

A Longitudinal Test of the Investment Model: The Development (and Deterioration) of Satisfaction and Commitment in Heterosexual Involvements

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A longitudinal study of heterosexual dating relationships tested investment model predictions regarding the process by which satisfaction and commitment develop (or deteriorate) over time. Increases over time in rewards led to corresponding increases in satisfaction, whereas variations in costs did not significantly affect satisfaction. Commitment increased because of increases in satisfaction, declines in the quality of available alternatives, and increases in investment size. Greater rewards also promoted increases in commitment to maintain relationships, whereas changes in costs generally had no impact on commitment. For stayers, rewards increased, costs rose slightly, satisfaction grew, alternative quality declined, investment size increased, and commitment grew, whereas for leavers the reverse occurred. Individuals whose partners ended their relationships evidenced *entrapment*: They showed relatively low increases in satisfaction, but their alternatives declined in quality and they continued to invest heavily in their relationships. Suggestive evidence points to the importance of changes over time in commitment in mediating stay/leave behaviors. The generalizability of these results for men and women and stayers and leavers at all stages of involvement is discussed.

What causes partners in romantic involvements to be satisfied with their relationships? What causes individuals to be committed to maintaining their involvements? Why do some relationships persist over time whereas others end? Most social psychological research on such issues has sought to answer the first of these three questions, that is, to identify the determinants of attraction and satisfaction (e.g., Ajzen, 1974; Berscheid, Brothen, & Graziano, 1976; Drachman, DeCarufel, & Insko, 1978; Insko & Wilson, 1977; Tyler & Sears, 1977; Walster, Walster, Piliavin, & Schmidt, 1973). Others have directed their attention to the second of these

questions; they have examined variables predictive of "distress" and/or commitment in ongoing involvements (e.g., Billings, 1979; Birchler, Weiss, & Vincent, 1975; Fineberg & Lowman, 1975; Gottman et al., 1976). Finally, some researchers have addressed the third question, exploring the causes of relationship dissolution (e.g., Bentler & Newcomb, 1978; Brown & Manela, 1978; Hill, Rubin, & Peplau, 1976; Kerckhoff, 1976; Levinger & Moles, 1979; Todres, 1978). This literature contributes to our understanding of romantic involvements by identifying a variety of factors that appear to be important in affecting relationship satisfaction, commitment, and dissolution.

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Unfortunately, there have been few attempts to integrate these diverse findings by developing more abstract, general theories of romantic involvement. A few authors have proffered such general models (e.g., Altman & Taylor, 1973; Hatfield, Utne, & Traupman, 1979; Levinger, 1974; Rusbult, 1980a), but most empirical assessments of these models have been "static" in nature. That is, most research designed to evaluate the predictive power of general theories of romantic in-

volvement has done so at a single point in the development of individuals' relationships; very little research has utilized longitudinal methodologies. In the absence of longitudinal research, it is difficult to answer adequately a variety of important questions regarding the *process* by which relationships develop and deteriorate over time.

The present research was designed as a longitudinal test of the investment model (Rusbult, 1980a). The investment model is a simple extension of concepts developed in the exchange tradition within social psychology (Blau, 1964; Homans, 1961; LaGaipa, 1977), particularly interdependence theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959). As in interdependence theory, the investment model distinguishes between two important characteristics of relationships: satisfaction—positivity of affect or attraction to one's relationship—and commitment—the tendency to maintain a relationship and to feel psychologically "attached" to it. This definition of satisfaction corresponds to that utilized by other authors (i.e., generally having positive feelings about one's partner/relationship), whereas the definition of commitment includes two categories of definition advanced by other authors: behavioral intent *and* psychological attachment (cf. Johnson, 1973; Rosenblatt, 1977). From the point of view of the investment model, these two types of commitment should covary. That is, whether or not they are satisfied, persons who report intent to maintain their involvements should also report feelings of psychological attachment. The model asserts that variations in level of commitment should mediate stay/leave decisions.

Following interdependence theory, the investment model argues that individuals should be more satisfied with their relationships (SAT_x) to the extent that they continue to provide high rewards (REW_x) and low costs (CST_x) and exceed their generalized expectations, or comparison level (CL_x). Thus, if individuals share many common interests with their romantic partner (i.e., derive numerous rewards) with whom they seldom argue (i.e., incur few costs), and expect little from their romantic involvements more generally (i.e., have a low comparison level), then they should be relatively satisfied with their

involvement. These relationships are expressed as follows:

$$SAT_x = (REW_x - CST_x) - CL_x. \quad (1)$$

Greater satisfaction with an involvement should increase commitment to maintain that relationship (COM_x). However, commitment should also be influenced by two additional variables: alternative quality and investment size. As in interdependence theory, the investment model proposes that persons become more committed when they perceive that they have only poor alternatives to their current associations. Perceived quality of alternatives (ALT_x) is established in much the same manner as is satisfaction with current involvements (i.e., it is influenced by the anticipated rewards and costs of the alternative), except that in this case the object of evaluation is an alternative relationship, solitude, "dating around," or spending time with friends and relatives (i.e., whatever is the best available alternative). For example, if individuals are relatively dissatisfied with their relationship (i.e., experience low satisfaction) and really enjoy spending time on their own (i.e., have a good alternative), they should be less committed to maintaining their relationship.

According to the investment model, a third means of becoming committed to a relationship is by investing numerous resources in that involvement. There are two general categories of investment (INV_x): intrinsic and extrinsic. Intrinsic investments are those resources that are put directly into the relationship, such as time, emotional effort, or self-disclosures. Extrinsic investment occurs when initially extraneous resources become inextricably connected to the relationship (e.g., mutual friends, shared memories or material possessions, activities/persons/objects/events uniquely associated with the relationship). Invested resources may also prove to be rewarding or costly, for example, shared memories or mutual friends could also serve as rewards, whereas emotional effort or monetary investments could be costly. What distinguishes between rewards/costs and investments is that once invested, intrinsic and extrinsic investments cannot readily be removed from the relationship; normal rewards and

costs are not as strongly tied to a particular involvement and do not as dramatically decline in value (or become lost) with the dissolution of a relationship. Investments increase commitment and help to "lock the individual into his or her relationship" by increasing the costs of ending it—to a greater or lesser degree, to abandon a relationship is to sacrifice invested resources. The present use of the investment concept, thus, is similar to constructs advanced by other authors: Becker's (1960) notion of "side bets" (i.e., extrinsic investments), Levinger's (1979) discussion of "barrier forces," or issues related to entrapment and investments as presented by Rubin (Rubin & Brockner, 1975), Blau (1964), and Staw (Staw, 1976; Staw & Fox, 1977).

Thus, according to the investment model, an individual's commitment to maintain a relationship should increase to the extent that he or she is satisfied with that involvement, has no acceptable alternative, and has invested in it heavily. This proposition may be expressed as follows:

$$COM_x = SAT_x - ALT_x + INV_x. \quad (2)$$

If we ignore some complications involving comparison level, these relations may be alternatively expressed as

$$COM_x = (REW_x - CST_x) - ALT_x + INV_x. \quad (3)$$

Stay/leave behaviors (ST/LV_x) are said to be directly mediated by the individual's psychological/cognitive commitment to maintain his or her relationship:

$$ST/LV_x = COM_x. \quad (4)$$

Because satisfaction and commitment need not necessarily be strongly correlated—strong commitment may be produced by poor alternatives or large investments—it is possible to be dissatisfied with a relationship yet remain committed to it and stay involved in it. Alternatively, an individual might leave a relatively satisfying involvement because of the availability of an attractive alternative coupled with low investments in the current relationship.

