In association with an extensive examination of the disclosure literature, this paper describes two laboratory studies designed to yield information regarding the effects of reinforcement on self-disclosing behaviors in an exchange process. In one series, the experimenters manipulated the patterns of personal reward/cost experiences, hypothesizing that shifts in reinforcement, inconsistent with prior established expectations, would produce "contrast effects". Results provide evidence of such effects, with S's exposed to negative changing to positive reinforcement talking about themselves for longer periods of time than those subjected to continuous positive conditions. This pattern held true only when S's were led to think they would be together for a long time. No contrast effects were found for the positive changing to negative condition. A followup study, in which the major independent variable was intimacy, introduced four patterns of intimacy of self-disclosure into the verbal exchange of S's and confederates. Results of these exchanges also provided some support for the contrast hypothesis. The author suggests several independent theoretical foundations for the appearance of contrast effects and hopes that future studies will provide more solid empirical support for such effects. (Author/CJ)
Self-Disclosure as an Exchange Process: Reinforcement Effects

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INTRODUCTION

Self-disclosure as an exchange process, in this paper, will be discussed in the context of what has been called social penetration (Altman and Taylor, 1973). The theory of social penetration describes the development of interpersonal relationships as a multi-level behavioral process. These processes include verbal, nonverbal, and environmental behaviors that occur systematically through time and at varying levels of intimacy. Specifically, we postulate that relationship formation proceeds from non-intimate to intimate areas of the self, in an orderly fashion. We have developed methodological frameworks for investigating the quantity (breadth) and the quality (depth) of interpersonal exchange in all of these modes. The discussion here will concentrate principally on the verbal mode.

Situation

One key aspect of the theory speculates regarding the environmental effects on interpersonal relationships. To investigate these effects, studies have been conducted which examined social penetration processes among college roommates and experimentally isolated pairs of men. In both instances it was noted that disclosure of one's self occurred at extremely rapid rates. One caveat from these studies was the observation that we had discovered a process comparable to the biologists' use of the

drosophila in the study of genetic transmission. Pairs of men in conditions of social isolation for 8 days exhibited levels of self-disclosure comparable to that achieved by close friends over a period of years. While these outcomes were of heuristic value to us, in some instances they proved to be deleterious to the disclosing pairs. More will be said about this later.

**Personality**

In other studies, we have repeatedly demonstrated that questionnaire measures of self-disclosure to best friend are reliably stable predictors of self-disclosure to novel persons in both natural and laboratory interaction situations (Altman and Haythorn, 1965; Frankfurt, 1965; Taylor, 1968). Subjects categorized as high disclosers (to best friend) disclose more to novel targets or different targets than do subjects designated as low disclosers (to best friend). We have labeled this distinction a personality trait in which the high discloser-low discloser difference is a function of high disclosers being more sensitive to the selection and recognition of person-oriented stimuli than are low disclosers. This notion began with the assumption that gregarious individuals, who participate in more social interactions and experience a wider acquaintance with people are exposed to a relatively high social stimulus cue density. A social stimulus cue is any aspect of the individual's environment that is socially relevant to his behavior in relation to other individuals. It may be the color, shape, or texture of facial characteristics, manner of dress and body movement, or some form of direct or indirect communication, either verbal or
nonverbal, i.e., voice quality, facial expression, gesture, pupil dilation, etc. We have concluded that high disclosers are individuals who experience a wide acquaintance with people and thus are exposed to a high social stimulus cue density. Conversely, low disclosers are those who experience a narrow acquaintance with people and hence are exposed to a social stimulus cue sparsity (Taylor and Oberlander, 1969).

In a more recent study (Taylor, Altman, and Wheeler, 1973), we discovered a relationship between predisposition to reveal (as a personality trait) and subsequent adjustment in a socially isolated environment. Inability to complete successfully the assigned duration of social isolation was associated with departures from base-line measures of self-disclosure (to best friend). Low disclosers who "overdisclosed" as well as high disclosers who "underdisclosed" (to isolation partner) exhibited a greater incidence of unsuccessful mission completion than their disclosure counterparts whose disclosure patterns (to isolation partner) conformed to base-line expectations.

