



Jana Campbell-Lopatova (Autor)
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Telefon: +49 (0)551 54724-0, E-Mail: info@cuvillier.de, Website: <https://cuvillier.de>



INTRODUCTION

Over the entire course of their life, individuals enter into different relationships with other people: colleagues, friends, relatives, romantic partners, even strangers. Over the years, some relationships grow stronger and survive even in difficult circumstances (e.g. long distance, conflicts, losses, infidelity, diverging life concepts), while others weaken and dissolve. Interestingly, a weak association of between .14 and .44 has been found between the degree of satisfaction with a romantic relationship and the probability of its maintenance (see Karney & Bradbury, 1995), suggesting the existence of internal dyadic stabilizing mechanisms, which might act in a powerful way to preserve even unsatisfactory relationships.

One possible approach for understanding the dynamics of social relationships focuses on processes of social exchange, whereby “partners in all social interactions try to maximize their outcomes through the exchange of social goods like status, approval, and information” (Bradbury & Karney, 2010, p. 118). Foa and Foa (2012) define six classes of resources which are transmitted within social relationships, namely love, status, services, information, goods and money. Processes of mutual social comparison (SC) can promote the perception and emergence of discrepancies in the relative distribution of resources between individuals, thus leading to experienced imbalance and social inequity (Walster et al., 1978). Indeed, if the comparison domain is highly self-relevant (Festinger, 1954) and/or there are no compensatory strategies available to restore equilibrium, a social relationship might be threatened in its stability and further development. On the other hand, a non-balanced relationship can survive if its members draw benefit from it. Additionally, many psychological variables, such as SC orientation, neuroticism or self-esteem (Buunk et al., 2001) may be plausibly associated with a higher or a lower vulnerability of individuals to SC processes within their relationships.



Besides these internal psychological mechanisms, individual biological factors have also been proposed to modulate social behavior. However, SC processes in romantic relationships have not yet been examined with respect to “biological vulnerability factors”. For example, the impact of the sex steroids T and E2 on social behavior has been considered as two-fold in nature. On the one hand, basal hormone levels might increase the predisposition for a certain behavior in a trait-like manner (Edelstein et al., 2010). For example, individuals with higher T levels might be more vulnerable to SC processes in their relationships, since high T levels have been associated with attempts to achieve and maintain high status and dominance (Mazur & Lamb, 1980). At the same time, endocrine measures have shown a dynamic sensitivity to different psychological contexts; for example E2 levels increasing in contexts of intimacy and attachment (Edelstein et al., 2010; van Anders et al., 2009; van Anders et al., 2011). Consequently, the idea of biological factors, interacting with psychological variables, in modulating social behavior in couple relationships in specific environmental contexts appears plausible.

The main purpose of this thesis is to integrate social psychological findings on SC in couples with a biological perspective in order to examine a) the sensitivity of the sex steroids T and E2 to SC processes (empirical study I) and b) the impact of the sex steroids on social behavior of romantic partners (empirical study II). In other words, endocrine variables are considered from a state-like as well as from a trait-like perspective.

In chapter 1, a general overview of the SC theory in couple relationships is presented (chapters 1.1 and 1.2) with a special focus on a) potential gender differences in the impact of SC (chapter 1.3) and b) psychological factors modulating the individual effects of SC (chapter 1.4). In chapter 2, the current social psychological research is critically evaluated and the need for the inclusion of a biological perspective is introduced. Shifting our attention to recent biopsychological findings, endocrine markers as determinants of social behavior are discussed



in chapter 3.2, followed by an overview of the endocrine reactivity in different psychological contexts (chapter 3.3) and of psychological factors modulating this endocrine reactivity (chapter 3.4). In chapter 4, social behavior is conceptualized in a way which enables it to be approached from an empirical perspective. Finally, chapter 5 provides a summary of the theoretical background and introduces the ideas and hypotheses for the first (chapter 6) and second (chapter 7) empirical study. Finally, the relevant findings of both empirical studies are discussed in more detail in chapter 9, critically evaluated in chapter 10, and considered with respect to practical implications and directions for future research in chapter 11.



PART I THEORETICAL BACKGROUND

1. Social Exchange Processes in Romantic Relationships

The following chapter 1.1 provides a general introduction to the two prominent socio-psychological theories, which shed light on the mechanisms of social exchange in any social relationship: the Theory of Social Comparison and the Equity Theory. Subsequently, in chapter 1.2, the focus is laid on romantic relationships and empirical findings regarding the impact of social exchange on romantic partners are presented.

1.1. Relevant Theories with Respect to Social Exchange

1.1.1. Social Comparison Theory

As initially proposed by Leon Festinger (1954), individuals are naturally driven to evaluate the accuracy of their beliefs and the value of their abilities by comparing them with those of similar others. Comparison targets chosen in this way are twice as likely to be close individuals than strangers (Tesser, 1988). A substantial body of research has focused on the impact of upward comparisons (UC) (i.e. comparisons with individuals who are “better off”) and downward comparisons (DC) (i.e. comparisons with individuals who are “worse off”) on emotional well-being (for a review see Buunk & Gibbons, 2007).

