences*, 16, 701-713.

Hall, J. A. & Veccia, E. M. (1990). More "touching" observations: New insights on men, women, and interpersonal touch. *Journal of Personality and Social Psychology*, 59(6), 1155-1162.

Haselton, M. G. & Buss, D. M. (2000). Error management theory: A new perspective on biases in cross-sex mind reading. *Journal of Personality and Social Psychology*, 78(1), 81-91.

Henley, N. M. (1973). Status and sex: Some touching observations. *Bulletin of the Psychonomic Society*, 2, 91-93.

Henley, N. M. (1977). *Body politics: Power, sex, and nonverbal communication*. Englewood Cliffs, NJ: Prentice-Hall.

Hernandez-Reif, M., Field, T., Ironson, G., Beutler, J., Vera, Y., Hurley, J., Fletcher, M., Schanberg, S., Kuhn, S., & Fraser, M. (2005). Natural killer cells and lymphocytes are increased in women with breast cancer following massage therapy. *International Journal of Neuroscience*, 115, 495-510.

Hernandez-Reif, M., Field, T., Krasnegor, J., Martinez, E., Mavunda, K., & Schwartzman, M. (1999). Cystic fibrosis symptoms are reduced with massage therapy intervention. *Journal of Pediatric Psychology*, 24, 183-189.

- Hernandez-Reif, M., Field, T., Lergie, S., Diego, M., Manigat, N., Seonanes, J., Bornstein, J., & Waldman, R. (2005). Cerebral Palsy symptoms in children decreased following massage therapy. *Early Child Development and Care*, 175, 445-456.
- Hernandez-Reif, M., Martinez, A., Field, T., Quintino, O., Hart, S., & Burman, I. (2000). Premenstrual syndrome symptoms are relieved by massage therapy. *Journal of Psychosomatic Obstetrics & Gynecology*, 21, 9-15.
- Ironson, G., Field, T., Scafidi, F., Hashimoto, M., Kumar, M., Kumar, A., Price, A., Goncalves, A., Burman, I., Tetenman, C., Patarca, R., & Fletcher, M. (1996). Massage therapy is associated with enhancement of the immune system's cytotoxic capacity. *International Journal of Neuroscience*, 84, 205-217.
- Johnson, K. L. & Edwards, R. (1991). The effects of gender and type of romantic touch on perceptions of relational commitment. *Journal of Nonverbal Behavior*, 15(1), 43-55.
- Jolly, A. (1972). *The evolution of primate behavior*. New York: Macmillan.
- Jourard, S. (1963). An exploratory study of body accessibility. *British Journal of Social Clinical Psychology*, 5, 221-231.
- Keverne, E., Martensz, N., & Tuite, B. (1989). Beta-endorphin concentrations in cerebrospinal fluid on monkeys are influenced by grooming relationships. *Psychoneuroendocrinology*, 14, 155-161.
- Kimura, R. (1998). Mutual grooming and preferred associate relationships in a band of free-ranging horses. *Applied Animal Behaviour Science*, 59(4), 265-276.
- Kinzey, W. & Wright, P. (1982). Grooming behavior in the titi monkey, *Callicebus torquatus*. *American Journal of Primatology*, 3, 267-275.
- Lawick-Goodall, J. van. (1968). The behavior of free living chimpanzees in the Gombe Stream Reserve. *Animal Behavior Monographs*, 1, 161-311.
- Lim, M. & Young, L. (2004). Vasopressin-dependent neural circuits underlying pair bond formation in the monogamous prairie vole. *Neuroscience*, 128, 35-45.
- Lim, M., Murphy, A., & Young, L. (2004). Ventral striatopallidal oxytocin and vasopressin V1a receptors in the monogamous prairie vole. *Journal of Comparative Neurology*, 468, 555-570.
- Major, B., Schmidlin, A. M., & Williams, L. (1990). Gender patterns in social touch: The impact of setting and age. *Journal of Personality and Social Psychology*, 58(4), 634-643.
- Malinowski, B. (1929). *The sexual life of savages in north-western Melanesia*. New York: Liveright.
- Mason, W. A. (1974). Comparative studies of social behavior in *Callicebus* and *Saimiri*: Behavior of male-female pairs. *Folia Primatologica*, 22, 1-8.
- McGrew, W. C. (1992). *Chimpanzee material culture*. New York, NY: Cambridge University Press.
- Miller, L., Rozin, P., & Fiske, A. P. (1998). Food sharing and feeding another person suggest intimacy: two studies of American college students. *European Journal of Social Psychology*, 28, 423-436.

- Moore, D., Angel, J. E., Cheeseman, I. M. & Robinson, G. E. (1995). A highly specialized social grooming honey bee. *Journal of Insect Behavior*, 8(6), 855-861.
- Mooring, M. S. & Hart, B. L. (1997). Reciprocal allogrooming in wild impala lambs. *Ethology*, 103(8), 665-680.
- Mooring, M. S. & Samuel, W. M. (1998). The biological basis of grooming in moose: Programmed versus stimulus-driven grooming. *Animal Behaviour*, 56(6), 1561-1570.
- Morris, D. (1977). *Manwatching: A field guide to human behavior*. New York, NY: Elsevier.
- Muroyama, Y. (1994). Exchange of grooming for allomothering in female patas monkeys. *Behavior*, 128, 103-119.
- Nakamura, M., McGrew, W., Marchant, L., & Nishida, T. (2000). Social scratch: Another custom in wild chimpanzees? *Primates*, 41(3), 237-248.
- Nelson, H. (2001). *The caregiving touch: Human allo-grooming*. MA thesis. University of New Hampshire, Durham, NH.
- Nelson, H. (2006). Human mutual grooming: An ethological perspective on its form and function. Poster presented at the annual meeting of the Human Behavior and Evolution Society, June 7-11.
- Nelson, H. (2007, under review). Mutual grooming in human dyadic relationships: An evolutionary perspective. *Journal of Personal and Social Relationships*.
- Noller, P. (2005). Attachment insecurity as a filter in the decoding and encoding of nonverbal behavior in close relationships. *Journal of Nonverbal Behavior*, 29(3), 171-176.
- Nguyen, T., Heslin, R., & Nguyen, M. (1975). The meanings of touch: Sex differences. *Journal of Communication*, 25(3), 92-103.
- Perper, T. (1985). *Sex signals: The biology of love*. Philadelphia: ISI Press.
- Pisano, M. D., Wall, S. M., & Foster, A. (1986). Perceptions of nonreciprocal touch in romantic relationships. *Journal of Nonverbal Behavior*, 10(1), 29-40.
- Poulin, R., Bansemmer, C., Grutter, A. S. (2002). Geographic variation in the behaviour of the cleaner fish *Labroides dimidiatus* (Labridae). *Ethology*, 108(4), 353-366.
- Robinson, J. G., Wright, P. C., & Kinzey, W. G. (1987). "Monogamous cebids and their relatives: Intergroup calls and spacing." In B. Smuts, D. Cheney, R. Seyfarth, R. Wrangham & T. Struhsaker (Eds.), *Primate Societies* (pp. 44-53). Chicago: University of Chicago Press.
- Schefflen, A. (1972). *Body language and the social order: Communication as behavioral control*. Englewood Cliffs, NJ: Prentice-Hall.
- Schefflen, A. (1974). *How behavior means*. Garden City, NY: Doubleday.
- Schiefenhövel, W. (1997). "Universals in interpersonal interactions." In U. Segerstrale & P. Molnar (Eds.), *Nonverbal communication: Where nature meets culture* (pp. 71-74). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Schino, G., Scucchi, S., Maestriperi, D., & Turillazzi, P. G. (1988). Allogrooming as a tension-reduction mechanism: A behavioral approach. *American Journal of Primatology*, 16, 43-50.

Seyfarth, R. & Cheney, D. (1984). Grooming, alliances and reciprocal altruism in vervet monkeys. *Nature*, 308, 541-543.

Seyfarth, R. M., Palombit, R. A. & Cheney, D. L. (2001). Female-female competition for male 'friends' in wild chacma baboons (*Papio cynocephalus ursinus*). *Animal Behaviour*, 61(6), 1159-1171.

Simpson, M. J. A. (1991). "On declaring commitment to a partner." In P. Bateson, (Ed.), *Development and integration of behavior: Essays in honor of Robert Hinde* (pp. 271-293). Place: Publisher.

Smuts, B. B. (1999). *Sex and friendship in baboons*. Boston, MA: Harvard University Press.

Smuts, B., Cheney, D., Seyfarth, R., Wrangham, R., & Struhsaker, T. (1987). *Primate Societies*. Chicago: University of Chicago Press.

Sternberg, R. J. (1986). A triangular theory of love. *Psychological Review*, 93, 119-135.

de Waal, F. (1989). *Peacemaking among primates*. Cambridge, MA: Harvard University Press.

de Waal, F. (1997). The chimpanzee's service economy: Food for grooming. *Evolution & Human Behavior*, 18(6), 375-386

Strier, K. B. (1999). *Faces in the forest*. Boston, MA: Harvard University Press.

Trivers, R. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology*, 46, 35-57.

Trivers, R. (1972). Parental investment and sexual selection. In B. Campbell (Ed.), *Sexual selection and the descent of man* (pp.136-179). New York: Aldine de Gruyter.

Wachtmeister, C. (2001). Display in monogamous pairs: A review of empirical data and evolutionary explanations. *Animal Behaviour*, 61(5), 861-868.

Wilkinson, G.S. (1986). Social grooming in the common vampire bat, *Desmodus rotundus*. *Animal Behaviour*, 34(6), 1880-1889.

Willis, F. N. & Briggs, L. F. (1992). Relationship and touch in public settings. *Journal of Nonverbal Behavior*, 16(1), 55-63.

Zahavi, A. (1975). Mate selection: A selection for a handicap. *Journal of Theoretical Biology*, 53, 205-214.

APPENDICES

APPENDIX A

This appendix lists the dates and cities from which participants were recruited each week through craigslist.com.

2007

Feb. 6 - Detroit

Jan. 28 - Dallas

Jan. 17 - St. Louis

Jan. 9 - San Diego

2006

Dec. 30 - Miami

Dec. 13 - Austin

Dec. 5 - Las Vegas

Nov. 28 - Washington, D.C.

Nov. 24 - Montreal

Nov. 15 - Chicago

Nov. 10 - Minneapolis

Nov. 7 - Vancouver, B.C.

Nov. 1 - Phoenix

Oct. 24 - Seattle

Oct. 17 - Philadelphia

Oct. 10 - Miami

Oct. 3 - Los Angeles

Sept. 26 - Orange County, Calif.

Sept. 13 - San Francisco

Sept. 5 - Boston

Sept. 1 - Atlanta

Aug. 22 - Worcester, Mass.