The predictive power of the investment model has heretofore been explored in ro-

matic involvements, friendships, and business associations. I (Rusbult, 1980a) assessed the predictive ability of the investment model in two studies of romantic associations—a role-playing experiment and a cross-sectional survey—and (Rusbult, 1980b) employed a cross-sectional survey to examine the predictive ability of investment model variables in friendships. Finally, several studies have applied the investment model to the study of job satisfaction, job commitment, and turnover: Farrell and Rusbult (1981) reported an experimental simulation of a work setting and a cross-sectional survey of industrial workers, whereas Rusbult and Farrell (in press) presented a longitudinal study of professional workers. This research provides consistently good support for the model.

However, although the investment model was initially proposed as a means of accounting for the development and deterioration of satisfaction and commitment, and as a means of accounting for actual stay/leave behaviors, such phenomena have not yet been directly examined in romantic relationships. As noted above, previous investment model research in the domain of romantic involvement has been static rather than longitudinal. The present research attempts to remedy this deficiency by exploring both the processes by which satisfaction and commitment "ebb and flow" over time and the dynamics accounting for the termination of involvements.

More specifically, the present research was designed to address three basic issues. The first issue at hand was to assess the overall power of investment model variables in predicting satisfaction and commitment: Across the entire sample, does the model influence satisfaction and commitment as specified in Equations 1, 2, and 3 above? Does the model "behave" similarly for men and women, for stayers and leavers, and at all stages of involvement? A second goal was to explore the manner in which investment model variables change over time. For the sample as a whole, Are there significant trends over time in reported rewards, costs, alternatives, investments, satisfaction, and commitment? Are such changes similar for men and women? Finally, and perhaps most importantly, the study sought to establish the relationship be-

tween investment model variables and stay/leave behaviors. Two related goals were to evaluate the relationship between "intent" commitment and "attachment" commitment and to assess the role of commitment in mediating stay/leave behaviors (Equation 4).

Thirty-four individuals participated in the 7-month longitudinal study of romantic involvements. Every 17 days subjects completed questionnaires designed to measure rewards, costs, alternatives, investments, satisfaction, and commitment.¹ Subjects' participation concluded when their relationships ended or when the study itself ended. During the course of the 7-month study, 29% of the subjects' relationships terminated (10 out of 34 relationships).

Method

Subjects and Procedure

Subjects were 17 male and 17 female undergraduates from Franklin and Marshall College. Individuals volunteered to participate in the study in response to a flyer placed in the campus mailbox of each student at the college. The flyer described the purpose of the study, requirements for eligibility (heterosexual, unmarried dating couples), nature of requests that would be made of participants, and instructions for volunteering. One hundred and nineteen individuals volunteered to participate. Subjects were selected based on sex (half men, half women) and initial duration of the relationship (five men and five women in the 0–2-week category; four of each in the 2–4-week, 4–6-week, and 6–8-week categories). Only one partner in a given relationship was allowed to participate. Beyond these requirements, participants were selected on a first come, first served basis. The mean age of subjects was 20.14 years for men and 19.44 years for women. The mean duration of relationships at the start of the study was 4.24 weeks for men and 4.06 weeks for women. Participants were paid \$2.50 for each questionnaire they completed, each of which required approximately 25 minutes to answer.

The study began near the start of the academic year, and subjects' participation concluded when their relationships ended or the study itself ended (at the conclusion of the academic year). One man dropped out of the study at Time 2, and two men and one woman stopped responding at Time 8 (spring break). Of the remaining 30 subjects, 10 persons' relationships ended (four men, six women), and 20 subjects responded throughout the study (their relationships extended beyond Time 12; 10 men, 10 women). Participants returned questionnaires through campus mail within 4 days of their receipt. If a questionnaire was not returned within 7 days of the time it was mailed, a reminder was mailed to the participant in an attempt to encourage him or her to complete it promptly. This procedure was altered only twice

during the course of the study—during winter break (1978), when questionnaires with return envelopes were mailed to participants' off-campus addresses, and during the Three Mile Island incident (1979), when the college was closed for 1 week (questionnaires were delayed 4 days). Participants exhibited remarkable responsibility throughout the study; most questionnaires were quickly completed, and relatively few reminders were required. At the end of the study, all participants were mailed full descriptions of the purpose of the study, were given a set of simple descriptive data presenting preliminary findings, and were thanked for their unflagging cooperation.

Questionnaires

Subjects completed two types of questionnaires: (a) an Initial Questionnaire, which requested that participants describe their perceptions of their relationships at their very start, and (b) the 12 identical Relationship Questionnaires completed every 17 days, which comprised the bulk of the study's data and were designed to measure the major parameters of the investment model. Unless otherwise indicated, measures were 9-point scales with bipolar adjectives/phrases as end anchors.

Initial Questionnaire. The Initial Questionnaire and 12 Relationship Questionnaires were designed to measure each variable of the investment model—rewards, costs, alternatives, investments, satisfaction, and commitment—and were modeled after the questionnaire used in Rusbult (1980a). Each concept was briefly defined, subjects answered a series of items representing concrete operationalizations of each model variable, and then subjects completed general measures tapping each variable. The concrete measures prepared subjects to answer the more general questions and, in a sense, "taught" them the meaning of the general item. The means and standard deviations of each general measure are presented in Table 1.

The following issues were addressed in the concrete measures designed to assess initial rewards and costs: partner's personality, partner's attitudinal similarity, partner's intelligence, partner's physical appearance, partner's physical proximity, partner's similarity of values, partner's need complementarity, partner's sense of humor, partner's shared interests, partner's similarity of habits or pastimes, partner's sexual relationship, subject's loss of personal freedom, relationship's monetary costs, relationship's time costs, partner's embarrassing habits, partner's unattractive personal qualities, partner's unattractive attitudes about relationships, and partner's reliability. One general item measured initial relationship rewards ("Initially, how rewarding was the relationship?"; 1 = not at all, 9 = extremely), and one general item measured costs ("Initially, how costly was the relationship?"; 1 = not at all, 9 = extremely). Two general

¹ I did not attempt to measure comparison level in this study because of the inextricable connection between individuals' reports of rewards and costs and their generalized expectations. That is, I expected that it would be very difficult for participants to separate that which exists objectively from that which they expect more generally.

questions assessed alternatives: "In terms of the sorts of factors discussed above, how appealing are the people you could have dated other than your partner?" (1 = not at all, 9 = extremely) and "To what extent can you be happy when you're not dating anyone?" (1 = not at all happy, 9 = very happy). The concrete items measuring investments were mutual friends, duration of acquaintance, hours per week spent together, shared "memories" or events, monetary investments, shared possessions, activities uniquely associated with relationship, emotional investment, and self-disclosures. The two general measures of initial investment size were "Initially, how much had you invested in the relationship?" (1 = very little, 9 = very much) and "At that point, what would you have lost by ending the relationship?" (1 = lost a great deal, 9 = lost nothing). The general measures of initial satisfaction were "Initially, to what extent were you attracted to your partner?" (1 = not at all, 9 = extremely) and "Initially, to what degree were you satisfied with your relationship?" (1 = extremely, 9 = not at all). Three general items measured initial commitment: "Initially, for how long did you want your relationship to last?" (1 = week or so, 9 = lifetime). "To what extent were you committed to maintaining the relationship?" (1 = extremely, 9 = not at all), and "To what extent were you 'attached' to him/her" (1 = not at all, 9 = extremely).