Under normal circumstances, individuals are reported to more frequently conduct UC; a pattern which has been labeled as the “unidirectional drive upward” (Festinger, 1954). Conducting UC has been associated with advantageous behavioral effects in the respective comparison domain, such as better performance with regard to academic success (Blanton et al.,



1999) or smoking behavior (Gerrard et al., 2005), suggesting a role-model effect of UC. In further developments of the initial SC theory, however, Brickman and Bulman (1977) have questioned the universality of the upward drive and have suggested that especially when experiencing a certain threat, individuals would rather compare themselves to peers who are worse off (Hakmiller, 1966) than risk a further threat to their self-esteem.

A large wave of studies have picked up this assumption and have focused on the impact of DC on emotional well-being (Wills, 1981) and psychological adjustment in arthritis (DeVellis et al., 1991; Giorgino et al., 1994), infertility (A. L. Stanton, 1992), cancer (Taylor et al., 1983; van der Zee et al., 1998) and a variety of other serious health threats (for a review see Tennen et al., 2000). During this research period, UC has been related to a self-evaluative threat (Collins, 1996; Major et al., 1991; J. V. Wood, 1989) and negative affective states (Wheeler & Miyake, 1992).

Later on in the 1980s, a “paradigm shift” and a “renaissance” of the SC theory (see Buunk & Gibbons, 2000) brought new perspectives on the mechanisms of SC. Within this new orientation, a main focus was placed on the concepts of *self-improvement* and *self-enhancement* (Taylor & Lobel, 1989), highlighting that UC can fulfill a *self-improvement* purpose in motivating and inspiring the individual to achieve the same progress. At the same time, under stressful conditions, DC could promote *self-enhancement*, thus feeling better about the self (Wills, 1981).

1.1.2. Equity Theory

The equity theory (ET) was initially introduced by Adams (1965) and included four propositions referring to the mechanisms by which individuals evaluate their relationships.



First, individuals estimate their own inputs and outcomes within a relationship and compare them (by means of a SC) to the inputs and outcomes of their partner. Second, if the two ratios are perceived as not being in equilibrium, inequity occurs. Third, inequity induces tension and distress, proportionally to its magnitude. Finally, individuals try to reduce the stress and restore equity through various strategies, e.g. through a cognitive distortion of their own or their partner's inputs/outputs, through efforts to change their own or their partner's inputs/outputs, through replacing the comparison target or through dissolving the relationship. In other words, "Equity refers to the perceived balance in the partner's contributions and outcomes" (Sprecher, 2001, p. 599).

In their attempt to categorize the exchanged resources (inputs and outputs) in a relationship, Rohmann and Bierhoff (2007) distinguished between partner-related and person-related resources. The former category includes inputs which are directed towards the partner, such as love, attention, tenderness, support, contributions to housework, childcare, paid work or social life. By contrast, person-related inputs refer to self-related personal characteristics, which are self-profitable in the first instance; namely attractiveness, social and interpersonal skills, intelligence, specific talents or social status. Thus, each partner brings particular unique capabilities into the relationship.

Another conceptual differentiation has been made between over-benefiting and under-benefiting inequity (Donaghue & Fallon, 2003). When individuals perceive that they are investing more in a relationship than they are receiving back, then they are under-benefited. By contrast, over-benefiting inequity is experienced when a person is receiving more than she is contributing. The highest relationship satisfaction has been proposed for individuals experiencing equity, followed by over-benefited and under-benefited individuals (Hatfield et al., 1985). Sprecher (2001) also suggested that under-benefiting equity is linked to lower relationship commitment and satisfaction and a greater probability of relationship dissolution.



Moreover, while being over-benefited has been associated with feelings of depression, guilt or anger, being under-benefited has been related to feelings of frustration, resentment or hurt (Sprecher, 1986).

Finally, an important aspect of equity refers to the possibility of compensating for one's own shortcomings to restore equilibrium (DeMaris, 2007). Walster et al. (1978) referred to this mechanism as an "interchangeability of resources" and provided an amusing example of a wife who owes her husband money and pays him back by encouraging him to go golfing at the weekend (thus enhancing his status), cooking him a nice meal (thus conducting a service) or expressing love and appreciation (thus providing love). In a more recent study, it was found that the greater men's contribution to the domains of childcare and paid labor, the less the household division of labor was perceived by both partners as unfair to the wife (DeMaris & Longmore, 1996). In other words, even an objectively inequitable relationship may be perceived as equitable by both spouses if the particular domains are compensated.

After the Theory of Social Comparison and the Equity Theory have been introduced, the next chapter focuses on empirical evidence concerning the impact of social exchange processes in couple relationships.

1.2. Empirical Evidence on the Impact of Social Exchange in Couple Relationships

1.2.1. "Like Attracts Like"

A substantial body of research on mating preferences has demonstrated that individuals tend to be drawn to individuals similar to them in terms of physical appearance and other social and personal characteristics. It seems that people try to avoid inequity in the first place by preferring partners who are matched with them with respect to relevant attributes and features.