Aug. 15 - Tucson, Ariz.

Aug. 8 - Maine

Aug. 1 - Omaha, Neb.

July 18 - Detroit

July 11 - Austin, Texas

July 4 - New Jersey

June 27 - Las Vegas

June 20 - Orange County, Calif.

June 13 - New Hampshire

May 30 - Kansas City

May 23 - Toronto
May 17 - Vancouver, B.C.
May 10 - Fresno, Calif.
May 3 - St. Louis
April 18 - Orange County, Calif.
April 11 - Santa Barbara, Calif.
April 4 - Baltimore
March 28 - Phoenix
March 21 - Albany, N.Y.
March 16 - San Diego
March 7 - Tampa, Fla.
Feb. 28 - Miami
Feb. 21 - Denver
Feb. 14 - Dallas
Feb. 7 - Minneapolis
Jan. 31 - Washington, D.C.
Jan. 24 - New York
Jan. 17 - Portland
Jan. 10 - Boston

APPENDIX B

Biologically/Anatomically I am: (male) (female)

Psychologically I feel: (mostly masculine) (mostly feminine) (in between)

Your age: _____

How many sisters (who grew up in the same household) do you have? _____

How many brothers (who grew up in the same household) do you have? _____

Your ethnicity: (pull down menu)

White/Caucasian

Black or African American

Asian

Hispanic or Latino

Other (please specify) _____

Marital status: (pull down menu)

Single

Married

Divorced

Widowed

Living w/ partner

Occupation: (pull down menu)

Business

Education

Social/Public Service

Retail

Medicine

Manufacturing

Student

Other (please specify) _____

Do you work in a grooming-related industry (salon, spa, massage, etc)? (yes) (no)

Highest level of education reached by either parent:

No high school or equivalent diploma

high school or equivalent diploma

some college or technical school, associates degree

bachelors degree

masters degree

doctoral degree

Home State/Country: _____

ZIP CODE: _____

Who do you consider to be your primary caregiver (the person who took care of you)

when you were a child?

MOTHER

FATHER

Other: _____

Do you have children of your own? YES NO

[NOTE: If the person selects NO, the following question will appear:]

Do you want to have children of your own? YES NO UNDECIDED

[NOTE: If the person selects YES, to the previous question, the following question will appear:]

Who do you want to provide most of the daily care for your children during their first 4 years?

Me The child's other parent A relative Friend Will hire

(NEW WEBPAGE)

INSTRUCTIONS

The table below lists a variety of touches and ways that people help each other.

-

These are listed vertically on the left. Across the top, running horizontally, are types of people you might know.

-

The people listed across the top, running from left to right, are family members. It does not matter if the person is your biological relative or not, and it doesn't matter if you have more than one female or male sibling, or even if you have more than one mother or father

(for instance, you may have stepparents or an adopted mother and a biological mother or step-siblings).

-

SELECT the bubble underneath the person you have that type of relationship with - IF YOU HAVE performed yourself -OR- THAT PERSON HAS performed the action listed in the list on the left, the one that runs from the top to bottom.

-

We are only interested in interaction you have had with that person AS AN ADULT (when you AND the other person were BOTH age 18 or older) so think about interactions that have taken place while you were both adults.

-

If you have never known or interacted with that person as an adult, check the bubble under that person in the row labeled “not applicable.”

-

Although there might be many things you have not done, or you may need to leave many spots blank, READ EACH & EVERY ITEM CAREFULLY.

-

The first group lists FAMILY RELATIVES horizontally across the top. The group on the next page lists other people you know.

-

	mother	father	female sibling	male sibling
not applicable	()	()	()	()

Hug	()	()	()	()
Touch briefly				
(i.e. pat on arm, shoulder, or back)	()	()	()	()
Tickle	()	()	()	()
Pinch	()	()	()	()
Kiss	()	()	()	()
Hold hands with	()	()	()	()
Scratch an itch	()	()	()	()
Massage	()	()	()	()
Wipe/dry a spill, food crumbs when noticed	()	()	()	()
Brush dirt, leaves, bugs, lint etc. off	()	()	()	()
Run fingers through her/his hair or “play” with it	()	()	()	()
Brush or style hair, including braiding it, putting gel or	()	()	()	()

styling product in				
Paint nails	()	()	()	()
Give manicure	()	()	()	()
Paint toenails	()	()	()	()
Give pedicure	()	()	()	()
Remove dry or flaking				
skin (like sunburned	()	()	()	()
skin, blister, scabs, etc)				
Shampoo or wash hair	()	()	()	()
Trim or cut hair	()	()	()	()
Tweeze eyebrows	()	()	()	()
Remove back or chest hair	()	()	()	()
Shave legs/face or	()	()	()	()
other body part				
Squeeze/pop pimples,	()	()	()	()
blisters, or other bumps				
Make a snack, food	()	()	()	()
Give a ride somewhere	()	()	()	()
Get something in	()	()	()	()
another room				
Bring a glass of water	()	()	()	()
or other drink				

Treat, dress, or bandage a wound	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Run an errand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Take care of a pet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Closed their zipper or buttons if open	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Straightened their tie, necklace, or jewelry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tucked their tag in	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tied their tie, shoelaces, or scarf or sash for them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(NEW WEBPAGE)

This section is the same as the previous one except this time, the people listed across the top are people you have had romantic relationships with, very close friends and a work colleague.

If you have had more than one romantic partner or have more than one person you consider to be your best friend, SELECT the bubble underneath that person if YOU HAVE done the actions listed for ANY of them –OR- if THAT PERSON has done the action listed in the corresponding row.

Remember, only select that action if you have experienced it with that person AS AN ADULT (when you AND the other person were both age 18 or older).

-

Although there might be many things you have not done, or you may need to leave many spots blank, READ EACH & EVERY ITEM CAREFULLY.

-

Only select an item if it occurred within that relationship when you were both adults.

	romantic partner	best friend (same sex)	best friend (opposite sex)	work colleague
not applicable	()	()	()	()
Hug				
Touch briefly (i.e. pat on arm, shoulder, or back)	()	()	()	()
Tickle	()	()	()	()
Pinch	()	()	()	()
Massage	()	()	()	()
Scratch an itch	()	()	()	()
Kiss	()	()	()	()
Hold hands with	()	()	()	()

Wipe/dry a spill,				
food crumbs	()	()	()	()
when noticed				
Brush dirt, leaves,				
bugs, lint etc. off	()	()	()	()
Run fingers through				
her/his hair or	()	()	()	()
“play” with it				
Brush or style hair,				
including braiding it,				
putting gel or	()	()	()	()
styling product in				
Paint nails	()	()	()	()
Give manicure	()	()	()	()
Paint toenails	()	()	()	()
Give pedicure	()	()	()	()
Remove dry or flaking				
skin (like sunburned	()	()	()	()
skin, blister, scabs, etc)				
Shampoo or wash hair	()	()	()	()
Trim or cut hair	()	()	()	()

Tweeze eyebrows	()	()	()	()
Remove back or chest hair	()	()	()	()
Shave legs/face or other body part	()	()	()	()
Squeeze/pop pimples, blisters, or other bumps	()	()	()	()
Make a snack, food	()	()	()	()
Give a ride somewhere	()	()	()	()
Get something in another room	()	()	()	()
Bring a glass of water or other drink	()	()	()	()
Treat, dress, or bandage a wound	()	()	()	()
Run an errand	()	()	()	()
Water plants	()	()	()	()
Take care of a pet	()	()	()	()
Closed their zipper or buttons if open	()	()	()	()
Straightened their tie, necklace, or jewelry	()	()	()	()
Tucked their tag in	()	()	()	()

Tied their tie, shoelaces, or

scarf or sash for them

()

()

()

()

APPENDIX C

Biologically/Anatomically I am: (male) (female)

Psychologically I feel: (mostly masculine) (mostly feminine) (in between)

Your age: _____

How many sisters (who grew up in the same household) do you have? ____

How many brothers (who grew up in the same household) do you have? ____

Your ethnicity: (pull down menu)

White/Caucasian

Black or African American

Asian

Hispanic or Latino

Other (please specify) _____

Marital status: (pull down menu)

Single

Married

Divorced

Widowed

Living w/ partner

Occupation: (pull down menu)

Business

Education

Social/Public Service

Retail

Medicine

Manufacturing

Student

Other (please specify) _____

Do you work in a grooming-related industry (salon, spa, massage, etc)? (yes) (no)

Highest level of education reached by either parent:

No high school or equivalent diploma

high school or equivalent diploma

some college or technical school, associates degree

bachelors degree

masters degree

doctoral degree

Home State/Country: _____

ZIP CODE: _____

(New WebPage)

Who do you consider to be your primary caregiver (the person who took care of you)
when you were a child?

MOTHER

FATHER

Other: _____

Do you have children of your own? YES NO

[NOTE: If the person selects YES, the following question will appear:]

How much of the daily care for your child did your child's other parent provide during the child's first 4 years of life?

None 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 All

[NOTE: If the person selects NO, the following question will appear:]

Do you want to have children of your own? YES NO UNDECIDED

[NOTE: If the person selects YES or UNDECIDED, to the previous question, the following question will appear:]

How much of the daily care for your child (during the child's first four years of life) do you want or expect your child's other parent to provide?

None 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 All

(New WebPage)

Below is a short descriptive paragraph that depicts a man and a woman interacting. After reading it, complete the questions that follow.

[VIGNETTE]

Which type of relationship do these people most likely have? (pull down menu)

family members

work associates who are not best friends and not romantically involved

best friends who are not romantically involved

romantically involved

How deeply does she care about him?

Not at all 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 Extremely

How committed is she to her relationship with him?

Not at all 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 Extremely

How flirtatious is she being?

Not at all 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 Extremely

How good a parent will she be when she becomes one?

Not at all 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 Certainly

How sexually attracted is she to the man?

Not at all 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 Extremely

How much does she love the man?

Not at all 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 Extremely

Do you think she is making amorous advances at the man?

Not at all 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 Certainly

If she were to become a parent, how well do you think she would care for her child?

Not at all 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 Extremely

How likely do you think it that she wants to have sex with him?

Not at all 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 Certainly

How much do you think she wants to continue having some kind of relationship with him?

Not at all 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 Certainly

If you think these people might be romantically involved, do you think they are more likely to have recently started dating each other - or – have an established relationship that has lasted for a long time?

Select only one:

more likely to have recently started dating

more likely to have an established relationship

(New WebPage)

The questions that follow are about the story you just read.

True or false: The woman touched the man. (TRUE) (FALSE)

[Note: The next three questions only appear for the participants who get one of the 12 grooming vignettes]

Have you ever touched someone or been touched in the way described in the vignette?

(YES) (NO)

What was your relationship with the person? _____

Please write a few sentences about that touch experience.

(text box here)

I want to have children.

