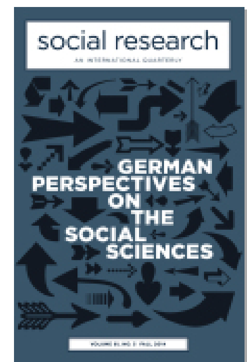
Social Connection and Compassion: Important Predictors of Health and Well-Being



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> Being unwanted, unloved, uncared for, forgotten by everybody—I think that is a much greater hunger, a much greater poverty than the person who has nothing to eat.
>
> —Mother Theresa (Costello 2008, 14)

> Communities, which included the greatest number of the most sympathetic members, would flourish best, and rear the greatest number of offspring.
>
> —(Darwin 1871, 130).

> Love and compassion are necessities, not luxuries. Without them, humanity cannot survive.
>
> —His Holiness the XIVth Dalai Lama (Ramaswamy 2006, 148)

From the dawn of modern psychology, psychological theorists have emphasized the importance of positive human social connection for health, well-being, and survival. Both early and modern psychologists

have argued that social connection—that is, the development of positive relationships with others in the social world—is a primary psychological need and motivator essential for human development and survival (Baumeister and Leary 1995, 499; Hart, Shaver, and Goldenberg 2005, 1000; Maslow 1943, 375). Indeed, several decades of research on social connection now confirm that it is linked to a substantial number of psychological and physical health benefits as well as longevity (Berkman and Syme 1979, 201–202; Cacioppo et al. 2002, 416; Pressman et al. 2005, 297).

Despite its importance, sociological research suggests that social connection is waning at an alarming rate in modern American society. Household sizes are decreasing and biological family and friends are more geographically and emotionally disconnected from one another than ever before (Hobbs and Stoops 2002, 33; McPherson, Smith-Lovin, Brashears 2006, 358; Putnam 2001, 541). Consequently, loneliness, isolation, and alienation are rising (Lee and Robbins 1995, 232–241) and represent one of the leading reasons people seek psychological counseling (Baumeister and Leary 1995, 497-529; McWhirter 1990, 419). A revealing sociological study found that in 2004 the average American reported having only two close others with whom to confide while nearly 25 percent of Americans reported having no one at all (2006, 371).

In view of the importance of social connection as a human motivator and determinant of well-being, we examine the ways in which social connection has been defined in different psychological subfields, the consequences of social connection, the antecedents of social connection, and the cultivation of compassion as a way to increase social connection.

DEFINITIONS OF SOCIAL CONNECTION

We define social connection as *a person's subjective sense of having close and positively experienced relationships with others in the social world.* One can glean the importance of social connection from the fact that every branch of psychological research, from developmental through clini-

cal, social, and personality research, has produced copious amounts of research on the topic in the last decades. Psychological theorists and practitioners have empirically demonstrated that social connection is a critically important human need, echoing the theories of one of the founding fathers of personality psychology, Abraham Maslow (1943, 370–396), who famously theorized that when basic physiological and safety requirements are met, a person's primary psychological need is a sense of affectionate and loving connection to others.

The different subfields of psychology use different terms for social connection. For example, the subfield of developmental psychology uses the term *attachment*; clinical psychology and related sociological research employ the terms *social support* and *loneliness*; and social psychology applies the terms *belongingness, social connectedness,* and *social exclusion*. While the research findings will be discussed in the following section, this section will clarify the definitions attributed to social connection by each subfield and suggest that, although different research terms have been used, all refer to a similar overarching concept, which this paper terms *social connection*.

Developmental Psychology

Developmental psychologists have emphasized that social connection is essential throughout a person's lifespan. In 1959, Fromm-Reichmann stated that "the longing for interpersonal intimacy stays with every human being from infancy throughout life; and there is no human being who is not threatened by its loss. . . . The human being is born with the need for contact and tenderness" (as quoted in Heinrich and Gullone 2006, 3). It is therefore understood as a basic human need, whose necessary ingredient is an affectionate and loving relationship. It has the quality of being malleable, suggesting that intervention is possible.