Relationship Questionnaires. The 12 Relationship Questionnaires, too, obtained concrete and general measures of all investment model variables. The concrete items are described below, and the general measures are listed in Table 1 along with the mean and standard deviation of each measure at each time. The following factors were assessed in the concrete measures of rewards and costs: partner's need complementarity, partner's attitudinal similarity, partner's similarity of values, partner's physical appearance, partner's personality, partner's intelligence, partner's sense of humor, partner's shared interests, partner's physical proximity, partner's sexual relationship, partner's similarity of interests or pastimes, partner's ease of communication, partner's reliability, subject's loss of personal freedom, relationship's monetary costs, relationship's time costs, partner's embarrassing habits, partner's unattractive personal qualities, partner's unattractive attitudes about relationships, partner's failure to live up to agreements developed in relationship, conflict in relationship, partner's sexual faithfulness, reciprocity in relationship, dependency in relationship, partner's feelings of guilt, partner's emotional stability, and emotional "ups and downs" in relationship. The following were tapped in the concrete measures of alternatives: appeal of alternative relationships, difficulty of replacing partner, importance of involvement, and subject's happiness when not involved. The concrete measures of investments were number of hours per week spent together (fill in), exclusivity of involvement, mutual friends, shared "memories" or events, monetary investment, shared possessions, activities uniquely associated with relationship, emotional investment, and self-disclosures. Satisfaction and commitment were measured only with general items (see Table 1). Subjects were also asked to write brief descriptions of anything unusual that had happened in their relationships since completing the previous questionnaire. If their relationships ended, they were asked to describe the cause(s) of the

termination and the circumstances surrounding their breakup (e.g., Who ended it? Why do you think it ended?).

Results

Reliability of Measures

Reliability estimates (coefficient alpha) were computed at each time for the set of general measures designed to estimate each model variable. (For the Initial Questionnaire, these analyses could not be performed for the measures of rewards and costs because each was assessed by a single general measure.) The results of the reliability analyses are presented in Table 2. Generally, these coefficients exceeded recommended levels (Nunnally, 1967; the only exceptions were ALT and INV at Time 0 and CST at Time 1), so a single measure of each investment model variable, at each time, was formed by averaging the individual general measures of each variable. These averaged measures were used in the remaining analyses.²

Predicting Satisfaction and Commitment

The data for the following analyses were averaged measures of each investment model variable for each of 34 subjects at each of 13 times (Time 0 through Time 12, or until the subject's relationship ended). Usual multiple regression analyses could not be applied to these data, because the 13 sets of measures for a given subject cannot be assumed to be independent observations. To account for the portion of the variance controlled by the within-subjects factor, a subjects variable (SUBJ) was included as a categorical factor in all regression analyses using techniques outlined in Cohen and Cohen (1975).

Overall sample. According to Equation 1 of the investment model, rewards should be positively related to satisfaction and costs should be negatively related to satisfaction. Therefore, the measures of rewards and costs were regressed onto corresponding satisfac-

(text continued on page 108)

² Measures were scored in reverse where necessary so that higher numbers always indicated greater rewards, costs, satisfaction, alternatives, investments, and commitment.

Table 1
Means and Standard Deviations of All General Measures at Times 0 Through 12

General measure	Time												
	0	1	2	3	4	5	6	7	8	9	10	11	12
Rewards													
How rewarding is this relationship? (1 = not at all, 9 = extremely)	7.38 (1.28)	8.03 (1.24)	8.09 (1.07)	8.00 (1.00)	7.90 (1.14)	7.87 (1.33)	8.00 (.86)	7.86 (1.11)	7.75 (1.36)	7.71 (1.52)	7.91 (1.28)	8.05 (.95)	8.11 (.90)
In terms of rewards, how does the relationship compare to your ideal? (1 = close to ideal, 9 = far from ideal)		7.29 (1.68)	7.52 (1.30)	7.36 (1.47)	7.36 (1.87)	7.17 (1.80)	7.76 (1.02)	7.52 (1.50)	7.42 (1.56)	7.42 (1.59)	7.44 (1.62)	7.32 (1.52)	7.67 (1.41)
<i>M</i>	7.38 (1.28)	7.66 (1.35)	7.80 (1.11)	7.68 (1.17)	7.63 (1.44)	7.52 (1.48)	7.88 (.90)	7.70 (1.23)	7.58 (1.39)	7.56 (1.50)	7.67 (1.32)	7.68 (1.12)	7.89 (1.09)
Costs													
How costly is this relationship? (1 = not at all, 9 = extremely)	2.82 (1.73)	2.50 (1.50)	2.73 (1.83)	3.16 (1.99)	3.45 (2.00)	3.33 (2.19)	3.48 (1.92)	3.36 (2.06)	3.30 (2.16)	3.63 (2.26)	3.74 (2.24)	3.73 (2.39)	3.00 (1.77)
In terms of costs, how does the relationship compare to your ideal? (1 = close to ideal, 9 = far from ideal)		3.65 (2.31)	3.70 (1.85)	3.52 (2.05)	3.61 (2.11)	3.67 (2.12)	3.86 (2.55)	3.75 (2.37)	3.71 (2.48)	3.88 (2.23)	4.00 (2.52)	3.77 (2.60)	3.28 (2.42)
<i>M</i>	2.82 (1.73)	3.07 (1.62)	3.21 (1.67)	3.34 (1.86)	3.53 (1.94)	3.50 (1.99)	3.67 (2.17)	3.55 (2.14)	3.44 (2.23)	3.75 (2.13)	3.87 (2.28)	3.75 (2.41)	3.09 (1.99)
Alternatives													
In general, how appealing are your alternatives (dating another person or other persons, or being without a romantic involvement)? (1 = not at all appealing, 9 = extremely appealing)	4.97 (2.47)	3.65 (2.01)	3.33 (2.03)	3.26 (1.83)	3.03 (2.09)	3.18 (2.23)	3.35 (2.37)	3.50 (2.27)	3.17 (2.28)	3.29 (2.39)	3.26 (2.56)	3.32 (2.66)	2.83 (2.62)
All things considered, how do your alternatives compare to your current relationship? (1 = this is much better, 9 = alternatives are much better)	6.12 (2.47)	2.29 (1.64)	2.15 (1.30)	2.10 (1.30)	2.45 (1.96)	2.45 (2.03)	2.24 (1.43)	2.18 (1.81)	2.92 (1.92)	2.46 (2.09)	2.65 (1.95)	2.64 (2.28)	2.39 (2.40)
<i>M</i>	5.59 (1.61)	2.97 (1.66)	2.74 (1.50)	2.68 (1.44)	2.74 (1.90)	2.84 (2.07)	2.79 (1.80)	2.84 (1.85)	2.73 (2.01)	2.88 (2.10)	2.96 (2.07)	2.98 (2.41)	2.61 (2.43)
Investment Size													
All things considered, are there objects/persons/activities associated with the relationship that you would lose (or value less) if the relationship were to end? (1 = none, 9 = many)	3.94 (2.45)	5.44 (2.48)	6.24 (2.19)	6.43 (2.03)	6.45 (2.20)	6.67 (2.40)	6.59 (2.11)	6.82 (1.77)	7.21 (1.74)	7.25 (1.85)	7.44 (2.02)	7.59 (1.71)	7.94 (1.21)

Table 1 (continued)