Not at all 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 Certainly

If I were to have a child, I would expect the other parent to help provide daily care for my/our child.

Not at all 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 Certainly

Have you participated in this study before? (YES) (NO)

Have you participated in the other study about grooming behaviors that is being conducted in conjunction with this one? (YES) (NO) (NOT SURE)

APPENDIX D

1. NON-TRADITIONAL

FOR FEMALES – Non-Trad #1

N Version

While walking around window shopping downtown with a man, a woman feels a little queasy. She seems to be developing a bad case of nausea. She suspects she might have food poisoning or ate something that didn't agree with her. She mentions to him that she feels sick. They keep walking around and plan on sitting down to rest at the coffee shop just down the next block. Before they get there, she suddenly feels like she's definitely going to throw up, so she runs quickly into the alley where she vomits behind a dumpster. He runs after her and discovers her throwing up.

FOR FEMALES - Non-Trad #1

G Version

While walking around window shopping downtown with her a man, a woman feels a little queasy. She seems to be developing a bad case of nausea. She suspects she might have food poisoning or ate something that didn't agree with her. She mentions to him that she feels sick. They keep walking around and plan on sitting down to rest at the coffee shop just down the next block. Before they get there, she suddenly feels

like she's definitely going to throw up, so she runs quickly into the alley where she vomits behind a dumpster. He runs after her and discovers her throwing up. When she's done, he reaches into his pocket for some Kleenex and uses it to wipe some of the vomit off of her nose and mouth.

-

FOR FEMALES – Non-Trad #1

T Version

While walking around window shopping downtown with a man, a woman feels a little queasy. She seems to be developing a bad case of nausea. She suspects she might have food poisoning or ate something that didn't agree with her. She mentions to him that she feels sick. They keep walking around and plan on sitting down to rest at the coffee shop just down the next block. Before they get there, she suddenly feels like she's definitely going to throw up, so she runs quickly into the alley where she vomits behind a dumpster. He runs after her and discovers her throwing up. He goes over to her and places his hand on her back.

FOR MALES - Non-Trad #1

N Version

While walking around window shopping downtown with a woman, a man feels a little queasy. He seems to be developing a bad case of nausea. He suspects he might have food poisoning or ate something that didn't agree with him. He mentions to her that he feels sick. They keep walking around and plan on sitting down to rest at the coffee

shop just down the next block. Before they get there, he suddenly feels like he's definitely going to throw up, so he runs quickly into the alley where he vomits behind a dumpster. She runs after him and discovers him throwing up.

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FOR MALES - Non-Trad #1

G Version

While walking around window shopping downtown with a woman, a man feels a little queasy. He seems to be developing a bad case of nausea. He suspects he might have food poisoning or ate something that didn't agree with him. He mentions to her that he feels sick. They keep walking around and plan on sitting down to rest at the coffee shop just down the next block. Before they get there, he suddenly feels like he's definitely going to throw up, so he runs quickly into the alley where he vomits behind a dumpster. She runs after him and discovers him throwing up. When he's done, she reaches into her purse for some Kleenex and uses it to wipe some of the vomit off of his nose and mouth.

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FOR MALES - Non-Trad #1

T Version

While walking around window shopping downtown with a woman, a man feels a little queasy. He seems to be developing a bad case of nausea. He suspects he might have food poisoning or ate something that didn't agree with him. He mentions to her that he feels sick. They keep walking around and plan on sitting down to rest at the coffee

shop just down the next block. Before they get there, he suddenly feels like he's definitely going to throw up, so he runs quickly into the alley where he vomits behind a dumpster. She runs after him and discovers him throwing up. She goes over to him and places her hand on his back.

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FOR FEMALES – Non-Trad #2

N Version

A man and a woman are outside having a picnic by a pond, spread out on a blanket eating oranges. It's a pleasant sunny day and they're enjoying the time they've spent together. The wind has died down a little bit and the mosquitoes have come back. One lands on the woman's cheek. She doesn't feel it. The man notices it on her cheek and tells her. She reaches up and swats it away with her hand.

FOR FEMALES – Non-Trad #2

G Version

A man and a woman are outside having a picnic by a pond, spread out on a blanket eating oranges. It's a pleasant sunny day and they're enjoying the time they've spent together. The wind has died down a little bit and the mosquitoes have come back. One lands on the woman's cheek. The man notices it on her cheek and tells her. He reaches up and brushes it off her cheek.

-

FOR FEMALES – Non-Trad #2

T Version

A man and a woman are outside having a picnic by a pond, spread out on a blanket eating oranges. It's a pleasant sunny day and they're enjoying the time they've spent together. The wind has died down a little bit and the mosquitoes have come back.

One lands on the woman's cheek. She doesn't feel it. The man notices it on her cheek and tells her. She reaches up and swats it away with her hand. He touches her on her back.

FOR MALES – Non-Trad #2

N Version

A man and a woman are outside having a picnic by a pond, spread out on a blanket eating oranges. It's a pleasant sunny day and they're enjoying the time they've spent together. The wind has died down a little bit and the mosquitoes have come back.

One lands on the man's cheek. He doesn't feel it. The woman notices it on his cheek and tells him. He reaches up and swats it away with his hand.

-

FOR MALES – Non-Trad #2

G Version

A man and a woman are outside having a picnic by a pond, spread out on a blanket eating oranges. It's a pleasant sunny day and they're enjoying the time they've spent

together. The wind has died down a little bit and the mosquitoes have come back.

One lands on the man's cheek. The woman notices it on his cheek and tells him. She reaches up and brushes it off his cheek.

FOR MALES – Non-Trad #2

T Version

A man and a woman are outside having a picnic by a pond, spread out on a blanket eating oranges. It's a pleasant sunny day and they're enjoying the time they've spent together. The wind has died down a little bit and the mosquitoes have come back.

One lands on the man's cheek. He doesn't feel it. The woman notices it on his cheek and tells him. He reaches up and swats it away with his hand. She touches him on his back.

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FOR FEMALES – Non-Trad #3

N Version

It's New Year's Eve and almost midnight. Two people standing close to each other with champagne glasses in hand ready themselves for the big countdown. They glance over at one another with anticipation. The woman smiles at the man. As the clock strikes midnight, confetti flies everywhere and people start cheering and kissing each other. The man looks back at the woman and sees her covered with confetti. It's in

her hair, on her shoulders, and even in her champagne. He smiles at her and remarks that there's confetti everywhere.

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FOR FEMALES – Non-Trad #3

G Version

It's New Year's Eve and almost midnight. Two people standing close to each other with champagne glasses in hand ready themselves for the big countdown. They glance over at one another with anticipation. The woman smiles at the man. As the clock strikes midnight, confetti flies everywhere and people start cheering and kissing each other. The man looks back at the woman and sees her covered with confetti. It's in her hair, on her shoulders, and even in her champagne. He smiles at her and remarks that there's confetti everywhere. He reaches over and brushes it off her shoulders.

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FOR FEMALES – Non-Trad #3

T Version

It's New Year's Eve and almost midnight. Two people standing close to each other with champagne glasses in hand ready themselves for the big countdown. They glance over at one another with anticipation. The woman smiles at the man. He touches her on her shoulder. As the clock strikes midnight, confetti flies everywhere and people start cheering and kissing each other. The man looks back at the woman and sees her covered with confetti. It's in her hair, on her shoulders, and even in her champagne. He smiles at her and remarks that there's confetti everywhere.

FOR MALES – Non-Trad #3

N Version

It's New Year's Eve and almost midnight. Two people standing close to each other with champagne glasses in hand ready themselves for the big countdown. They glance over at one another with anticipation. The man smiles at the woman. As the clock strikes midnight, confetti flies everywhere and people start cheering and kissing each other. The woman looks back at the man and sees him covered with confetti. It's in his hair, on his shoulders, and even in his champagne. She smiles at him and remarks that there's confetti everywhere.

-
FOR MALES – Non-Trad #3

G Version

It's New Year's Eve and almost midnight. Two people standing close to each other with champagne glasses in hand ready themselves for the big countdown. They glance over at one another with anticipation. The man smiles at the woman. As the clock strikes midnight, confetti flies everywhere and people start cheering and kissing each other. The woman looks back at the man and sees him covered with confetti. It's in his hair, on his shoulders, and even in his champagne. She smiles at him and remarks that there's confetti everywhere. She reaches over and brushes it off his shoulders.

-

FOR MALES – Non-Trad #3

T Version

It's New Year's Eve and almost midnight. Two people standing close to each other with champagne glasses in hand ready themselves for the big countdown. They glance over at one another with anticipation. The man smiles at the woman. She touches him on his shoulder. As the clock strikes midnight, confetti flies everywhere and people start cheering and kissing each other. The woman looks back at the man and sees him covered with confetti. It's in his hair, on his shoulders, and even in his champagne. She smiles at him and remarks that there's confetti everywhere.

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2. TRADITIONAL

FOR FEMALES – Trad #1

N Version

A man is sitting outside on the patio having a cup of coffee with a woman he knows. He notices she still hasn't gotten the haircut she talked about having. He asks her about it and she says she 's been thinking about it. They talk a bit and then go inside to the kitchen. He fills up her coffee mug, and they keep talking.

-

FOR FEMALES – Trad #1

G Version

A man is sitting outside on the patio having a cup of coffee with a woman he knows. He notices she still hasn't gotten the haircut she talked about having. He asks her about it and she says she 's been thinking about it. He offers to cut her hair for her, "I could do it for you," he says. "After all, it's just a little trim to shorten it in the back." She agrees. They go inside to the kitchen and she wets her head under the faucet. While she's doing that he goes to get some towels and a pair of scissors. He returns and then cuts her hair, trimming it in the back so it's a little shorter.

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FOR FEMALES – Trad #1

T Version

A man is sitting outside on the patio having a cup of coffee with a woman he knows. He notices she still hasn't gotten the haircut she talked about having. He asks her about it and she says she 's been thinking about it. They talk a bit and then go inside to the kitchen. He fills up his coffee mug, and while they talk, he reaches out and touches the back of her neck.

FOR MALES – Trad #1

N Version

A woman is sitting outside on the patio having a cup of coffee with a man she knows. She notices he still hasn't gotten the haircut he talked about having. She asks him

about it and he says he 's been thinking about it. They talk a bit and then go inside to the kitchen. She fills up her coffee mug, and they keep talking.

-

FOR MALES – Trad #1

G Version

A woman is sitting outside on the patio having a cup of coffee with a man she knows. She notices he still hasn't gotten the haircut he talked about having. She asks him about it and he says he 's been thinking about it. She offers to cut his hair for him, "I could do it for you," she says. "After all, it's just a little trim to shorten it in the back." He agrees. They go inside to the kitchen and he wets his head under the faucet. While he's doing that she goes to get some towels and a pair of scissors. She returns and then cuts his hair, trimming it in the back so it's a little shorter.

