Social Schemata for Remembering People: Relationships and Person Attributes in Free Recall of Acquaintances*

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ABSTRACT: When people are not engaged in social interaction and relational thinking is not explicitly primed, is social cognition organized with reference to the personal attributes of acquaintances or according to subjects' relationships with these people? Two studies tested the hypothesis that memory for associates is organized according to the nature of the subject's social relationships with the people recalled. The studies specifically tested the relational-models theory of A. P. Fiske (1991) that people use four elementary models to represent social relationships. In separate studies, 21 students and 30 nonstudents gave the names of everyone with whom they remembered interacting during the previous month; approximately two weeks later, subjects provided diverse information about each person. Adjusted Ratio of Clustering values confirmed that subjects clustered their acquaintances in runs corresponding to the relational-models taxonomy, the resource typology of Foa and Foa (1974), and the communal vs. exchange distinction of Clark and Mills (1979). Subject's recall of acquaintances also showed strong clustering of people in terms of social situations or groups, and role terms (e.g., teacher, friend). Subjects tended to cluster more by these social factors than by attributes of individuals, such as gender, race, age, or first name.

KEY WORDS: communal and exchange relationships, person attributes, person memory, recall clustering, relational-models theory, resource theory

RELATIONSHIPS IN SOCIAL COGNITION

Imagine that you have committed a crime, and you want to remember everyone who could be called as a witness to testify regarding your whereabouts or your state of mind during a given week. More mundanely, imagine figuring out who might have given you the flu, who told you a bit of news, or whom you saw wearing a funny T-shirt. Or suppose you are making up a list of people to whom you will send wedding announcements or Christmas cards. To do such tasks, you need to retrieve most of your associates and acquaintances. How do people construct such an exhaustive list? Is your memory for people structured according to the attributes of the individuals, such as gender, age, race, appearance, and personality? Or is your memory organized according to the kinds of relationships you

have with people? That is, do you think about what kinds of people you know, or what kinds of relationships you have?

Most research on person memory, as well as studies of other kinds of person perception, seems to indicate that social cognition is often organized according to features of individuals (e.g., Arcuri 1982; S. T. Fiske and Neuberg 1990; S. T. Fiske and Taylor 1991; Frable and Bem 1985; Hastie, Park, and Weber 1984; Sherman, Judd, and Park 1989; Taylor, S. T. Fiske, Etcoff, and Ruderman 1978; Wyer and Srull 1989). The specific attributes of the individual that organize person memory may depend on the schemas, goals, and motives of the perceiver, but subjects in this prior research seemed to be pretty consistent in thinking about people in terms of such attributes as personality, gender, race, and age. However, this research focused on subjects' recall and other cognitive processes with regard to simulated strangers, rather than real personal acquaintances.

In contrast, A. P. Fiske (1990, 1991, 1992) has suggested that social cognition tends to be organized in terms of relationships: people think about how they relate to other people, using a set of four basic relational models or schemata: Communal Sharing, Authority Ranking, Equality Matching, and Market Pricing. A number of studies using diverse methods support several predictions of this theory. All of these studies investigated social cognition about real acquaintances of the subjects. A. P. Fiske, Haslam, and S. T. Fiske (1991) showed that when people make a memory, speech, or action error in which they confuse one person with another, they are likely to substitute another person to whom they relate in the same mode. Although there is also a strong tendency to make errors within gender, relationship mode generally predicts error substitutions better than attributes inhering in the individuals confused. In effect, when people forget with whom they are interacting, they still remember the relationship mode. Two of the seven error studies compared alternative relational theories: Foa and Foa's (1974, 1981) resource typology, and Mills and Clark's (1982, 1986) distinction between communal and exchange relationships. These two studies provided stronger and more consistent support for the relational models typology than these other two taxonomies. Studies in four very different cultures replicated these effects of the relational models on error substitutions (A. P. Fiske 1993). In all eleven error studies, substitutions within relationship type were usually independent of substitutions within gender, age, race, or social setting. This suggests that in some sense the four relational models may be more fundamental in social memory than the identities of individuals. Furthermore, the tendency to confuse people with whom subjects had the same type of relationship was generally independent of the tendency to confuse people whom subjects called by the same role term (friend, uncle).

