

Survivor guilt, submissive behaviour and evolutionary theory: The down-side of winning in social comparison

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In prior research submissive behaviour has been studied in relation to social comparison. Evolutionary theory conceptualized submissive behaviour as a fear-based self-protective strategy when in a subordinate position. In this study we hypothesized that survivor guilt, the type of guilt associated with feeling better off than others, is also linked to submissive behaviour. The Interpersonal Guilt Questionnaire, the Submissive Behaviour Inventory, the Eysenck Personality Questionnaire-Revised and the Automatic Thoughts Questionnaire were administered to a sample of 199 college students. Submissive behaviour was found to be significantly correlated with survivor guilt. Introversion, used as an indirect measure of the fear of being put down, was also correlated with submissive behaviour. A principal components analysis found two components: the first was composed of high loadings of submissiveness, survivor guilt and omnipotent responsibility guilt; the second was composed of high loadings of submissiveness and introversion. This supports the hypothesis that there may be two motivational states related to submissive behaviour, the fear of harm to the self, as described in prior studies, and the fear of harm to another or guilt-based submissive behaviour. We propose that survivor guilt has been selected by evolution as a psychological mechanism supporting group living, and that it may be considered from the perspective of inclusive fitness, reciprocal altruism, and multilevel selection theory.

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Submissive behaviour is usually regarded as a form of defensive behaviour when an individual is under some kind of social threat from a more powerful other (Gilbert, 1989; Gilbert & Allan, 1994). In this paper we propose that submissive behaviour may also be linked to guilt about feeling better off than others, often referred to as 'survivor guilt'. The concept of survivor guilt was first used to describe the guilt that people may feel when literally surviving the death of another (Darwin, 1872/1965; Freud, 1896/1985; Neiderland, 1961, 1981). More recently, the use of the term has been expanded to include guilt about any advantage a person believes they have when compared with others, such as success, superior abilities, or a greater degree of health and well-being (Modell, 1965, 1971; O'Connor, Berry, Weiss, Bush, & Sampson, 1997a; Weiss, Sampson, & Mount Zion Psychotherapy Research Group, 1986; Weiss, 1983, 1993). In the present paper we use the term in the broader sense.

Researchers in social, behavioural and biological sciences have focused on the complex social motivations of people living in groups, including both the need to belong and be accepted, as well as the need to achieve status and success in competition and social comparison (Baumeister & Leary, 1995; Brewer & Caporael, 1990; Buirski, 1975; Caporael, 1997; Chance, 1988; Festinger, 1954; Gilbert, 1989; Gilbert & Allan, 1994; Slavin & Kriegman, 1992; Pratto, Sidanius, Stallworth, & Malle, 1994; Wheeler, 1991; Wood, 1989). The ability to make social comparisons provides information about our status and similarity to others. The importance of status and ranking has been viewed largely from the perspective of wanting to win in social competition, maintain or increase their status, and/or avoid losing status, rendered subordinate or rejected (Gilbert, 1992; Price, 1967, 1972, 1991; Price, Sloman, Gardner, Gilbert, & Rohde, 1994; Sloman & Price, 1987). Success in social competition brings greater access to resources, alliances and reproductive partners. High status also contributes to immediate positive emotional states, such as feelings of pride and elation, and may be the proximate cause of status-seeking behaviour. In contrast, failure in competition and loss of status has detrimental effects on reproduction and other functions, along with immediate feelings of depression, anxiety and defeat. Winning in social competition and gaining status affect physiology and neurochemistry and make an animal less vulnerable to stress-related illness, whereas losing may have the opposite effect (Hartmann, 1992; Raleigh & McGuire, 1986; Raleigh, McGuire, Brammer, & Yuwiler, 1984; Sapolsky, 1989, 1990a, 1990b).

There may also be a down-side to winning in social competition. Although being motivated to gain status leads to success, people may sometimes feel badly when they believe that they are better off than others (Baumeister, Stillwell, & Heatherton, 1994; Exline & Lobel, 1999; O'Connor *et al.*, 1997a; O'Connor, Berry, & Weiss, 1999; Weiss, 1983, 1993). Baumeister *et al.* (1994) called this type of guilt 'inequity guilt', while others have labelled it 'survivor guilt' or 'outdoing guilt'. The most obvious form of survivor guilt occurs when someone survives the death of another. In 1872, Darwin described survivor guilt when he wrote:

...under the sudden loss of a beloved person, one of the first and commonest thoughts which occurs, is that something more might have been done to save the lost one...in describing the behaviour of a girl at the sudden death of her father...she "went about the house wringing her hands like a creature demented, saying 'It was my fault;' 'I should never have left him;' 'If I had only sat up with him,'" ...

