

Effects of Erotica Upon Men's Loving and Liking Responses for Women They Love

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In two studies, the construct validity of the Rubin Love scale and its discriminant validity in relation to the Rubin Liking scale were examined. In Study 1, males were asked to describe their loved ones on a series of measures after having been exposed to either erotica or control materials. Analysis of the within-condition correlations revealed convergent and discriminant patterns indicating construct validity. Analysis of covariance also revealed convergent and discriminant patterns: Only scores on the Love measures reliably increased from the control to the erotica condition. In presenting a behavioral analysis of the differential impact of erotica upon Love as opposed to Liking scale responses, it was assumed that (a) women are more likely to reinforce suitors for emitting statements more similar to the Love than to the Liking items and (b) men are more likely when sexually aroused than when not aroused to express statements more similar to the Love than to the Liking items to their loved ones. In Study 2, a series of surveys offered support for these assumptions. Overall, the results were interpreted as corroborating the construct validity of the Love scale and were embedded within a behavioral analysis of love in general and the determinants of Love scale responses in particular.

Rubin (1970) defined love as "an *attitude* held by a person toward a particular other person, involving predispositions to think, feel, and behave in certain ways toward that other person" (p. 265). In conceptualizing love as a hypothetical construct, and conforming with Cronbach and Meehl's (1955) description of construct validation, Rubin developed a measure of romantic love and showed it to be moderately independent of a measure of liking. Perhaps because Rubin conceptualized love to be a predisposition, construct validation

efforts—in contrast to research on liking—have primarily involved an examination of between-person covariation (Dion & Dion, 1976; Rubin, 1970, 1973, 1974). The specification of situational variables that control Love and Liking scale responses has not, however, been emphasized.

Homans (1974, p. 66) has suggested that it is a history of exchange of a *variety* of reinforcers with a *particular* other that renders a relationship personal. An extension of such a behavioral analysis suggests that a loved one may function as a discriminative stimulus and generalized reinforcer, by having reinforced the lover's orienting, approach, and other behaviors (Gewirtz, 1972, p. 148) with a *variety of reinforcers*—especially reinforcers that cannot be readily obtained from others. Whether the attitude, or more simply the behavior, (see Skinner, 1953, p. 162) of a lover vis à vis a loved one is best described, for example, as romantic or conjugal depends upon the role relationship between the lovers and the nature of the reinforcers exchanged.

For Rubin, romantic love refers to the sort

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of love that may exist between unmarried, opposite-sexed partners (Rubin, 1973, p. 122). Given this conception of love, we were puzzled by the absence of any reference to interpersonal sexual behavior within the Love scale. This class of reinforcers would appear to be a major determinant of romantic love among college youth. For example, in Peplau, Rubin, and Hill's (1977) sample of college students who were "going together," about 70% reported being "in love" and 82% reported having sexual intercourse within their current relationship. If the two classes of behavior, being "in love" and having sexual intercourse, are independent, then about 56% of the sample was both "in love" and having sexual intercourse.

Given the assumption that sexual behavior is closely related to romantic love, we attempted to determine whether erotica might affect males' interpersonal responses regarding women they love. Essentially we randomly assigned males, who had earlier reported being in love, to a condition in which they read either erotic or control materials before evaluating their loved one on Rubin's Love and Liking scales. We were interested in whether erotica would differentially affect Love and Liking scale responses. Differential impact would indicate that the scales have different determinants and would enhance construct validity. Evaluations of the loved one's physical attractiveness and sexual receptiveness were also included, since similar measures had been utilized in an earlier study of the effects of erotica upon initial impressions (Stephan, Berscheid, & Walster, 1971). Analyses of the within-cell correlations between these response classes permitted examination of convergent and discriminant validity as in Rubin's (1970) work.

Study 1

Method

Participants

Fifty-one undergraduate men who reported heterosexual romantic involvement participated in the experiment in exchange for extra credit in their introductory psychology courses at the University of Wisconsin—Milwaukee.

Procedure

At the beginning of the semester, a general survey was administered in introductory psychology classes. Three of the 50 items pertained to the respondent's romantic involvement:

1. Is there one member of the opposite sex to whom you feel more attracted than to all others?
2. If "yes," to what extent do you believe yourself to be in love with this person? (Place one check mark anywhere along the following scale . . .)
3. If you are at all in love, could you please indicate the initials of the person with whom you are in love?