We have also studied Americans' reflective classification of their personal relationships. We asked subjects to sort freely everyone with whom they

interact according to how they relate to them (Haslam and A. P. Fiske 1992). As predicted, both student and nonstudent subjects' groupings were correlated with the relational-models taxonomy. When American students and nonstudents make pairwise similarity judgments about their relationships with their acquaintances, the clusters that emerge are also correlated with the relational models taxonomy (Haslam and A. P. Fiske 1992). None of the other four theoretical taxonomies tested did better in predicting the clusters or the free sorts; the two theories that tied with the relational models theory are the resource typology of Foa and Foa (1974, 1981), and a taxonomy we derived from two of the pattern variables of Parsons and Shils (1951). Two taxonomies do substantially worse than the other theories: Mills and Clark's (1982, 1986) distinction between communal and exchange relationships, and MacCrimmon and Messick's (1976) game-theoretic typology of altruistic, selfish, and competitive motives.

What is the form of people's representations of social relationships? The relational models theory predicts that social models are discrete, qualitatively distinct categories, while most other theories describe social representations in terms of independent dimensions. When subjects judge the prototypicality of hypothetical relationships in two different ways, they use distinct categories that correspond to the relational models. When subjects rate a variety of theoretically important features of their own, real-life relationships with their personal acquaintances, they also use implicit categories predicted by the relational models theory and by Foa and Foa's (1974, 1981) resource typology. However, the relational models theory is a better predictor of the subjects' specific categories than the typology of resources exchanged. Furthermore, the results of the sorting, similarity judgments, prototypicality ratings, and attribute ratings all indicate that people are thinking in terms of a small set of discrete relationship categories, rather than a relational space defined by continuous independent dimensions or by interactional laws such as complementarity (Haslam and A. P. Fiske 1992; Haslam 1992, 1994a, b). People represent their own personal relationships according to a typological taxonomy that corresponds rather closely to the predictions of the relational models theory.

In summary, we have studied action, naming, and memory errors, free sorts, similarity and prototypicality ratings, and ratings of the attributes of relationships. All 16 of the studies in all five cultures show that people think about others in terms of their social relationships with them. People generally pay less attention to the attributes of individuals. Comparative tests specifically indicate that the four relational models govern social cognition more consistently than other aspects or typologies of relationships. The relational models evidently operate at a level of social cognition that is common to action, speech, implicit verbal memory, explicit classification, and reflective assessments of relationships.

Thus there appears to be a discrepancy. Most previous research on person

memory (and the mainstream of research on person perception and other aspects of social cognition) indicates that people organize their social thinking with reference to the distinguishing attributes of individuals. The relational model theory and all of the studies that have tested it indicate that people organize their social thinking primarily in terms of a set of four modes of relating to other people. What accounts for this apparent divergence in results?

DO PEOPLE THINK ABOUT THE ATTRIBUTES OF INDIVIDUALS OR ABOUT THE NATURE OF THEIR SOCIAL RELATIONSHIPS?

The relational models theory does not suggest that people ignore attributes of individuals, or are unconcerned about them. It posits that people's interest in others usually focuses on their relationships with them, and that people tend to attend to those differences among people that impinge on their relationships with them. Certainly people notice gender, race, age, appearance, and personality – but how cognitively salient are these factors compared to relationships? Previous research on person memory and other aspects of person perception has generally neglected to investigate the possibility that people represent their social worlds in terms of their relationships with others. There is comparatively little psychological research that compares the extent to which social cognition is "objectivist" (treating each person as a fixed, separate entity) or "relativist" (characterizing people with respect to the actor or in terms of people's relationships with others).

Of course, there is ample evidence from cultural anthropolgy and sociolinguistics to show that in most societies people address, identify, describe, and refer to each other in a relational manner, using kinship terms and markers of status that are relative to the speaker (e.g., Brown and Ford 1964; Brown and Gilman 1960; Fox 1967; Friedrich 1986; C. Geertz 1973; H. Geertz 1974; Leach 1961; Radcliffe-Brown 1965). This tradition examines linguistic and other cultural representations, not individual cognitive representations, and it often relies on qualitative participant observation and interviewing that lacks rigorous controls or reliability checks. However, much of this research in anthropology and sociolinguistics has focused on studying interactions with real people, often in naturally occurring situations. In contrast, the great majority of experimental studies of person perception and other aspects of social cognition have used artificial stimuli (e.g., text, or slides and tape) simulating encounters with strangers; some such research has used brief encounters with stooges who are strangers. Thinking about artificially constructed persons, actors, and strangers may have limited external validity with respect to how people represent their actual acquaintances. This may account for some of the differences between earlier work and our results on real relationships.

