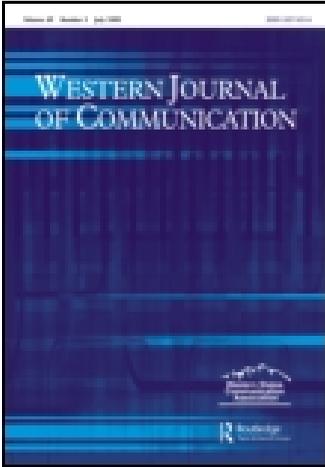


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Relational and Health Correlates of Affection Deprivation

Kory Floyd

This article articulates the construct of affection deprivation, the condition of wanting more tactile affectionate communication than one receives. Individual- and group-level variance on the construct is investigated and its social and health correlates are identified in a survey of 509 adults from all 50 U.S. states, the District of Columbia, Puerto Rico, and 16 foreign countries. Affection deprivation shows no correlation with age and no relationship with ethnicity, but men report significantly higher average affection deprivation than women. Moreover, as affection exchange theory predicts, affection deprivation shows positive linear associations with loneliness, depression, stress, alexithymia, preoccupied and fearful avoidant attachment styles, and numbers of personality disorders, mood and anxiety disorders, and secondary immune disorders. Affection deprivation shows negative linear associations with general health, happiness, social support, relationship satisfaction, and attachment security. These findings support the claims of affection exchange theory that the provision and receipt of affection contribute to health and wellness in both mental and physical ways.

Keywords: Affection Deprivation; Affection Exchange Theory; Health

Scholars and clinicians alike have long considered affection to be among the most fundamental of human needs (Floyd, 2006a; Rotter, Chance, & Phares, 1972; Schutz, 1958, 1966), and with good reason. Affection is one of the primary communication behaviors contributing to the formation (Owen, 1987), maintenance (Bell & Healey, 1992), and quality (Floyd & Morman, 1997, 1998, 2000a) of human relationships. It supports physical health (Floyd, Pauley, & Hesse, 2010), mental well-being (Hesse & Floyd, 2008), and academic performance (Steward & Lupfer, 1987), and mitigates loneliness (Downs & Javidi, 1990) and depression (Oliver, Raftery, Reeb, & Delaney,

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1993). Although there are certainly situations when affection is unwelcome or problematic (Floyd & Burgoon, 1999; Floyd & Morman, 2000b; Floyd & Voloudakis, 1999), it is typically associated with numerous positive outcomes.

Acknowledging the benefits of affectionate communication quite naturally raises questions about the detriments of affection deprivation. If affection truly is a fundamental human need, as theorists have long proposed, then what consequences are associated with the failure to meet that need? This study examines that question by conceptualizing affection deprivation as the longing for more affectionate touch (such as hugging, hand-holding, kissing, and other forms of tactile affection) than one receives. Although affection can be and is communicated in nontactile ways as well (Floyd, 2006a), touch is especially strongly connected to mental, physical, and relational well-being (see, e.g., Floyd & Deiss, 2012). The skin is the largest and first to develop of the human sense organs (Field, 2006), and touch is the only one of the five senses essential to human survival (Field, 2002); thus it was chosen as the focus of this study.

That affection deprivation may be detrimental to well-being is suggested clearly by affection exchange theory, whose principles are reviewed below. Following that is a review of literature on affection deprivation with a specific focus on touch. Hypotheses and a research question related to general and social well-being, mental and physical health, and relational attachment appear subsequently.

Affection Exchange Theory

Affection exchange theory (AET; Floyd, 2006a) conceives of affectionate communication as an adaptive behavior that contributes to humans' superordinate motivations for viability and fertility. AET assumes the Darwinian principle of selective fitness and argues that affectionate communication begets both social and physiological benefits that increase an individual's relative likelihood of survival and procreation. Multiple experimental and correlational experiments have confirmed relationships between affectionate communication and relational satisfaction (Floyd, 2002; Morman & Floyd, 1999); management of stress hormones (Floyd, 2006b; Floyd & Riforgiate, 2008); resting blood pressure (Floyd, Hesse, & Haynes, 2007); resting heart rate (Floyd, Mikkelson, Tafoya et al., 2007b); blood lipids (Floyd et al., 2009; Floyd, Mikkelson, Hesse, & Pauley, 2007); and recovery from elevated distress (Floyd, Mikkelson, Tafoya et al., 2007a; Floyd, Pauley, & Hesse, 2010).

Although AET provides that the benefits of affectionate communication are fundamentally in an asymptotic relationship to its level—eventually reaching a point of diminished return—it is a logical theoretic deduction that affection deprivation—conceptualized as less affectionate communication than one desires—is detrimental to fitness. No studies have tested this hypothesis within the parameters of AET, but a number of investigations lend support to this general prediction, as explained below.