-

FOR MALES – Trad #1

T Version

A woman is sitting outside on the patio having a cup of coffee with a man she knows. She notices he still hasn't gotten the haircut he talked about having. She asks him about it and he says he 's been thinking about it. They talk a bit and then go inside to the kitchen. She fills up her coffee mug, and while they talk, she reaches out and touches the back of his neck

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FOR FEMALES – Trad #2

N Version

One lazy summer afternoon a man and woman sit on a porch swing drinking lemonade and thinking of new ways to pass the day. They're both kind of hungry but aren't sure about eating just yet. He feels like experimenting and doing something different. Looking over at her, he says with a grin, "I've always wondered what it would be like to shave your legs." She reaches down and feels her stubbly legs. "Oh, yeah?" she says. She looks back at him and says, "Maybe tomorrow."

-

FOR FEMALES – Trad #2

G Version

One lazy summer afternoon a man and woman sit on a porch swing drinking lemonade and thinking of new ways to pass the day. They're both kind of hungry but aren't sure about eating just yet. He feels like experimenting and doing something different. Looking over at her, he says with a grin, "I've always wondered what it would be like to shave your legs." She reaches down and feels her stubbly legs. "Oh, yeah?" she says. He looks back at her and then gets up. He comes back with some of her shaving cream, her razor, and a towel. He lathers up her legs and then gently shaves them. When he's done she reaches down and runs her hands over her legs.

-

FOR FEMALES – Trad #2

T Version

One lazy summer afternoon a man and woman sit on a porch swing drinking lemonade and thinking of new ways to pass the day. They're both kind of hungry but aren't sure about eating just yet. He feels like experimenting and doing something different. Looking over at her, he says with a grin, "I've always wondered what it would be like to shave your legs." She reaches down and feels her stubbly legs. "Oh, yeah?" she says. She looks back at him. He touches her legs. She says, "Maybe tomorrow."

FOR MALES – Trad #2

N Version

One lazy summer afternoon a man and woman sit on a porch swing drinking lemonade and thinking of new ways to pass the day. They're both kind of hungry but aren't sure about eating just yet. She feels like experimenting and doing something different. Looking over at her, he says with a grin, "I've always wondered what it would be like to shave your face." He reaches up and feels his scruff. "Oh, yeah?" he says. He looks back at her and says, "Maybe tomorrow."

-

FOR MALES – Trad #2

G Version

One lazy summer afternoon a man and woman sit on a porch swing drinking lemonade and thinking of new ways to pass the day. They're both kind of hungry but don't really feel like eating yet. She feels like experimenting and doing something different. Looking over at her, he says with a grin, "I've always wondered what it would be like

to shave your face.” He reaches up and feels his scruffy face. “Oh, yeah?” he says. She looks back at him and then gets up. She comes back with some of his shaving cream, his razor, and a towel. She lathers his face up and then gently shaves his face. When she’s done he reaches up and runs his hands over his face.

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FOR MALES – Trad #2

T Version

One lazy summer afternoon a man and woman sit on a porch swing drinking lemonade and thinking of new ways to pass the day. They’re both kind of hungry but aren’t sure about eating just yet. She feels like experimenting and doing something different. Looking over at her, he says with a grin, “I’ve always wondered what it would be like to shave your face.” He reaches up and feels his scruffy face. “Oh, yeah?” he says. He looks back at her. She touches his face. He says, “Maybe tomorrow.”

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FOR FEMALES – Trad #3

N Version

A man and a woman are sitting around and joking late at night. They’re not tired and have lots of energy to burn. They killed time by watching an old TV game show, Family Feud, then read magazines, and watched another frivolous TV show. They have been enjoying their time together and are running out of things to do. She decides

she wants to paint her nails, so she gets up and comes back with some nail polish. She paints her nails and sets the bottle down next to her when she's done. The man reaches over and picks up the bottle and with a smirk asks her "Why not paint your toenails too?" She answers, "Because I'm waiting for my nails to dry." He picks up a different magazine to read and before going to sit down, he goes over and looks at her nails.

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FOR FEMALES – Trad #3

G Version

A man and a woman are sitting around and joking late at night. They're not tired and have lots of energy to burn. They killed time by watching an old TV game show, Family Feud, then read magazines, and watched another frivolous TV show. They have been enjoying their time together and are running out of things to do. She decides she wants to paint her nails, so she gets up and comes back with some nail polish. She paints her nails and sets the bottle down next to her when she's done. The man reaches over and picks up the bottle and asks her, "Why not paint your toenails too?" She answers, "Because I'm waiting for my nails to dry." He says, "I could do them for you." She says, "Okay." He paints her toenails gently.

-
FOR FEMALES – Trad #3

T Version

A man and a woman are sitting around and joking late at night. They're not tired and have lots of energy to burn. They killed time by watching an old TV game show, Family Feud, then read magazines, and watched another frivolous TV show. They have been enjoying their time together and are running out of things to do. She decides she wants to paint her nails, so she gets up and comes back with some nail polish. She paints her nails and sets the bottle down next to her when she's done. The man reaches over and picks up the bottle and with a smirk asks her, "Why not paint your toenails too?" She answers, "Because I'm waiting for my nails to dry." He picks up a different magazine to read and before going to sit down, he goes over and looks at her nails. She looks up at him. He reaches out and grasps her hand gently. He holds her hand up to get a closer view.

FOR MALES – Trad #3

N Version

A man and a woman are sitting around and joking late at night. They're not tired and have lots of energy to burn. They killed time by watching an old TV game show, Family Feud, then read magazines, and watched another frivolous TV show. They have been enjoying their time together and are running out of things to do. She decides she wants to paint her nails, so she gets up and comes back with some nail polish. She paints her nails and sets the bottle down next to her when she's done. The man reaches over and picks up the bottle and with a smirk asks her "Why not paint your toenails too?" She answers, "Because I'm waiting for my nails to dry." He picks up a

different magazine to read and before going to sit down, he goes over and looks at her nails.

-

FOR MALES – Trad #3

G Version

A man and a woman are sitting around and joking late at night. They're not tired and have lots of energy to burn. They killed time by watching an old TV game show, Family Feud, then read magazines, and watched another frivolous TV show. They have been enjoying their time together and are running out of things to do. She decides she wants to paint her nails, so she gets up and comes back with some nail polish. She paints her nails and sets the bottle down next to her when she's done. The man reaches over and picks up the bottle and with a smirk asks her, "Why not paint my toenails?" She answers, "Because I'm waiting for my nails to dry." He says, "I could wait." She says, "Okay." After her nails dry, she paints his toenails.

-

FOR MALES – Trad #3

T Version

A man and a woman are sitting around and joking late at night. They're not tired and have lots of energy to burn. They killed time by watching an old TV game show, Family Feud, then read magazines, and watched another frivolous TV show. They have been enjoying their time together and are running out of things to do. She decides she wants to paint her nails, so she gets up and comes back with some nail polish. She

paints her nails and sets the bottle down next to her when she's done. The man reaches over and picks up the bottle and with a smirk asks her, "Why not paint your toenails too?" She answers, "Because I'm waiting for my nails to dry." He picks up a different magazine to read and before going to sit down, he goes over and looks at her nails. She looks up at him, reaches out, and grasps his hand gently.

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3. MIMICRY

FOR FEMALES – Mimicry #1

N Version

After a very long and stressful day of work a woman comes home to relax but finds that not only does the laundry need to be done but the dishes too. She does the laundry. By the time she's done, her back is very sore. The man she lives with arrives shortly thereafter and asks her how her day was. They talk a little bit and she lets him know how exhausted she is, how much her back hurts, and what housework still needs to be done. He tells her about his day. She goes to lie down and rest for a little while before getting up to finish the dishes.

FOR FEMALES – Mimicry #1

G Version

After a very long and stressful day of work a woman comes home to relax but finds that not only does the laundry need to be done but the dishes too. She does the laundry. By the time she's done, her back is very sore. The man she lives with arrives shortly thereafter and asks her how her day was. They talk a little bit and she lets him know how exhausted she is, how much her back hurts, and what housework still needs to be done. He tells her about his day. She goes to lie down and rest for a little while. He comes in and massages her back. She gets up to finish the dishes.

FOR FEMALES – Mimicry #1

T Version

After a very long and stressful day of work a woman comes home to relax but finds that not only does the laundry need to be done but the dishes too. She does the laundry. By the time she's done, her back is very sore. The man she lives with arrives shortly thereafter and asks her how her day was. He places his hand on her back. They talk a little bit and she lets him know how exhausted she is, how much her back hurts, and what housework still needs to be done. He tells her about his day. She goes to lie down and rest for a little while before getting up to finish the dishes.

FOR MALES – Mimicry #1

N Version

After a very long and stressful day of work a man comes home to relax but finds that not only does the laundry need to be done but the dishes too. He does the laundry.

By the time he's done, his back is very sore. The woman he lives with arrives shortly thereafter and asks him how his day was. They talk a little bit and he lets her know how exhausted he is, how much his back hurts, and what housework still needs to be done. She tells him about her day. He goes to lie down and rest for a little while before getting up to finish the dishes.

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FOR MALES – Mimicry #1

G Version

After a very long and stressful day of work a man comes home to relax but finds that not only does the laundry need to be done but the dishes too. He does the laundry. By the time he's done, his back is very sore. The woman he lives with arrives shortly thereafter and asks him how his day was. They talk a little bit and he lets her know how exhausted he is, how much his back hurts, and what housework still needs to be done. She tells him about her day. He goes to lie down and rest for a little while. She comes in and massages his back. He gets up to finish the dishes.

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FOR MALES – Mimicry #1

T Version

After a very long and stressful day of work a man comes home to relax but finds that not only does the laundry need to be done but the dishes too. He does the laundry. By the time he's done, his back is very sore. The woman he lives with arrives shortly thereafter and asks him how his day was. She places her hand on his back. They talk

a little bit and he lets her know how exhausted he is, how much his back hurts, and what housework still needs to be done. She tells him about her day. He goes to lie down and rest for a little while before getting up to finish the dishes.

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FOR FEMALES – Mimicry #2

N Version

One afternoon a man and a woman are flying overseas. They're finally leaving to go on vacation to Paris for two weeks and are both really looking forward to their trip. As they talk about their plans, she notices that the air on the plane has dried out her skin and now her back and face are terribly itchy. She reaches into her purse and takes out some moisturizer. They continue to talk.

FOR FEMALES – Mimicry #2

G Version

One afternoon a man and a woman are flying overseas. They're finally leaving to go on vacation to Paris for two weeks and are both really looking forward to their trip. As they talk about their plans, she notices that the air on the plane has dried out her skin and now her back and face are terribly itchy. She starts to scratch her back but can't reach the spot. "Lean forward," he says, "I'll get it." He scratches her back. She leans back and thanks him. They continue to talk.

