

The Conceptual Relationship Between Love, Romantic Love, and Sex: A Free List and Prototype Study of Semantic Association

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Abstract

Certain methodological techniques blend quantitative and qualitative elements, defying explicit characterization as either. Placing focus on the distinction between methods for data collection and methods for analysis ameliorates this confusion and identifies the occasionally ambiguous quantitative/qualitative designation of highly convergent methods as largely subject to researchers' goals. We use free listing and prototype analysis, two methods which are variously characterized as either quantitative or qualitative, to investigate the conceptual relationship between love, romantic love, and sex. A methodological framework is presented in which open-ended questionnaires and structured interviews are analyzed comparatively to clarify the relationship between the three concepts. Results suggest that romantic love is conceptualized as a synthesis of prototypical "caring" love and noncrude attributes of sex.

Keywords

love, romantic love, sex, prototypes, free lists

There is no bad data, only bad analysis.

—Andrey Korotayev.

Certain techniques used in mixed methods studies defy strict designation as quantitative or qualitative methods. "Free listing," an unconstrained, open-ended interview technique, regularly receives the label of either qualitative or quantitative within mixed methods literature (Collins & Dressler, 2008; Maltseva, 2014; Mporu, Hallfors, Mutepfa, & Dune, 2014). Prototype analysis, which often follows free list collection, is similarly difficult to characterize. We use the approach of Bernard (1996) to show that variable techniques such as free listing and prototype analysis must draw clear distinctions between methods for data collection and methods for

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analysis, each of which may emphasize qualitative or quantitative attributes according to research design and goals. Our techniques are used to investigate the conceptual relationship between three concepts or categories: love, romantic love, and sex.

There remains little consensus on “what is romantic love.” Concerns over the lack of a common vocabulary to study romantic love have been voiced by Rubin (1988), Dion and Dion (1996), and Noller (1996). Weis (2006) expressed similar concerns in the conclusion of a 2006 volume.¹ Two prominent stumbling blocks toward ameliorating this problem are (a) the polysemous nature of love and romantic love and (b) the problematic relationship between love, romantic love, and sex. We show how a mixed methods approach using comparative free listing and questionnaires contributes not only to the removal of these stumbling blocks but also to the consideration of them as assets to understanding romantic love. We use a comparative mixed methods framework that addresses the conjunction between systematic methods *for* analysis and those *for* data collection. In so doing, we provide an aggressive strategy that confronts and ameliorates these two problems by attending to the theoretical implications that often drive methods for data collection, but are often forgotten in the analysis of the data.

We lay the groundwork for our investigation with a pithy framing of both the “problem” of polysemy and that of the logical fit between love, romantic love, and sex—a difficulty frequently encountered by researchers. As the introductory quote by Korotayev suggests, the root of the problem lies not in the nature of the data but in the methods for analysis. Given this presumption, we first discuss our methods for analysis. Then, we address both “problems.” We perform a qualitative marking hierarchy analysis (Greenberg, 1966) to clarify certain semantic dimensions of love and romantic love. Next, we utilize free listing, a method for data collection which is ambiguously quantitative/qualitative, to gauge the terms most closely related to love, romantic love, and sex. Free lists are subjected to a (largely) quantitative comparative numerical analysis of frequency and rank, as well as a comparative qualitative analysis regarding unique terms found on each of the three free list tasks. The comparative approach to free listing used here provides a means for finding and evaluating the different cognitive structures by which love, romantic love, and sex are connected to each other. We use the results of our free list analyses to construct a prototype analysis survey in which participants complete rating tasks to measure the relative importance of elicited free list terms. We end with a discussion regarding the particulars of our methodological approach as they relate to free listing and prototype analysis (and, by extension, to similar methods of semantic inquiry), as well as a summary of the implications our results carry for the relationship between love, romantic love, and sex.

Methods for Data Collection and Analysis

Methods used for data collection are free lists and surveys. A free list is an open-ended, semi-structured interview which allows respondents to exercise a great deal of freedom in their responses. Free lists are variously characterized as quantitative or qualitative. Several studies using mixed methods research designs have opted for either designation; Maltseva (2014) uses free listing as a quantitative method of data collection, while Mpofo et al. (2014) emphasize its qualitative attributes. Writing on organizational behavior, Bartunek and Seo (2002) cast free listing as a qualitative method; likewise, medical researchers tend to describe free lists as qualitative (Betancourt, Speelman, Onyango, & Bolton, 2009; Dongre, Deshmukh, Kalaiselvan, & Upadhyaya, 2010; Murray et al., 2009). Bernard (1996) clears some of this confusion by stressing the differences between means for data collection and means for analysis; free lists are a primarily *qualitative* mode of data collection which is most frequently subjected to *quantitative* analysis, though qualitative elements of analysis tend to emerge during interpretation of results. Bernard acknowledges that the designation of free listing as a qualitative method remains

tentative; researchers may emphasize quantitative attributes (and deemphasize qualitative attributes) of free listing during the collection and coding process. In a mixed methods study, Collins and Dressler (2008) correctly identify free lists as subjectable to both qualitative and quantitative analysis:

the findings of the free lists' qualitative data alone would give us information on content but could not tell us about the structure of our participants' thoughts or beliefs; nor could we draw an inference that they systematically shared beliefs. (p. 383)

Free list data is collected in the form of individual words or short phrases which are analyzed according to frequency (the amount of times a particular word appeared across free lists) and rank (the position of a term on a list). Free lists are not purely quantitative, as the terms do not reflect the data per se but are indicative of what the data mean. Terms and numbers are equally important to making determinations about the data—analysis is driven not exclusively by numbers, as in purely quantitative analysis, but equally so by the semantic properties of each elicited term. Analysis of free lists must alternate seamlessly between the quantitative assessment of numeric data and the qualitative consideration of what elicited terms mean to participants. In this manner, free lists (as they tend to be used in the social sciences) invoke a convergent mixed methods design; the aspects of free listing that researchers choose to stress will emphasize or deemphasize quantitative and qualitative attributes of the tool during both collection and analysis. Where appropriate, we have labelled our analyses of free lists as explicitly quantitative or qualitative; however, it is important to note that these designations represent tendencies for the particular analytical directions being employed. We employ a design which emphasizes both numeric and semantic aspects of free listing and conduct two comparative analyses: a quantitative analysis of frequencies and a qualitative analysis of thematic patterns. Similarly, our prototype data collection emphasizes quantitative attributes, subsequently analyzed using a quantitative comparison of prototypicality ratings and a qualitative analysis drawing on semantic network theory. The combination of various methodological tools for both data collection and analysis allows unique insights to emerge from the data which would be unattainable by the use of quantitative or qualitative measures alone.