(1872/1965, p. 80)

In recent years survivor guilt has been mentioned in the popular press in the wake of catastrophic airplane crashes, the AIDS epidemic, and other major disasters. In clinical literature, the broader use of the term is used in reference to persons who believe that they are harming others by surpassing them (Burka & Yuen, 1983; Bush, 1989; Modell, 1965, 1971; O'Connor *et al.*, 1999; Weiss, 1983, 1993). A person may feel survivor guilt when someone close suffers misfortune such as an illness or the loss of a job. Survivor guilt can occur on witnessing the suffering of strangers, such as reading about victims of violence, or seeing homeless beggars.

Survivor guilt in psychological theory

Adaptive guilt leads to remorse and efforts to make reparations after harming others (Baumeister *et al.*, 1994; Tangney & Fischer, 1995). Maladaptive guilt has been emphasized in the clinical literature and studied empirically (Ferguson & Stegge, 1998; Ferguson, Stegge, Miller, & Olsen, 1999; Harder, Cutler, & Rockert, 1992; O'Connor, Berry, Weiss, & Gilbert, 1998; O'Connor *et al.*, 1999).

Survivor guilt was described by Freud, referring to the guilt that he felt in the wake of his father's death. He noted 'that tendency toward self-reproach which death invariably leaves among the survivors' (Freud, 1896/1985; as cited in Masson, 1985 p202). Neiderland (1961, 1981) studied survivor guilt among survivors of War II prison camps who were found to be suffering from guilt, depression, anxiety, somatic symptoms, and sleep disturbances. Modell (1965, 1971) linked survivor guilt to evolutionary theory and broadened the concept to include guilt resulting from less catastrophic traumas. He discussed patients who engaged in self-destructive behaviours in response to unconscious guilt to family members believed to be worse off than themselves. Weiss (1993) has suggested that psychopathology results from pathogenic beliefs formed in childhood that give rise to high proneness to survivor guilt.

The relationship between survivor guilt and psychopathology has been investigated empirically, demonstrating a significant association with depression, pessimism, low self-esteem, the impostor phenomenon, perfectionism, jealousy, and addiction (Daley, 1996; Herbold, 1996; Meehan, O'Connor, Berry, Weiss & Acampora, 1996; Menaker, 1995; O'Connor *et al.*, 1996, 1997a, 1999; O'Connor, Berry, Weiss, & Sevier, 1997b; Webster, 1998).

Survivor guilt, ranking, and evolutionary theory

While research has focused on the association between survivor guilt and psychopathology, it is also found in non-clinical populations (Baumeister *et al.*, 1994), especially in egalitarian cultures (Itani, 1988; Service, 1966; Turnbull, 1968; Woodburn, 1982). Boehm (1993, 1997) discussed a reverse dominance hierarchy in egalitarian societies, in which aggressive leaders who attempt to demonstrate superiority are controlled and punished, in what Boehm calls 'intentional leveling'. Wilson (personal communication, 1996) has noted: '...this kind of egalitarianism was extremely common in small-scale human societies for a long enough period to have evolutionary consequences...to be much better off than your fellows was probably a precarious situation in our ancestral social environment, which makes guilt an understandable psychological reaction'.

Survivor guilt promotes group cohesion, inhibits anti-social competition, and leads people to engage in altruistic behaviour. Tice, Butler, Muraven, and Stillwell (1995) found that people are more modest about promoting themselves in the presence of friends than in the presence of strangers, supporting equality in the social group.

Survivor guilt may be understood in the context of the evolution of altruism. Inclusive fitness theory (Hamilton, 1964) explains acts of altruism directed towards genetically related individuals which serve to increase the probability of gene representation in subsequent generations. Reciprocal altruism (Axelrod & Hamilton, 1981; Trivers, 1971) explains altruistic acts motivated by the expectation of obtaining a favour in return. This accounts for the evolution of altruism between individuals who are not related, but are likely to interact with one another in the future. It has been more difficult to explain altruistic behaviour directed towards strangers, who are unlikely to interact in the future. More recently altruism has been explained by multiple levels of selection, including group selection, which posits that some acts of altruism may not be explained by self-interest, but instead may relate to fitness at the level of the group in between-group competition (Batson, 1991; Buss, 1999; Brewer & Caporael, 1990; Caporael, 1997; Caporael, Dawes, Orbell, & van de Kragt, 1989; O'Connor, 1996; Sober & Wilson, 1998; Wilson, 1989; Wilson & Sober, 1994). Cosmides and Tooby (1992) have noted that sharing evolved in groups in which access to food was variable. From this perspective survivor guilt has evolved with various forms of altruistic behaviour and is a psychological mechanism that promotes sharing and concern for others.

Antecedents of survivor guilt: Sharing in non-human animals

In humans, survivor guilt contributes an equalizing influence on the distribution of resources. In other species, sharing of food has also been noted, although not to the extent found among humans. According to de Waal (1996):

...among non-primates, sharing is most notable in social carnivores, such as wolves, brown hyenas, mongooses, and vampire bats... In small, stable family units, such as those of gibbons and marmosets, food is freely shared with offspring and mates. ...Such intrafamilial tolerance may have laid the groundwork for the second kind...the group-wide sharing of chimpanzees, humans; and capuchin monkeys (p. 144).