Rewards and Costs (Reinforcement)

As interpersonal relationships proceed in a systematic and orderly fashion from superficial and non-intimate to more intimate areas of exchange, they are strongly influenced by the rewards and costs of behavior exchanges in the past, present, and anticipated future. This reward/cost emphasis is similar to that of Homans (1961) and Thibault and Kelley (1959). Following a paradigm developed by Taylor, Altman and Sorrentino (1969), we have demonstrated in several studies that self-disclosure varies as a joint function of reward/cost outcomes and
commitment to the relationship. Positive outcomes (rewards) produced greater disclosure and more liking to an experimenter confederate than negative outcomes (costs) elicited. When mixed patterns of reinforcement were employed, subjects were more open and disclosing when negative responses became positive as opposed to shifts in the opposite direction. Additionally, subjects in relationships characterized as long-term commitments were somewhat more cautious in responding to the confederate’s reinforcement. Subjects in short-term relationships were more open and willing to disclose to the confederate. These findings clearly indicate that reinforcement has differential effects on disclosure patterns that relate to one’s commitment to a relationship. More will be said about this relationship later.

SELF-DISCLOSURE

In a recent review of the literature on self-disclosure, Cozby (1973) defined self-disclosure as "any information about himself which Person A communicates verbally to a Person B (p. 73)". This definition is consistent with the approach we have employed in investigating social penetration processes. Initially, we measured breadth (amount) of verbal disclosure by number of items answered on the Jourard Self-Disclosure Questionnaire. Depth was measured by average Thurstone Scale Values for the questionnaire items pre-scaled for Intimacy. Eventually, the concept of breadth was further dimensionalized into 1) breadth category, or the extent to which disclosures occurred in different topical areas, e.g. sex, hobbies,
religion; 2) **breadth frequency** or amount of disclosure within a broad area, and 3) **breadth time** or simply the average amount of time spent talking. In accomplishing this, we developed a Taylor-Altman Self-disclosure Scale.

As indicated above, we have had good success in identifying high and low disclosers using this instrument. More expansively, we have manipulated a confederate's level and kind of disclosure as a way of studying semi-structured self-disclosure among naive laboratory subjects. Live confederates have been pre-programmed to deliver, consistent with experimental conditions, pre-arranged alternative responses contingent on freely selected statements from a deck of items by a naive subject. Of primary importance in these studies have been the relationship between reinforcement dynamics and self-disclosure patterns that relate to developing relationships. In this respect, we have obtained information on amount of disclosure, length of disclosure, and degree of intimacy of the disclosure.

The most interesting dynamics of self-disclosure have occurred among high-intimacy disclosures. This outcome perhaps relates to the enigmatical nature of the reward/cost implications of intimate disclosure. Rubin (1973) has appropriately defined intimacy as getting "into another person -- to really know another (p. 160)". But there is great resistance to disclosing one's self. Self-disclosure is often a risky proposition in that one renders himself vulnerable to the possibility that his disclosures will make it possible for another
to exploit him. Simultaneously there can be enhanced pleasure or reward in the mutual sharing of a delicate intimacy -- as with lovers. In writing to his female lawyer with whom he was in love, black panther Eldridge Clever aptly describes dilemma in the uncertainty of extreme penetration and the vulnerability of two people on the verge of an intimate relationship.

The reason two people are reluctant to really strip themselves naked in front of each other is because in doing so they make themselves vulnerable and give enormous power over themselves one to the other. How awful, how deadly, how catastrophically they can hurt each other, wreck and ruin each other forever! How often, indeed, they end by inflicting pain and torment upon each other. Better to maintain shallow, superficial affairs; that way the scars are not too deep, no blood is hacked from the soul. You beautifully -- oh, how beautifully!! -- spoke, in your letter, of "what an awful thing it is to feel oneself on the verge of the possibility of really knowing another person..." and "I feel as though I am on the edge of a new world."

Getting to know someone, entering that new world, is an ultimate, irretrievable leap into the unknown. The prospect is terrifying. The stakes are high. The emotions are overwhelming (Cleaver, 1968, p. 139).