Integration occurs between the methods for data collection and the methods for analysis. In addition to the numerical quantitative analyses that typically follow free list and survey data, several qualitative methods are used for analysis: hierarchy theory (Greenberg, 1966), prototype analysis (Fehr, 1988; Rosch, 1973), and semantic network analysis (Schnegg & Bernard, 1996; Strauss & Quinn, 1997). Our discussion of hierarchy theory draws on marking hierarchies, a variant of taxonomies concerned with words which have multiple contextual definitions. Prototype analysis is the most common means of eliciting prototypes from free list data; prototypes, in the original sense developed by Rosch (1973), are understood to be “best case examples” of a particular word or concept. Semantic network analysis is a method used in cognitive science which involves drawing connections between the meanings of concepts in order to understand how they are related to one another. Each of these methods will be discussed more thoroughly in later sections.

Framing the Issues

Murstein (1988) considered love the most “promiscuous” word in the English language (p. 13). In the introduction to a 1988 volume, *The Psychology of Love*, Rubin decried the lack of a common vocabulary. Similar pronouncements were made by authors in a 1996 special issue on romantic love in the journal *Personal Relationships*. In the more recent 2006 volume on *The*

New Psychology of Love, Karen Weis (2006) summarizes the many different theories of love in the Conclusion and is compelled to ask, “What’s the use of all these different kinds of Love?” (p. 320). Echoing Rubin (1988), Weis writes,

there are still no specific definitions, and there is a lack of a common conceptual vocabulary of love. . . . When people talk about romantic love or attachment do they really have the same concept in mind? At this point in the development of the field of love, such clarity of terms does not necessarily exist. (pp. 320-321)

In summarizing research on romantic love, Berscheid and Meyers (1996, p. 28) write that as a type of love, romantic love is found to be “peripheral” to other types of love. This statement was first made by Fehr (1988), and numerous other researchers have concurred (Aron & Westbay, 1996; Fehr & Russell, 1991; Fehr & Sprecher, 2009). Furthermore, many of the prototypical features of romantic love (e.g., passion, sex, desire) are also rated as peripheral on prototype scales of features of love. Fehr (1988), Fehr and Russell (1991), and their colleagues found that the most prototypical type of love is “maternal love.” As one would suspect, the top-five most prototypical features of love are “Trust, Caring, Honesty, Friendship, Respect” (Fehr, 1988, p. 565). According to the studies by Fehr and her colleagues, love, at least according to North American young adults, is prototypically conceptualized as familial and comprises features related to family values.

Clearly, from the brief sketch above, the prototype literature holds romantic love in an ambiguous position both hierarchically and horizontally. Its defining features contrast with that of the prototypical type of love, familial love; in fact, the differentiating features between familial love and romantic love are anathema to one another. Fehr (2006) writes, after reviewing the literature on romantic love, “. . . the major studies of love can be summarized in terms of the companionate-passionate distinction originally proposed by Berscheid and Hatfield” (p. 227). The issue of how sexuality and familial features of love can be configured into one natural gestalt or category remains dismayingly (or, for us, fortuitously) unresolved. The problem that we address in this article then is “How can romantic love be a type of love and still include sex and passion as core features?”

We will suggest that the relationship between love and sex is akin to the associational connections discussed by Strauss and Quinn (1997) in terms of “connectionism.” Drawing on “neural network modeling,” they posited a network of associations between concepts with variable activation thresholds depending on the closeness of concepts to each other. This closeness or degree of “association” is derived directly from individual experiences in context, an example being the association between trucks/beer/flannel shirts and strong men who hunt and fish. The concepts cited are not logically or inherently linked; however, they are strongly associated with each other by many North Americans. Similarly, sex and romantic love are strongly associated with each other, especially by young adults. This connection may originally have been between “love” and “sex” to produce “romantic love,” but given the importance of the concept of romantic love, we hypothesize and will demonstrate that “sex” enters the concept of love via “romantic love,” producing this associational bridging connection. Sternberg and Grajek (1984) anticipated such a connection in their notes on future developments in the study of love. They write, “Stage 2 models involve either overlapping entities (nonindependent bonds, for example) or hierarchically related entities . . . and Stage 3 models involve a combination of overlapping and hierarchically related entities” (p. 313).

We will use a convergent mixed methods design to demonstrate the inclusive, taxonomic relationships between romantic love and love, as well as the associational bridge that connects sex to romantic love and ultimately to love. However, such a synthesis requires a more

focused and extensive research program, for which we hope to have charted a reasonable methodological course. We begin by discussing the theoretical underpinnings of our methodological techniques.

Prototypes

Prototype analysis is a popular theory and method for going beyond trait list approaches that rely on the correlations among attributes of a factor, or the correlations between factors, to construct a whole (Aron & Aron, 1991). Through prototype analysis one seeks to find a prototype or exemplar, as well as the focal dimensions which members of a culture use to evaluate the fit of their own love relations with the prototype. The prototype anchors their evaluations. The dimensions create a thickness to the prototypical field so that items are not “in” or “out” of a category but viewed along continua which extend out from the prototype core.