Others have reported instances of voluntary sharing in the wild (Boesch, 1994; Boesch & Boesch, 1989; Goodall, 1986; Hohmann & Fruth, 1993; Itani, 1984, 1988; Kuroda, 1984; Stanford, Wallis, Mpongo, & Goodall, 1994). Itani reports that among chimpanzees in the wild:

...First, their favourite food items move between individuals...Direct consumption of food from hand to mouth is delayed through transfers between individuals, and the food is consumed also by some individuals who have not originally obtained it...Moreover, the objects flow from those who have to those who do not have... (Itani, 1984, p. 178)

Nissen and Crawford (1936) and D'amato and Eisenstein (1972), as cited by de Waal (1996, p. 148), observed chimpanzees sharing food with a deprived chimpanzee in an adjacent cage, sometimes in response to begging, and sometimes with no apparent stimulus. Karudo describes a male Bonobo who, when approached by a female begging for food, appears to lose self-confidence before sharing (de Waal & Lanting, 1997). It is

well known that higher primates are capable of empathy and work to maintain group cohesion (de Waal, 1989, 1996) and antecedents to survivor guilt, based on empathy, may include an internal emotional state providing a proximate motivation for sharing.

Survivor guilt, submissive behaviour and depression

Displays of dominance and submission are fundamental to the social organization of most primate groups, including humans. They help to establish and maintain hierarchies while conserving group cohesion and individual energy (Allan & Gilbert, 1997; Chance, 1980, 1988; Gilbert, 1989, 1992). Traditionally, submissive behaviours have been viewed as social defensive behaviours in the context of threats from more powerful others (Harper, 1985; Henley, 1977; Hinde, 1987; Lorenz, 1981; O'Connor, 1970; Scott, 1958; Trivers, 1985). The emotion associated with involuntary submission is fear. A number of studies have shown robust associations between submissive behaviour, inferiority self-perceptions and depression in both clinical and non-clinical populations (e.g. Allan & Gilbert, 1997; Gilbert, Allan & Trent, 1995). However, fear and anxiety may be only one reason why people behave submissively in certain contexts. Other reasons may include desires to ingratiate oneself with a leader, wanting to create a good impression, be seen as not arrogant or pushy, or out of care for the other. Indeed, from our perspective it is possible that submissive behaviour relates to inhibition of one's own ambition in order that one's success will not be harmful to others.

The present study

This study investigated individual proneness to survivor guilt in relation to submissive behaviour. Our theory of survivor guilt predicts a significant correlation between survivor guilt and submissive behaviour and that this correlation remains significant after controlling for neuroticism, depressive automatic thoughts and introversion (as a measure of fear of negative evaluation). Our theory also predicts a significant correlation between survivor guilt and depressive automatic thoughts, as well as between survivor guilt and neuroticism. We also explored the difference between guilt-based submissiveness and fear-based submissiveness, and between these types of submissiveness and depression as manifest in negative automatic thoughts.

Methods

Participants

Participants were 199 college students. Completed packets were returned by 210 students; however, data for 11 students were excluded from the final data analysis because their item response patterns on several scales strongly suggested random responding or a fixed response pattern, as determined by their misfit statistics in a Rasch rating scale analysis (Berry, O'Connor, & Weiss, 1998). Subjects included 133 (67.2%) females and 65 (32.8%) males, ranging in age from 18 to 68 years, with a mean of 19.6 (SD = 4.3). Ethnicity included 31 (15.8%) European Americans; 65 (33.2%) Asian Americans; 8 (4.1%) African Americans; 26 (13.3%) Filipino Americans; 23 (11.7%) Latin Americans; 1 (.5%) Native American; 5 (2.5%) other; 37 (18.9%) mixed. Of those subjects reporting a religious affiliation, there were 113 (59.8%) Christian; 19 (10.1%) Buddhist; 4 (2.1%) Jewish; 4 (2.1%) Hindu; 1 (.5%) Muslim; 48 (25.4%) None.

Instruments

The Interpersonal Guilt Questionnaire-67 (IGQ-67;) (O'Connor *et al.*, 1997a) is a 67-item questionnaire assessing proneness to guilt related to the fear of harming others; the four subscales of the IGQ-67 are survivor guilt (22 items), separation guilt (16 items), omnipotent responsibility guilt (14 items), and self-hate (15 items). Survivor and omnipotent guilt were used in this study. Responses are given on a 5-point Likert-type scale. Cronbach's alpha coefficients determined from previous studies have ranged from .82 to .85 for survivor guilt, and from .74 to .83 for omnipotent responsibility guilt (Menaker, 1995; O'Connor *et al.*, 1997b). In the present study, alpha coefficients obtained were .72 for survivor guilt and .77 for omnipotent responsibility guilt.