In this way, SC processes would not reveal dramatic differences between spouses, thereby preventing a potential imbalance and enabling a more stable and long-lasting pair bond.

This “matching hypothesis” has been tested and verified with respect to a variety of characteristics, such as physical attractiveness (Berscheid et al., 1971; Feingold, 1988; S. B. Kiesler & Baral, 1970; Price & Vandenberg, 1979; White, 1980), personality characteristics (Botwin et al., 1997; McCrae et al., 2008), for example agreeableness, conscientiousness and openness (Rammstedt & Schupp, 2008), attachment style (Klohnen & Luo, 2003), social skills (Burluson & Denton, 1992), educational level and IQ (Bouchard & McGue, 1981), number of pre-relationship intercourse partners (L. Garcia & Markey, 2007), love attitudes, commitment, investment and disclosure (Hendrick et al., 1988), religious and political values (Luo, 2009) and shared emotional experiences (Gonzaga et al., 2007). A higher relationship satisfaction has been found in couples in which both dyad members expressed high levels of femininity (Antill, 2007) and similarity in terms of religion or interests (Lutz-Zois et al., 2006).

After a romantic relationship is established, SC processes seem to occur on a daily basis, as the empirical findings presented in the following chapter suggest.

1.2.2. Social Comparison and Competition in Romantic Relationships

1.2.2.1. Social Comparison Between Romantic Partners in Daily Life

In a close romantic relationship, partners usually engage in daily interactions and share various activities and responsibilities. Thereby, the potential for mutual SC processes is very high, as each partner offers a unique set of capabilities and resources while simultaneously perceiving the strengths and weaknesses of his/her spouse.



In their experience sampling study, Pinkus et al. (2008) asked romantic partners to report over a period of two weeks whether and to what extent spouses compare each other on a daily basis. The authors demonstrated that partners make on average 1.8 comparisons daily with regard to their spouse's behavior. The most common domains of comparison included abilities and skills (15%), followed by childcare and housework (11.4%), social and interpersonal skills (8.8%), general traits (7.1%), career (6.7%) and physical appearance (4.4%). Surprisingly, UC were not only slightly more common than DC (56.6% vs. 43.4%), but (in a subsequent sub-study) they were also associated with more positive responses than DC, even if the particular domain was highly self-relevant or threatening for self-evaluation. Why are these findings surprising?

Being outperformed by a close other in a dimension of high personal relevance is threatening to one's self-esteem and leads to attempts to restore positive self-evaluation: a prominent early thesis proposed by Tesser (1988) and labeled as the "Self-Evaluation Maintenance Theory" (SEMT). According to SEMT, the impact of SC will grow stronger with the increase in the closeness to the counterpart and the relevance of the comparison domain.

With their findings, Pinkus et al. (2008) provided support for the earlier idea of Beach et al. (1996) that SC processes in romantic relationships might follow slightly different mechanisms than in other relationships; a finding which led to the formulation of the extended SEMT. According to this modified theory, romantic partners have been suggested to "show a communal orientation, leading them to keep track of each other's needs and to respond sympathetically to these needs" (Beach et al., 1996, p. 382). In other words, spouses are proposed to perceive each other as "an integral part of their own identity" (Aron et al., 1992), thus experiencing the partner's accomplishments and failures as one's own. Therefore, UC can induce feelings of pleasure, pride or even reward or benefit, while DC might promote empathic concern and discomfort.



This extended SEMT has been supported by findings of reduced enjoyment of superior performance in domains, which are known to be important to the partner (Beach & Tesser, 1996), less negative affect after recalling spouses' superior performance in domains relevant to him (Beach et al., 1998) and increase in positive affect after the spouse's success (McFarland et al., 2001). Less supportive findings have been reported by Lockwood et al. (2004), who revealed more competent feelings in romantic partners instructed to conduct DC than UC with respect to their romantic partners.

A parallel research field has focused on the way in which UC and DC in particular comparison domains affect relationship quality. Also from this perspective, a certain desire for an equilibrium and complementarity has been found. Being outperformed by the partner has been reported almost consistently in domains of low self-relevance (Pilkington et al., 1991) and complementarity with respect to the areas of decision-making power has been associated with a higher relationship quality (Beach & Tesser, 1993). In organizing their joint activities, couples have been reported to search for ways to reduce negative SC (Beach et al., 1996) or in general to avoid such comparisons due to the anticipation of potential conflicts (Brickman & Bulman, 1977).

In examining SC processes in couples' relationships, some authors have taken one step further and have focused on areas of *competition* between romantic partners. Currently, a clear distinction between SC and competition is still lacking. Buunk and Gibbons (2007) briefly mentioned in their review on SC that competition can be distinguished from SC orientation, which "involves a more prosocial orientation and a more interdependent self" (p.13). It is proposed that SC-oriented individuals are engaged in the feelings of others and exhibit a social sensitivity and empathy. Indeed, within their study on the development of a scale assessing intrasexual competition, Buunk and Fischer (2009) found a very low (although significant) correlation between SC and intrasexual competition ($r=.14$). Moreover, S.M.