In a classic cross-cultural study of prototypical color and color terms, Berlin and Kay (1973) used 320 Munsell color chips assembled on 40 individual pages. Each page contained chips from a single hue, organized in a two dimensional matrix (x,y). The rows of the matrix were arranged by brightness, while the columns were arranged by saturation. After basic, or generic, color terms were elicited (using specific criteria), informants were asked to choose both the chip that was “the best, most typical example of x ” and also “all those chips you would under any conditions call x .” In other words, both the prototype for a color and the extension of a color around that prototype were investigated. They found that there was substantial intra- and inter-cross-cultural agreement on the focal points, while there was a great deal of variation along the borders. Subsequent work on color terms has substantiated these findings.²

Rosch (1973) synthesized this approach into prototype theory based on three levels of inclusion: the superordinate, basic, and subordinate levels. An example is as follows: furniture; chair/table/sofa/bed; lazy-boy recliner/office swivel chair/foldable camping chair. The superordinate level of “furniture” is abstract and groups the basic level. The basic level—chair/table/sofa/bed—is key, as it conveys a “thought-image” or gestalt, rather than a list of traits. The basic level contains the most salient information. The subordinate level adds minor features that differentiate types.

Marking Hierarchy Analysis

Our marking hierarchy analysis is exclusively concerned with semantic usage of “love” and “romantic love” in common language, and thus precedes our discussion of data collection methods. Marking hierarchies are a qualitative analytical tool which we have used to inform our data collection procedures by applying the analysis in advance of those procedures. We use Greenberg’s (1966) marking hierarchy approach to show clearly how the vocabulary of love becomes confusing. Marking hierarchies are a variant of taxonomies and the least studied of the cognitive structures. They provide a unique and inconspicuous insight into the meanings of many words. A simple marking hierarchy consists of two words, with the “unmarked” word standing for both the category label and its most general and frequently used case. The “marked” word is the less general, less used case. Kronenfeld, Armstrong, and Wilmoth (1985) use the example of *cow* and *bull* where *cow* is both the category label that includes *cows* and *bulls* and that stands for the most general member of the category: the female *cow*. D’Andrade (1995) has used the term *man* to interesting effect in the marking hierarchy provided in Figure 1.

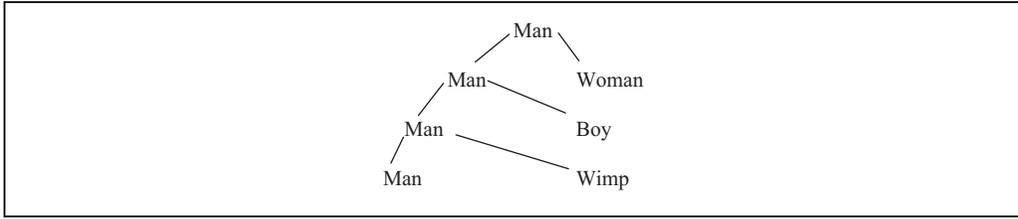


Figure 1. Example of marking hierarchy (D'Andrade, 1995, p. 36).

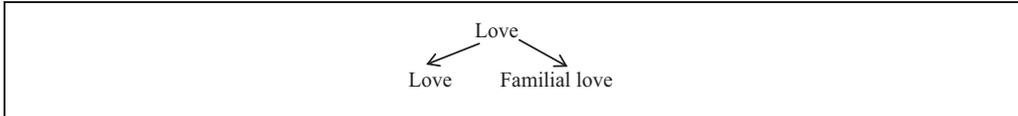


Figure 2. Implicit marking hierarchy of love—romantic love in vocabulary of scholars.

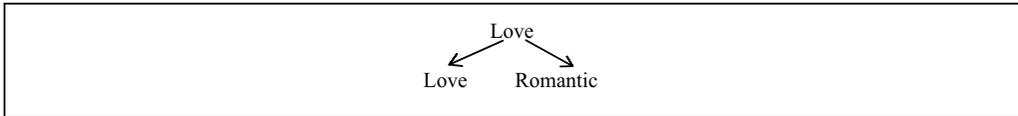


Figure 3. Marking hierarchy of love—romantic love.

Marking hierarchies are pervasive in human thinking because they economize the mental labor needed for thinking (i.e., the “cognitive workload”) and for communicating. They do this by allowing one word to stand for two taxonomic levels of inclusion simultaneously and also to stand for both members of one taxonomic level under “neutral conditions” (Greenberg, 1966, p. 25). We only need to specify that the cow is a bull when there is a reason to *mark* a cow as a bull. Similarly, consider the default settings of your word-processing program: The page size is set to “letter size” (8.5 × 11 inches) unless otherwise specified and oriented to “portrait” or “landscape.” These default settings save you time because you do not need to set page size or orientation unless the less typical setting is required.

In the special issue “Toward Understanding Love,” the authors write “Most . . . of these articles primarily concern heterosexual love—a major focus of theory and research on love” (Dion & Dion, 1996, p. 1). In the hierarchy for love implied by this admission regarding the use of “love” to refer to romantic love, we have the sort of implicit marking hierarchy presented in Figure 2.

The content of Figure 2 is quite strange and illogical. As noted previously, romantic love is construed as a peripheral and odd “type of love.” In Figure 2, when we use “love” to refer to “romantic love,” we are repositioning romantic love as the default for the category love; even though love scholars who rely on prototype analysis, by virtual consensus, agree that it is peripheral! What we argue is that Figure 2 represents a sloppy use of the word “love” that is not inconsequential but has ramifications for the way researchers think about love. Using marking hierarchy as a method for analysis, we obtain a more “correct” taxonomy of the love—romantic love relationship, seen in Figure 3.

Our marking hierarchy analysis of the words “love” and “romantic love” casts the former as a superordinate- or basic-level category and the latter as a subordinate category. This

assertion implies that a comparative analysis of free list terms will demonstrate the subordinate nature of romantic love to the superordinate category of love.