Affection Deprivation: The General Evidence

The observation that affection deprivation impedes wellness can trace its roots at least back to Harry Harlow's pioneering research in the mid-20th century. Harlow's

now-classic experiments with infant macaque monkeys illustrated that the need for physical closeness and affectionate contact is pervasive, even to the point of overriding more fundamental needs such as the need for food. He found that his primate subjects experienced behavioral difficulties and attachment deficits when they failed to receive adequate affection (Harlow, 1958).

James W. Prescott, formerly of the National Institutes of Health, was among the first to document systematic relationships between tactile affection and well-being in humans. His fieldwork in primitive cultures, which focused on the affectional bond between mothers and children, found that the degree of physical affection—touching, holding, carrying—received by infants from their mothers predicted with near-perfect accuracy the propensity toward violence in a culture (Prescott, 1976, 1979). The less the affectionate contact between mothers and infants in a culture, the more violent that culture. Later research has noted similar associations; for instance, Field (2002) reported that, compared to European adolescents, adolescents in the United States receive less affectionate touch and are also more aggressive (see also Field, 1999, for evidence of the same associations among preschool children). Prescott (1980) later hypothesized that violence and other destructive behaviors—including drug and alcohol abuse—in adulthood stem partly from attempts to compensate for touch deprivation in early childhood, although evidence for those associations was not strong.

Since the work of Prescott (1976, 1979, 1980), touch deprivation has been systematically studied most often in the relationship between infants and caregivers. For infants raised at home, research identifies a predictable pattern in which maternal affectionate touch—such as kissing, hugging, and stroking—is highest during an infant's first six months and then begins to wane as the infant's accelerating gross motor movements move him or her farther away from maternal contact (Ferber, Feldman, & Makhoul, 2008). In comparison, infants and children in institutional care (Field, 2010) and children of clinically depressed mothers (Herrera, Reissland, & Shepherd, 2004) receive significantly less affectionate touch. This comparative touch deprivation predicts later cognitive (MacLean, 2003) and neurodevelopmental (Chugani et al., 2001; Nelson, 2007) delays. In particular, touch-deprived children demonstrate cognitive skills deficits compared to age-matched peers that often persist into early adolescence (Beckett et al., 2006).

Fewer studies of touch deprivation have focused on adults (for an exception, see Watson, 1975), but of those that have, some have examined the effects of childhood touch deprivation on later-life outcomes, similar to Prescott's (1980) argument that touch deprivation in childhood predicted adulthood violence and substance abuse as compensatory behaviors. For instance, Gupta and Schork (1995) reported inverse correlations between perceived tactile nurturing during childhood and both body dissatisfaction and drive for thinness among adult women. A similar study by Gupta, Gupta, Schork, and Watteel (1995) found that women diagnosed with anorexia nervosa and/or bulimia nervosa reported significantly higher childhood touch deprivation than did a random nonclinical sample of women from the same community. Other research has focused on touch deprivation among adults as an outcome of

dermatological conditions. Gupta, Gupta, and Watteel (1998), for example, found that psoriasis patients who perceived that others made a conscious effort not to touch them because of their psoriasis scored higher on a measure of depression (and within the diagnostic range for major depressive disorder), compared to psoriasis patients reporting no such touch deprivation.

That a lack of touch—especially touch of a supportive, nurturing, affectionate nature—would be associated with cognitive delays, body image dissatisfaction, and psychopathologies such as depression and eating disorders is unsurprising, given empirical evidence demonstrating the benefits of affectionate communication, in general, and tactile affection, in particular. Juxtaposing that evidence with support for the detriments of affection deprivation gives credence to the focus of the present study, as articulated below.

Importance of Tactile Affection

As research shows, being deprived of affectionate touch is associated with various deficits in well-being. The very idea of *deprivation* is conceptually void, however, unless an underlying need for affectionate touch already exists. A formidable body of empirical work supports the claim that, from infancy on, the receipt of supportive, nurturing, affectionate touch conveys substantial social, psychological, emotional, and physical benefits among humans. Only an abbreviated review of that work is possible here; more complete treatments appear in Field (2006), Field and Chaitow (2000), and Floyd (2006a).

Infant Growth and Development

Affectionate caregiving touch accelerates infant weight gain and development. Several scientific studies have used a form of massage therapy consisting of body stroking and passive limb movement to demonstrate significant increases in weight gain among premature infants (Dieter, Field, Hernandez Reif, Emory, & Redzepi, 2003; Scafidi et al., 1990), cocaine-exposed preterm neonates (Wheeden et al., 1993), and infants born with HIV (Scafidi & Field, 1997). A skin-to-skin parent–child tactile intervention known as “kangaroo care” has also been shown to increase psychomotor development (Feldman, Eidelman, Sirota, & Weller, 2002).

Stress Moderation

Affectionate touch modulates physiological stress reactions. In an fMRI study of married women, Coan, Schaefer, and Davidson (2006) found that when participants held hands with either their husband or a male experimenter, they had attenuated neural response to an electric shock threat relative to no hand-holding. The stress attenuation was greater when holding hands with a husband than with a stranger. Similarly, Grewen, Anderson, Girdler, and Light (2003) demonstrated that hand-holding and hugging with a cohabiting romantic partner attenuated heart rate, systolic

blood pressure, and diastolic blood pressure reactivity to a public speaking stressor, relative to a no-contact condition.