-

FOR FEMALES – Mimicry #2

T Version

One afternoon a man and a woman are flying overseas. They're finally leaving to go on vacation to Paris for two weeks and are both really looking forward to their trip. As they talk about their plans, she notices that the air on the plane has dried out her skin and now her back and face are terribly itchy. She reaches into her purse and takes out some moisturizer. He places his hand on her back, and they continue to talk.

FOR MALES – Mimicry #2

N Version

One afternoon a man and a woman are flying overseas. They're finally leaving to go on vacation to Paris for two weeks and are both really looking forward to their trip. As they talk about their plans, he notices that the air on the plane has dried out his skin and now his back and face are terribly itchy. He gets some lotion out of his carry-on bag. They continue to talk.

-

FOR MALES – Mimicry #2

G Version

One afternoon a man and a woman are flying overseas. They're finally leaving to go on vacation to Paris for two weeks and are both really looking forward to their trip.

As they talk about their plans, he notices that the air on the plane has dried out his skin and now his back and face are terribly itchy. He starts to scratch his back but can't reach the spot. "Lean forward," she says, "I'll get it." She scratches his back. He leans back and thanks her. They continue to talk.

-

FOR MALES – Mimicry #2

T Version

One afternoon a man and a woman are flying overseas. They're finally leaving to go on vacation to Paris for two weeks and are both really looking forward to their trip. As they talk about their plans, he notices that the air on the plane has dried out his skin and now his back and face are terribly itchy. He gets some lotion out of his carry-on bag. She places her hand on his back, and they continue to talk.

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FOR FEMALES – Mimicry #3

N Version

Working on her weekend project of painting the ceiling in the kitchen, a woman lifts the roller soaked in paint over her head another time. She's been staring at the ceiling, rolling the paint sponge back and forth for over an hour. She finishes one spot then stares down at the floor, turning her neck from side to side trying to stretch her muscles out. A man comes in to get a glass of water and wash his hands in the kitchen

sink. He's been outside working in the yard. He says he's almost done and asks her how it's going. She says she's glad she's almost finished painting the ceiling. "It's a pain in the neck," she says as she strokes the back of her neck where it's sore.

-

FOR FEMALES – Mimicry #3

G Version

Working on her weekend project of painting the ceiling in the kitchen, a woman lifts the roller soaked in paint over her head another time. She's been staring at the ceiling, rolling the paint sponge back and forth for over an hour. She finishes one spot then stares down at the floor, turning her neck from side to side trying to stretch her muscles out. A man comes in to get a glass of water and wash his hands in the kitchen sink. He's been outside working in the yard. He says he's almost done and asks her how it's going. She says she's glad she's almost finished painting the ceiling. "It's a pain in the neck," she says as she strokes the back of her neck where it's sore. He comes over and strokes her neck with his fingertips.

-

FOR FEMALES – Mimicry #3

T Version

Working on her weekend project of painting the ceiling in the kitchen, a woman lifts the roller soaked in paint over her head another time. She's been staring at the ceiling, rolling the paint sponge back and forth for over an hour. She finishes one spot then stares down at the floor, turning her neck from side to side trying to stretch her

muscles out. A man comes in to get a glass of water and wash his hands in the kitchen sink. He's been outside working in the yard. He says he's almost done and asks her how it's going. She says she's glad she's almost finished painting the ceiling. "It's a pain in the neck," she says as she strokes the back of her neck where it's sore. He reaches over and touches her briefly on the back of her neck and then says, "I'm going to head back outside to finish up."

FOR MALES – Mimicry #3

N Version

Working on his weekend project of painting the ceiling in the kitchen, a man lifts the roller soaked in paint over his head another time. He's been staring at the ceiling, rolling the paint sponge back and forth for over an hour. He finishes one spot then stares down at the floor, turning his neck from side to side trying to stretch his muscles out. A woman comes in to get a glass of water and wash her hands in the kitchen sink. She's been outside working in the yard. She says she's almost done and asks him how it's going. He says he's glad he's almost finished painting the ceiling. "It's a pain in the neck," he says as he strokes the back of his neck where it's sore.

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FOR MALES – Mimicry #3

G Version

Working on his weekend project of painting the ceiling in the kitchen, a man lifts the roller soaked in paint over his head another time. He's been staring at the ceiling,

rolling the paint sponge back and forth for over an hour. He finishes one spot then stares down at the floor, turning his neck from side to side trying to stretch his muscles out. A woman comes in to get a glass of water and wash her hands in the kitchen sink. She's been outside working in the yard. She says she's almost done and asks him how it's going. He says he's glad he's almost finished painting the ceiling. "It's a pain in the neck," he says as he strokes the back of his neck where it's sore. She comes over and strokes his neck with her fingertips.

FOR MALES – Mimicry #3

T Version

Working on his weekend project of painting the ceiling in the kitchen, a man lifts the roller soaked in paint over his head another time. He's been staring at the ceiling, rolling the paint sponge back and forth for over an hour. He finishes one spot then stares down at the floor, turning his neck from side to side trying to stretch his muscles out. A woman comes in to get a glass of water and wash her hands in the kitchen sink. She's been outside working in the yard. She says she's almost done and asks him how it's going. He says he's glad he's almost finished painting the ceiling. "It's a pain in the neck," he says as he strokes the back of his neck where it's sore. She reaches over and touches him briefly on the back of his neck and then says, "I'm going to head back outside to finish up."

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4. BLEMISH-FOCUSED

FOR FEMALES – Blemished-Focused #1

N Version

A woman gets distracted while reading a book. She feels the back of her neck and finds a small bump about the size of a pinhead. She asks the man she's sitting with to look at it and tell her what it is. He leans over to look at her neck and says, "Oh it's nothing, just a small zit." She goes back to reading and he picks up a newspaper to check out the baseball team standings. He hopes his team is still on top.

-

FOR FEMALES – Blemished-Focused #1

G Version

A woman gets distracted while reading a book. She feels the back of her neck and finds a small bump about the size of a pinhead. She asks the man she's sitting with to look at it and tell her what it is. He leans over to look at her neck and says, "Oh it's nothing, just a small zit. Can I pop it?" She says yes so he pops her zit. She goes back to reading and he picks up a newspaper to check out the baseball team standings. He hopes his team is still on top.

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FOR FEMALES – Blemished-Focused #1

T Version

A woman gets distracted while reading a book. She feels the back of her neck and finds a small bump about the size of a pinhead. She asks the man she's sitting with to look at it and tell her what it is. He leans over, placing his hand on her neck, and looks at it. "Oh it's nothing," he says, "just a small zit." She goes back to reading and he picks up a newspaper to check out the baseball team standings. He hopes his team is still on top.

FOR MALES – Blemished-Focused #1

N Version

A man gets distracted while reading a book. He feels the back of his neck and finds a small bump about the size of a pinhead. He asks the woman he's sitting with to look at it and tell him what it is. She leans over to look at his neck and says, "Oh it's nothing, just a small zit." He goes back to reading and she picks up a newspaper to check out the baseball team standings. She hopes her team is still on top.

-

FOR MALES – Blemished-Focused #1

G Version

A man gets distracted while reading a book. He feels the back of his neck and finds a small bump about the size of a pinhead. He asks the woman he's sitting with to look at it and tell him what it is. She leans over to look at his neck and says, "Oh it's

nothing, just a small zit. Can I pop it?" He says yes so she pops his zit. He goes back to reading and she picks up a newspaper to check out the baseball team standings. She hopes her team is still on top.

FOR MALES – Blemished-Focused #1

T Version

A man gets distracted while reading a book. He feels the back of his neck and finds a small bump about the size of a pinhead. He asks the woman he's sitting with to look at it and tell him what it is. She leans over to look, placing her hand on his neck, and looks at it. "Oh it's nothing," he says, "just a small zit." He goes back to reading and she picks up a newspaper to check out the baseball team standings. She hopes her team is still on top.

+++++

FOR FEMALES – Blemished-Focused #2

N Version

A man and woman finish eating dinner and decide to watch a movie on TV. They sit together on the couch while a cat curls up next to them. The woman pulls a blanket over her legs; it's been a very cold winter. He reaches to pull a blanket over onto himself and as he does so he notices the scab from a recent cat scratch on her hand.

-

FOR FEMALES – Blemished-Focused #2

G Version

A man and woman finish eating dinner and decide to watch a movie on TV. They sit together on the couch while a cat curls up next to them. The woman pulls a blanket over her legs; it's been a very cold winter. He reaches to pull a blanket over onto himself and as he does so he notices the scab from a recent cat scratch on her hand. He reaches over and feels it, probing it a little with his finger.

-

FOR FEMALES – Blemished-Focused #2

T Version

A man and woman finish eating dinner and decide to watch a movie on TV. They sit together on the couch while a cat curls up next to them. The woman pulls a blanket over her legs; it's been a very cold winter. He reaches to pull a blanket over onto himself and as he does so he notices the scab from a recent cat scratch on her hand. He stretches out his hand and puts it on top of hers briefly.

FOR MALES – Blemished-Focused #2

N Version

A man and woman finish eating dinner and decide to watch a movie on TV. They sit together on the couch while a cat curls up next to them. The man pulls a blanket over

his legs; it's been a very cold winter. She reaches to pull a blanket over onto herself and as she does so she notices the scab from a recent cat scratch on his hand.

-

FOR MALES – Blemished-Focused #2

G Version

A man and woman finish eating dinner and decide to watch a movie on TV. They sit together on the couch while a cat curls up next to them. The man pulls a blanket over his legs; it's been a very cold winter. She reaches to pull a blanket over onto herself and as she does so she notices the scab from a recent cat scratch on his hand. She reaches over and feels it, probing it a little with her finger.

-

FOR MALES – Blemished-Focused #2

T Version

A man and woman finish eating dinner and decide to watch a movie on TV. They sit together on the couch while a cat curls up next to them. The man pulls a blanket over his legs; it's been a very cold winter. She reaches to pull a blanket over onto herself and as she does so she notices the scab from a recent cat scratch on his hand. She stretches out her hand and puts it on top of his briefly.

+++++

FOR FEMALES – Blemished-Focused #3

N Version

A man and a woman are looking for a desk at a garage sale. They spot an old wooden desk and go over to inspect it up close. It's a little rough around the edges; it's just what she's looking for. She pays for it and then they load it into his truck. When they're done she realizes she got a splinter of wood stuck in her finger. "Ouch," she says, "I have a splinter." He says, "Let me see." She shows him her finger; sure enough there's a little piece of wood stuck. She pulls it out with her nails.