Sidney Jourard, in a similar comment on the nature of individuals' tendencies to be guarded against becoming truly known by others, argues that such guardedness results in being misunderstood and ultimately contributes to poor mental health. Nonetheless, cautiousness continues to be the rule in interpersonal exchanges. In order to study intimacy in interpersonal exchange, we scaled 671 statements for intimacy and topical category using the Thurstone procedure of equal appearing intervals (Taylor and Altman, 1966). This process has permitted us to examine differences in patterns of disclosure at superficial and intimate levels in social exchanges.
Our findings have consistently showed that greater differences in self-disclosure, as a function of personality or reinforcement occur in intimate as opposed to non-intimate areas of exchange (Altman and Haythorn, 1965; Frankfurt, 1965; Taylor, Altman, and Sorrentino, 1969). This phenomenon most probably results from the fact that the rate of development of self-disclosure is greater at low-intimacy levels. Additionally, past research indicated that a greater amount of disclosure occurred at low levels of intimacy as opposed to high-intimacy levels (Altman and Haythorn, 1965; Taylor, 1968; Taylor, Altman, and Sorrentino, 1969). In a recent study by Worthy, Gary, and Kahn (1969) a reciprocity effect for intimacy of disclosures was obtained. More intimate initial disclosures were made to those who were initially better liked. In turn, final liking was higher for those who made more intimate disclosures. These studies provide clues to the dual nature of intimacy; the rate of development of intimate exchanges is slow yet the more intimate a response to a question, the more rewarding the disclosure is for the recipient. Consistent with social exchange theory, more intimate disclosures are made to those from whom communicators had received more intimate information. Thus, increased mutual acquaintance or interpersonal knowledge promotes the communication of personal material. In this fashion, self-disclosure is an interpersonal exchange process governed by the perceived favorability or unfavorability of outcomes to the interactants.
REINFORCEMENT

Although intimate verbal exchanges have been shown to be emitted rather slowly and cautiously in relatively natural settings, a number of experimental investigations have demonstrated that the process of social penetration may be accelerated by providing subjects with a self-disclosing model. That is, mutually revealing communications have been demonstrated to propel reciprocal disclosures on items of increasing intimacy value within a brief period of time. Since highly intimate information may be seen as typically disclosed only to close friends, the recipient of the disclosure may feel that he is liked and trusted by the disclosee. Hence, such a self-disclosure may be assumed to be a reward, a reinforcement, or a positive outcome for the recipient who subsequently engages in further self-disclosing behaviors. This dynamic has provided the impetus for two kinds of studies conducted in our laboratories designed to yield information regarding the effects of reinforcement on self-disclosing behaviors in an exchange process. The remainder of this paper will deal with these issues.

In one series of studies we manipulated the pattern of interpersonal reward/cost experiences. The underlying assumption in these studies was that shifts in reinforcement which are inconsistent with prior established expectations produce "contrast effects" that result in exaggerated behaviors. Jones and Wein (1972), using the bogus pipeline paradigm (a technique in which Ss are convinced that a machine can detect their true feelings) found that Ss show a stronger
preference for target persons who expressed opinions at first dissimilar and then similar to S's own opinions. Jones and Velin label this phenomenon "expectancy violation" and as such approximates very closely the approach we have taken. Berkowitz (1960a, 1960b) has also found that a second behavioral act has its greatest impact when it is inconsistent with earlier behavior. Aronson and Linder (1965) discuss similar effects in the context of a gain-loss model.

Our paradigms have typically established relationships which began favorably but turned out to be unfavorable, and vice versa. Social penetration processes involve a series of evaluations of reward/cost outcomes in relationship formation; hence, attraction and changes in self-disclosure are influenced by these patterns of reinforcement. As suggested above, we postulated that initially negative reinforcement which unexpectedly becomes positive provides a sharp contrast in perception which leads to greater openness and attraction. We have labeled this outcome a "contrast effect" and data supportive of this interpretation have been collected in several variations of a standard experimental technique involving four reward/cost conditions, two of which were expectancy-confirmation conditions and two of which were expectancy-disconfirmation conditions:

1. **Positive Confirm**: continuous positive reinforcement across all trials.