Survivor guilt is characterized by the pathogenic belief that pursuing normal goals and achieving success and happiness will cause others to suffer simply by comparison. This subscale contains items such as 'I conceal or minimize my success'; 'It makes me uncomfortable to receive better treatment than the people I am with'; 'I am uncomfortable talking about my achievements in social situations'.

Omnipotent responsibility guilt is characterized by an exaggerated sense of responsibility for the well-being of others. People who feel survivor guilt invariably feel omnipotent responsibility guilt. Omnipotent responsibility may be the overarching type of guilt, of which survivor guilt is a special type. However, there are instances in which a person may feel omnipotently responsible for others without specifically feeling survivor guilt. Items on the omnipotent responsibility guilt subscale include: 'It is very hard for me to cancel plans if I know the other person is looking forward to seeing me'; 'I often find myself doing what someone else wants me to do rather than doing what I would most enjoy'; 'I feel responsible at social gatherings, for people who are not able to enter into conversations with others'.

The Submissive Behaviour Scale (SBS) (Allan & Gilbert, 1997) is a 16-item measure, adapted from Buss and Craik (1986), used to assess submissive social behaviour. This scale includes items such as: 'I agree that I am wrong, even though I know I am not'; 'I do things because other people are doing them, rather than because I want to'; and 'I let others criticize me or put me down without defending myself'. Cronbach's alpha coefficient of .89 and a test-retest reliability at 4 months of .84 are reported. SBS has been used in studies of social comparison and evolutionary theory (Gilbert & Allan, 1994; Gilbert *et al.*, 1995).

The Eysenck Personality Questionnaire-Revised (EPQ-R) (Eysenck & Eysenck, 1994) is a 100-item questionnaire designed to assess three broad factor-analytically derived dimensions of personality: extraversion/introversion, neuroticism/emotional stability and psychoticism/superego control. Extraversion/introversion was used to operationalize sensitivity to social threats or rejection, a finding discussed by Gray (1987). Gilbert and Reynolds (1990) found a significant correlation between introversion and fear of disapproval. Lolas (1991) found that introversion was correlated significantly with shame anxiety, which is linked to negative evaluations by others, and ambivalent hostility in which the self expresses aggression as stemming from others. In both cases introversion was more highly related to social threats than was neuroticism. Neuroticism was included to ascertain that proneness to guilt was not confounded by a general proneness to worry.

The Automatic Thoughts Questionnaire (ATQ-30) (Hollon & Kendall, 1980) is a 30-item self-report questionnaire designed to measure the frequency of occurrence of automatic negative self-statements, highly associated with a proneness to depression. Cronbach's alpha coefficient for this measure is reported as .96.

Results

Table 1 presents the correlation matrix of intercorrelations between submissive behaviour, survivor guilt, omnipotence guilt, introversion, neuroticism and automatic thoughts. All correlations with the exception of the correlation between introversion and omnipotence guilt were moderate and statistically significant. The correlations

Table 1. Correlation matrix of study variables

	Surv. G	Omnip.	Subms.	Neur.	Intro.
Submissiveness	.41***	.30***			
Neuroticism	.40***	.47***	.40***		
Introversion	.16*	.02	.36***	.21**	
Automatic thoughts	.42***	.18*	.49***	.47***	.31***

* $p < .05$; ** $p < .01$; *** $p < .001$.

between submissive behaviour and neuroticism and introversion are consistent with those found by Gilbert and Allan (1994). The correlation between submissiveness and automatic thoughts is comparable to that reported by Gilbert *et al.* (1995) between submissiveness and depression as measured by the Beck Depression Inventory. As hypothesized in the present study, survivor guilt was also correlated with automatic thoughts and with submissiveness.

The theory proposed in the present study suggests that survivor guilt would be correlated with submissiveness independently of fear of social put-down (operationalized by the introversion subscale of the EPQ-R). Gray (1987) has shown that introverted persons are characterized by a sensitivity to rejection and social threats. In addition we wished to control for generalized proneness to worry as operationalized by neuroticism, and for self-criticisms related to proneness to depression, as operationalized by the ATQ. A multiple regression was calculated predicting submissiveness from survivor guilt, introversion, neuroticism, and automatic thoughts. The multiple R was .60, $F(4, 190) = 26.04$, $p < .001$. As indicated in Table 2, the partial regression coefficients for all four predictor variables were statistically significant, suggesting that each variable accounts independently for some variance in submissiveness.

Table 2. Partial correlations between submissive behaviour and survivor guilt, introversion, neuroticism, and automatic thoughts

	Partial R	t
Survivor guilt	.21	3.09**
Neuroticism	.14	2.10*
Introversion	.22	3.53***
Automatic thoughts	.27	3.81***

* $p < .05$; ** $p < .01$; *** $p < .001$.