The first connection that occurs between infant and caretaker has been termed *attachment* (Ainsworth 1993, 2; Ainsworth, Blehar, Waters, and Wall 1978, 391). Research on attachment using both animals and human subjects confirms Fromm-Reichmann's statement that social

connection is fundamental throughout one's life. Depending on the relationships between infant and mother, the infant develops certain ways of interacting with caretakers that are either healthy (*secure attachment*) or dysfunctional (*insecure* or *anxious attachment*). Secure attachment develops out of an affectionate relationship with the caretaker figure. The active ingredient of social connection emphasized by developmental researchers is an affectionate emotional connection (Connell and Wellborn 1991, 43–77; Deci, Vallerand, Pelletier, and Ryan 1991, 332; Harlow 1958, 673; Ryan 1995, 397).

Attachment styles, developed at infancy, become a working model for adult relationships, determining the "psychological connectedness between human beings" (Hazan and Shaver 1987, 511). However, dysfunctional attachment styles may be corrected in adulthood through affectionate relationships. This fact indicates that attachment is malleable rather than fixed and that interventions can help heal a dysfunctional attachment style.

Clinical Psychology

The clinical literature has mainly used the broader and more general term *social support* to refer to *social connection*. Like attachment, the term *social support* includes emotional connection (concern, empathy, affection) but also encompasses other forms of interpersonal exchange such as instrumental support (practical aid such as money, time, labor), informational support (advice, education, information), and appraisal support (information about the self: social comparison, feedback, affirmation) (House, Kahn, McLeod, and Williams 1985, 83–108). Interestingly, despite the breadth of its scope, social support researchers, in line with developmental research, agree that emotional support is the most important and active ingredient. Social support researchers also add one more necessary ingredient to social connection: perception of support. Social support has a beneficial impact only if it is affectionate and perceived as such. It is therefore a highly subjective state (Schaefer, Coyne, and Lazarus 1981, 400).

The clinical literature also discusses the opposite of social connection: loneliness. Loneliness literature emphasizes the need for

an affectionate connection. It is marked by the absence, or subjective perception of absence, of positive social connection with others (Heinrich and Gullone 2006, 707; Peplau, and Perlman 1982). Loneliness research suggests that social connection is an optimal state, because loneliness, its opposite, is a state of lack that is associated with negative emotionality and even suicide.

Social Psychology

One social psychological term referring to social connection is *belongingness,* and an extensive review of the literature confirms that belongingness is a "fundamental human motivation" (Baumeister and Leary 1995, 497). Like developmental and clinical psychology researchers, belongingness researchers place emphasis on the need for affectionate relationships. Social psychology has also examined lack of belongingness (that is, social exclusion—the harsher version of loneliness, in which one's absence of connection to others is determined by the social world). It refers to the fact of being purposely excluded from one or more relationships by other people. It is one of the main sources of anxiety for the general public, after fear of physical harm, and it often leads to significant emotional distress (Baumeister and Tice 1990, 165–195; Baumeister, Twenge, and Nuss 2002, 818; Cacioppo, Hughes, Waite, Hawkley, and Thisted 2006, 441; Twenge, Baumeister, DeWall, Ciarocco, and Bartels 2007, 62).

Personality Psychology

Some personality psychologists have recently coined individual differences in social connection as *social connectedness* (not to be confused with this paper's overarching term of *social connection*). The term *social connectedness* represents one's subjective sense of connection not only to close others but to the whole social world, which includes close others, strangers, and the community at large (Lee and Robbins 1995, 232–241). Like attachment, it results from the accumulation of past and present experiences and is understood as an individual difference measure that determines one's subjective perception of the world (Williams and Galliher 2006, 856). As in social support and loneliness, social connect-

edness is a subjective state and although it encompasses a greater scope of connection, the emphasis remains on an affectionate connection to others, even when it refers to strangers and the community.

Even though they come from distinct fields of research, the terms *attachment, relatedness, social support, loneliness, belongingness, social connectedness,* and *social exclusion* are similar and differ only slightly—with regard to the breadth of their scope. For example, some terms refer exclusively to social connection with close others (for example, *attachment*) while others include the larger social community (for example, *social connectedness*).

ANTECEDENTS OF SOCIAL CONNECTION

Research in these different subfields of psychology has demonstrated that social connectedness has distinct antecedents.