General measure	Time												
	0	1	2	3	4	5	6	7	8	9	10	11	12
In general, what is the size of your investment in your relationship? (1 = I have invested a great deal, 9 = I have invested nothing)	4.53 (2.86)	6.32 (1.93)	7.22 (1.60)	7.23 (1.61)	7.45 (1.52)	7.60 (1.75)	7.79 (1.52)	7.64 (1.47)	7.71 (1.83)	7.54 (2.04)	8.13 (1.55)	8.20 (1.15)	8.33 (.84)
<i>M</i>	4.24 (2.12)	5.88 (1.99)	6.80 (1.70)	6.83 (1.69)	6.95 (1.64)	7.13 (1.89)	7.19 (1.62)	7.23 (1.48)	7.46 (1.72)	7.40 (1.89)	7.78 (1.65)	7.90 (1.44)	8.14 (.94)
Satisfaction													
How much do you like your partner? (1 = very much, 9 = not at all)	7.27 (1.54)	8.18 (1.11)	8.33 (1.05)	8.32 (1.14)	8.36 (1.25)	8.20 (1.32)	8.52 (.69)	8.32 (.98)	8.21 (1.32)	8.21 (1.25)	8.30 (1.11)	8.18 (1.44)	8.50 (.71)
To what extent are you attracted to your partner? (1 = not at all, 9 = extremely)	7.62 (1.30)	8.21 (1.10)	8.21 (.93)	8.32 (.98)	8.36 (1.05)	8.00 (1.74)	8.41 (.83)	8.32 (.95)	8.29 (1.23)	8.17 (1.20)	8.13 (1.36)	8.05 (1.70)	8.33 (.91)
To what degree are you satisfied with your relationship? (1 = extremely, 9 = not at all)		7.82 (1.22)	7.70 (1.29)	7.68 (1.45)	7.65 (1.60)	7.37 (2.21)	7.66 (1.57)	7.54 (1.80)	7.67 (1.71)	7.58 (1.56)	7.26 (1.94)	7.04 (2.34)	7.67 (1.82)
<i>M</i>	7.44 (1.22)	8.07 (1.19)	8.08 (1.18)	8.11 (1.29)	8.12 (1.45)	7.86 (2.04)	8.20 (1.10)	8.06 (1.63)	8.06 (1.65)	7.99 (1.59)	7.90 (1.71)	7.76 (2.09)	8.17 (1.32)
Commitment													
How likely is it that you will end your relationship in the near future? (1 = not at all likely, 9 = extremely likely)		7.50 (1.99)	7.66 (2.03)	7.81 (1.78)	7.65 (2.06)	7.20 (2.28)	7.62 (2.15)	7.39 (2.15)	7.67 (2.01)	7.29 (2.35)	7.39 (2.41)	6.96 (2.80)	7.56 (2.15)
For what length of time would you like your relationship to last? (1 = week or so, 9 = lifetime)	4.76 (1.99)	5.81 (2.40)	5.88 (2.45)	5.93 (2.35)	5.63 (2.34)	5.55 (2.49)	6.00 (2.46)	6.11 (2.27)	5.96 (2.51)	6.00 (2.67)	6.35 (2.93)	6.00 (2.81)	6.94 (2.59)
How attractive an alternative would you require before adopting it and ending your relationship? (1 = extremely attractive alternative, 9 = moderately attractive alternative)		6.82 (2.29)	7.19 (2.18)	7.23 (1.86)	7.29 (2.13)	7.50 (1.74)	7.62 (1.45)	7.50 (1.73)	7.13 (2.01)	7.25 (2.19)	7.35 (2.06)	7.05 (2.36)	7.83 (1.38)
To what extent are you "attached" to your partner? (1 = not at all, 9 = extremely)	4.59 (2.36)	8.03 (1.45)	8.27 (1.57)	8.07 (1.46)	8.26 (1.53)	8.13 (1.43)	8.17 (1.42)	7.89 (1.91)	8.13 (1.33)	8.04 (1.68)	8.30 (1.43)	8.18 (1.79)	8.33 (1.91)
To what extent are you committed to your relationship? (1 = extremely, 9 = not at all)	3.59 (2.44)	7.55 (1.80)	7.59 (1.97)	7.94 (1.55)	7.77 (1.84)	7.90 (1.69)	8.03 (1.38)	7.93 (1.49)	7.75 (1.87)	7.67 (2.04)	7.83 (1.95)	7.73 (2.07)	8.28 (1.23)
<i>M</i>	4.25 (1.84)	7.17 (1.76)	7.26 (1.78)	7.38 (1.49)	7.30 (1.62)	7.26 (1.64)	7.48 (1.32)	7.36 (1.55)	7.33 (1.71)	7.25 (1.97)	7.44 (1.96)	7.18 (2.11)	7.98 (1.21)
<i>N</i>	34	34	33	31	31	30	29	28	23	23	22	21	20

Note. Measures were scored in reverse where necessary so that higher numbers indicate greater rewards, greater costs, better alternatives, greater investment size, higher satisfaction, and higher commitment. Standard deviations are in parentheses. The general measures listed above are those utilized at Times 1 through 12. The general measures at Time 0, which differ slightly from these, are presented in the Method section.

Table 2
Reliability of Investment Model Measures

Time	REW	CST	SAT	ALT	INV	COM
0	—	—	.64	.32	.41	.75
1	.80	.55	.81	.77	.75	.93
2	.86	.79	.86	.71	.70	.84
3	.85	.83	.83	.79	.82	.88
4	.85	.88	.87	.86	.67	.91
5	.86	.83	.92	.94	.76	.88
6	.87	.92	.88	.82	.71	.80
7	.84	.92	.79	.77	.79	.88
8	.89	.93	.93	.90	.92	.89
9	.93	.88	.96	.86	.94	.95
10	.78	.90	.92	.79	.81	.93
11	.71	.93	.90	.95	.91	.93
12	.82	.85	.83	.93	.76	.83

Note. Table values are alphas for each analysis. Time 0 = Initial Questionnaire, Times 1-12 = Relationship Questionnaires. REW = rewards, CST = costs, SAT = satisfaction, ALT = alternatives, INV = investments, and COM = commitment.

tion measures (at Time 0 through Time 12). The results of this analysis are displayed in Table 3. The multiple correlation of rewards and costs with satisfaction was significant ($R^2 = .88$), but although the regression coefficient for the rewards factor was significant ($\beta = .890$), the coefficient for the cost factor was not ($\beta = .045$); rewards contributed sig-

Table 3
Multiple Regression Tests of Investment Model Predictions: Overall Sample

Measure	β	R^2	F
SAT from REW CST (SUBJ)	.890* .045 —	.88	69.02
COM from SAT ALT INV (SUBJ)	.845* -.500* .840* —	.89	71.18
COM from REW CST ALT INV (SUBJ)	.901* .078 -.595* .720* —	.90	76.12

Note. REW = rewards, CST = costs, SAT = satisfaction, ALT = alternatives, INV = investments, COM = commitment, and SUBJ = subjects factor.

* $p < .001$.

nificantly to the prediction of satisfaction, but costs did not. Equation 2, for commitment, was evaluated by examining the multiple regression between the commitment measure and measures of satisfaction, alternatives, and investments (see Table 3). As predicted, satisfaction and investment size were positively related to commitment, whereas alternative quality and commitment were negatively related. Finally, Equation 3 was tested by regressing rewards, costs, alternatives, and investments onto commitment (see Table 3). Consistent with Equation 3, rewards and investments were positively predictive of commitment, whereas alternatives was negatively predictive of commitment. However, the costs factor was not significantly related to commitment (when the effects on commitment of other variables were simultaneously taken into account).³

Men versus women. The above-reported analyses were performed on selected subsamples (men vs. women, stayers vs. leavers, Stage 1 vs. Stage 2 of involvement) to assess the generalizability of the model. The results of these analyses are summarized in Table 4. For both men and women, as for the sample as a whole, greater rewards produced greater satisfaction, but variations in costs did not significantly affect satisfaction. Greater satisfaction and investment size led to higher levels of commitment for both men and women, but although low alternative quality increased commitment for women, alternative quality did not significantly contribute to the prediction of commitment for men (this was true only for a model of commitment including satisfaction and investments

³ I speculated that the differential between a subject's perceived rewards and costs might better predict satisfaction and commitment, so I computed an algebraic difference score at each time for each subject and regressed this measure onto satisfaction, again using SUBJ as a categorical factor. This multiple regression accounted for less of the variance in satisfaction ($R^2 = .58$) than did the model including rewards and costs as two separate predictors. The same was true for the prediction of commitment; although the reward/cost differential measure was significantly correlated with commitment ($\beta = .450$), the multiple regression of reward/cost differential, alternatives, and investments onto commitment produced a lower R^2 (.82) than did the model from rewards, costs, alternatives, and investments.

as well as alternatives). The results for the prediction of commitment from a four-factor model—rewards, costs, alternatives, and investments—revealed that for men, greater rewards and investments and poorer alternatives increased commitment (as predicted), and greater costs encouraged greater commitment (contrary to predictions). For women, greater rewards and investments and poorer alternatives encouraged commitment, and costs did not significantly affect commitment (when the effects of other variables are simultaneously taken into account).