The theory proposed above suggests that there may be more than one type of submissive behaviour. For example one type, fear-based submissiveness, is related to fear of threats or put-downs, especially from a higher ranking person. The other, guilt-based submissiveness, is related to worry about harming others and/or being better off than others. In a way it is a fear of being too able, talented, or resourced. In order to explore this possibility, a principal components analysis was calculated on the correlation matrix of scores on submissive behaviour, survivor guilt, omnipotent responsibility guilt and introversion. Omnipotent responsibility guilt was included in the analysis because omnipotent responsibility is necessary for survivor guilt; in fact, survivor guilt may be a

special case of omnipotence. If survivor guilt loads on the same factor with omnipotent responsibility guilt, this would support the case that survivor guilt is closely related to worry about others, rather than worry about harm to the self. Two components accounting for 75.8% of the original score variance were extracted. Table 3 presents factor loadings for the two factors after varimax rotation. Submissiveness loaded highly on two factors. On the first factor survivor guilt and omnipotent responsibility guilt also loaded positively. Introversion had a very low loading on this first factor. The second factor was defined by high positive loadings on submissiveness and introversion, with a low loading on survivor and omnipotence guilt. As submissiveness loaded on two factors, one with guilt and the other with introversion, we propose that these data support the idea that there are two psychological factors mediating submissiveness, fear of put-downs or threats (as represented by introversion) and guilt related to worry about others.

Table 3. Factor loadings from principal components analysis

	Factor 1	Factor 2
Submissiveness	.50	.65
Survivor guilt	.85	.17
Omnipotence guilt	.88	-.07
Introversion	-.03	.91
Eigenvalue	1.95	1.08
Variance proportion	48.8	26.9

Factor scores on these two factors, submissiveness/guilt and submissiveness/fear were calculated for all subjects and were used to predict automatic negative thoughts or proneness to depression. The correlation between the submissiveness/guilt factor and the ATQ was .33, $p < .001$; the correlation between submissiveness/fear and the ATQ was .41, $p < .001$.

Discussion

This study investigated the relationship between submissive behaviour and guilt. In previous studies, it has been proposed that submissive behaviour leads to reduced aggression in another, and therefore it has been viewed as associated with fear of harm to oneself. Following the theoretical emphasis on guilt as a source of inhibitions and psychological problems, we hypothesized that guilt would also be a significant contributor to submissive behaviour. We expected that two psychological factors – fear of harm to the self and guilt caused by being better off than others – would be associated with submissive behaviour.

The results of this study support the theoretical emphasis on survivor guilt and its relevance to inhibition (e.g. of assertiveness) and psychopathology (Weiss, 1986, 1993; O'Connor *et al.*, 1999). These results also support the ranking theory of depression (Gilbert, 1992; Price & Sloman, 1987; Price *et al.*, 1994), which emphasizes the role of fear-based submission in the aetiology of depression. Furthermore, these results tentatively support the existence of both a guilt-based and fear-based submissiveness. Gilbert

(personal communication) has suggested that survivor guilt may reflect a fear of envy rather than a concern for others; further studies are needed to explore this hypothesis.

This study is exploratory. Introversions was used as a rough assessment of a sensitivity to social put-downs or threats. Future investigations might assess this particular sensitivity more directly. The participants in this study were young college students; therefore the results may not generalize to an older population or to a clinical population.

This study has clinical relevance. When patients appear to exhibit submissive behaviours, it may be important to ascertain whether they are submissive in response to an unconscious worry about being better off than others or in response to fear of someone higher than themselves, whose aggression they wish to reduce. This suggests that a case-specific approach is indicated. In the case of fear-based submission, it may be most important clinically to provide very specific and reality-based discussion of the patient's concrete situation, with a willingness to engage in problem solving techniques. If a patient's submissiveness is guilt-based, it may be more effective to help them to become aware of and to counter cognitively their inhibiting worries about surpassing other people.

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References

- Allan, S., & Gilbert, P. (1997). Submissive behaviour and psychopathology. *British Journal of Clinical Psychology*, 36, 467-488.
- Axelrod, R., & Hamilton, W. D. (1981). The evolution of cooperation. *Science*, 211 (27), 1390-1396.
- Batson, C. D. (1991). *The altruism question: Toward a social-psychological answer*. Hillsdale, NJ: Erlbaum.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117, 497-529.
- Baumeister, R. F., Stillwell, A. M., & Heatherton, T. F. (1994). Guilt: An interpersonal approach. *Psychological Bulletin*, 115, 243-267.
- Berry, J. W., O'Connor, L. E., & Weiss, J. (1998). *Rasch analysis of the Interpersonal Guilt Questionnaire*. Presented at the annual meetings of the American Psychological Association, San Francisco, CA.
- Boehm, C. (1993). Egalitarian behaviour and reverse dominance hierarchy. *Current Anthropology*, 34, 3, 227-254.
- Boehm, C. (1997). Impact of the human egalitarian syndrome on Darwinian selection mechanics. *The American Naturalist*, 150, S100-S121.
- Boesch, C. (1994). Cooperative hunting in wild chimpanzees. *Animal Behaviour*, 48, 653-667.
- Boesch, C., & Boesch, H. (1989). Hunting behaviour of wild chimpanzees in the Tai National Park. *American Journal of Physical Anthropology*, 78, 547-573.
- Brewer, M. B., & Caporael, L. R. (1990). Selfish genes vs. selfish people: Sociobiology as origin myth. *Motivation and Emotion*, 14 (4), 237-243.
- Buirski, P. (1975). Some contributions of ethology to group therapy: Dominance and hierarchies. *International Journal of Group Therapy*, 15, 227-235.