Experimental studies that have looked into the question indicate that social memory is often oriented to relationships among the people recalled. Bond (Bond, Jones, and Weintraub 1985; Bond and Brockett 1987) showed that people recall their acquaintances according to social groups; personality categories of the individuals are much less important. Sedikides, Olsen, and Reis (1992) showed that when people attempt to remember trait descriptions, they confuse the attributes of hypothetical married couples. Looking at speed of cued retrieval of acquaintances from memory, Bond and Sedikides (1988) found that personality traits are hierarchically subordinate to social contexts. Ostrom, Pryor, and Simpson (1981) showed that people may organize information about strangers according to both social and nonsocial categories, and under some conditions memory may be organized with respect to categories alone, without any tendency to cluster by individual persons. In a meta-analysis of such studies, Sedikides and Ostrom (1988) reported that social categories tend to have greater effects on recall clustering than non-social categories.

Similarly, in recent studies of actual social relationships in three different naturally-occurring groups, Brewer (Brewer 1983, this volume; 1995; Brewer and Yang 1994) found that subjects clustered persons in recall according to social structural principles, primarily perceived interaction patterns. In these studies, subjects did not cluster persons in recall according to individual traits such as gender or first letter of first names. However, this research did not investigate the specific kinds of social relationships (such as those postulated by the relational models theory) that might be involved in the organization of social memory.

One additional possible factor may explain why, in contrast to most other research on person perception, we have consistently found that people are generally more oriented to relationships than to the attributes of individuals. All of our studies have collected data about people's social interactions, or else have specifically asked people to characterize their interactions. Hence we have either been looking at contexts in which relationships are active, or else have primed people to think about and differentiate among their relationships. When they have no *a priori* reason to focus on relationships and are not engaged in interactions, do people still organize social cognition socially? Many investigators have used person memory as a general-purpose test of the organization of social cognition. As a method for studying basic representations, unconstrained exhaustive recall of social interaction partners has the advantage that it is not a task in which order of production is ordinarily governed by explicit rules (although people may sometimes mark contextual importance by temporal priority). Note that this is a rather rigorous test for a relational theory of social cognition, which describes how people organize social interaction. There is no functional reason for people to use relationship as a retrieval strategy in free recall: the relational models have no routine, functional, intrinsic, or necessary

connection to the task of retrieving exhaustive lists of individuals. Hence if people do use the relational models to organize free recall, it would imply that these model are fundamental to human representation of other humans.

Hypotheses

If person memory is organized according to type of relationship, then what are the fundamental relational schemata? A prominent theory based on a binary distinction with deep roots in the social sciences is Clark and Mills's (1979; Mills and Clark 1984, 1986) contrast between communal and exchange relationships. Mills and Clark argue that the most important social distinction is between exchange relationships, in which people give and get contingently, and communal relationships, in which transactions are not contingent (at least in the short run). People do not expect direct reciprocation in communal relationships, while in exchange relationships, people give only when they expect to get back something comparable of at least equal value, and get it soon. Another prominent theory is Foa and Foa's (1974, 1980) six-category resource exchange taxonomy. Foa and Foa focus on the content of the exchange, rather than the form: do people exchange money, goods, services, information, status, or love? They argue that people tend to exchange each of these six entities reciprocally, in return for the same kind of entity.

The Foa and Foa and the Clark and Mills typologies focus on exchange. A. P. Fiske's (1991, 1992) relational models theory takes a broader view of human relations, going beyond exchange to look at the structure of dyads and groups, social influence, identity, moral judgment, accounts of misfortune, and many other aspects of social life. (See the Appendix for brief descriptions of the four models and their uses.) This is a theory about the relational distinctions people make, independent of the content of the interaction. Mills and Clark emphasize the distinction between contingent and non-contingent exchange, Foa and Foa emphasize what people exchange, and Fiske emphasizes the relational structure, regardless of whether there is any exchange. So these three taxonomies make distinctions based on three very different aspects of social relationships, and they also differ in proposing two-, four-, and six-way typologies.