Stayers versus leavers. The results for both stayers and leavers were similar to those for the sample as a whole. As for the overall sample, for both stayers and leavers, rewards significantly affected satisfaction, but costs did not. Also, for both stayers and leavers, commitment was increased by greater satisfaction, poorer alternatives, and larger investment size. For the four-factor model of

commitment, greater rewards and investments and poorer alternatives increased commitment. Costs increased commitment for stayers and did not significantly affect commitment for leavers.

Stage 1 versus Stage 2 The results reported above for the overall sample generally hold true at all stages of involvement. Analyses comparing Stage 1 of relationships (Time 0 to Time 5) to Stage 2 (Time 6 to Time 12) of relationships revealed that for both Stage 1 and Stage 2, the three-factor model of commitment behaved as predicted, and the four-factor model showed that rewards, alternatives, and investments (but not costs) significantly affected commitment as predicted (and in the same manner as for the overall sample). At Stage 1 satisfaction was significantly affected by rewards but not costs, whereas at Stage 2 greater rewards increased satisfaction and greater costs decreased satisfaction.

Table 4
Multiple Regression Tests of Investment Model Predictions: Selected Subsamples

		Model			R ²	F
Men						
SAT from	+REW**	CST	(SUBJ)		.90	73.14
COM from	+SAT**	ALT	+INV**	(SUBJ)	.92	85.96
COM from	+REW**	+CST**	-ALT**	+INV** (SUBJ)	.93	94.76
Women						
SAT from	+REW**	CST	(SUBJ)		.87	64.78
COM from	+SAT**	-ALT**	+INV**	(SUBJ)	.88	65.71
COM from	+REW**	CST	-ALT**	+INV** (SUBJ)	.88	62.10
Stayers						
SAT from	+REW**	CST	(SUBJ)		.90	89.23
COM from	+SAT**	-ALT**	+INV**	(SUBJ)	.91	95.69
COM from	+REW**	+CST*	-ALT**	+INV** (SUBJ)	.91	94.24
Leavers						
SAT from	+REW**	CST	(SUBJ)		.82	27.20
COM from	+SAT**	-ALT**	+INV**	(SUBJ)	.83	26.10
COM from	+REW**	CST	-ALT**	+INV** (SUBJ)	.86	29.84
Stage 1						
SAT from	+REW**	CST	(SUBJ)		.91	47.24
COM from	+SAT**	-ALT**	+INV**	(SUBJ)	.90	38.14
COM from	+REW**	CST	-ALT*	+INV** (SUBJ)	.92	49.38
Stage 2						
SAT from	+REW**	-CST**	(SUBJ)		.88	32.92
COM from	+SAT**	-ALT**	+INV*	(SUBJ)	.93	62.30
COM from	+REW**	CST	-ALT**	+INV* (SUBJ)	.93	54.47

Note. REW = rewards, CST = costs, SAT = satisfaction, ALT = alternatives, INV = investments, COM = commitment, and SUBJ = subjects factor. + = a positive regression coefficient for a factor, and - = a negative regression coefficient.

* $p < .01$. ** $p < .001$.

Table 5
Multiple Regression Tests of Investment Model Predictions: Overall Sample (Trend Scores)

Measure	β	R^2	F
SAT from		.76	47.09
REW	.899**		
CST	.063		
COM from		.78	34.26
SAT	.244*		
ALT	-.459**		
INV	.397**		
COM from		.77	23.28
REW	.238*		
CST	.043		
ALT	-.577**		
INV	.395**		

Note. REW = rewards, CST = costs, SAT = satisfaction, ALT = alternatives, INV = investments, and COM = commitment.

* $p < .05$. ** $p < .01$.

Processes of Change Over Time

Changes over time in investment model variables. To explore the manner in which investment model factors change over time, each model variable was individually regressed onto time (with values 0 through 12), including SUBJ as a categorical variable. These analyses revealed that over time in relationships, rewards increased ($\beta = .402$; $t = 6.93$, $p < .001$), costs increased ($\beta = .316$; $t = 5.77$, $p < .001$), satisfaction increased ($\beta = .189$; $t = 5.11$, $p < .001$), alternative quality declined ($\beta = -.179$; $t = -3.19$, $p < .002$), investment size increased ($\beta = .772$; $t = 10.25$, $p < .001$), and degree of commitment increased ($\beta = .157$; $t = 6.57$, $p < .001$).

Predicting satisfaction and commitment: Trend measures. To facilitate the remaining analyses, I sought to develop a single measure of each investment model variable for each subject, measures reflecting the manner in which each variable changes over time for each subject. To do this, I performed analyses for each of 34 subjects wherein each model variable was regressed onto time (0 through 12). The resultant values, for each subject, represented the slope over time of changes in each investment model variable. To assess whether changes over time in satisfaction and commitment result from corresponding changes in investment model predictors, these "trend" scores were used in multiple regres-

sion analyses similar to those reported above (it was no longer necessary to include SUBJ as a factor, because each subject now had only one set of measures). The results of these analyses, presented in Table 5, mirror the findings reported above for the overall sample. Satisfaction increased as a function of increases in obtained rewards (but not costs). The process of increasing satisfaction, decreasing alternative quality, and increasing investment size produced corresponding increases over time in commitment. For the four-factor model, increases over time in commitment were associated with increasing rewards, declining alternatives, and increasing investments but not by any significant changes in costs.

Men versus women: Trend measures. A two-level multivariate analysis of variance (men, women) was performed on the trend scores to determine whether the process of change over time in investment model variables differed as a function of sex. The multivariate effect of sex on investment model variables was not significant, $F(6, 26) = .77$, $p < .60$, and univariate analyses revealed that the slopes over time for men and women of rewards ($F = .02$), costs ($F = .01$), satisfaction ($F = .02$), alternatives ($F = .25$), investments ($F = .21$), and commitment ($F = 1.79$) did not differ significantly.

Predicting Stay/Leave Behaviors

Stay/leave behaviors and investment model factors. A first step in the analysis of the relationship between investment model variables and stay/leave behaviors was to establish the simple effects of changes over time in model variables on behavior. To do this a two-level multivariate analysis of variance (stayers, leavers) was performed on the trend scores. The results of this analysis are displayed in Table 6. The multivariate effect of stay/leave on investment model variables was significant, $F(6, 26) = 5.33$, $p < .001$, as were all univariate effects (see Table 6). Compared to leavers', stayers' rewards increased more over time, costs increased less, satisfaction increased more, alternative quality declined more (leavers' reported alternative quality increased somewhat), investment size increased more, and commitment increased

Table 6
Mean Trends Over Time in Investment Model Variables for Stayers and Leavers

Measure	Stayers	Abandoned	Leavers	F	df	p <
Two-level MANOVA						
REW	.488		.145	10.98	1, 31	.002
CST	.159		.641	10.99	1, 31	.002
SAT	.423		.117	4.41	1, 31	.044
ALT	-.411		.189	13.05	1, 31	.001
INV	.542		.155	6.34	1, 31	.017
COM	.514		-.078	18.91	1, 31	.001
n	24		9			
Three-level MANOVA						
REW	.488	.292	.027	6.88	2, 30	.003
CST	.159	.458	.779	6.40	2, 30	.005
SAT	.423	.353	-.072	3.89	2, 30	.032
ALT	-.411	-.154	.463	10.12	2, 30	.001
INV	.542	.598	-.200	10.63	2, 30	.001
COM	.514	.248	-.339	15.32	2, 30	.001
n	24	4	5			

Note. REW = rewards, CST = costs, SAT = satisfaction, ALT = alternatives, INV = investments, and COM = commitment. MANOVA = multivariate analysis of variance.

more (leavers' commitment declined over time).