Immune Function

No research has yet directly examined affectionate touch and immune function, but multiple studies document immunological benefits associated with massage-related touch. Cho (1999), for example, demonstrated that hand-holding and hand massage with cataract surgery patients significantly increased natural killer cells relative to a no-touch control group. Massage also increases natural killer cell counts in HIV+adolescents (Diego et al., 2001) and natural killer cell counts and cytotoxicity in gay adult men (Ironson et al., 1996).

Mental Health

Although research has linked mental health to affectionate communication in general (Floyd, 2002; Floyd et al., 2005), evidence for a direct link between mental health and touch is again best extrapolated from the research on massage therapy. Experimental research has demonstrated that receiving massage improves the symptoms of depression (Field, Grizzle, Scafidi, & Schanberg, 1996), posttraumatic stress disorder (Field, Seligman, Scafidi, & Schanberg, 1996), and eating disorders (Hart et al., 2001).

The Concept: Affection Deprivation

When the receipt of affectionate touch is so clearly essential to human thriving and the deprivation of affectionate touch is associated with psychopathologies and other deficits to well-being, it is not inappropriate to draw an analogy between the need for affectionate touch and the need for food. Humans require sufficient caloric intake for nourishment and they experience hunger when that need is unsatisfied. Analogously, humans require sufficient levels of tactile affection, and experience what might be thought of as a hunger for affection when that need is unsatisfied. Just as the problems associated with hunger relate to the functions served by caloric intake, the problems associated with affection deprivation should relate to the functions served by affectionate communication, which are proposed here to encompass general well-being, social well-being, mental health, physical health, and, potentially, attachment. Hypotheses and a research question follow.

Hypotheses and Research Question

Assuming the Darwinian principle of selective fitness, AET provides that affectionate communication provides individuals with both social and physiological benefits. As articulated here, the principle of affection deprivation indicates that lacking sufficient affectionate communication is associated with detriments in optimal functioning. Specific predictions and one research question are articulated below.

General Well-Being

If affectionate communication is beneficial in the ways that AET provides, then it is logical to expect affection deprivation to be associated with impaired general well-being. To test that prediction, I examine here three indices of general well-being: one's level of alexithymia, one's general sense of happiness, and one's overall assessment of general health. Alexithymia is a personality trait characterized by an inability to identify emotional experiences in the self and decode emotional expressions in others (Taylor, Bagby, & Parker, 1997). I include it as a measure of general well-being—along with happiness and general health—because it substantially impairs the ability to meet and make a positive impression on others (Hesse & Floyd, 2011) and is associated with dissatisfaction in intimate relationships (Humphreys, Wood, & Parker, 2009) and friendships (Hesse & Floyd, 2008). The first hypothesis predicts that higher affection deprivation corresponds to higher alexithymia and lower happiness and general health.

H1: Affection deprivation is (a) directly related to alexithymia, (b) inversely related to happiness, and (c) inversely related to general health.

Social Well-Being

A second set of indices concerns well-being in one's social relationships. Given that affectionate communication is a principal behavior involved in the maintenance of quality, satisfying relationships (Floyd, 2006a), receiving less affection than one desires should be associated with deficits in social quality and satisfaction. The second hypothesis thus predicts that higher affection deprivation corresponds to higher loneliness and lower social support and relationship satisfaction.

H2: Affection deprivation is (a) directly related to loneliness, (b) inversely related to social support, and (c) inversely related to relationship satisfaction.

Mental Health

The third set of indices concerns mental health. Examined here were two commonly evaluated mental health outcomes, depression and stress, both of which show inverse relationships with the amount of affection people exchange in their close relationships (Floyd, 2002). Two additional outcomes are examined, the number of diagnosed mood/anxiety disorders and the number of diagnosed personality disorders. These specific categories of psychopathologies were chosen based on evidence that, relative to other psychopathologies, they are sensitive to the social environment (which may include affection deprivation; Comer, 2010). The specific prediction was that higher affection deprivation corresponds to higher depression, stress, number of diagnosed mood/anxiety disorders, and number of diagnosed personality disorders.

H3: Affection deprivation is directly related to (a) magnitude of depression, (b) magnitude of stress, (c) number of diagnosed anxiety/mood disorders, and (d) number of diagnosed personality disorders.

Physical Health

Further proposed was that affection deprivation predicts secondary immune deficiencies. The effect of positive social relationships on immune function is well established. For example, Graham et al. (2009) found that positive communication during spousal conflict mitigated increases in two cytokines, interleukin-6 and tumor necrosis factor- α , both of which are associated with inflammation, whereas Floyd et al. (in press) reported that affectionate communication in close relationships predicts the toxicity of natural killer cells. In contrast, Kiecolt-Glaser et al. (1993) discovered that hostility and negative behavior during spouses' conflict conversations predicted multiple detriments in immune system function, including greater numbers of Epstein-Barr virus antibodies and greater decrements in natural killer cell lysis, blastogenic response to two mitogens, and proliferative response to a monoclonal antibody to the T₃ receptor.