However, there are some overlaps. Foa and Foa's love resource, Mills and Clark's communal relationship, and Fiske's Communal Sharing sometimes describe the same interactions. Foa and Foa's status partially overlaps Fiske's Authority Ranking. Foa and Foa's money overlaps with Fiske's Market Pricing relationships and Mills and Clark's exchange category. Nevertheless, the taxonomies use distinct criteria to differentiate among interactions: content, exchange rules, and relational structure. These criteria encompass most of the bases that theorists have proposed, although it might be argued that the game-theoretic typology of altruistic, selfish, and com-

petitive motives is sufficiently different from Mills and Clark's to be included (see MacCrimmon and Messick 1976). However, this typology did a poor job of representing subjects' sorting and similarity ratings (Haslam and A. P. Fiske 1992). There are several other taxonomies that could be investigated, but many of them are subsets of Fiske's four relational models (e.g., the social justice distinctions among need, equality, and equity).

Our prediction is that when subjects generate lists of people with whom they interact, subjects will use kinds of social relationships more than they will use attributes of the individual. A more specific hypothesis is that people will use distinctions corresponding to the relational-models typology more than they will use exchange contingency or type of resource. In other words, retrieving people from memory, subjects will be more likely to list people consecutively with whom they interact in the same relationship mode. This should be more pronounced than any clustering of people with whom subjects exchange the same resource, or people with whom subjects exchange according to the same communal or exchange contingency principle.

There are two other relationship factors that we would expect to organize social memory. First, spatio-temporal associations are basic to the organization of memory and learning, and people often have to take into account their associates' relationships with each other. So we would expect people to tend to remember acquaintances according to the social group or social situation in which they typically interact, as Bond found (Bond *et al.* 1985; Bond and Brockett 1987). That is, in addition to using their personal relationship with each acquaintance, subjects should retrieve acquaintances according to the acquaintances' relationships with each other, and/or the settings in which they typically encounter their acquaintances. Second, we would expect subjects to use their own, lexically labeled folk concepts for relationships. These culturally-formulated surface categories are salient, readily available tools for retrieving people from memory. Indeed, because spatio-temporal conjunction is so basic to cognitive processes and role-terms are so communicatively salient, these two retrieval strategies should be prominent.

When they are not engaged in interaction or primed to think about their relationships as such, do people think about their real friends, family, acquaintances and associates in the individualistic, objectivist manner that previous studies on person memory and person perception indicate? Or do people think about others in the social relational manner that ethnographic reports, the relational models theory (and our previous tests of it) indicate? To explore these issues, we compared the magnitude of the clustering in subjects' recall of their personal acquaintances according to resources exchanged, exchange contingency, the four relational models, gender, race, first names, last names, age, role-terms, and social groups.[1]

METHODS

We conducted two studies; for brevity, we report them together. We thought that college students might have a more restricted and unbalanced distribution of social relationships than other adults, and might possibly use atypical, specialized, "expert" memory strategies derived from their experience in learning and recalling class materials. On the other hand, we thought that students might show more facility at learning, accurately applying, and distinguishing the three taxonomies of social relationships. So we did two studies simultaneously, one with students and one with people drawn from the Philadelphia-area community at large. We recruited non-student subjects with small display advertisements in a community newspaper for "participants in social psychology experiments," and recruited student subjects through similar advertisements in the University of Pennsylvania student newspaper. Many of the student subjects were fulfilling a social psychology course requirement to participate in an experiment.

A different female experimenter ran each of the two studies. When subjects arrived, the experimenter gave the subject sheets of lined paper and asked each subject to list the names of "everyone you interacted with in any way during the past month." These instructions should elicit the entire field of people whom subjects encounter, without directly priming them to orient to the nature or kinds of relationships they have with these people. We phrased the instructions in this way to encourage subjects to make a broad search of their interactions and encounters, including people whom they do not "know" personally and excluding people they perceive only through mass media. We also wanted subjects to focus on recent interactions that would presumably be easier to recall more completely. The experimenter told the subject to record any appropriate identifying information if the subject did not know the person's name. After once prompting for additional names, the experimenter thanked and paid the subject.

The experimenter then asked subjects if they would like to participate in another experiment; all subjects agreed, and were asked to keep records of social substitutions errors (the procedure and results of the errors study are described in A. P. Fiske *et al.* 1991). The experimenter made an appointment with the subject to return in approximately two weeks, and later telephoned to remind the subject of the appointment.