The leavers group, however, includes two types of individuals, those who decided to end their relationships and those whose partners decided to end their relationships. Because the processes by which investment model factors change over time may differ for these two types of relationship, a third group, those who were "abandoned," was added to the analysis reported above. The results of this analysis, too, are presented in Table 6. The multivariate effect of stay/abandoned/leave on investment model trend scores was significant, $F(12, 52) = 3.46$, $p < .001$, as were all univariate effects (see Table 6). Of course, the stayers group's data performed in the same manner as reported above (their group status did not change in these analyses). The newly defined leavers group (those who personally ended their relationships) showed very little increase over time in rewards, great increases in costs, a slight reduction in satisfaction, an increase in alternative quality, a decrease over time in investments (divestiture), and a decline in level of commitment. (No wonder they ended their relationships!) The abandoned group (those whose partners ended their relationships)

showed an interesting pattern of results: Compared to stayers', their rewards increased less and costs increased more, so their satisfaction did not increase much over time. However, their alternatives continued to decline in quality and they continued to invest as much in their relationships as did stayers. Thus, they reported moderately increasing commitment and did not end their involvements. Collectively, these data suggest that changes over time in investment model variables account for individuals' stay/leave behaviors.⁴

Does commitment mediate stay/leave behaviors? Ideally, it would be useful to use path analysis techniques to determine whether commitment mediates stay/leave behaviors (cf. Asher, 1976). Unfortunately, the stay/leave and stay/abandoned/leave measures are categorical rather than continuous, so path

⁴ I computed individual trend scores for the reward/cost differential measure and found that although this measure significantly distinguished between stayers and leavers—stayers' $M = .276$, leavers' $M = -.244$, $F(1, 31) = 7.72$, $p < .009$; stayers' $M = .276$, abandoned $M = -.121$, leavers' $M = -.342$, $F(2, 30) = 4.03$, $p < .028$ —the predictions from rewards and costs considered individually were superior.

analysis procedures, which employ multiple regression analyses, are inappropriate. However, we can use the general logic of path analysis to perform related analyses and obtain suggestive evidence regarding commitment's mediating role. The results of a series of multiple regression analyses using the Equation 2 and Equation 3 models of commitment and using both stay/leave and stay/abandoned/

Table 7
Predicting Stay/Leave Behaviors From
Investment Model Factors

Behavior	β
Prediction from individual factors	
ST/LV from	
SAT	-.511
ALT	.544
INV	-.412
COM	-.616
ST/LV from	
REW	-.353
CST	.512
ALT	.544
INV	-.412
COM	-.616
S/A/L from	
SAT	-.430
ALT	.624
INV	-.560
COM	-.701
S/A/L from	
REW	-.560
CST	.547
ALT	.624
INV	-.560
COM	-.701
Prediction from simple models	
ST/LV from	
SAT	-.343
ALT	.638
INV	-.288
ST/LV from	
REW	-.132
CST	.226
ALT	.275
INV	-.168
S/A/L from	
SAT	-.266
ALT	.713
INV	-.405
S/A/L from	
REW	-.068
CST	.154
ALT	.387
INV	-.338

Table 7 (continued)

Behavior	β
Prediction including commitment	
ST/LV from	
SAT	-.326
ALT	.461
INV	-.061
COM	-.528
ST/LV from	
REW	-.078
CST	.243
ALT	.051
INV	-.014
COM	-.388
S/A/L from	
SAT	-.363
ALT	.531
INV	-.247
COM	-.498
S/A/L from	
REW	-.029
CST	.166
ALT	.222
INV	-.225
COM	-.385

Note. REW = rewards, CST = costs, SAT = satisfaction, ALT = alternatives, INV = investments, COM = commitment, ST/LV = stay/leave, and S/A/L = stay/abandoned/leave.

leave as criteria are summarized in Table 7. The regression of commitment onto both criteria yielded fairly sizable betas ($-.616$ and $-.701$, respectively). Regressing commitment predictors individually onto both criteria revealed impressive betas for both Equation 2 and Equation 3 models (see Table 7, "Prediction from individual factors"). When the commitment predictors—Equations 2 and 3—were collectively regressed onto stay/leave and stay/abandoned/leave, their regression coefficients (generally) declined somewhat (see Table 7, "Prediction from simple models"). When the commitment measure was added to these simpler models, the regression coefficients for the commitment predictors (generally) declined even further, whereas the commitment coefficients remained relatively strong (see Table 7, "Prediction including commitment"). Thus, changes over time in commitment were more strongly predictive of stay/leave and stay/abandoned/leave than were other investment model factors, and although they (SAT, ALT, INV or REW, CST, ALT, INV) collectively

provided a reasonable prediction of both criteria, when the impact of commitment changes on stay/leave behaviors was accounted for, their impact declined. These findings suggest that although rewards, costs, satisfaction, investments, and alternatives may exert some relatively small direct effect on stay/leave behaviors, their impact on stay/leave is largely indirect, mediated by changes over time in commitment.

Intent commitment versus attachment commitment. The investment model asserts that commitment consists of two components—behavioral intent and psychological attachment. The above-reported analyses combined these two components, studying commitment as a single construct. Is this approach reasonable? Do these two components behave similarly? To answer this question I divided the five measures of commitment into two separate (averaged) subscales: intent (“How likely is it that you will end your relationship in the near future?”; “For what length of time would you like your relationship to last?”; and “How attractive an alternative would you require before adopting it and ending your relationship?”) and attachment (“To what extent are you ‘attached’ to your partner?” and “To what extent are you committed to your relationship?”). I regressed the attachment measure onto the intent measure, including SUBJ as a categorical factor, and found that these two measures were strongly related ($R^2 = .76$, $\beta = .456$). I also computed individual trend scores for each subscale and found that changes over time in intent and attachment were significantly correlated ($r = .82$). Furthermore, changes over time in both intent and attachment distinguished between stayers and leavers—for intent, stayers’ $M = .372$, leavers’ $M = -.449$, $F(1, 31) = 19.05$, $p < .001$; for attachment, stayers’ $M = .489$, leavers’ $M = -.075$, $F(1, 31) = 11.62$, $p < .002$ —and among stayers, those who were abandoned, and leavers—for intent, stayers’ $M = .371$, abandoned $M = -.093$, leavers’ $M = -.734$, $F(2, 30) = 12.74$, $p < .001$; for attachment, stayers’ $M = .489$, abandoned $M = .327$, leavers’ $M = -.396$, $F(2, 30) = 11.08$, $p < .001$. These results suggest that behavioral intent and feelings of psychological attachment are strongly related to one

another and that (at least in the present investigation) it was reasonable to deal with these two aspects of commitment as a single theoretical construct.

Discussion

The results of the present study provide generally good support for investment model predictions regarding the development and deterioration of satisfaction and commitment and the causes of individuals’ stay/leave behaviors. The investment model assertion concerning the impact of rewards and costs on satisfaction was assessed first (Equation 1). Increases in rewards consistently led to greater satisfaction, whereas variations in costs did not significantly affect level of satisfaction. This pattern of results held true not only for the sample as a whole but also for both men and women, for both stayers and leavers, and for early stages of involvement. The only exception to this overall pattern was for later stages of involvement (from about 3 to 7 months of involvement), at which time increases in costs led to significant decreases in level of reported satisfaction. This pattern of results may have occurred because the costs of a relationship are simply not apparent at early stages of involvement. At the beginning of a relationship, individuals may try hard to display their best selves, and their partners may be generous in overlooking any faults (or problems) that do become apparent. However, at later stages of involvement, persons may relax more, allow their true, flawed selves to emerge, and their partners may adopt a more realistic view of the relationship.