- Burka, J. B., & Yuen, L. M. (1983). *Procrastination: Why you do it and what to do about it*. Reading, MA: Addison-Wesley.
- Bush, M. (1989). The role of unconscious guilt in psychopathology and psychotherapy. *Bulletin of the Menninger Clinic*, 52, 97–103.
- Buss, D. M. (1999). *Evolutionary psychology: The new science of the mind*. Needham Heights, MA: Allyn & Bacon.
- Buss, D. M., & Craik, K. H. (1986). Acts, dispositions, and clinical assessment: The psychopathology of everyday conduct. *Clinical Psychology Review*, 6, 387–406.
- Caporael, L. R. (1997). The evolution of truly social cognition: The core configurations model. *Personality and Social Psychology Review*, 1 (4), 276–298.
- Caporael, L. R., Dawes, R. M., Orbell, J. M., & van de Kragt, A. J. C. (1989). Selfishness examined: Cooperation in the absence of egoistic incentives. *Behavioural and Brain Sciences*, 124, 683–699.
- Chance, M. R. A. (1980). An ethological assessment of emotion. In R. Plutchik & H. Kellerman (Eds.), *Emotion: Theory research and experience* (Vol. 1, pp. 8–111). New York: Academic Press.
- Chance, M. R. A. (1988). Introduction. In M. R. A. Chance (Ed.), *Social fabrics of the mind* (pp. 1–35). Hove and London: Erlbaum.
- Cosmides, L., & Tooby, J. (1992). Cognitive adaptations for social exchange. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 163–228). New York: Oxford University Press.
- Daley, M. (1996). *The impostor phenomenon and interpersonal guilt*. Unpublished Masters thesis, The Wright Institute, Berkeley, CA.
- D'amato, M. R., & Eisenstein, N. (1972). Laboratory breeding and rearing of *Cebus apella*. *Laboratory Primate Newsletter*, 11, (3) 4–9.
- Darwin, C. (1872/1965). *The expression of the emotions in man and animals*. Chicago: University of Chicago Press.
- de Waal, F. (1989) *Primate peacemaking among primates*. Cambridge, MA: Harvard University Press.
- de Waal, F. (1996). *Good natured*. Cambridge MA: Harvard University Press.
- de Waal, F., & Lanting, F. (1997). *Bonobo: The forgotten Ape*. Berkeley, CA: University of California Press.
- Exline, J. J., & Lobel, M. (1999). The perils of outperformance: Sensitivity about being the target of a threatening upward comparison. *Psychological Bulletin*, 125, 307–337.
- Eysenck, H. J., & Eysenck, S. B. G. (1994). *Manual of the Eysenck Personality Questionnaire (EPQ-R Adult)*. San Diego: Educational and Industrial Testing Service.
- Ferguson, T. J., & Stegge, H. (1998). The measurement of guilt in children: A rose by any other name still has thorns. In J. Bybee (Ed.), *Guilt in children* (pp. 19–74). New York: Academic Press.
- Ferguson, T. J., Stegge, H., Miller, E. R., & Olsen, M. E. (1999). Guilt, shame, and symptoms in children. *Developmental Psychology*, 35, 347–357.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117–140.
- Freud, S. (1896/1985). As cited in Masson, J. F. *The complete letters of Sigmund Freud to Wilhelm Fliess; 1887–1904*. Cambridge, MA and London, England: The Belknap Press of Harvard University Press.
- Gilbert, P. (1989). *Human nature and suffering*. Hove: Erlbaum.
- Gilbert, P. (1992). *Depression: The evolution of powerlessness*. Hove: Guilford/Erlbaum.
- Gilbert, P., & Allan, S. (1994). Assertiveness, submissive behaviour, and social comparison. *British Journal of Clinical Psychology*, 33, 295–306.
- Gilbert, P., Allan, S., & Trent, D. R. (1995). Involuntary subordination or dependency as key dimensions of depressive vulnerability? *Journal of Clinical Psychology*, 51, 740–752.
- Gilbert, P., & Reynolds, S. (1990). The relationship between the Eysenck Personality Questionnaire and Beck's concept of sociotropy and autonomy. *British Journal of Clinical Psychology*, 29, 319–325.
- Goodall, J. (1986). *The chimpanzees of Gombe: Patterns of behaviour*. Cambridge, MA: Harvard University Press.
- Gray, J. A. (1987). *The psychology of fear and stress*. Cambridge: Cambridge University Press.
- Hamilton, W. D. (1964). The evolution of social behaviour. *Journal of Theoretical Biology*, 7, 1–52.
- Harder, D. W., Cutler, L., & Rockert, L. (1992). Assessment of shame and guilt and their relationships to psychopathology. *Journal of Personality Assessment*, 59, 584–604.
- Harper, R. C. (1985). Power, dominance, and nonverbal behaviour: An overview. In S. L. Ellyson & J. F. Dovidio (Eds.), *Power, dominance and nonverbal behaviour* (pp. 29–48). New York: Springer-Verlag.
- Hartmann, L. (1992). Presidential Address: Reflections on humane values and biopsychosocial integration. *American Journal of Psychiatry*, 149, 1135–1141.