Sense of Similarity

The active ingredient behind the benefits of social connection is believed by some to be a sense of self–other overlap and similarity that induces a feeling of positivity (Cialdini, Brown, Lewis, Luce, and Neuberg 1997, 481; Davis 1996, 714; Galinsky, Ku, Wang 2005, 109). This feeling of similarity and positivity leads to a feeling of connection, even when the other was previously considered an out-group member; moreover, the sense of connection, when it occurs, expands to the entire out-group (2005, 109). These findings support the idea that a causal link exists between social connection, prosocial orientation, and prosocial behavior, and that a mediating factor may be a sense of similarity, which induces a positive feeling. It seems as if, when feeling socially connected, there is a familial feeling or sense of belongingness with others that makes them appear similar to oneself.

Emotional Connection and Affection

An emotional connection is a particularly potent activator of social connection. When perspective-taking is particularly geared toward imagining the other person's emotional state, rather than just her point of view, empathic responses and helping behavior are even

more pronounced (Batson et al 2003, 1190–1201). Moreover, implicitly priming people with emotionally laden words referring to connection ("love" and "hug") has been successfully used to increase online feelings of secure attachment, compassion for others, and altruistic behavior (Mikulincer and Shaver 2005, 34). Some experimental researchers deduce from these findings that humans have an instinctive capacity for nurturance that gets activated when we feel connected to others (Batson, Lishner, Cook, and Sawyer 2005, 15–25), especially when there is a sense of emotional connection to another person. These findings support the correlational data's already highly suggestive findings that an emotional connection is one of the most important ingredients of social connection.

The fields of research described above agree that affectionate social contact seems to be the most crucial element in social connection. Loneliness research underscores that one can feel alone in a crowd of people if there is no sense of intimacy, just as one can feel deeply content with just a few close friends (Peplau and Perlman 1982). A number of correlational studies support the idea that it is closeness, intimacy, and affection that constitute social connection. Fratiglioni, Wang, and Ericsson (2000, 1315–1319) found an inverse correlation between social connection and being diagnosed with Alzheimer's disease or other dementing disorders. A closer look at the data qualified these findings, underscoring the fact that the social connection needs to be positive and affectionate and perceived as such; elderly individuals who had infrequent but what they perceived as satisfying contacts with children and friends displayed a relatively low incidence of dementia. In contrast, participants citing frequent, unpleasant contacts with their children developed dementia even more often than did those who had no children.

The data therefore suggest that social contact is not sufficient to reap health benefits: it is the affective quality of the relationship that matters. Therefore, it is not surprising that, of all the social relationships, close relationships such as those with a confidant or spouse are most associated with health. Compared to those who did not have a close confidant, survivors of breast cancer had a lower relapse rate

in a seven-year follow-up, controlling for age, type of breast cancer, and treatment (Maunsell, Brisson, and Deschenes 1995, 631–7). If the patient had more than one confidant, relapse decreased even further. In another study on cancer, the survival rate of individuals suffering from different types of advanced cancer was a function of the number of close relationships that the patients had at that time: having four or more such ties significantly increased survival rate (Burns, Craft, and Roder 2005, 300). The fact that the number of confidants has a direct impact on survival suggests that social connection is most beneficial when it is affectionate and involves multiple connections. The necessity of an intimate and affectionate social connection may explain why marriage appears to be such a protective factor in terms of physical health. Indeed, of all social relationships, marriage—the closest interpersonal relationship for most people—is also the strongest predictor of happiness and of physical and mental health (Argyle 1999, 353–373; Argyle and Furnham 1983, 481–493) as well as longevity (Tucker, Friedman, Wingard, and Schwartz 1996, 100). Social support research therefore suggests that the closer the relationship, the more powerful the support it provides.

Perception

Berkman (1994, 246), who headed pioneering research on social connection and mortality in California's Alameda County in 1979, and Kessler and McLeod (1985, 219–240), in a review of the literature, agree that the most important ingredient of social connection is a subjective sense of belonging and intimacy; in other words, that the relationship must be not only affectionate but must be subjectively perceived as such in order to serve as a protective factor. Indeed, objectively and numerically derived social network size is a less accurate and consistent predictor of health than subjective perception of social connection. It is probably for this reason that research on social network size and health has yielded far less clear results than research on social connection (Cohen 1988, for a review of the literature, 292; Pressman et al. 2005, 304). Moyer and Salovey (1999, 186), for example, found that, for women suffering from breast cancer, perceived social support—as rated by patients

but not by their partners—significantly predicted changes in psychological distress. Indeed, research suggests that though both may play a protective role for physical health and perhaps strengthen each others' effects, perception of social connection is most important (2005, 304) and is in fact an even more powerful predictor of health than actual amount of social connection (Heinrich and Gullone 2006, 699; Schaefer et al. 1981, 384). These data highlight the importance of subjectivity in the potency of the effects of social connection. Whether social connection will have its effects may lie more within the individual's psyche, more than within the environment.