The rating scale for the Love (premeasure) question consisted of a 172-mm line with the phrases "not at all in love," "moderately in love," and "extremely intensely in love" appearing at the far left, midpoint, and far right of the line, respectively. Respondents whose ratings were between 30 and 135 mm and who had reported the initials of their loved one were recruited from 1 to 4 weeks after completing the survey.

At the laboratory, participants were seated in a comfortable reclining chair and were told that they were participating in a study of information processing. To increase the credibility of the cover story, participants were asked to complete a survey that contained Tellegen & Atkinson's (1974) Absorption scale. Participants either agreed or disagreed with statements describing their ability to imagine events and experience the events as if they were real. The final question requested participants to again indicate whether they were attracted to one member of the opposite sex above all others and if so to indicate this person's initials. These responses were necessary to verify that the participant had remained romantically involved with the person he had referenced in the first survey.¹

Erotica manipulation. Participants next read either a "Collegiate Fantasy" (erotica condition) or descriptions of the mating and courtship behavior of herring gulls (control condition; Tinbergen, 1961, pp. 108–116). Although both articles were approximately 3,000 words in length, required about 7 minutes to read, and dealt with sexual matters, they differed substantially. The former article was an explicit account of the sexual behavior and fantasies of a college woman. It was based upon various articles currently readily

¹ A total of 65 men participated in this experiment. Fourteen participants, however, apparently were no longer romantically involved with their initial loved ones. Romantic involvement was assessed *before* participants were randomly assigned to conditions. Data for these participants were consequently excluded either because these persons no longer appeared to be romantically involved or because we simply did not have a Love premeasure indexing their level of involvement with their current loved ones.

Table 1
Within-Cell Correlations Between Major Variables and Factor Loadings

Variable	Love pre-measure	Love post-measure	Rubin's Love scale	Rubin's Liking scale	Sexual receptivity	Physical attractiveness	F_1	F_2	F_3	F_4
Love premeasure	1.00						.90			
Love postmeasure	.78***	1.00					.50			
Rubin's Love scale	.66***	.72***	1.00				.33			
Rubin's Liking scale	.35**	.40**	.40**	1.00						.94
Sexual receptivity	.23	.30*	.17	-.08	1.00				.93	
Physical attractiveness	.21	.35**	.23	.49***	-.05	1.00		.96		

Note. The variables were scaled such that larger value denotes greater love, liking, sexual receptivity, and so on. Only factor loadings greater than .25 are presented.

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

available in "adult" book stores and included a masturbation fantasy as well as descriptions of mutual fondling, cunnilingus, and fellatio. The remaining article was a bland description of the sexual behaviors of herring gulls. Participants were randomly assigned to read one of the articles; the experimenter did not know which article the participant read.

Dependent measures. After finishing the article, participants completed an "Information Processing Survey" in which they anticipated describing parallels between the materials they read and their experiences with members of the opposite sex—in particular, the person whose initials they noted earlier. Before relating such parallels, however, they first described, on a series of rating scales, their feelings about and perceptions of this person. Participants did not proceed to the second portion of the survey until they had completed the scales. Participants were instructed to feel free to be as candid and accurate as possible and were assured that their responses would be held strictly confidential.

The initial question was identical to the Love premeasure and was designated the Love postmeasure. The next 18 items were answered along similar 172-mm lines (not at all true/disagree completely, moderately true/agree somewhat, definitely true/agree completely). These statements were Rubin's (1973, p. 216) condensed Love and Liking scale items, which were arranged in an alternating order. Participants next rated the physical attractiveness of their loved one (extremely unattractive, neither attractive nor unattractive, extremely attractive), what percent of the time their loved one would be cooperative and willing to reciprocate a sexual overture (0%, 50%, 100%), and their loved one's sexual receptivity in comparison to other people they have dated (very much less receptive, about as receptive, very much more receptive). Finally, as a manipulation check, participants rated the eroticism of the reading materials (not at all erotic or arousing, moderately erotic or arousing, extremely erotic or arousing).

In the second portion of the survey, participants described behavioral and emotional parallels between the materials they read and their relationship with their loved one.