- Henley, N. M. (1977). *Body politics: Power, sex and nonverbal communication*. New York: Simon and Schuster.
- Herbold, J. (1996). *Perfectionism and interpersonal guilt in adult children of alcoholics*. Unpublished Masters Thesis, The Wright Institute, Berkeley, CA.
- Hinde, R. A. (1987). *Individuals, relationship and culture. Links between ethnology and the social sciences*. Cambridge: Cambridge University Press.
- Hohmann, G., & Fruth, B. (1993). Field observations on meat sharing among Bonobos (*Pan paniscus*). *Folia Primatologica*, 60, 225–229.
- Hollon, S. D., & Kendall, P. D. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive Therapy and Research*, 4, 383–395.
- Itani, J. (1984). Inequality versus equality for coexistence in primate societies. In C. A. Villet (Ed.), *Absolute values and the new cultural revolution* (pp. 16–89). Chicago: I.C.U.S. Books.
- Itani, J. (1988). The origin of human equality. In M. R. A. Chance (Ed.), *Social fabrics of the mind* (pp. 137–156). Hove and London: Erlbaum.
- Kuroda, S. (1984). Interaction over food among pygmy chimpanzees. In R. L. Susman (Ed.), *The pygmy chimpanzee: Evolutionary biology and behaviour* (pp. 301–324). New York and London: Plenum.
- Lolas, F. (1991). Personality effects on verbally expressed anxiety and hostility. *Personality and Individual Differences*, 12, 581–584.
- Lorenz, K. (1981). *The foundations of ethology*. New York: Springer Verlag.
- Meehan, W., O'Connor, L. E., Berry, J. W., Weiss, J., & Acampora, A. (1996). Guilt, shame and depression in men and women recovering from drug addiction. *Journal of Psychoactive Drugs*, 28, 125–134.
- Menaker, A. (1995). *The relationship between attributional style and interpersonal guilt*. Unpublished doctoral dissertation, California School of Professional Psychology, Alameda, CA.
- Modell, A. H. (1965). On having the right to a life: An aspect of the superego's development. *International Journal of Psycho-Analysis*, 46, 323–331.
- Modell, A. H. (1971). The origin of certain forms of pre-oedipal guilt and the implications for a psychoanalytic theory of affects. *International Journal of Psychoanalysis*, 52, 337–346.
- Neiderland, W. G. (1961). The problem of the survivor. *Journal of Hillside Hospital*, 10, 233–247.
- Neiderland, W. G. (1981). The survivor syndrome: Further observations and dimensions. *Journal of American Psychoanalytic Association*, 29, 413–425.
- Nissen, H. W., & Crawford, M. P. (1936). A preliminary study of food-sharing behaviour in young chimpanzees. *Journal of Comparative Psychology*, 22, 383–419.
- O'Connor, L. E. (1970). *Male supremacy*. Unpublished manuscript.
- O'Connor, L. E. (1996). Altruism, an unconscious human motivation. *Process Notes*, 3, 10–12.
- O'Connor, L. E., Berry, J. W., & Weiss, J. (1999). Interpersonal guilt, shame and psychological problems. *Journal of Social and Clinical Psychology*, 18, 181–203.
- O'Connor, L. E., Berry, J. W., Weiss, J., Bush, M., & Sampson, H. (1997a). Interpersonal guilt: development of a new measure. *Journal of Clinical Psychology*, 53, 73–89.
- O'Connor, L. E., Berry, J. W., Weiss, J., & Gilbert, P. (1998). *Guilt, fear and empathy in college students and depressed patients*. Poster presented at the meeting of the American Psychological Association, San Francisco, CA, August.
- O'Connor, L. E., Berry, J. W., Weiss, J., Herbold, J., Meehan, W., & Webster, R. (1996, March). *Interpersonal guilt and psychopathology: Development of a new measure*. Poster presented at the meeting of the California Psychological Association, San Diego, CA.
- O'Connor, L. E., Berry, J. W., Weiss, J., & Sevier, M. (1997b). *Survivor guilt, submissive behaviour and evolutionary theory*. Poster presented at the meeting of the Western Psychological Association, Seattle, WA.
- Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology*, 67, 741–763.
- Price, J. (1967). The Dominance Hierarchy and the evolution of mental illness. *The Lancet*, July 27, 243–246.
- Price, J. (1972). Genetic and phylogenetic aspects of mood variation. *International Journal of Mental Health*, 1, 124–144.
- Price, J. (1991). Change or homeostasis? A systems theory approach to depression. *British Journal of Medical Psychology*, 64, 331–344.
- Price, J., & Sloman, L. (1987). Depression as yielding behaviour: An animal model based on Schjelderup-Ebbe's pecking order. *Ethology and Sociobiology*, 8, 85S–98S.