Methods for Data Collection

Free Lists

Free listing is a technique originally developed by anthropologists, now used throughout social science disciplines. Free listing is “a deceptively powerful technique” that “has many uses” (Bernard, 1994). The second author has made extensive use of free lists in Sri Lanka, Lithuania, Russia, and the United States. A free list is essentially a word association exercise. Informants are asked to list all the words or phrases they associate with a particular term. Common examples are “name all the X that you can,” or “how many different kinds of X are there?” The premise of free listing is straightforward: A population with sufficient intracultural similarity will produce enough common terms to warrant analysis. It is also assumed that the more familiar or important terms will be mentioned before the less familiar or important ones, and those who know more about a subject will list more terms than those who know less (Fleisher & Harrington, 1998).

The process of designing and collecting free lists is simple: Free lists are mostly blank pieces of paper with short and easily understood instructions, and respondents often describe the process as fun, interesting, or enlightening. This simplicity is compensated for in the process of analysis, which can be more difficult than working with purely quantitative data (Borgatti, 1994). Elicited terms must be combined based on similarity of meaning or function. This prevents the data from being clouded by the presence of equivalent or virtually equivalent terms. The standard provisions regarding the coding of interview data must be applied with particular care to avoid personal bias during the combination of terms (Fleisher & Harrington, 1998).

Free list terms are assigned values to represent various aspects of the data. The most important value is frequency, which is the number of times a particular term appears in the data set. Percentage is derived from the frequency and represents the percentage of informants who listed a term. The rank of a term denotes where on the list a term tended to appear. A higher rank means that the term was usually listed near the top of the list, while a lower rank indicates the opposite. Saliency demonstrates a combination of frequency and rank, giving an overall idea of how important that term is to the category. For the data presented in this article, we will focus primarily on percentage, with occasional consideration of rank to make the comparison of our three free lists as straightforward as possible.

Free lists have the potential to give us information about what words are most prominently associated with a concept. Our method is innovative in that few researchers have used multiple related free lists to compare the relationships between different but closely related topics. This work contributes to the body of research that utilizes free lists to gather linguistic/semantic data in the mixed methods literature (Collins & Dressler, 2008; Maltseva, 2014; Mpofo et al., 2014).

Prototype Surveys

After collecting free lists for the relevant concepts, a survey is constructed in which respondents rate the elicited words in terms of their importance to the concept being analyzed. Respondents are prompted to selecting a rating of importance for each of the listed terms. We compare separate analyses of love, romantic love, and sex. The collection of rating surveys for prototype analysis is more explicitly quantitative than free listing, though qualitative elements persist in the selection of terms chosen to be rated and the importance of semantic meaning to respondents.

Methodology

We address the relationship between love, sex, and romantic love by identifying their common and unique features. As Murstein (1986) notes, the distinctions between these concepts have a history of being resistant to intellectual inquiry. How can models such as love and sex, which maintain a firmly grounded folk separation evidenced by the popular question “Is it love or lust?” also be linked by an equally fundamental connection that manifests in all manners of art, media, and popular opinion? In the sections above, we have proposed a taxonomic relationship between love and romantic love and an “associational bridge” that connects sex with love via romantic love.

We use free listing to elicit the key terms of these three categories: love, sex, and romantic love. This comparative free list strategy allows us to infer the type of relationship—taxonomic or associational—between these concepts. A subsequent prototype analysis of these terms provides a means to measure which terms are potentially diacritical to each respective concept.

Our quantitative free list analyses are designed to test the following specific hypotheses:

1. Sex will have the highest number of unique terms (terms not found on the other two free lists) because it is independent of love, while romantic love is a subset of love.
2. Romantic love will have the fewest number of unique terms because it is subsumed by love and connected to sex, “sandwiching” it between the two.
3. Love and romantic love will share more common terms than other combinations because romantic love is a subset of love, while sex is an independent prototype or concept.
4. Sex is associated to love through romantic love; hence, sex and romantic love will share more terms in common than sex and love.
5. Romantic love will share more common terms with love than it does with sex, as it is composed primarily of love features and only partially by sex features.
6. *Almost* all of the terms for romantic love will be found on either the love or sex free lists. “Almost” qualifies this hypothesis because there may be other independent categories that “feed” romantic love.
7. The highly prototypical terms found in love will be mirrored in romantic love.
8. The highly prototypical and noncrude terms found in sex will be mirrored in romantic love.
9. High-frequency love terms not related to sex will have a high prototype rating in love and romantic love.
10. Terms unique to the sex free list will have a low prototypicality rating in love and romantic love.
11. Romantic love will be the only category that combines terms that are highly rated in the sex and love categories.

Qualitative analysis of free lists will focus on unique terms, words found on only one of the three lists, but which had a frequency of ≥ 2 . We take these terms to represent attributes of each concept which are not shared by the other two concepts. Common themes are identified for each set of unique terms, and the implications of these themes for each concept are discussed. Concerning the analysis of unique terms, we hypothesize that:

Hypothesis 1: The unique terms found on the love free list will contain the most diverse assortment of words; some of those words will be similar to unique terms found on the other two lists, since love encompasses romantic love (and, by association, sex).

Hypothesis 2: The unique terms found on the sex free list will be concerned primarily with sex acts, as the romantic love and love lists will have “caught” terms related to courtship or intimate/emotional sexual connection.

Hypothesis 3: The unique terms found on the romantic love free list will tie together sex and love, being composed of words which do not explicitly convey either but strongly imply both.

Analysis of prototype rating surveys will compare the relative scores and placement of terms across the three concepts. Higher ratings are taken to suggest higher prototypicality; these ratings are juxtaposed against free list frequencies for the same terms. The combination of comparative prototypicality ratings and free list frequencies will be used to argue for the existence of an “associational bridge” that cognitively links the concept of romantic love to sex.