Individual Differences: Gender and Culture

Some research on cardiovascular outcomes and social support, for example, has found positive effects for women but not for men (Krumholz et al. 1998, 958–964). Social connection's subjective nature may explain the gender differences that appear sporadically throughout research on social connection. In particular, some studies show that women appear to benefit from social connection more than men do, especially from an affectionate and emotional connection. A recent study showed that emotional social support predicted survival for elderly women but less or not at all so for men (Lyyra and Heikkinen 2006, S150; Taylor and Gonzaga 2007, 454–473). These findings may be due to the fact that women have a greater need to connect with others in an affectionate way. Taylor (2002) suggests that men, in times of stress, may be more inclined toward "fight or flight" while women, on the other hand, are evolutionarily more drawn to "tend and befriend," or engage in prosocial behaviors (that is, with offspring and friends). Whereas men connect through relationships that entail social comparison, competition, and power, women tend to connect through relationships that entail empathy, intimacy, and proximity (Lee and Robbins 2000, 484–491). An additional perplexing finding is that, whereas women may benefit more from close and intimate connections, men benefit more from marriage health-wise than do women (Waite 1995, 483–507). This finding, however, may be due to the fact that men rely on their wives as the primary source of emotional support whereas women rely more

on family and friends (Stroebe and Stroebe 1987, 288). More research is needed to further understand gender differences in the effects of social connection. These findings suggest that individual differences such as gender may benefit more or less from social connection or that they may differ in terms of the quality of social connection needed. If the effects of social connection do vary according to individual differences, the end goal of developing appropriate interventions will require further research with regard to differences such as gender, age, culture, and personality.

Cultural differences predict that different definitions of social connectedness will exist in more hierarchical societies than in egalitarian societies. Eastern cultures, for example, may benefit from a more collectivistic sense of connection (for example, an in-group) whereas many Western societies will benefit from a more individualistic approach to social connection (Markus and Kitayama 1991, 225).

CORRELATES OF SOCIAL CONNECTION

Social Connection Is Related to Well-Being

Social connection is strongly correlated with subjective well-being (Kimweli and Stilwell 2002, 211; Lee and Robbins 1998, 338–345). Individuals who are socially active with satisfying social relationships, for example, report above-average levels of happiness (Diener and Seligman 2004, 1–31; Myers 2000, 63; Putnam 2001, 541), lower levels of depression and anxiety, and higher resiliency across a broad array of stressful life events and environments (Lee, Draber, and Sujin 2001, 415; 1998, 338–345). A number of experimental studies also show that prosocial actions increase happiness (Brown, Nesse, Vinokur, Smith 2003, 320).

Well-being, in turn, has been linked to a host of psychological benefits. Positive emotions help broaden resources and optimize performance such as intellectual resources (creativity and flexible thinking), social resources (ability to connect with others), physical resources (improved health and coordination), psychological resources (resiliency and optimism; Fredrickson 1998, 312, 2001, 220). Positive emotion has also been linked to the state of flow—(Csikszentmihalyi

1990), which is the ultimate fusion of mind with one's work in an inspired, engrossed, focused, and productive way. Moreover, positive emotion and happiness are often a precursor of success, leading to the development of qualities that lead to success (Lyubomirsky, King, and Diener 2005, 842–843).