2. **Negative Disconfirm**: initially negative reinforcement followed by positive reinforcement in later trials.
(3) **Negative Con:** continuous negative reinforcement across all trials.

(4) **Positive Disconfirm:** initially positive reinforcement followed by negative reinforcement in later trials.

The results from these studies provide clear evidence of a contrast effect. Subjects exposed to mixed schedules of reinforcement in which initially negative reinforcement becomes positive, talk about themselves for a longer period of time than subjects subjected to continuous positive reinforcement. Two qualifiers must be added to these conclusions however. This effect occurred only in relationships in which subjects were led to believe they would be together for long periods of time. Secondly, the effect was most pronounced at intimate levels of disclosure. Contrast effects were neither predicted nor found between continuous negative reinforcement and reinforcement patterns that shifted from initially positive to negative.

The findings with regard to measures of attraction are mixed and less dramatic. Favorable or unfavorable evaluations of the confederate conformed to the reinforcement manipulations such that subjects exposed to positive reinforcement increased in favorableness toward the confederate and those in negative conditions showed decreases. The change conditions showed increases or decreases as expected. These differences most closely approximated contrast effects in experimental conditions where subjects were led to believe that their relationship would be a short-term one. It seems that when
ease of withdrawal characterizes the relationship, subjects feel freer or more liberal in evaluating the confederate.

As a follow-up to the finding that the most dramatic effects occurred in intimate areas of exchange, we have begun a series of studies in which the major independent variable is intimacy. That is, we are now concentrating on the effects of Person A's disclosure intimacy upon Person B's disclosure intimacy. These studies will also examine other aspects of the social penetration process, including measures of liking. The first of these studies, a master's thesis conducted by one of my students, has just been completed. This particular study was conducted under quasi-naturalistic conditions --, i.e., in a simulated waiting room. Subject and confederate met in a waiting room ostensibly to participate in an experiment. This initial meeting was the beginning of the actual experiment. Two subsequent waiting periods in this same room were staged under the cover story that the experimenter needed to check and adjust the experimental equipment after each trial. Each subject worked alone in a cubicle and the only interpersonal interaction occurred in the "drafting room" with the confederate where subjects were instructed that they could talk about anything during this time except discuss the experiment. Similar to the manipulation of reinforcement, four patterns of intimacy of self-disclosure were introduced into the verbal exchange taking place in the waiting room. Two of these were constant (high or low intimacy) and two were mixed (increasing or decreasing intimacy over
In all cases, the confederate led the discussion. This advantage provided the opportunity to manipulate the appropriate intimacy patterns:

1. **Constantly High Intimacy (HHH)**; confederate's self-disclosure was extremely intimate during each trial.

2. **Decreasing Intimacy (HML)**; confederate's self-disclosure began at a high level of intimacy and was gradually decreased across trials.

3. **Increasing Intimacy (LHI)**; confederate's self-disclosure began at a low level of intimacy and was gradually increased across trials.

4. **Constantly Low Intimacy (LLL)**; confederate's self-disclosure was extremely non-intimate during each trial.

All exchanges were tape-recorded. These tapes served as one basis for data analysis. Additionally, subjects were asked to give estimates of how intimate they thought the confederate was during each trial. Measures of sociometric attraction were also collected using the Interpersonal Judgment Scale (IJS) developed by Byrne (1961). As can be seen by examining Tables 1 and 2, the pattern of the data suggests that the manipulations had an effect in that there were

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Insert Table 1 about here
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Insert Table 2 about here
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differences between conditions and these differences tended to conform to predict from social penetration theory regarding the outcome of intimate disclosures in developing relationships. These results also provide some support for the contrast hypothesis. Both (1) subjects' estimates of confederate's intimacy and (2) reciprocated disclosures show enhancement effects in the increasing intimacy condition (LMH) such that the final levels of output are higher than the output at session 3 for the constantly high intimacy condition (HHH). Only the former index is statistically reliable, however. The attraction data were completely uninterpretable.