When the subject arrived for the second session, the experimenter went over the descriptions of the social errors the subject reported, and then paid and thanked the subject. Then the experimenter asked if the subject would like to participate in a follow-up of the acquaintance study. All subjects agreed. The experimenter had prepared five different copies of the names in the original list, each randomized in a different order and with a different heading. One list asked the subject to code the relation-

ship mode (CS, AR, EM, MP); another asked about the kind of resource typically exchanged (money, goods, services, information, status, love); another asked about the contingency of giving and getting in the relationship (communal or exchange); another asked "in what situation do you most commonly interact with this person" (free response). The mode descriptions were derived from the relational-models theory. The resource descriptions were adapted almost verbatim from Foa and Foa's (1980) Appendices B and C. The paragraphs describing communal and exchange relationships were derived directly from Clark and Mills's descriptions of the defining features of these two relationships (Clark and Mills 1979; Mills and Clark 1984, 1986). We refer to Clark and Mills's communal vs. exchange distinction hereafter as "contingency."[2] The order of presentation of these four lists was balanced using a Latin square design and subjects were randomly assigned to the four presentation orders. Last, each subject received a fifth randomly ordered list of acquaintances that asked about the person's age, race, gender, and the term that the subject would use to describe the person to someone else who did not know the person. The experimenter then thanked, paid, and debriefed the subject.

Three subjects were excluded form the analysis because the experimenter observed that they were writing down their acquaintances nonsequentially, moving back and forth between different lists on the page, so that recall order could not be determined. In the final data set there were 19 female and 11 male nonstudents (22 White, 7 African Americans, 1 Asian; their mean age was 35.2 (range: 21–81). There were 15 female and 6 male students (14 White, 5 African Americans, 2 Asian Americans); their mean age was 20.6 (range: 18–29).

RESULTS

The 30 nonstudents recalled a mean of 63.0 acquaintances (range: 9–165), while the 21 students recalled a mean of 84.5 acquaintances (range: 36–239).[3] Among the nonstudents, 26.2% of the acquaintances remembered were people with whom the subject had a relationship that was structured primarily as Communal Sharing, 10.6% of the acquaintances were Authority Ranking relationships, 44.7% Equality Matching, and 18.5% Market Pricing. Among the students, the relationships with acquaintances recalled were 30.2% Communal Sharing, 11.4% Authority Ranking, 38.9% Equality Matching, and 19.5% Market Pricing. The distributions are remarkably similar.

To analyze the results, we used the Adjusted ratio of Clustering (ARC; Gerjouy and Spitz 1966; Roenker, Thompson, and Brown 1971). ARC is a measure of the tendency of categories in a sequence to occur in runs; its value does not depend on the number of categories or the total number

of items on a list. In the samples as a whole, both populations showed clear tendencies to cluster acquaintances in recall by relationship mode. The mean ARC for relationship mode among nonstudents is 0.248, and for students, the mean ARC is 0.312. The t-tests showed that the mean for each group is significantly different from zero, indicating that both groups tended to use relationship mode to retrieve acquaintances (for nonstudents, $t[29] = 6.75, p < 0.0005$; for students, $t[20] = 8.67, p < 0.0005$). These values are also high in comparison to the values reported by Sedikides and Ostrom (1988) in their meta-analysis of 44 studies; they found a median ARC of 0.142 for all kinds of descriptor categories. This suggests that subjects' relationships with their acquaintances has a relatively powerful effect on recall.

Figure 1 summarizes the results for all the factors affecting clustering in recall. (For the analysis of age, we categorized acquaintances by age relative to the specific subject recalling them, as follows: 71+ years younger, 61–70 years younger, 51–60 years younger, 41–50 years younger, 31–40 years younger, 21–30 years younger, 16–20 years younger, 11–15 years younger, 6–10 years younger, 3–5 years younger, 1–2 years younger, same age, 1–2 years older, 3–5 years older, 6–10 years older, 11–15 years older, 16–20 years older, 21–30 years older, 31–40 years older, 41+ years older.) Both populations showed significant clustering by social situation, role term, contingency, resource, gender, race, and age; the nonstudent sample also showed an effect for last name (indicating clustering by family membership). The student sample as a whole shows no significant effect for last name. Otherwise, t-tests show that the mean ARC values for all of the variables are significantly different from zero in both samples (all p values are less than 0.003). The most notable fact that emerges from the two figures is that clustering according to features of the social relationship with the people recalled (situation, role term, relationship mode, exchange contingency, resource exchanged, and last name) is stronger overall than clustering by properties of the individual person (gender, race, age, and first name).