The opposite seems to be true for people low in social connection. The literature suggests that a lack of social connection not only leads to greater psychological distress but also compromises one's ability to engage in positive interpersonal relationships. Psychological distress in itself can influence people's interpretations of social interactions and can contribute to future negative social interactions (Alferi, Carver, Antoni, Weiss, and Durán 2001, 41). Low social connection is associated with hostility, social anxiety, jealousy, low interpersonal trust and self-esteem, and lower agreeableness and sociability (Baumeister and Leary 1995, 507; Downey and Feldman 1996, 1327; Leary, et al. 2006 for a review of the literature, 115; Lee, et al. 2001, 315–316; Lee and Robbins 1995, 232–241; Lee and Robbins 1998, 338–345). Due to these emotions and interpersonal tendencies, despite an even stronger need for belonging, people with few social connections tend to avoid social situations and to retreat from opportunities to connect with others—or, when they do engage with others, to appraise existing relationships negatively and to engage in dysfunctional interpersonal behavior in accordance with the emotions listed above, breeding further disconnection (Cacioppo et al. 2006, 1054–1085; Hagerty, Williams, Coyne, and Early 1996, 235–244; Heinrich and Gullone 2006, 708; Lee et al.; 1998, 338–345). As a consequence, individuals with low social connection seem to have difficulty feeling close to others and developing relationships. It is not surprising, therefore, that their romantic relationships tend to be stormier and short-lived (Downey, Freitas, Michaelis, and Khouri 1988, 556), and that they are less likely to be married (1995, 513).

Social Connection Is Related to Positive Social Behavior

In addition to being associated with emotional well-being, high social connection is associated with positive interpersonal orientation and

behavior. Indeed, people high in social connection tend to see others in a positive light, and as trustworthy and nonthreatening (Lee et al. 2001, 312; Lee and Robbins 1998, 338–345; Ptacek and Gross 1997, 69–91). Thus, it may be easier for such people to reach out and build social relationships, leading to more interpersonal engagement and social connection.

Social connection is associated with prosocial behavior in children, as well as adults, and is often coupled with high levels of well-being (Kunce and Shaver 1994, 205–237; Twenge et al. 2007, 56; Thoits and Hewitt 2001, 115–131; Westmaas and Silver 2001, 426; Wilson and Musick 1999, for a review of the literature, 243-272). Prosocial tendencies, in turn, enhance well-being and are highly rewarding (Moll et al. 2006, 15624). It is sometimes difficult to tell whether the benefits of volunteering come from the prosocial activity itself or the social connection that happens through volunteering. Regardless, social connection is associated with prosocial activity such as volunteerism, which in turn is associated with beneficial outcomes and greater social connection. Taken together, it seems as though social connection and well-being may mutually maintain themselves through a positive feedback loop of associated and highly beneficial connections. Indeed, two universal dimensions of social cognition—warmth and competence—elicit uniformly positive emotions and behavior (whereas those perceived as lacking these two, or only possessing one of them, elicit negative and ambivalent reactions respectively; Fiske, Cuddy, and Glick 2006, 77–83). Moreover, prosocial and compassionate feelings lead to stronger feelings of perceived self–other similarity (Oveis, Horberg, and Keltner 2010, 618–630), which naturally induces a feeling of positivity, empathy, and prosociality toward others (Cialdini et al. 1997; Davis, Conklin, Smith, and Luce 1996, 490; Galinsky, et al. 2005, 111).

Because of their lack of social competence and fear of rejection, people who are low on social connection may engage in less prosocial behavior and more aggression (Baumeister, et al. 2002; Kirkpatrick, Waugh, Valencia, and Webster 2002, 762; Leary et al. 2006, for a review of the literature, 124; Lee and Robbins 1995, 232–241; Twenge 2007, 63; Twenge, Baumeister, Tice, and Stucke 2001, 1068). Already in adoles-

cence, low social connection is associated with problematic interpersonal behavior (see Townsend and McWhirter 2005, 195). Perpetrators of school shootings, for example, often suffer from low social connection to their peers (as quoted in Twenge et al. 2007, 56–66; Leary, Kowalski, Smith, and Phillips 2003, 202–214; 2006, 127). A laboratory study in which participants believed others were excluding them confirmed that social exclusion decreases prosocial behavior (as measured by donations, volunteering, helping behavior, and cooperation) and increases aggression (Twenge et al. 2007, 59). Low social connection has been generally associated with a higher propensity to commit antisocial acts such as illegal and criminal offenses (1995, 514). Social rejection, in particular, seems to have a highly disorganizing effect on people, leading to self-defeating, impulsive, and under-controlled behavior, which may explain the severe behavioral outcomes with which it is associated (as quoted in Twenge 2007, 63; Baumeister et al. 2005, 603; Twenge, Catanese, and Baumeister, 2002, 409).