Data Collection

Respondents between the ages of 18 to 30 years were prompted to answer the question, “What words, terms, and/or phrases do you associate with the word LOVE?” Free lists were also collected for the words “romantic love” and “sex.” Free lists were gathered over the course of 2 months on or around the campus of a small university in the Northeastern United States. Most responses were individual words or two-word phrases. Longer phrases or complete sentences were usually broken down into individual words, that is, “an undying passion for a significant other” provided the terms undying, passion, and partner (derived from “significant other”). Forty or more free lists were obtained for each free list task: love ($N = 45$), romantic love ($N = 43$), and sex ($N = 43$).

During analysis, similar terms were combined into the more frequently listed term. This was obvious for certain terms, that is, “dates” and “dating.” Words of equivalent or virtually equivalent meaning were also combined, that is, “husband/wife” and “spouse.” We opted to be conservative in our consolidation of terms. We did not combine crude terms into more benign categories. We perceive the connotative aspects of these “emotionally charged” words to be important and worthy of retention, especially given their frequent appearance in our data.

Our second data set was obtained by collecting surveys. We used the same approach as Fehr (1988) but opted for a 5-point scale of prototypicality rather than an 8-point scale. Data were collected from the same demographics as the free list tasks but not the same individuals. Respondents took short surveys in which they rated 22 words as “important features of love/romantic love/sex.” A 5-point scale was used to determine this importance or “prototypicality,” with 1 being *not important* and 5 being *most important*. As with the free list tasks, there were 40 or more responses for each survey: love ($N = 40$), romantic love ($N = 47$), and sex ($N = 50$). All of the words were derived from the free list tasks.

Results

Quantitative Analyses of Free List Frequency and Unique Terms

The most frequently listed terms for each of the three categories are listed in Table 1.

“Passion”³ and “sex” were the two most frequently cited terms. These frequencies are not overly surprising given the age of our demographic. According to Fehr’s (1988) data, “sexual passion” was cited by 9.38% of subjects. The rise in the importance of sex and passion, at least as reflected by frequencies and their relative rankings, may be due to the fact that we both used primarily the same age and type of sample (i.e., students), but her student lists were obtained in the classroom and ours in public places during summer time. The two different contexts may have affected both results, dampening libido-based answers for Fehr and enhancing them for our sample. Love, as noted in the Methods for Data Collection and Analysis section, was used as a default term for romantic love by scholars, and in our sample, it may have become an

Table 1. Top-30 Terms for Love, Romantic Love, and Sex (Frequencies and Percentages, Highest to Lowest).

Love	#, %	Romantic love	#, %	Sex	#, %
1. sex	16, 36	1. sex	14, 33	1. love	12, 28
2. heart	15, 33	2. passion	13, 30	2. fuck	11, 26
3. passion	14, 31	3. flowers	12, 28	3. touch	10, 23
4. music	13, 29	4. kiss	11, 26	4. wet	9, 21
5. family	12, 27	5. happiness	11, 26	5. cum	9, 21
6. unity	10, 22	6. together	11, 26	6. warmth	8, 19
7. friendship	10, 22	7. love	10, 23	7. orgasm	8, 19
8. marriage	9, 20	8. dating	9, 21	8. kiss	8, 19
9. romance	8, 18	9. marriage	9, 21	9. moan	7, 16
10. trust	8, 18	10. feeling	9, 21	10. pleasure	7, 16
11. emotion	8, 18	11. cuddling	8, 19	11. sweat	6, 14
12. happiness	8, 18	12. trust	8, 19	12. cock	6, 14
13. feeling	8, 18	13. understanding	7, 16	13. release	6, 14
14. peace	8, 18	14. caring	6, 14	14. oral	5, 12
15. compassion	7, 16	15. warmth	6, 14	15. intimacy	5, 12
16. pain	7, 16	16. pure	6, 14	16. bite	5, 12
17. commitment	7, 16	17. heart	6, 14	17. lick	5, 12
18. sharing	6, 13	18. beauty	6, 14	18. submit	5, 12
19. caring	6, 13	19. friendship	6, 14	19. lips	4, 9
20. beauty	6, 13	20. fun	5, 12	20. dominate	4, 9
21. dating	6, 13	21. desire	5, 12	21. boobs	4, 9
22. comfort	6, 13	22. kindness	5, 12	22. suck	4, 9
23. affection	6, 13	23. movies	5, 12	23. skin	4, 9
24. children	5, 11	24. hug	5, 12	24. bed	4, 9
25. flowers	5, 11	25. compassion	5, 12	25. penetration	4, 9
26. relationship	5, 11	26. laughter	5, 12	26. tight	4, 9
27. intimacy	5, 11	27. sharing	5, 12	27. hard	4, 9
28. all	5, 11	28. life	4, 9	28. pussy	4, 9
29. giving	5, 11	29. emotion	4, 9	29. anal	4, 9
30. soul	5, 11	30. patience	4, 9	30. lust	4, 9

umbrella term or unmarked term referencing romantic love, with an emphasis on “making love.” We do not know the answer to this. Subsequent studies in different contexts may offer some clues to the reason for the significant disparity in frequencies.⁴ Our free list frequencies suggest that our hypotheses regarding sex—that it enters the concept of love through romantic love—is one that we cannot prove with free list frequencies alone.

Our hypotheses regarding the similarity between love and romantic love (due to romantic love being a subset of love) are strengthened by these data. We had hypothesized that romantic love and love would have more terms in common than romantic love would with sex. The results of the free list bear this out: 60% of romantic love’s terms are also included in the love free list, while only 20.7% of the romantic love terms are included in the sex free list. Furthermore, the hypothesis that love has more terms than romantic love is also supported. Love ($N = 45$) has a total of 381 terms with an average response per subject of 17.7; romantic love ($N = 43$) has a total of 243 terms with an average response per subject of 12.37; sex ($N = 43$) has the lowest output of the three, with a total of 222 terms and average response per subject of 9.95.

We had also hypothesized that romantic love would have the fewest unique terms (any term with a frequency of at least two which appeared on only one free list) since it is a subset of love,

Table 2. Number of Unique Terms for Love, Romantic Love, and Sex.