The student sample showed a stronger tendency to cluster acquaintances by age and by gender than the nonstudent sample (using ARC values and separate variances, $t[48] = 2.77, p = 0.008$ and $t[44.5] = 3.00, p = 0.004$, respectively). The nonstudents were much more likely to list consecutive sequences of people with the same last name ($t[33.8]) = 3.69, p = 0.001$). These differences seem to reflect systematic differences in recall strategies. Nonstudents were more likely to recall by family groups, which are heterogeneous with respect to age and gender. (During the school year, at least, students probably have less interaction with families). None of the other clustering factors exhibited ARC values that differed significantly between the two samples; the two studies produced strongly convergent results.

Because the relational factors, in particular, are not independent of each other, comparisons of their magnitudes are difficult to interpret. However,
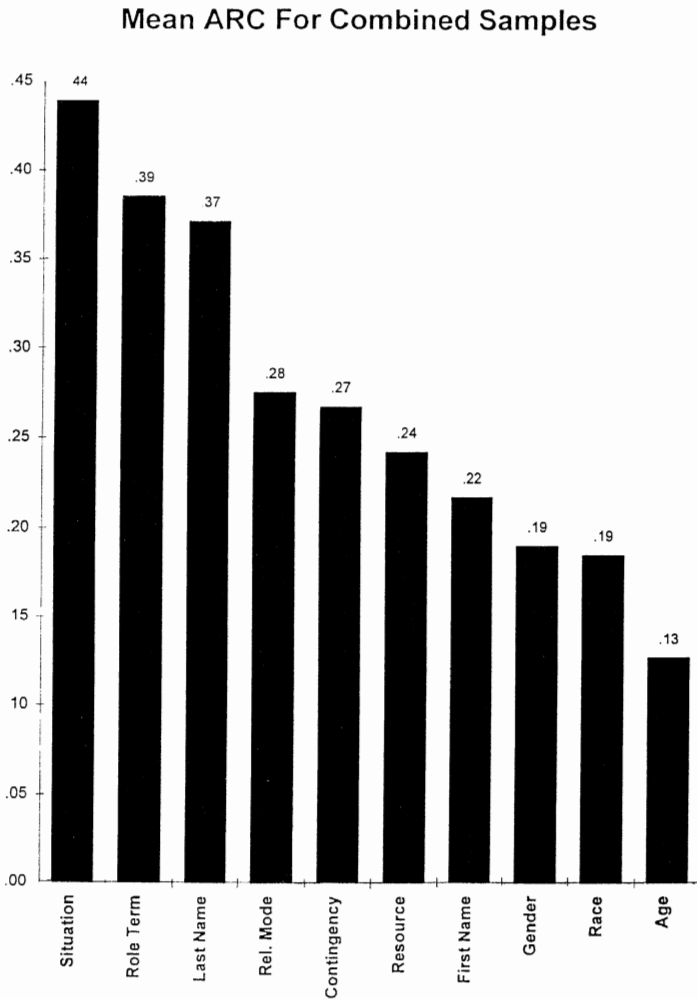
Mean ARC For Combined Samples

Fig. 1.

using other statistical techniques we counted the number of individual subjects who used each recall strategy to a significant level, and found that situation, role term, relational model, and resource were used by the most subjects; race, gender, and first name were used by the fewest subjects. These results concerning number of subjects using each strategy are affected by the number of categories on each dimension, which make such comparisons problematic, but they do tend to confirm that relationships with people are more important in person memory than the features of the individuals.

DISCUSSION

Our subjects were not engaged in social interactions and were not primed to think about others in relational terms. Yet subjects' recall lists exhibited more clustering on our measures of social relationships than by features of those individuals. This result is consistent with the observation that it is natural and pervasive in everyday American speech to identify interaction partners in relational terms; identification with reference to attributes of the individual is limited to unfamiliar people, and may be infrequent even then. When speaking with anyone they know, people refer to "my husband," not, "the shy, African-American man with thin eyebrows." This is not a function of people's inability to discriminate on perceptual features: people can distinguish faces with great accuracy. But what really counts about people is not what they look like, or even their personalities, but who they are in relation to us and to others.