One reason for the differences observed in people with high versus low social connection may be differences in two universal dimensions of social cognition: warmth and competence. Warmth and competence elicit uniformly positive emotions and behavior (whereas those perceived as lacking these two, or only possessing one of them, elicit negative and ambivalent reactions respectively; Fiske, Cuddy, and Glick 2006, 77–83). Moreover, prosocial and compassionate feelings lead to stronger feelings of perceived self-other similarity (Oveis, Horberg, and Keltner 2010, 618–630), which naturally induces a feeling of positivity, empathy, and prosociality towards others (Cialdini et al. 1997; Davis, Conklin, Smith, and Luce 1996, 490; Galinsky, et al. 2005, 111).

Consequences of Social Connection

In social psychological experiments, social connection increases prosocial emotions and behavior, even reducing the strong tendency toward in-group bias. Social psychological literature explains that humans have a natural tendency toward in-group bias, creating a sense of connection and fostering empathy and prosocial behavior toward

in-group members but not toward out-group members (Sherif, Harvey, White, Hood, and Sherif 1988; Stürmer, Snyder, and Amoto 2005, 544; Stürmer, Snyder, Kropp, and Siem 2006, 954; Vaes, Paladino, and Leyens 2002, 521). Indeed, in-group bias is often accompanied by a sense of separation and disconnect from out-group members, bringing about competition and even aggression (Sherif et al.1988). Experimental research has shown that these tendencies toward out-group members or strangers can be eliminated through manipulations of social connection that extend participants' sphere of in-group bias. Increasing one's sense of connection toward a member of a stigmatized group through perspective-taking (seeing a situation from the point of view of the other person), for example, increases one's connection to the group as a whole. Experimental findings using interdependence primes (which involve including others in one's self-construal or in-group through verbal priming) demonstrate that social connection promotes prosocial behavior: people primed with interdependence will sit closer to a stranger (Holland, Roeder, van Baaren, Brandt, and Hannover 2004, 238), be quicker to forgive others (Neto and Mullet 2004, 21), cooperate more (Utz 2004, 177), help more when requested (Eisenberg and Miller 1987, 106; Underwood and Moore 1982 for a review of the literature, 166), and take joy in other's successes without their own self-esteem being damaged (Gardner, Gabriel, and Hochschield 2002, 240). These experiments, taken together, show that a simple interdependence prime leads to a prosocial orientation on many levels ranging from physical proximity to altruistic emotion. Induced social connection through perspective-taking—that is, seeing the situation from another person's point of view (Batson 1991, 257)—also acts to selfless altruistic acts. A number of experiments show that perspective-taking increases feelings of connection and leads to empathy and helping behavior even at a cost to oneself (1991, 257; Batson, Early, and Salvaran 1997, 751–758; Cialdini et al. 1997, 491; Davis, Conklin, Smith, and Luce 1996, 725; Reed and Aquino 2003, 1279; 2006, 944). In sum, social connection seems linked to a more positive interpersonal orientation as well as prosocial behavior.

MECHANISMS OF SOCIAL CONNECTION

How does social connection increase well-being? Recent research suggests that it does so by buffering against stress and improving emotion regulation and cognition.

Stress and Emotion Regulation

Social connection appears to serve as a buffering effect in the face of life stressors (Cohen and Wills 1985, 314; Thoits 1986, 421). A number of researchers have therefore suggested that one of the active ingredients of social connection is emotion regulation. The psychological distress experienced by people with low social connection suggests that their emotion regulation skills are not as developed. They often suffer from negative emotionality, anxiety, and decreased optimism about life in addition to more severe and debilitating forms of psychopathology such as depression and suicidal behavior (Baumeister and Leary 1995, 521; Cacioppo et al. 2006, 1054–1085; Goldsmith, Pellmar, Kleinman, and Bunney 2002, 496; Hagerty et al. 1996, 235–244; Heinrich and Gullone 2006; Lee and Robbins 1998, 338–345; Pressman et al. 2005, 297; Shaver and Brennan 1991, 195–289). For people who are already suffering from psychopathology such as major depression, a lack of affectionate social connection is the best indicator of relapse (Paykel 1969, 756–757; Rehman, Gollan, and Mortimer 2008, 180). Hawkley and Cacioppo (2007, 187) found that, with increased age, the same challenging life events appeared much more enduringly negative and stressful to the socially isolated. Older people felt more helpless and threatened and were less likely to seek out help (2007, 188).