Reciprocity Effects

These data may also conform to what Jourard terms the "dyadic effect"—the reciprocity of intimacy. This effect can be explained within the framework of social penetration theory if it is assumed that the receiving of intimate self-disclosure is rewarding, and the disclosure of intimacy is costly. Then the tendency for intimacy to be reciprocated follows from Homans' (1961) concept of "distributive justice", which has been incorporated into social penetration theory. According to Homans (1961), "A man in an exchange relationship with another will expect that the rewards of each man be proportional to his costs--and that the net rewards, or profits, of each man be proportional to his investments". With two peers, the investments of each should be approximately equal, and thus the profit, or rewards minus costs, of each should be equal. Therefore, the more intimate A is, the more
costs he incurs but the more rewards B receives. In order to re-establish equity, B should thus disclose more intimately, increasing his costs, but at the same time increasing A's rewards.

Contrast Effects

A contrast effect occurs when a given intimacy level produces more reciprocity due to changes in intimacy from an expected level. Thus, not only does a contrast effect require the existence of a reciprocity effect, but its operation can be explained most easily when it is assumed, as research has demonstrated, that reciprocity is generally incomplete--that B will move towards A's high or low intimacy levels, but will not match them, staying instead within an intermediate area.

Therefore, contrast should produce greater reciprocity of highly intimate disclosure when highly intimate disclosure has been preceded by low intimate disclosure. The basis for a contrast effect is suggested by three sources: a trait vs. situational analysis, social penetration theory, and Aronson and Linder's gain-loss model.

The trait vs. situational approach asserts that A's disclosures have a greater influence on B's disclosures when B perceives them as unique responses to himself as an individual than when he perceives them as simply expressions of A's stable personality or nature. A second assertion is that self-disclosure at a constant level of intimacy is perceived as reflecting the discloser's personality, whereas self-disclosure which varies in intimacy level is perceived to reflect the discloser's response to one's own behavior.
When A discloses at a consistently high level of intimacy, B is likely to perceive A's behavior as a characteristic trait, rather than as a specific reaction to himself as a person. The consistently highly intimate discloser might be seen as the type of person who is intimate with almost anyone he encounters. A's behavior is attributed not to his liking or trust regarding B, but rather to his predisposition to be intimate regardless of his feelings toward the other person. On the other hand, an initially non-intimate person who then increases his level of intimacy is likely to be viewed as exhibiting person-specific behavior. The increasingly intimate discloser is seen as "opening up" over time because he has come to like and trust the other person.

Another explanation for contrast effects may be derived from social penetration theory. Altman and Taylor (1973) hold that strangers tend to initiate interaction at a low level of intimacy and to become more intimate only very gradually. At any particular point in a relationship, there is a slight tendency to be more intimate. Three assumptions must be added to this proposition to explain contrast effects. The first is that this low-to-higher pattern is a well-understood norm in our society. Nearly every normal adult is aware of and expects this course of development. Secondly, to the extent that A violates this shared expectation, B feels uncomfortable and his intimacy level decreases. This norm-violation-induced withdrawal from intimacy then combines with the reciprocity effect to determine B's actual intimacy level. The third assumption is that the norm-violation
effect is considerably weaker than the reciprocity effect. If it were not, there could be no reciprocity effect.

Finally, contrast effects may be explainable in the context of Aronson and Linder's (1965) gain-loss model. Extrapolating from the model beyond its original scope, it would predict that A's behavior has a more powerful effect on B when it is inconsistent with A's past behavior than when it is consistent. Thus, if A emits behavior X, then later behavior Y, B eventually responds more to the Y behavior than if A consistently emits behavior Y. Similarly, if A's behavior follows a Y-X sequence, D eventually exhibits more of an effect of the X behavior than if A had consistently emitted behavior X.

Aronson and Linder interpret the contrast effects in their particular case in terms of gain or loss of esteem -- that A's change in favorableness toward B is more influential than his average level of favorableness in determining B's final attraction to him. This explanation is reasonable for their experiment, in which A's and B's affective evaluations of each other were the variables. However, in applying their model to self-disclosure, this conception would be somewhat tenuous. One would have to assume that A's intimacy is perceived by B as reflecting A's liking for B, and that this in turn influences B's liking for A, which influences B's intimacy.