A second task was to explore the ability of investment model variables to predict level of commitment to maintain relationships. The three-factor model expressed in Equation 2—from satisfaction, alternatives, and investments—behaved fairly consistently as predicted. Greater satisfaction and investment size and poorer alternatives promoted higher levels of commitment for the overall sample, for both stayers and leavers, at all stages of involvement, and for women. For men the impact of alternatives on commitment was not significant (at least not for this three-factor model). (Because poorer alter-

natives did promote greater commitment for men in the four-factor model, this finding was not of great concern; perhaps their reported satisfaction was simply highly colinear with reported alternatives.) In regard to the four-factor model of commitment (Equation 3)—from rewards, costs, alternatives, and investments—it was found that greater rewards, poorer alternatives, and greater investment size encourage higher levels of commitment, whereas variations in costs generally have no significant effect on commitment. These findings are consistent with my earlier results (Rusbult, 1980a), arguing that “the romantic ideal that one accepts a mate ‘for better or worse’ may prevent individuals from admitting that they become less committed to one another as the costs of doing so increase” (p. 184). The only exceptions to this finding were for men and stayers, for whom greater costs actually increased level of commitment. This may be because a third variable—time—leads to increases in both costs and commitment, or this phenomenon may result from a sort of dissonance or self-perception effect (e.g., “There are numerous costs in this relationship, but I remain involved, so I must be *really* committed.”). That later analyses of trends over time in costs and commitment revealed no significant relation suggests that the former explanation is more probable (i.e., when the effects of time are accounted for, this relation is not apparent). Alternatively, for some persons at some times, costs may serve as a sort of investment (i.e., sunk costs); previous costs incurred with little reward may lead to increased determination to make those costs “pay off” in the future. This economic principle—that people are tempted to “throw good money after bad money”—is evident in research on social behavior in non-romantic settings (e.g., Rubin & Brockner, 1975; Staw, 1976; Staw & Fox, 1977) and may account for some of the aberrant findings in the present study. This speculation remains to be explored.

The study also sought to explore changes over time in investment model factors. Over time, rewards increase, costs increase, satisfaction increases, alternative quality declines, investment size increases, and level of commitment increases. It seems natural that investment size increases over time because a

variety of resources require time for their investment. Also, it is gratifying to discover that level of rewards, satisfaction, and commitment becomes greater over time. Unfortunately, costs too increase over time. As mentioned earlier, perhaps early stages of involvement are characterized by infatuation, in which both partners are “on their best behavior” and are generous in their evaluations of one another (i.e., they perceive fewer costs); we may allow our less attractive traits to become evident only at later stages of involvement. It is somewhat surprising to note that individuals’ perceptions of their alternatives decline over time. This seems reasonable because alternatives affect commitment and commitment increases over time, but there is no reason to assume from investment model assertions that *within a given individual*, alternative quality should decline over time. This phenomenon may occur because individuals’ alternatives really do decline over time in an involvement (e.g., alternative partners do not approach them because of awareness of their involvement) or because persons simply come to perceive their alternatives as less attractive with the passage of time and increased involvement.

An analysis of trend scores (i.e., measures reflecting changes over time in each model variable for each subject) revealed a pattern of findings identical to that summarized earlier. Increases over time in rewards led to corresponding increases in satisfaction, but changes over time in costs did not significantly affect satisfaction. Increases over time in commitment appear to result from increases in satisfaction, declines in the quality of available alternatives, and increases in investment size. Tests of the Equation 3 model of commitment revealed that commitment increases over time because of corresponding increases in rewards, declines in alternative quality, and increased investment. Variations in level of costs over time did not significantly affect commitment.

A final goal, perhaps the most important goal of the present study, was to determine the relations between investment model variables and stay/leave behaviors. Two types of analysis—for stayers versus leavers and for stayers versus abandoned individuals versus leavers—revealed similar patterns of find-

ings. For stayers, rewards increased over time, costs rose slightly, satisfaction grew, alternative quality declined, investment size increased, and level of commitment grew. For leavers, rewards did not increase very much, costs increased greatly, satisfaction declined somewhat, alternative quality greatly improved, investment size declined, and commitment declined. It is interesting to note that some form of "divestiture" occurs among leavers; over time, they seem to remove (or reclaim) resources invested in their relationships at earlier times. Individuals who were abandoned evidenced an intriguing pattern of change over time, a pattern of change that could be termed *entrapment*. These persons showed fewer increases in rewards, greater increases in costs, and lower increases in level of satisfaction than did stayers (i.e., they were not tremendously happy with their involvements). However, their alternatives declined in quality and they continued to invest heavily in their relationships (this group invested at as great a rate, or greater, than did stayers). They therefore reported moderate levels of commitment and remained involved (albeit trapped) in their relationships until they were terminated by their partners.

A final issue addressed in this study was the role of variations in commitment in mediating stay/leave behaviors (Equation 4). In all cases—examining stay/leave or stay/abandoned/leave criteria, using three- or four-factor models of commitment—commitment is a better zero-order predictor of stay/leave behaviors than is any other investment model variable. Moreover, when simple models of commitment (satisfaction, alternatives, and investments or rewards, costs, alternatives, and investments) as predictors of stay/leave are compared to similar models including commitment as a predictor of stay/leave, the variance in stay/leave accounted for by commitment predictors declines, whereas commitment itself continues to exert a sizable influence on stay/leave behaviors. Although these conclusions should be regarded as tentative (the analyses were not entirely "kosher" in regard to the assumptions of regression-type analyses), these results are consistent with investment model predictions.

Thus, the present study reveals fairly good support for investment model hypotheses.

These findings provide interesting evidence regarding the process by which satisfaction and commitment develop and deteriorate over time. The study also provides suggestive evidence concerning the role of commitment in mediating individuals' stay/leave behaviors. However, several limitations of this investigation should be noted. First, although the attempt to study 34 college students' dating relationships over a 7-month time period may be regarded as an ambitious endeavor, one may nevertheless question the generalizability of these findings—the findings are based on a small number of very young adults involved in the early stages of relatively short-term involvements. Three of our 34 subjects later married their partners, but it would be useful to conduct a similar study using an older subject population with more long-standing involvements.

Second, it should be noted that this study examined self-reported satisfaction and commitment and self-reported rewards, costs, alternatives, and investments. It is encouraging to find that these factors effectively predict stay/leave behaviors, but it is still unclear what relation self-report has to actual, objective conditions (e.g., Do reported rewards accurately represent real, obtained rewards?).

Third, a related issue concerns subjects' ability to make dependable distinctions among abstract concepts (e.g., Can subjects accurately distinguish between rewards and satisfaction, between costs and investment size? Do subjects strive for consistency across measures? Do they answer based on a simple halo effect?). All of the above-reported analyses in some manner controlled for the within-subjects factor, either by including subject as a factor or by eliminating individual response tendencies through the computation of individual trend scores. Such procedures should, at least in part, eliminate problems associated with consistency tendencies or halo effects. Also, the format of the questionnaires was designed to help subjects distinguish among concepts—definitions of all variables were presented, and both concrete and general questions were answered. In addition, the findings themselves suggest that subjects were able to distinguish among concepts. For example, subjects were able to report that both costs and satisfaction in-

creased over time; abandoned persons reported that in spite of increasing costs, they continued to invest in their relationships.

Finally, one must question the effects that the repeated administration of questionnaires has on subjects' responses: Do subjects strive for consistency over time, does this procedure produce reactive effects, do subjects develop self-fulfilling expectations, and so on? The inclusion of the within-subjects factor in the analyses presumably controls for many statistical problems associated with repeated administration. That similar patterns of results were obtained during both early and later stages of involvement suggests that reactive effects were not a serious problem. Information on nonparticipant volunteers for the study was also obtained to determine whether participation affected stay/leave decisions. Thirty-one percent of the nonparticipants' relationships ended during the 7-month period of the study, and 29% of the subjects' relationships ended. Thus, the act of completing a questionnaire once every 17 days does not seem to have significantly influenced stay/leave behaviors. Thus, although longitudinal procedures introduce a number of important methodological difficulties, the benefits gained through the conduct of this study using a longitudinal method by far outweigh the problems associated with such methods.