Predicted here was that affection deprivation would be associated with the number of diagnosed secondary immune disorders. Primary immune disorders—such as Kostmann syndrome, herpes simplex encephalitis, and hyper-IgE syndrome—are inherited genetically and therefore less likely to be influenced by social environmental variables such as affection. In contrast, secondary immune disorders—such as AIDS and multiple myeloma—are acquired as a result of exposure to environmental conditions (which can include conditions of the social environment). Given that positive social relationships predict immune regulation and function, Hypothesis 4 predicted that higher affection deprivation corresponds to a higher number of diagnosed secondary immune deficiencies.

H4: Affection deprivation is directly related to number of diagnosed secondary immune disorders.

Attachment

A final variable of interest was attachment style, a characteristic that represents one's generic orientation toward personal relationships and that is believed to have its roots in one's earliest interactions with a primary caregiver (Bartholomew & Horowitz, 1991). Attachment theory provides that the orientation forged during the initial days of life exerts influence throughout childhood and adulthood as individuals develop and maintain relationships with others. Although taxonomies vary, a common approach is to articulate four style categories: (a) Secure, representing those who desire interpersonal closeness and fear neither abandonment nor "suffocation" from becoming too close; (b) Preoccupied, representing those who desire intimacy yet never feel satisfied with the amount of intimacy they receive from others; (c) Dismissive, representing those who feel little need for intimate relationships; and, (d) Fearful/Avoidant, representing those whose worry about getting too close to others which causes them to avoid closeness.

Floyd (2002) found that people with a high level of trait affection are more likely to have a secure attachment style and less likely to have a dismissive or fearful/avoidant style. Some researchers (e.g., Guerrero, 1998) have argued persuasively, however, that

attachment style is better operationalized as four continua than as one discrete variable. That is, individuals may endorse all four attachment styles to varying degrees rather than endorsing one exclusively. The implications of this operational approach for the relationship between affection deprivation and attachment are unclear, however, leading to the advancement of a research question.

RQ: How, if at all, is affection deprivation associated with attachment style?

Method

Participants

Participants ($N = 509$) were 296 men, 203 women, and 10 adults declining to indicate their biological sex, ranging in age from 18 to 71 years ($M = 33.17$ years, $SD = 9.42$). Participants came from all 50 U.S. states, the District of Columbia, and Puerto Rico, as well as Andorra, Angola, Argentina, Australia, Bahrain, Barbados, Canada, Germany, India, Italy, Macedonia, Serbia, Singapore, Syria, Togo, and the United Kingdom. Most of the participants were either married (46.6%) or had never been married (44.8%), whereas 7.9% were divorced and 0.8% were widowed. Slightly more than half (57.4%) were Caucasian, whereas 26.3 were Asian/Pacific Islander, 5.5% were Black/African American, 5.1% were Native American, 4.1% were Hispanic or Latino/a, and 3.7% were of other ethnic origins.¹

Procedure

All procedures were approved by the university's institutional review board. Participants were recruited via the Amazon.com Web Services crowdsourcing marketplace Mechanical Turk (MTurk). MTurk is an online venue where workers—called *providers*—perform functions provided by companies or organizations—called *requesters*—in exchange for payment in the form of money or Amazon.com gift cards. In the case of the present study, a work assignment—called a *hit* on MTurk—was created in which providers were asked to take part in a survey about communication and relationships. Those who elected to participate clicked on a link to an online questionnaire. At the conclusion of the questionnaire, providers were given a code to enter on the MTurk site to verify their completion of the task. Participation was limited to providers 18 years of age or older. Providers received \$2US in exchange for filling out the questionnaire, which took the average provider 14 minutes, 3 seconds to complete. A recent study found that samples recruited on MTurk for academic research are often more representative of the U.S. population than are in-person convenience samples (Berinsky, Huber, & Lenz, 2012; see also Paolacci, Chandler, & Ipeirotis, 2010).

Measures

All measures—with the exception of numbers of immune deficiencies, mood/anxiety disorders, and personality disorders—employed 9-point Likert-type scales wherein

higher scores reflect a greater amount or intensity of the variable. Internal reliability estimates, means and standard deviations, and intercorrelations for all continuous measures appear in Table 1.

Affection deprivation was measured with a six-item scale developed for this study. Items address participants' dissatisfaction with the amount of affectionate touch they receive from other people (e.g., "I don't get enough affectionate touch from others," "I often wish I got more affectionate touch in my life"). *Alexithymia* was measured with the 20-item Toronto Alexithymia Scale developed and extensively validated by Taylor, Bagby, and Parker (2003). Items include "I am often confused about what emotion I am feeling," and "When I am upset, I don't know if I am sad, frightened, or angry." *General health* was measured with the 12-item General Health Questionnaire developed by Banks (1983; Banks et al. 1980). The items assess the level of one's mental and emotional health. *Happiness* was assessed with the four-item Subjective Happiness Scale (Lyubomirsky & Lepper, 1999). Items ask participants to rate their level of happiness both globally and in relation to peers.