-

FOR FEMALES – Blemished-Focused #3

G Version

A man and a woman are looking for a desk at a garage sale. They spot an old wooden desk and go over to inspect it up close. It's a little rough around the edges; it's just what she's looking for. She pays for it and then they load it into his truck. When they're done she realizes she got a splinter of wood stuck in her finger. "Ouch," she says, "I have a splinter." He says, "Let me see." She shows him her finger; sure enough there's a little piece of wood stuck. He reaches into his pocket for his swiss army knife. It has a miniature tweezer in it. He uses it to remove her sliver.

-

FOR FEMALES – Blemished-Focused #3

T Version

A man and a woman are looking for a desk at a garage sale. They spot an old wooden desk and go over to inspect it up close. It's a little rough around the edges; it's just what she's looking for. She pays for it and then they load it into his truck. When they're done she realizes she got a splinter of wood stuck in her finger. "Ouch," she says, "I have a splinter." He says, "Let me see." She shows him her finger. He grasps her hand and pulls her finger up close to look at it. Sure enough there's a little piece of wood stuck. She pulls it out with her nails.

FOR MALES – Blemished-Focused #3

N Version

A woman and a man are looking for a desk at a garage sale. They spot an old wooden desk and go over to inspect it up close. It's a little rough around the edges; it's just what he's looking for. He pays for it and then they load it into his truck. When they're done he realizes he got a splinter of wood stuck in his finger. "Ouch," he says, "I have a splinter." She says, "Let me see." He shows her his finger; sure enough there's a little piece of wood stuck. He pulls it out with his nails.

-

FOR MALES – Blemished-Focused #3

G Version

A woman and a man are looking for a desk at a garage sale. They spot an old wooden desk and go over to inspect it up close. It's a little rough around the edges; it's just what he's looking for. He pays for it and then they load it into his truck. When they're

done he realizes he got a splinter of wood stuck in his finger. "Ouch," he says, "I have a splinter." She says, "Let me see." He shows him his finger; sure enough there's a little piece of wood stuck. He reaches into his pocket for his swiss army knife. It has a miniature tweezer in it. She uses it to remove his sliver.

-
FOR MALES – Blemished-Focused #3

T Version

A woman and a man are looking for a desk at a garage sale. They spot an old wooden desk and go over to inspect it up close. It's a little rough around the edges; it's just what he's looking for. He pays for it and then they load it into his truck. When they're done he realizes he got a splinter of wood stuck in his finger. "Ouch," he says, "I have a splinter." She says, "Let me see." He shows her his finger. She grasps his hand and pulls his finger up close to look at it. Sure enough there's a little piece of wood stuck. He pulls it out with his nails.

APPENDIX E

INFORMED CONSENT PAGE (Study 1)

WELCOME and thank you for your interest in this research.

-

You are being asked to participate in a voluntary research study being conducted by Holly Nelson, a PhD candidate in psychology at the University of New Hampshire. Participation in this research is entirely voluntary.

-

The purpose of this study is to learn about the ways people touch and take care of each other in a variety of relationships. The total length of time it takes to complete the questionnaire is approximately 15 minutes or less.

-

Please know that your participation in this study is completely voluntary and that you are free to withdraw at any time. This study is completely anonymous – no identifying information will be collected about you, the computer you are using, or the Internet Service Provider through which you are accessing this web site. Should you choose to participate, your answers will be used for research purposes only.

-

No potential risks or discomforts are anticipated by participating in this study.

-

In appreciation of your participation, each participant will be entered into a prize drawing with the chance to win an Apple iPod or a \$200 gift certificate to a store of your choice. So that the study is accurate, we ask that you only participate once; multiple responses will not be counted. We appreciate your understanding. After prize allocation, your email address will be deleted and not linked to your survey responses. If you are a prize winner, you will be notified by email when the study is completed.

-

If you have any questions or concerns about this research, please feel free to contact the Principal

Investigator:

Holly Nelson

Email: nelsonh@whitman.edu

Dept. of Psychology, Whitman College

Tel: (509) 527-5124

Walla Walla, WA, 99362

-

Holly Nelson

Email: hnelsonh@cisunix.unh.edu

Dept. of Psychology

University of New Hampshire

Durham, NH 03824

-

If you have questions regarding your rights as a research subject, contact Julie Simpson, Regulatory Compliance Manager of Sponsored Research, University of New Hampshire,

Durham, NH 03857. Email: julie.simpson@cisunix.unh.edu (Phone: 603-862-2003).

-

YOU MAY PRINT OUT THIS INFORMATION SHEET FOR FURTHER
REFERENCE.

-

Do you give your consent to participate in this survey?

(I understand and agree to participate)

+++++

DEBRIEFING PAGE (Study 1)

THANK YOU for your interest in this research.

-

The purpose of this study is to learn about the ways people touch and take care of each other differently depending on the kind of relationship they have.

-

To be included in the prize drawing, please type your email address below.

-

If you are a prize winner, you will be notified by email when the study is completed, on or before May 15, 2007.

-

When the results of this study are available they will be posted at:

<http://www.whitman.edu/facpages/~nelsonh>

or <http://www.evolutionarypsych.blogspot.com>

-

If you have any questions or concerns about this research, please feel free to contact the

Principal

Investigator:

Holly Nelson

Email: nelsonh@whitman.edu

Dept. of Psychology, Whitman College

Tel: (509) 527-5124

Walla Walla, WA, 99362

-

Holly Nelson

Email: hnelsonh@cisunix.unh.edu

Dept. of Psychology

University of New Hampshire

Durham, NH 03824

APPENDIX F

INFORMED CONSENT PAGE (Study 2)

WELCOME and thank you for your interest in this research.

-

You are being asked to participate in a voluntary research study being conducted by Holly Nelson, a PhD candidate in psychology at the University of New Hampshire. Participation in this research is entirely voluntary.

-

The purpose of this study is to learn about the perceptions of people who are depicted interacting with each other in a variety of ways. The total length of time it takes to participate in this study is approximately 15 minutes or less.

-

Please know that your participation in this study is completely voluntary and that you are free to withdraw at any time. This study is completely anonymous – no identifying information will be collected about you, the computer you are using, or the Internet Service Provider through which you are accessing this web site. Should you choose to participate, your answers will be used for research purposes only.

-

No potential risks or discomforts are anticipated by participating in this study.

In appreciation of your participation, each participant will be entered into a prize drawing with the chance to win an Apple iPod or a \$200 gift certificate to a store of your choice. You will need to provide your email address in order to participate in the prize drawing. It will only be used to notify you if you have won. So that the study is accurate, we ask that you only participate once; multiple responses will not be counted. We appreciate your understanding.

-

If you have any questions or concerns about this research, please feel free to contact the Principal

Investigator:

Holly Nelson

Email: nelsonh@whitman.edu

Dept. of Psychology, Whitman College

Tel: (509) 527-5124

Walla Walla, WA 99362

-

Holly Nelson

Email: hnelsonh@cisunix.unh.edu

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University of New Hampshire

Durham, NH 03824

-

If you have questions regarding your rights as a research subject, contact Julie Simpson, Regulatory Compliance Manager of Sponsored Research, University of New Hampshire,

Durham, NH 03857. Email: julie.simpson@cisunix.unh.edu (Phone: 603-862-2003).

-

YOU MAY PRINT OUT THIS INFORMATION SHEET FOR FURTHER
REFERENCE.

-

Do you give your consent to participate in this survey?

(I understand and agree to participate)

+++++

DEBRIEFING PAGE (Study 2)

THANK YOU for participating in this research.

-

The purpose of this study is to learn about the perceptions and attributions men and women make about the opposite sex based on how they interact with someone of the opposite sex.

-

When the results of this study are available they will be posted at:

<http://www.whitman.edu/facpages/~nelsonh>

or <http://www.evolutionarypsych.blogspot.com>

To be included in the prize drawing, please type your email address below.

-

If you are a prize winner, you will be notified by email when the study is completed, on or before May 15, 2007.

-

If you have any questions or concerns about this research, please feel free to contact the Principal

Investigator:

Holly Nelson

Email: nelsonh@whitman.edu

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-

Holly Nelson

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APPENDIX G



UNIVERSITY of NEW HAMPSHIRE

November 2, 2005

Holly Nelson
Psychology, Conant Hall
541 East Alder Street
Walla Walla, WA 99362

IRB #: 3546
Study: Encoding and Decoding Human Mutual Grooming
Approval Date: 10/26/2005


The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, *Responsibilities of Directors of Research Studies Involving Human Subjects*. (This document is also available at <http://www.unh.edu/osr/compliance/irb.html>.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed pink Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,


Julie F. Simpson
Manager

cc: File
Rebecca Warner

**Research Conduct and Compliance Services, Office of Sponsored Research, Service
Building, 51 College Road, Durham, NH 03824-3585 * Fax: 603-862-3564**

APPENDIX H

Table 1
(Study 1). Geographic distribution of participants in study one.

AL	13	MT	8
AK	6	NC	6
AR	2	ND	2
AZ	44	NE	11
CA	255	NH	22
CO	22	NJ	53
CT	7	NM	8
DC	1	NV	11
DE	6	NY	82
FL	38	OH	20
GA	48	OR	57
HI	12	OK	3
ID	5	PA	54
IO	15	PR	1
IL	32	RI	3
IN	5	SC	6
KS	8	SD	2
KY	7	TN	24
LA	10	TX	96
MA	93	UT	5
MD	57	VA	20
ME	19	VT	2
MI	81	WA	136
MN	47	WI	32
MO	25	WV	4
MS	6	WY	1
<hr/>			
unspecified	33		
CANADA		AUSTRALIA	11
ALB	1	HONG KONG	7
BC	35	INDIA	9
ON	8	INDONESIA	8
QC	4	MEXICO	4

unspecified	84	PHILIPPINES	10
		POLAND	4
		UK	29

OTHER COUNTRIES w/ N < 2: Barbados, Brazil, Bulgaria, China, Ecuador, Finland, Germany, Greece, Israel, Japan, Poland, Portugal, Romania, Russia, Serbia, Spain, Sweden, Switzerland, South Africa, UAE.

Table 2

(Study 2). Geographic distribution of participants in study two.

AL	7	MT	11
AK	2	NC	5
AR	1	ND	3
AZ	31	NE	6
CA	205	NH	25
CO	29	NJ	28
CT	13	NM	2
DC	7	NV	9
DE	5	NY	80
FL	42	OH	23
GA	31	OR	75
HI	3	PA	27
IO	19	PR	1
IL	37	RI	2
IN	6	SC	4
KS	11	SD	2
KT	6	TN	30
LA	7	TX	81
MA	79	UT	4
MD	53	VA	26
ME	9	VT	6
MI	47	WA	100
MN	104	WI	49
MO	49	WV	2
MS	2	WY	2
<hr/>			
unspecified	28		
CANADA		AUSTRALIA	8
ALB	4	MEXICO	3
BC	47	NZ	4
ON	25	INDIA	6
QC	21	UK	11
unspecified	74		

OTHER COUNTRIES w/ N < 2: Bosnia, Bulgaria, Colombia, Denmark, Ecuador, Finland, France, Hong Kong, Mauritius, Nigeria, Netherlands, Philippines, Poland, Romania.