Social connection may allow people to regulate their emotions and maintain their state of well-being via the help of others (Lee et al. 2001, 310–318; Lee and Robbins 1998, 338-345; Ptacek and Gross 1997, 69–91). Experiments show, however, that even in the absence of others, the mere salience of social connection helps to curb negative emotional reactions. Gailliot and Baumeister (2007, 328) showed that when self-esteem is threatened (through a repudiation of the participants' worldview, for example) a feeling of social connection is successful at upholding self-esteem. As described above, Twenge et al. (2007,

61) showed a similar effect: inducing connection after a social threat of exclusion serves as a buffer against the antisocial feelings and tendencies associated with exclusion. When social connection was evoked in some way after the social exclusion manipulation (for example, writing about a close other or having a positive social interaction with the experimenter), the aggressive reactions disappeared. These findings show that social connection appears to buffer against the affective pain and aggressive tendencies resulting from social rejection. These findings indicate that social connection not only has an emotion regulatory function but also helps to fend of antisocial behavior.

An experimental intervention using brain-imaging supports the correlational finding that suggest that social connection may have an emotion regulatory role and may serve as a buffer against stress—in this case physical stress or pain. Participants who held their spouse's hand exhibited a decreased neural response to physical threat (mild electric shock), especially if the marital relationship was good. Furthermore, holding a significant other's hand increased activation in brain areas associated with emotion regulatory functions during the wait for the painful stimuli. Holding the hand of a stranger did not induce the same kind of response (Coan, Schaefer, and Davidson 2006, 1038). This study shows that social connection may decrease physiological and neural activation for pain, perhaps by recruiting areas responsible for emotion regulation. The fact that the response to pain decreased in particular for hand-holding with a spouse with whom there is a good relationship underscores the idea that in order for social connection to be effective, it needs to be affectionate, at least for women (the participants were all women). It also underscores the idea that the effect of social connection depends on one's subjective interpretation of the relationship, suggesting that even pain may be psychologically alleviated through social connection.

Biology and Cognition

The emotion regulatory effects of social connection may be both biological and cognitive. Animal research suggests that oxytocin and opioids, released in affiliative contexts, may serve as a protective factor,

decreasing the stress-induced cortisol levels and exerting a calming effect on the nervous system (Detillion, Craft, Glasper, Predergast, and DeVries 2004, 1010). It is perhaps because of this calming effect that high social connection facilitates cognitive processes (with regard to self-evaluation and social comparison), resulting in increased emotion regulation (Tesser 1991, 257–281). The perception of being connected changes one's cognitive interpretation of stress. Knowing that others (even just one person) will provide support has the effect of buffering one against stress by changing the appraisal of a situation formerly perceived as stressful. When faced with a life stressor, individuals high in social connection do not appraise the event as too stressful because they know they will receive support from close others (Cohen and Wills 1985, 352; Thoits 1986, 417).

Research on lack of social connection, on the other hands, suggests that it may reduce cognitive ability. In their experimental manipulation, Twenge et al. (2007, 60) induced feelings of social exclusion by telling participants they would end up alone in life. These predictions (but not other nonsocial negative predictions) led to decrements in cognitive performance in complex cognitive tasks (Baumeister et al. 2002, 817). To look at the relationship between social connection, negative emotionality, and social competence, Cacioppo et al. (2006, 1054–1085) hypnotically induced loneliness. As predicted, after the induction, participants reported lower positive mood as well as more fear of negative evaluation by others. They also reported lower social skills, confirming that lack of social connection somehow causes both negative emotionality and lower social competence. A manipulation that involves academic belongingness supports the idea that feeling a lack of belongingness impacts cognitive performance. Walton and Cohen (2007, 96) showed that feeling uncertain about one's belongingness undermines the motivation and achievement of students whose ethnic group is negatively stereotyped with regard to academics. When African-American students had doubts about social belongingness in an intellectual domain, their beliefs about their academic potential decreased accordingly (2007, 93). However, when the belonging doubts of African-American students

in Walton and Cohen's study were mitigated, their grades increased. These experiments seem to show a causal relationship between low connection and cognitive impairment and may explain why low social connection is associated with lower school outcomes (Solomon, Watson, Battistich, Schaps, and Delucchi 1996, 719–748).

The findings suggest that social connectedness may increase emotion regulation and cognitive ability suggest that social connectedness can help people find calmness under stressful circumstances and think clearly under pressure. This ability to deal with stress and adversity successfully may not only benefit their well-being, but also ensure endurance through adverse circumstances, and successful relationships.