Debriefing. The first 25 participants were permitted to complete the entire survey and were later asked to guess the hypotheses being tested. No one, however, described the true purposes of the study. The remaining participants were only required to complete the initial portion of the final survey. Although these participants were not as extensively debriefed, once again, no one described the experimental hypotheses. Finally, the rationale behind the study was described to all participants indicating immediate interest. For the remaining participants, the rationale was conveyed by mail together with a description of the findings and an invitation to discuss the study with the senior investigator.

Results

Manipulation Check

A one-way analysis of variance of the eroticism ratings revealed the erotica to be more arousing on the average (94.9 mm, or 8.6 mm above "moderately erotic or arousing") than the control materials (22.2 mm), $F(1, 49) = 92.2, p < .00001$.

Major Analyses

Measures. There were five dependent variables in the study; the Love postmeasure, Rubin's Love scale (the average of the responses to the nine Love items), Rubin's Liking scale (the average of the responses to the nine Liking items), sexual receptivity (the average of the responses to the sexual cooperation and receptivity items),² and the physical

² The pooled within-cell correlation (see Finn, 1974, pp. 81-83) for the sexual receptivity items was .57.

Table 2
Effects of Treatment Conditions Upon Adjusted Average Level of Response

Dependent measure	Control condition (<i>n</i> = 26)	Erotica condition (<i>n</i> = 25)	<i>F</i> (1, 48)	<i>p</i> =
Love postmeasure	89.0	103.1	5.51	.02
Rubin's Love scale	104.8	124.2	14.40	.0005
Unadjusted <i>M</i>	105.5	123.5		
Rubin's Liking scale	117.4	124.6	1.67	.20
Unadjusted <i>M</i>	117.7	124.2		
Sexual receptivity	110.1	102.9	.41	.53
Physical attractiveness	138.3	145.2	1.18	.28

Note. The above measures range from minimum scores of 0 to maximum scores of 172, with larger values denoting greater love, liking, and so on.

attractiveness item. With the exception of the latter two variables, the Love premeasure correlated reliably and often substantially with the dependent measures (see Table 1, column 1). Furthermore, it is important to note that the Love measures correlated highly with each other, but only moderately with the remaining variables. The convergence of the Love measures is best depicted by the factor loadings derived from a principal-components analysis, rotated according to the varimax criterion. The first four factors accounted for a total of 71% of the variance (20%, 17%, 17%, and 17%, respectively). Inspection of the factor loadings in Table 1 reveals love, physical attractiveness, sexual receptivity, and liking factors.

Variance analyses. Since neither the multivariate test, $F(5, 43) = .07$, nor univariate tests for nonparallelism of regression of the dependent measures on the Love premeasure were at all reliable ($p \geq .66$), a multivariate analysis of covariance was conducted with the Love premeasure designated the covariate.³ The multivariate test for the effect of the treatment was reliable, $F(5, 44) = 2.93$, $p = .02$. The adjusted treatment means together with the univariate statistics are presented in Table 2.

Reliable treatment effects were detected for only the Love measures. For both the Love postmeasure and Love scale, participants were more likely to indicate greater romantic involvement in the erotica than in the control condition. The splitting of the dependent

variables into Love and Nonlove measures as a function of erotica was strikingly evident for individual analyses of Rubin's Love and Liking items. The erotica failed to reliably ($p < .05$) influence only four of the nine Love items, as indexed by univariate *F* tests. The direction of all differences was consistent with the overall difference for the Love scale. For the Liking items, only one of the nine items was reliably ($p < .05$) influenced by the manipulation.⁴

Although the manipulation does appear to have almost exclusively influenced the Love measures, the tests for treatment effects may have been more reliable for Love than Nonlove items because the former tests were more sensitive. Recall that the covariate, the Love premeasure, correlated most highly with the Love items (see Table 1). To examine whether the treatment differentially affected these scales without the potential sensitivity bias of a covariate adjustment, a one-way analysis of variance was performed on the Rubin scales. The erotica do appear to have influenced the Love scale, $F(1, 49) = 7.15$, $p = .01$, but not the Liking scale, $F(1, 49) = 1.24$, $p = .27$. The corresponding unadjusted means are presented in Table 2 and are consistent with the adjusted means.