Table 3

(Study 2). Number of males-females who responded to each vignette.

	GROOMING	TOUCH	CONTROL
NON-TRADITIONAL			
Example 1	18-48	10-24	11-16
Example 2	13-13	11-17	20-304
Example 3	14-25	9-29	18-27
TRADITIONAL			
Example 1	19-94	15-19	10-24
Example 2	10-26	14-30	13-42
Example 3	9-28	10-18	13-28
MIMICRY			
Example 1	10-18	10-18	14-24
Example 2	16-17	11-34	10-29
Example 3	10-36	10-21	10-26
BLEMISH-FOCUSED			
Example 1	17-19	10-17	14-44
Example 2	11-18	20-11	15-14
Example 3	21-38	8-15	14-27

Table 4

(Study 1). Proportion of males reporting touches with family members. Data are reported as percentage (N) with the highest proportion of familial involvement for each type of touch indicated in bold.

N	Mother 396	Father 396	Sister 259	Brother 250
TOUCH				
Hug	93.7 (371)	72.5 (287)	78.4 (203)	58.0 (145)
Pat	82.3 (326)	81.3 (322)	73.7 (191)	70.0 (175)
Tickle	31.6 (125)	23.2 (92)	35.5 (92)	33.2 (83)
Pinch	24.7 (98)	17.2 (68)	35.9 (93)	30.0 (75)
Kiss	68.4 (271)	25.5 (101)	34.0 (88)	16.0 (40)
Hold hand	36.1 (143)	13.6 (54)	20.8 (54)	10.8 (27)
GROOMING				
<i>Mimicry</i>				
Scratch	42.2 (167)	26.5 (105)	25.9 (67)	22.0 (55)
Massage	36.4 (144)	17.9 (71)	20.1 (52)	10.0 (25)
Play hair	24.7 (98)	6.8 (27)	15.1 (39)	7.2 (18)
<i>Cleaning</i>				
Wipe	49.5 (196)	27.5 (109)	26.6 (69)	18.6 (55)
Dirt	62.9 (249)	43.2 (171)	46.3 (120)	40.8 (102)
<i>Traditional</i>				
Style hair	16.9 (76)	3.5 (14)	13.9 (36)	8.8 (22)
Wash hair	16.7 (66)	6.6 (26)	4.6 (12)	2.8 (7)
Cut hair	18.9 (75)	11.6 (46)	8.1 (21)	8.4 (21)
Paint nails	5.1 (20)	0.3 (1)	8.9 (23)	1.6 (4)
Manicure	4.5 (18)	1.3 (5)	4.6 (12)	0.8 (2)
Paint toe	4.0 (16)	0.5 (2)	6.2 (16)	0.8 (2)
Pedicure	3.8 (15)	0.8 (3)	3.1 (8)	0.8 (2)
Brows	4.3 (17)	1.8 (7)	4.6 (12)	1.6 (4)
Body hair	3.3 (13)	1.8 (7)	3.1 (8)	2.0 (5)
Skin	19.7 (78)	8.8 (35)	10.4 (27)	7.6 (19)
Shave	3 (12)	2.3 (9)	3.1 (8)	3.2 (8)
<i>Blemish</i>				
Pimple	14.9 (59)	5.6 (22)	9.3 (24)	5.6 (14)
Wound	42.9 (170)	31.6 (125)	24.3 (63)	26.4 (66)

Table 4 continued.

<i>Clothing</i>				
Zipper	22.5 (89)	10.4 (41)	13.5 (35)	8.8 (22)
Clasp	32.8 (130)	6.1 (24)	25.1 (65)	7.2 (18)
Adjust cloth	31.6 (125)	27.3 (108)	20.1 (52)	21.6 (54)
Tag	36.9 (146)	18.4 (73)	25.1 (65)	19.2 (48)
Laces	23.0 (91)	23.2 (92)	14.7 (38)	18.8 (47)

**** NOTE: mean age = 29.0 (SD=11.6) with a range of 16-69.**

Table 5

(Study 1). Proportion of females reporting touches with family members. Data are reported as percentage (N) with the highest proportion of familial involvement for each type of touch indicated in bold.

N	Mother 1358	Father 1358	Sister 693	Brother 775
TOUCH				
Hug	84.5 (1147)	76.1 (1033)	80.7 (559)	72.9 (565)
Pat	78.3 (1063)	71.5 (971)	78.4 (543)	76.0 (589)
Tickle	25.8 (351)	21.7 (295)	42.6 (295)	34.6 (268)
Pinch	20.5 (278)	14.5 (197)	40.4 (280)	38.3 (297)
Kiss	63.4 (861)	51.5 (700)	44.0 (305)	31.2 (242)
Hold hand	41.2 (560)	23.0 (312)	31.3 (217)	14.2 (110)
GROOMING				
<i>Mimicry</i>				
Scratch	45.4 (616)	25.1 (341)	42.3 (293)	27.1 (210)
Massage	39.5 (537)	18.3 (248)	32.0 (222)	14.5 (112)
Play hair	34.5 (469)	9.3 (126)	39.4 (273)	16.4 (127)
<i>Cleaning</i>				
Wipe	54.9 (745)	31.7 (431)	44.9 (311)	29.5 (229)
Dirt	68.1 (925)	44.0 (598)	64.1 (444)	42.5 (329)
<i>Traditional</i>				
Style hair	39.8 (541)	5.8 (79)	50.5 (350)	15.9 (123)
Wash hair	22.4 (304)	4.3 (59)	18.0 (125)	4.3 (33)
Cut hair	23.5 (319)	6.6 (89)	21.8 (151)	9.9 (77)
Paint nails	28.6 (388)	0.7 (10)	37.7 (261)	2.2 (17)
Manicure	19.0 (258)	1.0 (14)	21.4 (148)	1.0 (8)
Paint toe	19.7 (268)	0.6 (8)	22.5 (156)	1.0 (8)
Pedicure	13.5 (183)	1.0 (13)	13.9 (96)	0.8 (6)
Brows	14.4 (196)	1.3 (18)	18.8 (130)	2.6 (20)
Body hair	2.0 (27)	1.3 (17)	2.3 (16)	1.8 (14)
Skin	22.8 (310)	7.5 (102)	19.8 (137)	9.3 (72)
Shave	4.4 (60)	1.7 (23)	5.1 (35)	2.5 (19)
<i>Blemish</i>				
Pimple	15.1 (205)	4.6 (63)	16.5 (114)	8.5 (66)
Wound	42.5 (577)	25.2 (342)	30.7 (213)	24.3 (188)

Table 5 continued.

<i>Clothing</i>				
Zipper	32.8 (446)	10.3 (14)	29.0 (201)	10.2 (79)
Clasp	66.3 (901)	13.0 (177)	60.5 (419)	12.0 (93)
Adjust cloth	45.5 (618)	25.8 (351)	42.3 (293)	27.9 (216)
Tag	62.7 (852)	28.9 (392)	59.0 (409)	33.7 (261)
Laces	27.4 (372)	15.2 (206)	26.6 (184)	16.1 (125)

**** NOTE: mean age = 28.1 (SD=10.5) with a range of 15-68.**

Table 6

(Study 1). Proportion of males reporting touches with non-family members. Data are reported as percentage (N). The two highest proportions of relational involvement for each touch type appear in bold.

	Romantic				
	Romantic	(Not	Friend:	Friend:	
N	Relationship	Currently)	Same	Other	Work
	120	276	396	396	393
TOUCH					
Hug	93.3 (112)	75.4 (208)	65.2 (258)	75.3 (298)	37.4 (147)
Pat	90.0 (108)	73.6 (203)	73.5 (291)	73.2 (290)	55.0 (218)
Tickle	80.8 (97)	66.3 (183)	16.9 (67)	33.1 (131)	4.6 (18)
Pinch	66.7 (80)	49.6 (137)	17.2 (68)	25.5 (101)	5.6 (22)
Kiss	93.3 (112)	72.1 (199)	13.1 (52)	36.6 (145)	7.6 (30)
Hold hand	93.3 (112)	72.8 (201)	8.6 (34)	26.8 (106)	2.3 (9)
GROOMING					
<i>Mimicry</i>					
Scratch	83.3 (100)	55.1 (152)	17.4 (69)	24.7 (98)	7.4 (29)
Massage	90.8 (109)	71.0 (196)	18.4 (73)	35.4 (140)	8.1 (32)
Play hair	87.5 (105)	68.1 (188)	7.6 (30)	22.0 (87)	2.8 (11)
<i>Cleaning</i>					
Wipe	82.5 (99)	54.7 (151)	28.0 (111)	30.6 (121)	17.6 (69)
Dirt	82.5 (99)	59.8 (165)	42.4 (168)	44.9 (178)	23.2 (92)
<i>Traditional</i>					
Style hair	55.0 (66)	27.9 (77)	5.8 (23)	11.4 (45)	1.3 (5)
Wash hair	62.5 (75)	29.3 (81)	1.5 (6)	4.5 (18)	0 (0)
Cut hair	34.2 (41)	13.0 (36)	7.6 (30)	5.6 (22)	1.3 (5)
Paint nails	20.8 (25)	11.6 (32)	2.3 (9)	5.6 (22)	0 (0)
Manicure	13.3 (16)	5.1 (14)	1.5 (6)	3.0 (12)	0 (0)
Paint toe	18.3 (22)	5.8 (16)	2.0 (8)	3.5 (14)	0.5 (2)
Pedicure	12.5 (15)	4.3 (12)	1.5 (6)	1.8 (7)	0 (0)
Brows	20.0 (24)	6.5 (18)	1.3 (5)	2.8 (11)	0 (0)
Body hair	20.8 (25)	8.0 (22)	2.8 (11)	1.5 (6)	0.3 (1)
Skin	50.8 (61)	21.7 (60)	4.8 (19)	6.1 (24)	0.8 (3)
Shave	25.8 (31)	10.9 (30)	2.3 (9)	2.8 (11)	0.3 (1)

Table 6 continued.