CULTIVATING SOCIAL CONNECTION THROUGH COMPASSION

These different subfields of psychological research reveal that social connection is malleable and a subjectively perceived state, suggesting that it is possible to alter levels of social connection and that social connectedness can be cultivated for health and well-being as well as societal welfare. Methods that have proven efficacious in boosting social connection are compassion interventions.

Compassion

Compassion a mixture of love and sadness. It blends the recognition of suffering and the desire to help one who is suffering (Goetz, Keltner, and Simon-Thomas 2010, 351). Darwin noted that both compassion and kindness are essential for survival, and are factors that can potentially lead to greater fitness than other characteristics such as sheer mass or strength. Compassion can be seen in infants as young as 18 months, suggesting that it is an innate characteristic also found in chimpanzees, humans' closest primate relatives (Warneken and Tomasello 2006, 1301). These findings suggest that compassion is a trait that evolved over many years and contributed to the formation of bonds and profound social connection between human beings and other mammals. An fMRI study (Simon-Thomas et al. 2012, 635–648) found that brain regions

activated during compassion—an other-oriented emotion—compared to brain regions activated during pride—a more self-focused emotion–were associated with activity in the "empathy network," regions of the brain responsible for pain and the perception of others' pain as well as parental nurturing behaviors. Pride, on the other hand, was associated with activity in regions associated with thoughts about oneself.

Compassion Interventions

Several interventions have been developed to increase compassion and thereby increase social connection. A number of studies have evaluated these programs and the findings suggest that compassion can be cultivated and can thereby increase social connection.

A study conducted using foster children and a cognitively based compassion training intervention showed that the participants were more likely to use what they learned in the intervention when they got angry, and under stress participants also tried to act more compassionately (Reddy et al. 2013, 225). The researchers leading the study believe that the intervention, as many other meditations have shown, can be used to lower chronic stress and improve interpersonal functioning.

Jazaieri, Philippe, Werner, Ziv, and Gross (2012, 723) conducted a study to find out if mindfulness-based stress reduction or aerobic exercise could reduce social anxiety disorder. In addition to finding that both were indeed effective means, mindfulness-based stress reduction increased participants' life satisfaction and helped with loneliness while aerobic exercise increased self-compassion. These studies are evidence that compassion and altruism can be learned and can have profound positive effects on the practitioner.

An intervention by Hutcherson, Seppala, and Gross (2008, 720) examined whether a loving-kindness meditation could increase social connectedness. The experimenters found that a simple seven-minute loving-kindness meditation could increase both explicit and implicit social connection after just one attempt. Another loving-kindness meditation study examined the effects the same meditation had on one's emotions (Fredrickson, Cohn, Coffey, Pek, and Finkel 2008, 1056). This study found that loving-kindness meditation increased people's

positives emotions, which in turned helped decrease illnesses and increased social support, both of which are linked to social connection.

Leiberg, Klimecki, and Singer (2011, 5) conducted a study that looked at the effects of compassion training on prosocial behavior. These researchers developed the Zurich Prosocial Game, which has the ability to measure an individual's prosocial behavior multiple times, unlike many other prosocial tasks that only measure prosocial behavior in individuals once. Leiberg and her colleagues found that the Zurich Prosocial Game did in fact increase prosocial behavior in participants who received short-term compassion training, but not in those who did not receive the training.

The quote by Mother Theresa provided at the opening to this paper is highly supported by research on social connection. Several decades of correlational research and more recent experimental research suggest that social connection is of crucial importance to human life. Social connection is linked to health, well-being, social competence, and increased survival as well as a prosocial orientation toward the world, helping to create a highly beneficial and mutually reinforcing set of variables. Lack of social connection, on the other hand, is linked to psychological distress, dysfunctional interpersonal behavior, accelerated mortality, and antisocial tendencies in a deleterious and mutually reinforcing set of variables. In view of the rapid rate of the decline of social connection in today's world, further understanding of how to increase social connection is crucial and urgent. Active ingredients such as subjective perception of connection, affection, and emotion regulation provide clues to appropriate interventions. The cultivation of compassion appears to be an important intervention that can help increase social connection.

REFERENCES

The list of references cited in this paper is available online at www.newschool.edu/cps/socres-802-Seppala-Rossomando-Doty.