Domain	N of unique terms (%)
Love	44/381 (11.5)
Romantic love	14/243 (5.7)
Sex	50/222 (22.5)

and sex would have the most unique terms given our hypotheses that it represents an independent prototype (and hence an independent semantic concept). The hypothesized order of unique terms for love, romantic love, and sex was borne out in the data, as shown in Table 2.

The terms for sex are risqué and taboo to the familial prototype of love. Given the context of the category of sex, the terms are strongly related to sexual contact. A short list is formed by the frequently appearing terms which can be reasonably disconnected from actual sexual contact: love (12, 28%), intimacy (5, 12%), lust (4, 9%), desire (3, 7%), fun (3, 7%), and passion (3, 7%). Even so, if the prefix “sexual” were applied to these words, their potentially companionate/romantic implications would be effectively removed.⁵ According to Table 1, the terms listed under sex do not have significant presence under love or romantic love, though there is more overlap between romantic love and sex than there is between love and sex. This fact, in conjunction with the finding that “sex” was the most frequently listed term under both love and romantic love, provides evidence that sex constitutes an independent prototype that is interlinked in specific ways with love and romantic love. This supports our position that sex is a culturally construed category independent of love but becomes fused with love through “sex” (and hence through romantic love); based on the free list data, we make the tentative assertion that one finds romantic love in the place where love and sex meet.

We expected sex to have the most unique terms followed by love and romantic love. The data matched these predictions. Sex was estimated to contain the most unique terms for several reasons: (a) romantic love is subsumed under love, resulting in many common terms between the two categories; (b) sex is more dissimilar from the other two categories than they are to each other; and (c) many components of sex are not generally associated with love. Sex contained 50 unique terms, the most of the three categories. Love, the most expansive category of the three, was estimated to have the second greatest number of unique terms primarily because of the commonalities between love and romantic love; were we to exclude romantic love from the data set, love would contain more unique terms than sex. In total, we recorded 44 unique terms for love. Romantic love was presumed to have the fewest number of unique terms, as it is considerably less broad in scope than the other categories and also happens to be sandwiched between them. Altogether, there were only 14 unique terms for romantic love. Many of the terms within romantic love were also found in love *or* sex, but not both: “friendship” was found in both romantic love and love, but not sex. “Desire” was found in both romantic love and sex, but not love. In this manner, romantic love had more common terms with other categories than either love or sex did. This significantly pared down the number of unique terms for romantic love.

The placement of unique terms implies that romantic love occupies a conceptual landscape somewhere between love and sex. Our data for sex demonstrate that the word “sex” means a great deal more to our respondents than the physical act itself; the most frequently appearing term for sex was “love,” which had 28% frequency on the free list. When we assert that sex and love synthesize to form romantic love, we take “sex” to delineate not only physical sexual acts but the full spectrum of emotions that are connected to sexual acts *and/or* the absence of those acts: In so many words, “sex” necessarily evokes “passion.”

Table 3. Unique Free List Terms for Love.

all you need	elope	heartfelt	parents	sexuality
alone	emptiness	helping	patience	space
compatibility	faith	human	peace	suffering
complicated	forever	innocence	people	sympathy
complimentary	forgiveness	letting go	poetry	transcendent
dear	god	lost	questions	universal
detached	harmony	misunderstood	reliability	vacation
difficult	hate	nonjudgmental	selfless	worthwhile
drinks	healing	opposites	serenity	

Table 4. Unique Free List Terms for Romantic Love.

alcohol	engagement	faithful	husband/wife	loyalty	pure	wants/needs
dinner	eye contact	goals	illuminated	meaning	ring	whole

Qualitative Analyses of Free List Unique Terms

According to our free list data, love and romantic love elicit very similar responses. This implies that romantic love is composed mostly of the core criterial features of love with only a few exceptions. Those exceptions are necessarily expressed by the word “romantic,” it being the only distinguishing factor between love and romantic love. What, then, *is* “romantic” that *is not* also love? The best way to answer these questions is to examine the terms that are unique to each free list.⁶ First, consider the terms unique to love as presented in Table 3.

Because none of these terms appeared on the sex or romantic love free lists, we presume that most of them represent forms of love that are nonsexual and nonromantic. Several commonly accepted themes or tropes regarding love are represented here, that is

- Compassionate/transcendental love: all you need, peace, selfless, people, god, human, sympathy, faith, detached, harmony, nonjudgmental, transcendent, universal, serenity, forever
- Familial love: parents
- Negative/unpleasant aspects of love: complicated, difficult, lost, hate, letting go, emptiness, alone, suffering
- Love of things: poetry, drinks, vacations.

These terms—with the exceptions of “sexuality” and “elope”—do not have any necessary or contextually implied connections to romance. Table 4 lists the terms that are unique to romantic love.

Given the context of romantic love, many of these terms strongly imply courtship: eye contact, loyalty, ring, husband/wife, engagement, faithful. Most of the remaining terms can be considered qualities of or activities related to dating or relationships: pure, whole, wants/needs, alcohol, dinner. Essentially, these terms reflect exactly what we would expect to be the unique qualities of romantic love—things that are not quite love and not quite sex, but *are* both of these two “not quite” in tandem.

The terms unique to sex are primarily crude descriptions of various forms of sexual activity. Beyond this observation, it is not necessary to list them here. The main observation to be gleaned from the terms unique to sex is that sex is more dissimilar to love and romantic love

than they are to each other and it elicits less varied sorts of responses from informants. In accordance with our assertions regarding the conceptual bridging between romantic love and sex, and the subsumed nature of romantic love to love, the terms unique to sex would not generally be considered loving or romantic in most contexts. The qualitative analysis of unique free list terms suggests that (a) love may be distinguished from romantic love and sex in many ways, certainly many more ways than this research is concerned with; (b) romantic love is distinguished from love and sex through courtship activities, a sort of “halfway” space between love and sex; and (c) sex is most readily distinguished from love and romantic love as particular manifestations of the physical act (or as a description of biological sex).