Social support was assessed with the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988). Items include "My family really tries to help me," and "I can count on my friends when things go wrong." *Loneliness* was measured with the 20-item UCLA Loneliness Scale (Russell, 1996), which includes items such as "I have nobody to talk to," and "I feel starved for company." *Relationship satisfaction* was measured with the seven-item Relationship Assessment Scale developed by Hendrick (1988). Items include "How well does your partner meet your needs?" and "How good is your relationship compared to most?" *Depression* was assessed with the Iowa Short Form (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993) of the Center for Epidemiological Studies Depression (CES-D) scale (Radloff, 1977). The 11-item measure asks participants how frequently they experience symptoms such as loss of appetite, changes in sleep patterns, or self-dislike. *Stress* was measured with the 14-item Stress Scale developed by Cohen, Kamarck, and Mermelstein (1983). Items ask participants how often, in the past month, they have experienced stress, nervousness, anger, difficulty coping with irritations, and difficulty dealing with changes, among other things.

Participants were then presented with lists of *secondary immune deficiencies*, *mood/anxiety disorders*, and *personality disorders*. For each list, they were asked to indicate how many of the disorders, if any, they had ever been diagnosed as having. Finally, participants reported on their *attachment styles*, using paragraph descriptions of dismissive, fearful/avoidant, secure, and preoccupied styles by Bartholomew and Horowitz (1991). For each style, participants were asked to indicate how much that style characterized them.

Validation Check

As a validation check on the affection deprivation measure, participants were also presented with a visual image of a thermometer and the instruction to consider where on that metric they would place a mark representing the level of affectionate touch they receive in their lives. They were asked to indicate, on a 1–100 scale in which

Table 1 Reliability Estimates, Means, Standard Deviations, and Intercorrelations for Study Variables (N = 509)

Variable	α	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Affection deprivation	.87	4.91	1.93	—														
2. Alexithymia	.89	4.14	1.30	.31**	—													
3. Gen. health	.90	6.12	1.58	-.38**	-.59**	—												
4. Happiness	.93	6.16	1.87	-.26**	-.14**	.63**	—											
5. Social suppt	.93	6.29	1.79	-.31**	-.23**	.58**	.60**	—										
6. Loneliness	.97	3.80	2.02	.45**	.71**	-.70**	-.37**	-.46**	—									
7. Rel satisfac	.86	7.29	1.42	-.38**	-.42**	.51**	.40**	.55**	-.58**	—								
8. Depression	.94	3.81	1.90	.36**	.58**	-.80**	-.58**	-.44**	.78**	-.50**	—							
9. Stress	.89	4.37	1.45	.34**	.49**	-.83**	-.62**	-.52**	.63**	-.49**	.77**	—						
10. Immune def	—	1.32	1.18	.12**	.27**	-.14**	.07	-.00	.27**	-.20**	.23**	.07	—					
11. Mood dis	—	1.60	1.12	.09*	.26**	-.30**	-.11**	-.06	.37**	-.20**	.45**	.26**	.28**	—				
12. Person dis	—	1.30	1.16	.13**	.18**	-.17**	-.05	-.06	.22**	-.20**	.24**	.15**	.46**	.33**	—			
13. Dismiss att	—	5.29	2.37	.03	.31*	-.14*	.01	-.18*	.37*	-.21*	.20*	.14*	.16*	.17*	.07	—		
14. Fearful att	—	4.82	2.48	.27*	.45**	-.44**	-.26*	-.36*	.22*	-.40*	.52**	.48**	.17*	.36*	.13*	.44**	—	
15. Secure att	—	5.53	2.30	-.18*	-.07	.36*	.53**	.53**	.29*	.31*	-.30*	-.40*	.07	-.01	.03	-.18*	-.43*	—
16. Preocc att	—	4.31	2.36	.35*	.44*	-.23*	.09*	.03	.55**	-.16*	.25*	.18*	.18*	.16*	.12*	.07	.20*	.13*

* $p < .01$. ** $p < .001$. Probabilities are one-tailed except for attachment styles (variables 13–16).

higher numbers mean more touch, how much affectionate touch they receive. They were then asked to consider how much affection touch they *wish they received*, whether that amount was higher, lower, or the same than they reported actually receiving. Participants were asked to report their optimal level of affectionate touch on the same 1–100 scale, and a difference score was calculated for comparison to participants' responses to the affection deprivation scale.

Results

Measure Validation

As anticipated, scores on the self-report measure for affection deprivation were strongly related to the difference score calculated on the validation check, such that those who reported higher affection deprivation also reported wanting more affectionate touch than they received, $r(506) = .62, p < .001$.