³ Average responses on the premeasure were equivalent across the control (86.3) and erotica (84.0) conditions, $F(1, 49) = .09$.

⁴ Participants in the erotica condition agreed more with the statement that their loved one "is one of the most likable people I know."

Discussion

Correlational Findings

The factor loadings associated with the within-cell correlations presented in Table 1 indicate both convergent and discriminant validity. The Love measures appear strongly to covary and load on a single factor. This finding replicates the correlations Rubin (1970, Table 3) reported for males in his questionnaire study of dating couples. As Rubin noted (1974), the correlations between the Love scale and the remaining Love measures indicate convergent validity since the Love scale (in which the word *love* was never used) was closely related to participants' own characterization of the depth of their romantic involvement. Furthermore, the Love and Liking scales appear to intercorrelate only moderately and to load highly on orthogonal factors, indicating discriminant validity. Finally, the alpha coefficients for the 9-item Love and Liking scales were identical ($r_{kk} = .80$) and are consistent with those Rubin reported for the 13-item scales (1970, p. 268).

Effects of Erotica Upon Level of Responses

The discriminant validity of the Love measures was dramatically illustrated by our finding that with but one exception (see footnote 4) only Love measures were reliably influenced by erotica.⁵ It should be noted that the effects of erotica do not at all appear due to the control condition influencing the Love measures. Pre- to posttreatment change in terms of the simple Love ratings revealed no reliable change in the control condition, $M = 3.8$, $F(1, 49) = .81$, but a reliable gain, $M = 18.0$, $F(1, 49) = 17.98$, $p < .0002$, in the erotica condition. The clearest support for the discriminative validity of the Love measures is the differential impact of erotica upon the Love and Liking scales. Participants' scores on the Love scale reliably increased with exposure to erotica, whereas their scores on the Liking scale did not. Participants in the erotica condition as compared with those in the control condition were more in agreement that they could confide in their loved one about everything; they would do almost anything for their loved one; if they could never be with their loved one, they would feel miserable; if they were lonely, their first thought would be to

seek their loved one out; they felt responsible for their loved one's well-being and it would be hard to get along without their loved one. The erotica appear to have increased scores on all three components of love—"attachment," "caring," and "intimacy"—that Rubin (1973, pp. 212–215) identified. In terms of the Rubin Liking items, participants in the erotica condition were neither reliably in greater agreement than participants in the control condition regarding their loved one's adjustment, responsibility, maturity, good judgment, initial favorable impression upon other people, ability to earn respect, and admirableness, nor were they more likely to consider their loved one to be the sort of person they would like to be. The differential impact of erotica upon the Love as compared to the Liking scale items indicates that situational determinants of these responses differ and supports the discriminant validity of the scales. Furthermore, the direction of the effects for the Love scale items is consistent with the assumption that love and interpersonal sexual behaviors are closely related and therefore suggests construct validity.

The validity of the Love scale would, of course, be better demonstrated if we understood more precisely why scores on this scale increased from the control to the erotica condition, whereas Liking scale responses did not increase. The Love items reminded us of what a lover *might* say to a loved one during a particularly romantic moment. For example, "I would do almost anything for you," or "If I could never be with you, I would feel miserable." Obviously, we did not know exactly what participants said while dating the women they eventually reported loving, but it would certainly appear more likely that a woman would reinforce a suitor for emitting statements more similar to the Love than to the Liking items. To the extent participants were most often sexually aroused than not aroused before and while emitting these statements, the physiological stimuli associated with sex-

⁵ The failure of erotica to enhance sexual receptivity and physical attractiveness judgments constitutes a failure to replicate *constructively* Stephan et al.'s (1971) findings for first-impression evaluations of an "accessible" woman and can be attributed to procedural differences between the studies.

ual arousal should further occasion such verbal behavior. By the principle of stimulus generalization, such verbal behavior should best be recalled (covert verbal and/or perceptual behavior from the perspective of *radical* behaviorism; Skinner, 1974) under conditions most resembling those in which the behavior was originally emitted. The erotica condition, of course, most closely resembled this state of affairs. In particular, the physiological stimuli resulting from the erotica may have served as discriminative stimuli facilitating recall behavior (see Skinner, 1953, p. 245). For these reasons, we believe that the participants in the erotica as compared to the control condition may have been more likely to indicate the Love items to be true.⁶

Study 2

The principles of stimulus generalization and discriminative stimulus control are, of course, well known and generally accepted. Our assumptions regarding the verbal behavior of dating and presumably "mating" college sophomores, although plausible, were, however, in need of independent verification. Monitoring verbal behavior in dating and "mating" contexts is impractical and potentially unethical. We chose instead to conduct a series of surveys to test our assumptions. It is, of course, possible that respondents' reports regarding their behaviors may not perfectly correspond with their actual behavior. To reduce this problem, we studied respondents who reported being in love at the time of the survey.