- Price, J., Sloman, L., Gardner Jr., R., Gilbert, P., & Rohde, P. (1994). The social competition hypothesis of depression. *British Journal of Psychiatry*, 164, 309–315.
- Raleigh, M. J., & McGuire, M. T. (1986). Animal analogues of ostracism: Biological mechanisms and social consequences. *Ethology and Sociobiology*, 7, 201–214.
- Raleigh, M. J., McGuire, M. T., Brammer, G. L., & Yuwiler, A. (1984). Social and environmental influences on blood serotonin concentrations in monkeys. *Archives of General Psychiatry*, 41, 405–410.
- Sapolsky, R. M. (1989). Hypercortisolism among socially subordinate wild baboons originates at the CNS level. *Archives of General Psychiatry*, 46, 1047–1051.
- Sapolsky, R. M. (1990a). Adrenocortical function, social rank and personality among wild baboons. *Biological Psychiatry*, 28, 862–878.
- Sapolsky, R. M. (1990b). Stress in the wild. *Scientific American*, January, 106–113.
- Scott, J. P. (1958). *Animal behaviour*. Chicago: University of Chicago Press.
- Service, E. R. (1966). *The hunters. Foundations of modern anthropology series*. Englewood Cliffs, NJ: Prentice-Hall.
- Slavin, M., & Kriegman, D. (1992). *The adaptive design of the human psyche*. New York: Guilford.
- Sloman, L., & Price, J. S. (1987). Losing behaviour (yielding subroutine) and human depression: Proximate and selective mechanisms. *Ethology and Sociobiology*, 8, 99S–109S.
- Sober, E., & Wilson, D. S. (1998). *Unto others: The evolution and psychology of unselfish behaviour*. Cambridge, MA: Harvard University Press.
- Stanford, C. B., Wallis, J., Mpongo, E., & Goodall, J. (1994). Hunting decisions in wild chimpanzees. *Behaviour*, 131 (1–2), 1–18.
- Tangney, J. P., & Fischer, K. W. (1995). *Self-conscious emotions: The psychology of shame, guilt, embarrassment, and pride*. New York: Guilford.
- Tice, D. M., Butler, J. L., Muraven, M. B., & Stillwell, A. M. (1995). When modesty prevails: Differential favourability of self-presentation to friends and strangers. *Journal of Personality and Social Psychology*, 69(6), 1120–1138.
- Trivers, R. (1971). The evolution of reciprocal altruism. *Quarterly Review of Biology*, 46(35), 35–37.
- Trivers, R. (1985). *Social evolution*. Menlo Park CA: Benjamin/Cummings.
- Turnbull, C. (1968). Hunting and gathering. Part III. Contemporary societies. *International Encyclopedia of the Social Sciences*, 7 (pp 21–26). New York: MacMillan.
- Webster, R. (1998). *Jealousy and guilt in sibling rivalry*. Unpublished doctoral dissertation, Wright Institute, Berkeley, CA.
- Weiss, J. (1983). *Notes on unconscious guilt, pathogenic beliefs, and the treatment process*. Bulletin 6. The San Francisco Psychotherapy Research Group (formerly the Mount Zion Psychotherapy Research Group), Department of Psychiatry, Mount Zion Hospital and Medical Center.
- Weiss, J. (1986). Unconscious guilt. In J. Weiss, & H. Sampson (Eds.), *The psychoanalytic process: Theory, clinical observation and empirical research* (pp. 43–67). New York: Guilford.
- Weiss, J. (1993). *How psychotherapy works: Process and technique*. New York: Guilford.
- Weiss, J., Sampson, H., & The Mount Zion Psychotherapy Research Group (1986). *The psychoanalytic process: Theory, clinical observation and empirical research*. New York: Guilford.
- Wheeler, L. (1991). A brief history of social comparison. In J. Suls & T. A. Wills (Eds.), *Social Comparison, Contemporary Theory and Research* (pp. 3–21). Hillsdale, NJ: Erlbaum.
- Wilson, D. S. (1989). Levels of selection: An alternative to individualism in biology and the human sciences. *Social Networks*, 11, 257–272.
- Wilson, D. S., & Sober, E. (1994). Reintroducing group selection to the human behavioural sciences. *Behavioural and Brain Sciences*, 17, 585–654.
- Wood, J. V. (1989). Theory and research concerning social comparisons of personal attributes. *Psychological Bulletin*, 106, 231–248.
- Woodburn, J. (1982). Egalitarian societies. *Man*, 17, 431–451.