Descriptive Analyses

Scores for affection deprivation approached a normal distribution, ranging from a low of 1 to a high of 9. The mean of 4.91 was near the theoretic mean of 5.0, and the distribution had a slight negative skew of $-.20$. A histogram appears in Figure 1.

Affection deprivation scores were unrelated to age but differed by sex, with men's scores ($M = 5.16, SD = 1.76$) exceeding those of women ($M = 4.56, SD = 2.11$), $t(497) = 3.43, p(2\text{-tailed}) = .001$. Scores were unaffected by ethnic comparisons.

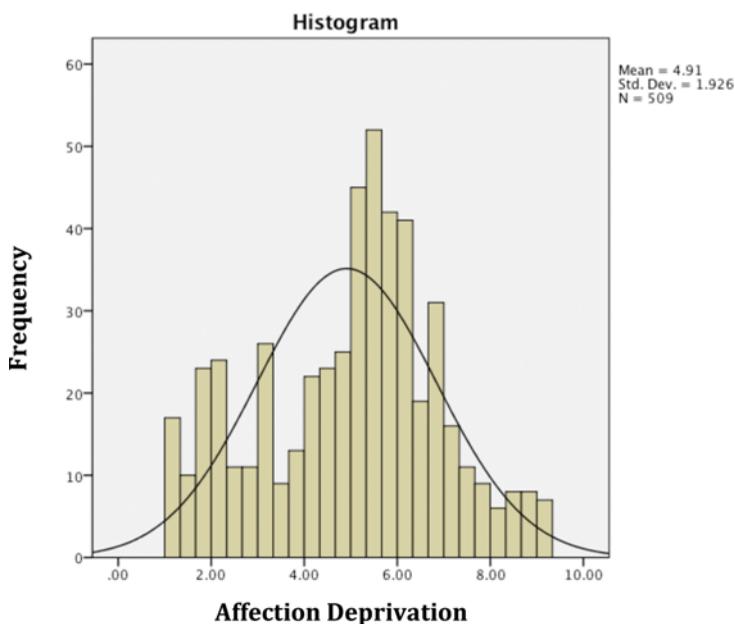


Figure 1 Distribution of Affection Deprivation Scores ($N = 509$).

*Hypotheses and Research Question**Descriptive results*

For descriptive purposes, I examined zero-order correlations between the measure of affection deprivation and the dependent measures, which appear in Table 1. Every correlation was consistent with the hypotheses. Specifically, affection deprivation was positively associated with alexithymia, loneliness, depression, stress, number of diagnosed mood/anxiety disorders, number of diagnosed personality disorders, and number of diagnosed secondary immune deficiencies. It was negatively associated with happiness, general health, social support, and relationship satisfaction. Many of the correlations represent moderate effect sizes. However, zero-order correlations do not provide the strongest tests of the hypotheses because they fail to account for the potential moderating effects of participant sex (given that affection deprivation scores differed by sex). Hierarchical multiple regressions were therefore used to test the hypotheses formally.

General well-being

The first hypothesis predicted that higher affection deprivation corresponds to higher alexithymia and lower happiness and general health. Hierarchical linear regressions were used to test the predicted relationships. In each regression model, affection deprivation was entered in the first step, participant sex (0 = female, 1 = male) was entered in the second step, and the affection deprivation-by-sex interaction term was entered in the third step. The regression for alexithymia (adjusted $R^2 = .13$, $F(3, 495) = 24.87$, $p < .001$) identified a significant relationship with affection deprivation that was consistent with H1, $\beta = .31$, $p < .001$. The association with participant sex was also significant, $\beta = .18$, $p < .001$, with the positive beta weight indicating that men were more alexithymic than women. The affection deprivation-by-sex interaction was nonsignificant.

The regression for happiness (adjusted $R^2 = .06$, $F(3, 495) = 11.76$, $p < .001$) identified a significant relationship with affection deprivation that was consistent with H1, $\beta = -.25$, $p < .001$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant. Finally, the regression for general health (adjusted $R^2 = .14$, $F(3, 495) = 28.92$, $p < .001$) identified a significant relationship with affection deprivation that was consistent with H1, $\beta = -.37$, $p < .001$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant. H1 is confirmed on all counts.

Social well-being

The second hypothesis predicted that higher affection deprivation corresponds to higher loneliness and lower social support and relationship satisfaction. The regression for loneliness (adjusted $R^2 = .21$, $F(3, 495) = 44.63$, $p < .001$) identified a significant relationship with affection deprivation that was consistent with H2, $\beta = .45$, $p < .001$. The main effect of sex was nonsignificant, but there was a significant affection deprivation-by-sex interaction, $\beta = .26$, $p = .03$. The interaction was graphed

using scores for high and low affection deprivation that represented one standard deviation above and below the mean, respectively. The interaction, which appears in Figure 2, indicates that people with high affection deprivation are consistently lonelier than people with low affection deprivation, in line with H1. However, men with high affection deprivation are slightly lonelier than women with high affection deprivation, whereas women with low affection deprivation are slightly lonelier than men with low affection deprivation.