Although the research reported herein uses the investment model as a theoretical tool for exploring longitudinal effects in romantic relationships, I do not wish to argue that this model should replace traditional research and theory on romantic involvements. The investment model may be a useful means of integrating diverse findings regarding the role of variables such as attitudinal similarity, physical attractiveness, and self-disclosures, but it is still important that such phenomena be explored in greater detail on their own. For example, the results of this study are fairly consistent with those of Hill et al.'s (1976) 2-year longitudinal study of breakups before marriage. These authors found that factors such as liking and loving (i.e., satisfaction), estimates of marriage probability (i.e., commitment), duration and exclusivity (i.e., investments), and partner's similarity (i.e., rewards, costs) effectively predicted

breakups. Although the present approach is more strongly grounded in the extant theory on relationships, their study explores in greater detail factors such as the timing of breakups and partner's explanations for breakups. Also, although these data were examined from the point of view of the investment model, these findings are not inconsistent with theories such as social-penetration theory (Altman & Taylor, 1973) or incremental-exchange theory (Huesmann & Levinger, 1976). For example, Levinger (1979) distinguishes between attractive versus unattractive and stable versus unstable relationships. The analyses of abandoned individuals in the present study reveal a pattern reminiscent of his "unattractive stability" group, except that such conditions appear to result not only from low attraction and poor quality alternatives but also from high levels of investment. The utility of the investment model may lie in its applicability to a wide range of social-exchange relations (friendships, romantic involvements, and job-related behaviors; Farrell & Rusbult, 1981; Rusbult, 1980a, 1980b; Rusbult & Farrell, in press), in its ability to integrate the diverse literature on romantic relationships, and in its foundation in more general theories of social relations, particularly interdependence theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959). It is hoped that through such functions the investment model may contribute to our understanding of social behavior.

References

- Ajzen, I. Effects of information on interpersonal attraction: Similarity versus affective value. *Journal of Personality and Social Psychology*, 1974, 29, 374-380.
- Altman, I., & Taylor, D. A. *Social penetration: The development of interpersonal relationships*. New York: Holt, Rinehart & Winston, 1973.
- Asher, H. B. *Causal modeling*. Beverly Hills, Calif.: Sage, 1976.
- Becker, H. S. Notes on the concept of commitment. *American Journal of Sociology*, 1960, 66, 32-40.
- Bentler, P. M., & Newcomb, M. S. Longitudinal study of marital success and failure. *Journal of Consulting and Clinical Psychology*, 1978, 47, 1053-1070.
- Berscheid, E., Brothen, T., & Graziano, W. Gain-loss theory and the "law of infidelity": Mr. Doting versus the admiring stranger. *Journal of Personality and Social Psychology*, 1976, 33, 709-718.
- Billings, A. Conflict resolution in distressed and nondistressed married couples. *Journal of Consulting and Clinical Psychology*, 1979, 47, 368-376.

- Birchler, G. R., Weiss, R. L., & Vincent, J. P. Multi-method analysis of social reinforcement exchange between maritally distressed and nondistressed spouse and stranger dyads. *Journal of Personality and Social Psychology*, 1975, 31, 349-360.
- Blau, P. M. *Exchange and power in social life*. New York: Wiley, 1964.
- Brown, P., & Manela, R. Changing family roles: Women and divorce. *Journal of Divorce*, 1978, 1, 315-328.
- Cohen, J., & Cohen, P. *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale, N.J.: Erlbaum, 1975.
- Drachman, D., DeCarufel, A., & Insko, C. A. The extra credit effect in interpersonal attraction. *Journal of Experimental Social Psychology*, 1978, 14, 458-465.
- Farrell, D., & Rusbult, C. E. Exchange variables as predictors of job satisfaction, job commitment, and turnover: The impact of rewards, costs, alternatives, and investments. *Organizational Behavior and Human Performance*, 1981, 27, 78-95.
- Fineberg, B. L., & Lowman, J. Affect and status dimensions of marital adjustment. *Journal of Marriage and the Family*, 1975, 37, 155-160.
- Gottman, J., et al. Behavior exchange theory and marital decision making. *Journal of Personality and Social Psychology*, 1976, 34, 14-23.
- Hatfield, E., Utne, M. K., & Traupman, J. Equity theory and intimate relationships. In R. L. Burgess & T. L. Huston (Eds.), *Social exchange in developing relationships*. New York: Academic Press, 1979.
- Hill, C. T., Rubin, Z., & Peplau, L. A. Breakups before marriage: The end of 103 affairs. *Journal of Social Issues*, 1976, 32, 147-168.
- Homans, G. C. *Social behavior: Its elementary forms*. New York: Harcourt, Brace & World, 1961.
- Huesmann, L. R., & Levinger, G. Incremental exchange theory: A formal model for progression in dyadic social interaction. In L. Berkowitz & E. Walster (Eds.), *Advances in experimental social psychology* (Vol. 9). New York: Academic Press, 1976.
- Insko, C. A., & Wilson, M. Interpersonal attraction as a function of social interaction. *Journal of Personality and Social Psychology*, 1977, 35, 903-911.
- Johnson, M. P. Commitment: A conceptual structure and empirical application. *Sociological Quarterly*, 1973, 14, 395-406.
- Kelley, H. H., & Thibaut, J. W. *Interpersonal relations: A theory of interdependence*. New York: Wiley, 1978.
- Kerckhoff, A. C. Patterns of marriage and family formation and dissolution. *Journal of Consumer Research*, 1976, 2, 261-275.
- LaGaipa, J. J. Interpersonal attraction and social exchange. In S. Duck (Ed.), *Theory and practice in interpersonal attraction*. New York: Academic Press, 1977.
- Levinger, G. A three-level approach to attraction: Toward an understanding of pair relatedness. In T. L. Huston (Ed.), *Foundations of interpersonal attraction*. New York: Academic Press, 1974.
- Levinger, G. A social exchange view on the dissolution of pair relationships. In R. L. Burgess & T. L. Huston (Eds.), *Social exchange in developing relationships*. New York: Academic Press, 1979.
- Levinger, G., & Moles, O. C (Eds.), *Divorce and separation*. New York: Basic Books, 1979.
- Nunnally, J. *Psychometric theory*. New York: McGraw-Hill, 1967.
- Rosenblatt, P. C. Needed research on commitment in marriage. In G. Levinger & H. L. Raush (Eds.), *Close relationships: Perspectives on the meaning of intimacy*. Amherst: University of Massachusetts Press, 1977.
- Rubin, J. Z., & Brockner, J. Factors affecting entrapment in waiting situations: The Rozencrantz and Guildenstern effect. *Journal of Personality and Social Psychology*, 1975, 31, 1054-1063.
- Rusbult, C. E. Commitment and satisfaction in romantic associations: A test of the investment model. *Journal of Experimental Social Psychology*, 1980, 16, 172-186. (a)
- Rusbult, C. E. Satisfaction and commitment in friendships. *Representative Research in Social Psychology*, 1980, 11, 96-105. (b)
- Rusbult, C. E., & Farrell, D. A longitudinal test of the investment model: The impact on job satisfaction, job commitment, and turnover of variations in rewards, costs, alternatives, and investments. *Journal of Applied Psychology*, in press.
- Staw, B. M. Knee-deep in the big muddy: A study of escalating commitment to a chosen course of action. *Organizational Behavior and Human Performance*, 1976, 16, 27-44.
- Staw, B. M., & Fox, F. V. Escalation: The determinants of commitment to a chosen course of action. *Human Relations*, 1977, 30, 431-450.
- Thibaut, J. W., & Kelley, H. H. *The social psychology of groups*. New York: Wiley, 1959.
- Todres, R. Runaway wives: An increasing North American phenomenon. *Family Coordinator*, 1978, 27, 17-21.
- Tyler, T. R., & Sears, D. O. Coming to like obnoxious people when we must live with them. *Journal of Personality and Social Psychology*, 1977, 35, 200-211.
- Walster, E., Walster, G. W., Piliavin, J., & Schmidt, L. "Playing hard to get": Understanding an elusive phenomenon. *Journal of Personality and Social Psychology*, 1973, 26, 113-121.

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