<i>Blemish</i>					
Pimple	42.5 (51)	17.8 (49)	3.0 (12)	4.0 (16)	0.5 (2)
Wound	79.2 (95)	39.1 (108)	27.0 (107)	24.0 (95)	12.7 (50)
<i>Clothing</i>					
Zipper	70.8 (85)	38.4 (106)	11.4 (45)	12.4 (49)	3.1 (12)
Adjust cloth	70.8 (85)	39.5 (109)	23.5 (93)	25.5 (101)	10.7 (42)
Tag	71.7 (86)	46.4 (128)	24.2 (96)	29.3 (116)	12.5 (49)
Laces	54.2 (65)	32.6 (90)	20.7 (82)	16.4 (65)	6.6 (26)

**** NOTE:** For men in a relationship, mean age = 37.2 (SD=12.8) with a range of 16-69. For men not currently romantically involved with someone, mean age = 25.4 (SD=8.98) with a range of 16-65.

Table 7

(Study 1). Proportion of females reporting touches with non- family members. Data are reported as percentage (N). The two highest proportions of relational involvement for each touch type appear in bold.

	Romantic Relationship	Romantic (Not Currently)	Friend: Same	Friend: Other	Work
N	417	818	1358	1235	1213
TOUCH					
Hug	94.2 (393)	82.2 (677)	80.3 (1090)	70.0 (865)	49.3 (598)
Pat	92.3 (385)	81.8 (669)	77.5 (1052)	68.9 (851)	62.6 (759)
Tickle	83.0 (346)	73.1 (598)	27.3 (371)	25.8 (319)	4.0 (49)
Pinch	62.4 (260)	52.0 (425)	24.2 (328)	22.0 (272)	4.8 (58)
Kiss	91.8 (383)	81.9 (670)	36.2 (492)	31.9 (394)	6.8 (82)
Hold hand	92.8 (383)	81.7 (668)	31.8 (432)	21.4 (264)	2.8 (34)
GROOMING					
<i>Mimicry</i>					
Scratch	86.3 (360)	63.0 (515)	32.0 (434)	24.0 (297)	8.7 (106)
Massage	90.2 (376)	76.7 (627)	32.5 (441)	26.9 (332)	9.0 (109)
Play hair	88.2 (368)	75.7 (619)	31.2 (424)	19.1 (236)	3.2 (44)
<i>Cleaning</i>					
Wipe	85.1 (355)	66.9 (547)	48.2 (655)	32.3 (439)	20.8 (252)
Dirt	88.2 (368)	71.6 (586)	60.5 (822)	47.0 (580)	??? (398)
<i>Traditional</i>					
Style hair	55.9 (233)	36.1 (295)	42.7 (580)	11.4 (141)	2.1 (25)
Wash hair	47.7 (199)	32.6 (267)	10.2 (139)	3.1 (38)	0.4 (5)
Cut hair	48.7 (203)	24.3 (199)	15.4 (209)	7.0 (87)	0.7 (9)
Paint nails	11.0 (46)	6.2 (51)	29.8 (405)	2.3 (28)	1.2 (15)
Manicure	14.1 (59)	7.2 (62)	17.8 (242)	1.8 (22)	0.7 (9)
Paint toe	10.1 (42)	5.4 (44)	18.0 (245)	1.3 (16)	0.6 (7)
Pedicure	13.9 (58)	7.2 (59)	11.3 (154)	1.0 (12)	0.3 (4)
Brows	25.2 (105)	14.1 (115)	16.2 (220)	2.1 (26)	0.3 (4)
Body hair	26.1 (109)	13.2 (108)	1.3 (17)	1.5 (19)	0.2 (2)
Skin	56.6 (236)	34.0 (278)	11.7 (159)	5.6 (69)	0.5 (6)
Shave	25.4 (106)	15.2 (124)	2.8 (38)	1.6 (20)	0.2 (2)
<i>Blemish</i>					
Pimple	48.2 (201)	26.8 (219)	6.7 (91)	3.1 (38)	0.2 (2)
Wound	78.7 (328)	51.7 (423)	55.3 (751)	20.6 (254)	12.2 (148)

Table 7 continued.

<i>Clothing</i>					
Zipper	69.1 (288)	53.4 (437)	26.5 (360)	15.6 (193)	5.5 (67)
Adjust cloth	76.5 (319)	58.6 (479)	41.9 (569)	29.9 (369)	12.6 (153)
Tag	80.3 (335)	63.4 (519)	59.4 (807)	39.3 (485)	26.3 (319)
Laces	55.4 (231)	39.5 (323)	25.6 (347)	18.7 (231)	5.9 (71)

**** NOTE:** For women in a relationship, mean age = 32.2 (SD=10.4) with a range of 18-67. For women not currently romantically involved with someone, mean age = 25.9 (SD=9.84) with a range of 15-68.

Table 8

(Study 2). Chi-square contingency table showing the observed frequencies and percentages of relationship type females attributed to actors in grooming (non-traditional) and non-grooming vignettes. Note: * indicates significant post-hoc tests.

VIGNETTE TYPE	RELATIONSHIP TYPE	
	NON- ROMANTIC	ROMANTIC
GROOMING*	36 (41.9%)	50 (58.1%)
Example 1	14 (29.2%)	34 (70.8%)
Example 2*	3 (23.1%)	10 (76.9%)
Example 3	19 (76.0%)	6 (24.0%)
NON-GROOMING*	256 (61.4%)	161 (38.6%)
Example 1	20 (50.0%)	20 (50.0%)
Example 2*	194 (60.4%)	127 (39.6%)
Example 3	42 (75.0%)	14 (25.0%)

Table 9

(Study 2). Chi-square contingency table showing the observed frequencies and percentages of relationship type females attributed to actors in grooming (traditional) and non-grooming vignettes. Note: * indicates significant post-hoc tests.

VIGNETTE TYPE	RELATIONSHIP TYPE	
	NON- ROMANTIC	ROMANTIC
GROOMING*	78 (52.7%)	70 (47.3%)
Example 1*	69 (73.4%)	25 (26.6%)
Example 2	1 (3.8%)	25 (96.2%)
Example 3	8 (28.6%)	20 (71.4%)
NON-GROOMING*	126 (40.8%)	183 (59.2%)
Example 1*	22 (51.2%)	21 (48.8%)
Example 2	8 (9.2%)	64 (90.8%)
Example 3	18 (35.1%)	28 (64.9%)

Table 10

(Study 2). Chi-square contingency table showing the observed frequencies and percentages of relationship type females attributed to actors in grooming (mimicry) and non-grooming vignettes. Note: * indicates significant post-hoc tests.

VIGNETTE TYPE	RELATIONSHIP TYPE	
	NON- ROMANTIC	ROMANTIC
GROOMING*	13 (18.3%)	52 (81.7%)
Example 1	4 (22.2%)	14 (77.8%)
Example 2	4 (23.5%)	13 (76.5%)
Example 3*	5 (13.9%)	31 (86.1%)
NON-GROOMING*	52 (37.7%)	86 (62.3%)
Example 1	9 (23.7%)	29 (76.3%)
Example 2	19 (30.2%)	44 (69.8%)
Example 3*	29 (39.7%)	44 (60.3%)

Table 11

(Study 2). Chi-square contingency table showing the observed frequencies and percentages of relationship type males attributed to actors in grooming (mimicry) and non-grooming vignettes. Note: * indicates significant post-hoc tests.

VIGNETTE TYPE	RELATIONSHIP TYPE	
	NON- ROMANTIC	ROMANTIC
GROOMING*	10 (27.8%)	26 (72.2%)
Example 1	9 (52.9%)	8 (47.1%)
Example 2	1 (9.1%)	10 (90.9%)
Example 3	11 (52.4%)	10 (47.6%)
NON-GROOMING*	37 (56.9%)	28 (43.1%)
Example 1	19 (79.2%)	5 (20.8%)
Example 2	6 (17.1%)	29 (82.9%)
Example 3	13 (59.1%)	9 (40.9%)

Table 12
Summary Table: Hypothesis Tests

Note: All tests for hypothesis one are comparisons between romantic partners and the relationship type listed. They are listed in descending order according to the mean incidence of grooming reported in those relationships. Only significant post-hoc tests are included. None of the 2x3 ANOVA interactions were significant so they are not listed here. For the hypotheses involving ANOVAs, main effects are marked significant only if the contrasts revealed a significant difference between perceptions of grooming and non-grooming touch. Also, only significant post-hoc tests that looked at whether grooming was perceived differently than non-grooming touch are listed. Post-hoc tests are indented.

Hypothesis Test/ Dependent Variable	Statistical Procedure	Significant?	In Predicted Direction?	Effect Size
<i>(1) REPORTED FREQUENCY OF GROOMING</i>	paired- samples t-test			
mothers	“	YES	YES	.08
sisters	“	YES	YES	.19
females - male friends	“	YES	YES	.55
males - female friends	“	YES	YES	.43
fathers	“	YES	YES	.50
brothers	“	YES	YES	.53
males - male friends	“	YES	YES	.49
co-workers	“	YES	YES	.66
	3x4 chi-square			
<i>2(1) TIE-SIGN</i>				
males	“	nearly		
mimicry	2x2 chi-square	YES	YES	.28
females	3x4 chi-square	YES	YES	.16
non-traditional (ex 2)	2x2 chi-square	YES	YES	.15
traditional (ex 1)	“	YES	NO	.23
mimicry (ex 3)	“	YES	YES	.20

Table 12 continued.

Hypothesis Test/ Dependent Variable	Statistical Procedure	Significant?	In Predicted Direction?	Effect Size
<hr/>				
<i>2(2) SEXUAL INTEREST</i>	2x3 ANOVA			
main effect: sex traditional, mimicry	“	YES	NO	.01
main effect: touch mimicry (ex 1 & 3)	“	NO		
		YES	YES	.02
<hr/>				
<i>3(1) FLIRTATION</i>	2x3 ANOVA			
main effect: sex	“	NO		
main effect: touch traditional (ex 1)	one way “	YES	NO	.04
		YES	NO	.02
<hr/>				
<i>3(2) RELATIONSHIP STAGE</i>	non- parametric chi-square			
males	“	NO		
females	“	YES	YES	.15
<hr/>				
<i>4 CARE/LOVE</i>	2x3 ANOVA			
main effect: sex traditional	“ “	YES YES	N/A N/A	.01 .02
main effect: touch blemish-focus (ex 1)	“ “	YES YES	YES YES	.06 .15
<hr/>				
<i>4 COMMITMENT</i>	2x3 ANOVA			
main effect: sex traditional	“ “	YES YES	N/A N/A	.01 .02
main effect: touch blemish-focus (ex 1)	“ “	NO YES	YES YES	.06 .06

Table 12 continued.

<i>4 PARENTING</i>	2x3 ANOVA			
main effect: sex	“	NO		
main effect: touch	one-way ANOVA	YES	YES	.10
non-traditional	“	YES	YES	.09
traditional	“	YES	YES	.07
mimicry (ex 3)	“	YES	YES	.16
blemish-focus (ex 1 & 3)	“	YES	YES	.12
<i>5 REAL-LIFE TIE SIGN</i>	non- parametric chi-square			
males	“	NO		
females	“	NO		