The regression for social support (adjusted $R^2 = .11$, $F(3, 495) = 20.74$, $p < .001$) identified a significant relationship with affection deprivation that was consistent with H2, $\beta = -.31$, $p < .001$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant. Finally, the regression for relationship satisfaction (adjusted $R^2 = .16$, $F(3, 495) = 33.12$, $p < .001$) identified a significant relationship with affection deprivation that was consistent with H2, $\beta = -.38$, $p < .001$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant. H2 is supported on all counts, with the qualifier that affection deprivation and sex interact to affect loneliness.

Mental health

The third hypothesis was that higher affection deprivation corresponds to higher depression, stress, number of diagnosed mood/anxiety disorders, and number of diagnosed personality disorders. The regression for depression (adjusted $R^2 = .13$, $F(3, 494) = 24.79$, $p < .001$) identified a significant relationship with affection deprivation that was consistent with H3, $\beta = .36$, $p < .001$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant. Similarly, the regression for stress (adjusted $R^2 = .11$, $F(3, 494) = 21.02$, $p < .001$) identified a significant relationship with affection deprivation that was consistent with H3, $\beta = .34$, $p < .001$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant.

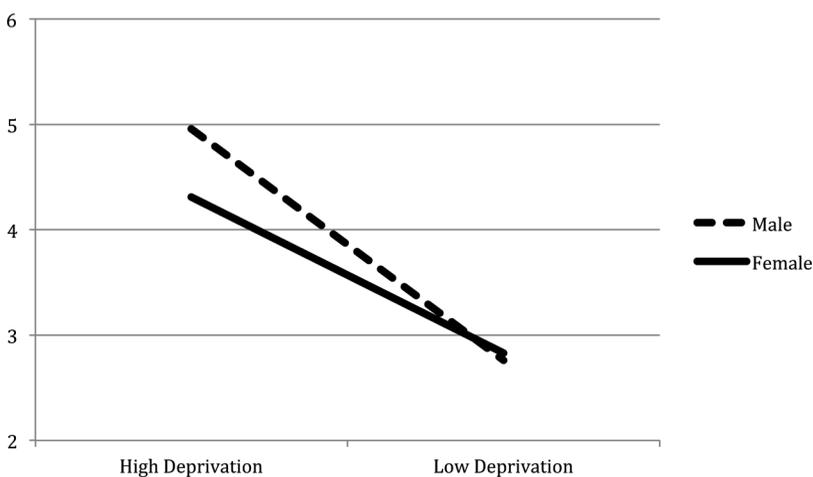


Figure 2 Affection Deprivation by Participant Sex Interaction for Loneliness (N = 509).

The regression for mood/anxiety disorders (adjusted $R^2 = .004$, $F(3, 490) = 1.72$, $p = .16$) produced a nonsignificant omnibus model but identified a significant relationship with affection deprivation that was consistent with H3, $\beta = .09$, $p = .04$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant. The regression for personality disorders (adjusted $R^2 = .004$, $F(3, 493) = 0.28$, $p = .84$) was nonsignificant and produced no significant individual effects. H3 is confirmed for depression, stress, and mood/anxiety disorders, but not for personality disorders.

Physical health

Hypothesis 4 predicted that higher affection deprivation corresponds to a higher number of diagnosed secondary immune deficiencies. The regression for secondary immune deficiencies (adjusted $R^2 = .01$, $F(3, 493) = 2.33$, $p = .07$) produced a nonsignificant omnibus model but identified a significant relationship with affection deprivation that was consistent with H4, $\beta = .12$, $p = .01$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant. H4 is confirmed.

Attachment

The research question asked how affection deprivation is related, if at all, to people's tendencies toward the four adult attachment styles. The regression for fearful avoidant attachment (adjusted $R^2 = .07$, $F(3, 492) = 12.88$, $p < .001$) identified a significant positive relationship with affection deprivation, $\beta = .27$, $p < .001$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant.

Table 2 Summary of Significant Findings

Affection deprivation is . . .

1. Positively related to alexithymia.
 2. Negatively related to happiness.
 3. Negatively related to general health.
 4. Positively related to loneliness.*
 5. Negatively related to social support.
 6. Negatively related to relationship satisfaction.
 7. Positively related to depression.
 8. Positively related to stress.
 9. Positively related to number of diagnosed mood/anxiety disorders.
 10. Positively related to number of diagnosed secondary immune disorders.
 11. Negatively related to tendency toward secure attachment.
 12. Positively related to tendency toward fearful avoidant attachment.
 13. Positively related to tendency toward preoccupied attachment.
-

*This effect was moderated by participant sex.

Similarly, the regression for preoccupied attachment (adjusted $R^2 = .13$, $F(3, 493) = 24.90$, $p < .001$) identified a significant positive relationship with affection deprivation, $\beta = .35$, $p < .001$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant.