A more parsimonious explanation would focus on the perceptual distortion of self-disclosure intimacy itself. Aronson and Linder recognize the perceptual contrast explanation as an alternative to
their gain-loss of esteem analysis. Both Gestalt principles and Nelson's (1964) adaptation-level theory suggest that an intimate disclosure is perceived as more intimate if it has been preceded by non-intimate disclosures than if it has been preceded by intimate disclosures.

Sigall and Aronson (1967) used a design similar to the one employed by Aronson and Linder. For the dependent variable of attitude change, the results were as predicted, with subjects showing the greatest agreement with the evaluator in the negative-positive condition, and least agreement in the positive-negative condition. Again, however, the difference between the negative-negative and the positive-negative conditions was not significant. Ratings of liking for the evaluator did not support the model. Mettee (1971) did not use constant conditions. But his results for the "change" conditions were completely in contradiction to a contrast effect -- positive-negative confederates were liked better than negative-positive ones. Hewitt (1972) also failed to obtain evidence for contrast effects. Finally, Tognoli and Keisner (1972) replicated the original Aronson and Linder study, but again contrast effects were not evidenced.

These studies, however, have not been directly concerned with self-disclosure. There are experiments in which self-disclosure contrast effects have been investigated. As indicated above, Taylor, Altman, and Sorrentino (1969) studied the influence of differing patterns of confederate positiveness. The results were in the direction predicted by the contrast model: negative-positive confederates elicited more intimate disclosure than positive-positive confederates, who
elicited more than negative-negative confederates, who in turn elicited more than positive-negative ones. However, the latter three groups did not differ significantly from each other. Benedict (1970) varied the confederate's intimacy and measured the resulting degree of trust. No significant differences in trust and apparently none in subject intimacy were found among the high-high, high-low, low-high, and low-low conditions. Savicki (1972) found no difference in final intimacy level between subjects exposed to a constant high intimacy confederate and those exposed to an increasingly intimate one. One possible reason why a contrast effect may not have obtained here is that the increasing intimacy condition was one in which the confederate's responses were contingent on the subject's. (They were always two steps above the subject's last response level.) In our experiment, the confederate's intimacy level depended only on the experimental condition, not on the subject's level. It seems possible that in Savicki's "step-up" procedure, many subjects would soon discover that the confederate was attempting to raise their intimacy level by using a definite strategy. Indeed, Savicki reported that, upon postexperimental questioning, "many subjects could verbalize the confederate's strategy...[1972, p. 273]." Although Savicki did not report whether any differences among conditions existed in the degree of awareness of the confederate's response pattern, it is likely that such awareness was more common in the "step-up" condition than in the constant conditions.

To summarize, several independent theoretical foundations for a contrast hypothesis exist. The evidence for contrast in regard to
attraction has generally been negative. For self-disclosure and intimacy, on the other hand, few studies seem to deal adequately with the experimental parameters necessary to demonstrate the contrast effect. Aside from our study, only one study exists (Benedict, 1970) in which the confederate's intimacy was varied independently of the subject's behavior. While the evidence from our own laboratory is not very strong, we are hopeful that future studies will provide more solid empirical evidence for the contrast effect.
REFERENCES


### Table 1. Estimates of Confederate's Intimacy

<table>
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<th>Pattern of Intimacy</th>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
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<tr>
<td>HHH</td>
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<td>5.7</td>
<td>5.8</td>
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<tr>
<td>HML</td>
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<tr>
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<td><strong>5.0</strong></td>
<td><strong>5.1</strong></td>
<td><strong>5.7</strong></td>
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</table>

Sessions (F = 6.39, p < .005)
Sessions X Intimacy (F = 5.69, p < .001)

### Table 2. Rated Intimacy of Subject's Responses to Confederate

<table>
<thead>
<tr>
<th>Pattern of Intimacy</th>
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<th>Session 3</th>
</tr>
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<tbody>
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<tr>
<td><strong>Total</strong></td>
<td><strong>4.52</strong></td>
<td><strong>4.69</strong></td>
<td><strong>5.79</strong></td>
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Session (F = 3.78, p < .05)