Our hypotheses regarding unique terms were substantiated but the first only weakly so: We did not find any descriptions of sex acts within the unique terms for the love free list (though several such descriptions can be found by examining nonunique terms). The unique love terms did, however, contain “elope,” which is highly reminiscent of the unique romantic love terms. It is possible, though, to view many of the unique love terms through the thematic lens of “courtship,” which was observed in the romantic love terms. For example, the word “reliability” is found on the love list, and the words “loyalty” and “faithful” are found on the romantic love list. Similarly, words such as “compatibility” and “drinks” imply, but do not require, romantic undertones. We did not code “drinks” and “alcohol” into one term, though the occurrence of these words on the unique terms for love and romantic love, respectively, indicates exactly the situation we hypothesized would occur. If romantic love is subsumed under love, a small number of such characteristically “romantic” words would be found within the love list, but not the romantic love list, as a matter of happenstance; we anticipate that an identical set of free list tasks would include similar instances of characteristically “romantic” words being found not on the romantic love list, but on the love list, though the exact terms are likely to differ from our data. These words “slip through the cracks,” and in doing so, they indicate the hierarchical relationship between love and romantic love.

There were no unique terms found on the love or romantic love lists that reflect the crude terms found on the sex list, but we expected this to be the case; sex, being the least expansive concept of the three terms, elicits smaller and more focused lists. Moreover, we perceive sex to be linked to love via romantic love—even as the definition of “love” may include the physical act of sex, the concept of sex contains its own prototypical attributes which may not be readily contained within love, at least not so readily as romantic love terms are contained within love. One might then expect to see some crude terms on the romantic love list, as it is more closely linked to sex than love is linked to sex, but the stark distinction that tends to be drawn between love and sex (“Is it love or is it lust?”) might serve to diminish the presence of crude terms related to sex on the romantic love list. In sum, our investigation of unique terms across the three lists suggests that romantic love is a category of love, and that a more immediate relationship exists between romantic love and sex than between love and sex.

Prototype Analysis

Our prototypicality ratings are measured on a scale of 1 to 5, with 1 being *the least prototypical* and 5 being *the most prototypical*. These ratings represent the mean rating for each feature. Because all of the words had significant presence on the relevant free lists, we presume that each word has some degree of prototypicality to its respective category. Table 5 lists all of the 22 words and ratings for love, romantic love, and sex.

Our data for love conform to the results received by Fehr and subsequent researchers. Prior research indicated that companionate attributes of love are the most prototypical, whereas

Table 5. Prototypicality Ratings From 1 to 5 for Love, Romantic Love, and Sex (Highest to Lowest).

Love	Rating	Romantic love	Rating	Sex	Rating
1. trust	4.56	trust	4.62	pleasure	4.48
2. happiness	4.38	love	4.46	orgasm	3.92
3. caring	4.36	happiness	4.44	intimacy	3.90
4. compatibility	4.21	friendship	4.44	passion	3.88
5. compassion	4.18	caring	4.43	touch	3.88
6. friendship	4.15	understanding	4.38	lust	3.82
7. commitment	4.10	fun	4.13	fun	3.76
8. mutual	4.08	together	3.97	love	3.58
9. comfort	4.00	warmth	3.91	wet	3.56
10. fulfillment	4.00	feeling	3.90	cum	3.50
11. feeling	3.92	passion	3.79	fuck	3.44
12. sharing	3.85	desire	3.76	penetration	3.38
13. passion	3.79	cuddling	3.65	cock	3.24
14. romance	3.51	sex	3.62	hard	3.20
15. peace	3.38	kiss	3.44	warmth	3.16
16. making love	2.97	dating	3.09	pussy	3.08
17. family	2.97	lust	2.89	release	2.96
18. sex	2.90	beauty	2.78	tension	2.60
19. lust	2.51	soul	2.75	tight	2.56
20. beauty	2.51	marriage	2.55	dominate	2.34
21. marriage	2.23	pure	2.29	gender	2.26
22. pain	2.00	flowers	1.52	submit	2.00

passionate or sexual aspects of love are less prototypical. Indeed, our results here show that companionate terms were given high ratings much more consistently than passionate or sexual terms.

The 10 highest prototypicality terms for our romantic love survey are very similar to our love survey. This supports our first hypothesis regarding the prototype survey that the highly prototypical terms in love would be mirrored in romantic love. Interestingly, the similarities between love prototypicality ratings and romantic love prototypicality ratings disappear after the first 10 terms (see the 11th-22nd terms for romantic love in Table 5). In order to discover the reason for this, we must consider our prototypicality ratings for sex in relation to the ratings for love and romantic love.

Two words on the sex survey are also on the love survey: passion and lust. While the actual difference between prototypicality scores for passion between the love and sex surveys is only 0.09, the relative placement of passion is much higher on the sex survey than the love survey: #4 as opposed to #13. The difference between prototypicality ratings for lust on the same two surveys is a considerable 1.31, with lust placed at #6 on the sex survey and #19 on the love survey. In accordance with our free list results, “passion” commands a significant presence on all three surveys.

Our observations regarding the love and sex surveys are connected by the romantic love survey. Because the terms were derived from our free list tasks, there is considerable overlap between the terms listed for the romantic love survey and the terms listed for the remaining two surveys. “Fun” received high prototypicality ratings on both the sex and romantic love surveys (3.76 and 4.13, respectively), and the position of “fun” on each list is #7. “Lust” received a slightly higher rating on the romantic love survey (+0.38) and “sex” received a considerably higher ranking (+0.72). The relative placement of lust, sex, and passion are all

higher on the romantic love survey than the love survey (#17 vs. #19, #14 vs. #18, and #11 vs. #13). The relative placement of these three terms is a minor but significant observation, especially when one recalls that lust and passion placed considerably higher on the sex survey than on the love survey. These observations reflect our hypotheses: The prototypical and noncrude terms found in sex were also found in romantic love; terms of a sexual nature received low prototypicality ratings on the love survey; noncrude terms found in sex were also found in romantic love. More important, the results support our hypothesis that the core features of romantic love are very similar to the core features of love, but romantic love's aberrations from those core features occur regarding attributes that are more commonly associated with sex.