Method

Participants

Seventy-seven women and 64 men completed surveys either as volunteers or in exchange for credit toward their psychology courses at the University of Wisconsin—Milwaukee.

Female respondents were introductory psychology and personality students who indicated they were currently in love with someone they dated regularly. Most surveys were completed during the last 5 minutes of a class session.

The selection of male respondents closely approximated the procedures used in Study 1. Students were selected as in Study 1 with the exception that the rating criterion on the Love premeasure was less stringent: Students were invited to participate provided they did not check "not at all in love." Two weeks after completing the premeasure, students

independently completed the Love survey in the psychology laboratory.

Surveys

For women, the 18 Rubin Love and Liking items were arranged vertically in random order on a single page⁷ and were introduced as follows:

Below is a series of statements. Although you may have never heard exactly these statements from the people you seriously dated, who loved or love you, you probably have heard similar remarks from them. Please read the statements carefully.

After reading the statements, respondents were instructed:

We would like you to recall your *serious* romantic relationships. Place a check mark before those nine statements which are most similar to the statements you have *most appreciated hearing* from the people who came to love you, and consequently most encouraged.

For men, the list of Rubin items, presented in another random order, was introduced as follows:

Below is a series of statements. Although you may have never said exactly these statements to the people you dated, whom you loved or love, you probably have made similar remarks. Please read the statements carefully.

After reading the statements, male respondents were differentially instructed depending upon whether they were randomly assigned to the "aroused" or "not aroused" survey:

We would like you to recall your *serious* romantic relationships. Place a check mark before those *nine* statements which are most similar to the statements you have said to people you have seriously dated, while you [*have not*] at all felt sexually stimulated or aroused.

⁶ An anonymous reviewer suggested that the love findings could be interpreted in terms of a Schachterian two-component theory of passionate love (cf. Berscheid & Walster, 1978). But as Kenrick and Cialdini (1977) indicate, it is *unexplained* arousal that theoretically is subject to differential attribution (Schachter & Singer, 1962). The source of arousal in the erotica condition was obviously clear to participants in this experiment, as indicated by the strong findings for the manipulation check; a misattribution interpretation does not appear appropriate.

⁷ The Rubin items were rewritten slightly so that the blank in each item was replaced with either "you" or "your." Thus, "I would do almost anything for _____" read "I would do almost anything for you." For women respondents, two survey forms were used, such that the items were presented in reverse order on the second form.

On the next page, the identical series of statements appeared, but male respondents checked statements only with reference to the person they currently loved.

Debriefing

A complete description of the rationale and findings was made available to female respondents and was mailed to male respondents.

Results and Discussion

Female Survey

For each respondent, the number of Love statements checked was calculated. On the basis of chance, 4.5 (on the average) of the statements would have been expected to be Love statements. The average number of Love statements checked, 5.6, reliably exceeded the chance level of endorsement, $t(76) = 5.78$, $p < .00001$. Furthermore, the preference for Love statements was invariant across both orders of statement presentation. This result corroborates the assumption that women are more likely to reinforce a suitor for expressing statements more similar to the Love than Liking items.

Male Survey

For each respondent, the number of Love statements checked was calculated regarding the people with whom a respondent had had *serious* romantic relationships and the person they currently loved.⁸ A multivariate analysis of variance was conducted upon these two variables as a function of whether respondents had been assigned to the "aroused" or "not aroused" survey, $F(2, 61) = 4.5$, $p = .01$. Although responses regarding *serious* romantic relationships were in the hypothesized direction (aroused $M = 6.4$, not aroused $M = 5.8$), the difference was not reliable, $F(1, 62) = 2.22$, $p = .14$. Responses regarding current loved ones (aroused $M = 6.7$, not aroused $M = 5.5$) did corroborate the hypothesis, $F(1, 62) = 8.72$, $p = .004$. This result supports the assumption that men are more likely to express love- than liking-related statements to their loved ones when the men are sexually aroused than when they are not sexually aroused.