The regression for secure attachment (adjusted $R^2 = .03$, $F(3, 494) = 5.62$, $p = .001$) identified a significant inverse relationship with affection deprivation, $\beta = -.18$, $p < .001$. The main effect of sex and the affection deprivation-by-sex interaction were both nonsignificant. Finally, the regression for dismissive attachment (adjusted $R^2 = .01$, $F(3, 492) = 2.23$, $p = .08$) was nonsignificant overall and produced no significant individual effects. Thus, affection deprivation is positively related to tendencies toward preoccupied and fearful avoidant attachment, negatively related to the tendency toward secure attachment, and unrelated to the tendency toward dismissive attachment.

A summary of significant findings appears in Table 2.

Discussion

A robust literature articulates the mental and physical health benefits associated with expressing and receiving affection. In particular, affectionate, nurturing forms of touch are beneficial from infancy on (Dieter et al., 2003), and some forms of affectionate touch, such as kissing (Floyd et al., 2009) and hand-holding (Grewen et al. 2003), have been shown to improve specific health parameters. Considered collectively, this research not only demonstrates that the exchange of affection is beneficial but also implies that the absence of adequate affection may be detrimental. Indeed, a range of studies has identified social, psychological, and physical problems associated with the lack of affection in both human infants (MacLean, 2003) and nonhuman primates (Harlow, 1958). On the basis of affection exchange theory, the present study extended these efforts by exploring the correlates of affection deprivation among human adults.

As hypothesized, affection deprivation was significantly associated with a host of deficits related to general well-being, social well-being, mental health, and physical health. Affection deprivation was also related to insecure patterns of interpersonal attachment. Consistent with Floyd's (2002; Floyd et al., 2005) studies illustrating the benefits of affectionate communication, this study demonstrated that the absence of affectionate communication—specifically, tactile affection—is detrimental. That affection deprivation was higher for men than for women is consistent with research showing that both sexes prefer to be touched by women more than by men, which may result in greater deprivation for men (see, e.g., Crawford, 1994; Willis & Rawdon, 1994).

Like Floyd's (2002; Floyd et al., 2005) investigations, the present study was cross-sectional rather than experimental. Thus, the findings cannot support any causal inferences. Affection exchange theory suggests that denying affection—that is, creating affection deprivation—would lead to deficits in well-being such as increased loneliness and depression and reduced immunocompetence. Of course, it is also plausible that loneliness, depression, and/or immunosuppression could lead to decreased tactile affection from others. Indeed, both causal claims may be true: decreased affection

may lead to increased depression, which may in turn lead to further decreased affection. Identifying the relative variance accounted for by each pattern will be a task for future, experimental studies.

Establishing the correlations between affection deprivation and various measures of wellness is a necessary first step toward identifying causal relationships, however. To the extent that affection deprivation affects general, social, mental, physical, and/or relational well-being, instructing people in ways to increase their tactile affection can effect improvements to their health and stability. Such was the case in Floyd et al.'s (2009) study, for example, in which increased kissing led to decreased blood lipid levels and enhanced relational satisfaction. These detriments associated with affection deprivation also add to the reasons to question no-touch policies, such as those enforced in schools and work environments around the United States. Although intended to reduce sexual abuse of children and sexual harassment of work subordinates, zero-tolerance policies for touch may introduce new problems by creating work and school environments that are inhospitable to one of the most fundamental of human needs. The problem may be particularly potent in primary schools, insofar as young children—who may lack the cognitive skills and social networks to self-soothe adequately while experiencing distress—may especially need the comforting touch from trusted adults such as teachers that is denied them by the no-touch policies that are intended to help them.

Floyd's previous studies (2002; Floyd et al., 2005) establishing the benefits associated with affection communication suffered some important methodological limitations upon which the current study has improved. Specifically, the earlier Floyd studies employed relatively small samples that were largely homogenous with respect to age, age range, ethnicity, marital history, and regional residence. Each of those demographic attributes has been shown to influence affectionate behavior to some degree (see Andersen, Andersen, & Lustig, 1987; Floyd & Morman, 2001; Heslin & Alper, 1983; Pendell, 2000), making such homogeneity problematic with respect to external validity.

In sharp contrast, the current sample was considerably larger and more demographically diverse. Although online recruitment of research participants necessarily limits the sampling frame to those with Internet access, it substantially increases the demographic diversity of the sampling frame compared to the practice of convenience sampling with college students. The current sample provides a high degree of confidence in the external validity of the findings.

Although cross-sectional, the current study provides an illuminating first examination of affection deprivation—tactile affection deprivation. Whereas this study focused specifically on touch as a means of affection, the construct of affection deprivation may, in future research, extend beyond the tactile sense into verbal and other symbolic forms of affectionate behavior, all of which are beneficial to human development, relational satisfaction, and individual well-being.

Note

- [1] These percentages sum to greater than 100 because some participants report belonging to more than one ethnic group.

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