Strauss and Quinn (1997) theorize that some concepts map onto one another by means of association rather than taxonomically or categorically. In an earlier section, we used the example of "strong men" being associated with beer/trucks/flannel shirts/hunting/fishing. None of these words are necessary attributes of strong men, nor are they subsumed within the overarching category—rather, they are semantically connected to the category in such a way that, given the correct context, each may invoke the other. We offer that romantic love is connected to sex in this manner, by what we refer to as an associational bridge. Due to the polysemous nature of love, it is possible for "romantic love" to be used somewhat synonymously with sex, but our data do not demonstrate that a link occurs between romantic love and sex in such a direct and explicit manner. Rather, our data show that noncrude terms are considered highly prototypical attributes of sex just as those same terms are considered highly prototypical attributes of romantic love or at least more prototypical to romantic love than to love. Our results indicate that romantic love *implies* sex, and sex *implies* romantic love—the two are intrinsically associated with one another, but one is not contained *within* the other in any significant capacity.

Discussion

Implications for Mixed Methods Studies

Free lists and, to a lesser extent, prototype analysis, blur the boundaries between quantitative and qualitative methods. Free lists in particular require that one draw a sharp division between methods for data collection and methods for analysis, but even this division has limited descriptive power to explicitly cast the method as one or the other; free lists are an example of a method which necessarily integrates quantitative and qualitative techniques. In constructing our analyses of free list frequencies, we repeatedly considered what the elicited terms meant to our respondents, the various contexts those meanings could be placed within, the relationships between terms, and the influence of the data collection instrument on responses. Without such considerations, exclusively quantitative analysis of free lists could not draw any conclusions regarding the actual importance of terms to respondents. Traditional structured interviews, like our prototype rating surveys, invoke a far lesser degree of respondent freedom, and thus are less qualitatively nuanced. However, the construction of a survey using free list data carries over some of the qualitative attributes of the preceding instrument in both the formation of the survey and (especially) its subsequent analysis.

Free lists are essentially open-ended surveys which are most commonly subjected to quantitative analysis. We expect our observations regarding the quantitative/qualitative attributes of free listing are expected to hold for the analysis of open-ended survey data which uses some amount of quantitative analysis and also for the analysis of any research instruments which are constructed using data with qualitative attributes. Engaging with the distinction between methods for data collection and methods for analysis lessens the confusion inherent within certain

methodological techniques and allows for researchers to more clearly describe how the various strains of their procedures inform and enhance one another.

Comparing Free Lists to Generate Prototypes

Our three free list tasks were selected via the hypothesis that the relevant concepts are interconnected: Romantic love is subsumed under love, and sex is connected to romantic love via an associational bridge. Once the terms had been consolidated, similar terms across the tasks could be compared. By observing the frequencies of specific terms across different tasks, objective judgments can be made regarding which keywords share importance across multiple categories and which keywords are exclusive to a single category. Likewise, one can assess peripheral words that are not especially important to a particular category but command some degree of presence on two or more categories. The use of multiple free lists allows a researcher to monitor keywords in different contexts.

The free list terms we collected have various connotative and denotative meanings. Individuals can and do disagree regarding the precise implications of these words, but there is considerable overlap between the various interpretations. The manner in which an individual interprets the meanings of these words will affect their personal narrative for the prototype that they associate with each category. This is to say that terms cited in the respective concepts also refer to motivations and actions associated with the prototype. The process is then: define related prototypes by collecting free lists → compare, organize, and analyze results → form hypothesis regarding the related prototypes → conduct prototype analysis to clarify results → draw conclusions from results.

Conclusion

We have used a mixed methods approach to demonstrate the occasionally complex distinction between methods for data collection and methods for analysis. By being aware of this distinction, researchers may consciously emphasize or diminish the quantitative/qualitative aspects of their methodologies. Free listing and prototype analysis are presented as two techniques which illustrate how quantitative and qualitative attributes continuously inform one another in certain procedures of data collection and analysis. We use these two methods, along with marking hierarchy theory and semantic network theory, to study romantic love by addressing two major issues within the literature: (a) the polysemous nature of “love” and (b) the problematic relationship between love and sex. Results suggest that romantic love is a subcategory of love which is conceptually connected to sex via what we call an “associational bridge.” Our hypotheses regarding the comparison of free list data suggest more definitively than previous studies (Birmie-Porter & Lydon, 2013; Fehr, 1988; Fehr & Russell, 1991) that romantic love is in the love taxa as a lower level category. We postulate that romantic love is connected to sex via what we have termed an associational bridge (and what Strauss and Quinn [1997] refer to as a “semantic network”). Perceived in this manner, romantic love is constructed through the synthesis of two independent prototypes (and their respective semantic categories). The mixed methods approach we have used has combined, in a foundational manner, a number of methods for analysis to critique earlier theories of love and romantic love. Our approach was also designed to collect data that resolve the quandary of how these three prototypes specify more thoroughly the mode of synthesis and the conditions under which it may occur. This would be exciting research for both evolutionary and cognitive social scientists.

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Notes

1. There are, of course, many others who have added to the chorus.
2. See D'Andrade (1995), for an excellent review of this study as well as follow-up studies.
3. To avoid confusion, words from the free list tasks are placed in single quotations. Love, romantic love, and sex refer to categories/domains/prototypes; "love," "romantic love," and "sex" refer to free list terms or survey terms.
4. We think it may also be a sign of the times, given that sexual themes in media were more explicit in 2013 than in 1988 (if not more frequent as well).
5. The identification of potentially nonsexual themes here is a good example of how free list analysis must segue between quantitative and qualitative evaluations.
6. If a term did not appear at least twice, we excluded it from the data set.

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