General Discussion

Construct Validation

Rubin (1970) defined love as an attitude and presented evidence that his Love scale is a valid measure of romantic love. The pattern of correlations reported in Study 1, reflecting between-participant covariation, replicates Rubin's (1970) findings and indicates both convergent and discriminant validity for the Love scale. Furthermore, the results of Study 2 suggest that men are more likely when sexually aroused than not aroused to express to their loved ones statements more similar to the Love than to the Liking items and generally may be differentially reinforced by their loved ones for such behavior.⁹ Given these results, the finding that scores on the Love scale (but not the Liking scale) were greater in the erotica than in the control condition further supports the construct validity of the Love scale. Although a construct validation approach is useful (see Skinner's discussion of *methodological* behaviorism, 1974, pp. 13-18), we believe an explicit behavioral approach better integrates interpersonal attraction theory and research.

The Love Scale From a Behavioral Perspective

Rubin (1973, pp. 212-215) cited a variety of philosophers and clinical psychologists in justifying his three "aspects" of love. A behavioral approach, however, appears more integrative. We believe a lover's endorsement of the Love items is mediated by the lover's "attachment," "caring," and "intimacy" *behavior* vis à vis the loved one. A lover may be likely to endorse the attachment items of the Love scale ("If I could never be with _____, I would feel miserable"), reflecting "powerful desires to be in the other's presence, [or] to make physical contact with [the loved one],"

⁸ For the latter measure, two participants in the "nonaroused" condition did not check nine items. For these respondents, the proportion of Love items checked was multiplied by nine with the resulting value included in the variance analysis.

⁹ It is possible that the survey results may be due to participants' endorsement of items that appear culturally appropriate for lovers. Contrariwise, the actual dating and mating behavior of participants may be influenced by such norms.

probably because the loved one has reinforced orienting, approach, and contact behaviors with a *variety* of reinforcers that cannot be readily obtained from others and is therefore a discriminative stimulus and a generalized reinforcer. Similarly, a lover may be likely to endorse the caring items of the Love scale ("One of my primary concerns is _____'s welfare"), reflecting "giving to another person," because the lover has probably reinforced the loved one. From a behavioral perspective, to the extent that the loved one's reinforcement of the lover is not reciprocated, the loved one's reinforcing behavior will eventually extinguish. The notion of reciprocal reinforcement is explicit in exchange theory, which, of course, is "simply . . . behavioral psychology applied to the interaction of . . . [people]" (Homans, 1974, p. 56). Finally, a lover may be likely to endorse the intimacy items ("I feel I can confide in _____ about virtually everything"), reflecting "communication between two people, through nonverbal as well as verbal channels," probably because the loved one has reinforced such behaviors and has functioned as a nonpunishing psychotherapist (Skinner, 1953, pp. 370-371). Indeed, the loved one may be one of the few people in the lover's life who knows the lover's unique circumstances so well that the loved one's advice regarding intimate problems is likely to mediate reward for the lover!

In this section, we have presented a behavioral analysis of the possible determinants of Love scale responses. Although an individual's responses are doubtlessly influenced by his or her unique socialization history, the high internal consistency of the scale suggests that the responses are controlled by a common set of determinants. Similarly, although Berscheid and Walster (1978, pp. 162-165) have emphasized the meaning of "love" to depend upon unique socialization histories, the substantial correlations between participants' judgments of their level of romantic love and scores on the Love scale ($r_s = .66$ and $.72$, respectively; see Rubin, 1970, Table 3) also suggest a common set of determinants.

If our general analysis is correct, Love scale responses are determined by the lover's *behavior* vis à vis the loved one. The lover's behavior, in turn, is controlled by the loved one's

functioning as a discriminative stimulus and a generalized reinforcer. Our findings specifically suggest that in comparison to the nonsexually aroused state, an aroused male is more likely to express to his loved one that she is a powerful generalized reinforcer than that she merely has socially desirable dispositions.

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