Our results further suggest that person memory is organized with respect to two kinds of social relationships: subjects' own relationships with their acquaintances, and the relationships among acquaintances. People whom the subject encounters in the same social setting and who usually form some kind of social group tend to appear together in recall lists. For example, when people remember a friend, this often leads them to think of the friend's spouse, children, or friends. Spatio-temporal coordinates are very basic to memory and learning, and any subjects who used a recall strategy based on time and place would also tend to produce clusters of people related to each other. Given the instructions to recall "everyone you interacted with in any way during the past month," it would be natural for subjects to try to remember all of the groups in which they participate, and most subjects did this.

We did not ask subjects specifically for information about social relationships among their acquaintances, but Bond, Ostrom, Sedikides and their colleagues (Bond and Brockett 1987; Bond et al. 1985; Bond and Sedikides 1988; Ostrom et al. 1981; see also the meta-analyses in Sedikides and Ostrom 1988) found that people tend to recall their acquaintances according to social groups of various sorts. Bond and his associates studied retrieval by "social group," which they defined as "an aggregate of people who gather together at the same time and the same place." The only information they present about the groups subjects typically named lists contexts like "your dormitory," "choir," and "elementary school class" (Table 2 of Bond and Brockett 1987). These are just the kind of social situations our subjects identified. Indeed, it is important to observe that when we asked subjects to identify the "situations" in which they encountered each person, their free responses were always formulated in social terms, never with reference to physical or merely spatio-temporal features of the environment. So, in practice, the "situations" that we elicited from our subjects and the "groups"

that Bond and his associates elicited are virtually equivalent; both are categories defined by the social relationships among people. It would be interesting if someone were to extend these findings by explicitly studying how various kinds of relationships among acquaintances affect recall. Following Bond's methods, further studies could also use evidence from pauses during verbal recall to study the effects of relationships with the subject and among subjects' acquaintances. From our results and other studies, it is still unclear to what extent subjects' recall by group or situation reflects the *subject's* parallel social relationships with each of the members of each group, and to what extent it reflects the subjects' representations of social relationships *among the persons recalled.*

Not surprisingly, the current study indicates that people seem to use several recall strategies. So the present studies extend the findings of Bond, Ostrom, Sedikides, and their colleagues by suggesting the importance of other factors that apparently structure free-recall memory; in addition to social group and perceptual fields, people also retrieve their acquaintances according to role term, exchange contingency, type of resource exchanged, gender, race, age, and family name.

Hence the present results partially confirm the findings of Taylor *et al.* (1978) and Arcuri (1982) that people remember others according to gender and race. Our results also agree with Stangor, Lynch, Duan and Glass's (1992) findings on American undergraduates' confusions among statements attributed to people presented in photographs: people categorize by sex more than by race, which only prejudiced subjects use regularly. But these earlier studies involved memory for strangers whom the subjects only observed on slides and listened to on tapes, or whose features or statements were presented in writing. They were not real people with whom subjects interacted directly. When people remember their own acquaintances, the kind of relationship they have with their acquaintances determines order of recall more than the objective attributes of the individual. It may be that individual demographic attributes are sometimes significant in memory for strangers and causal acquaintances, while memory for people who are partners in regular social interaction is organized primarily in terms of the nature of one's relationships with them. However, Sedikides and Ostrom's (1988) meta-analysis of studies of artificial stimulus persons – who are "strangers" – is consistent with the current findings about real acquaintances: relationship categories affect recall clustering more than non-social categories.

It remains for future work to determine the causal links among the various factors that exhibit clustering in acquaintance recall. As is always the case in *any* kind of research on any topic, it could be that among the positive findings reported here, some of the factors identified are not true causes of the observed effects; some of the results may simply reflect associations between the factor measured and the true underlying cause. Unfortunately, there are few good tools for multivariate analysis of this kind

of sequential categorical data, and the nature of the free recall task is that none of these variables are controlled.

Both of our subject populations used the same array of recall strategies and showed similar tendencies to recall according to social relations in preference to person attributes. The only difference was that nonstudents tended to list people by family groups, which is probably why they showed a smaller effect for gender and age (since each family is heterogeneous with respect to gender and age). The overall consistency in results suggests that many kinds of people use categories of social relationship to organize person memory.

USE OF INDIVIDUALLY-TAILORED SURFACE CATEGORIES VERSUS IMPLICIT UNIVERSAL ONES

The two open-ended taxonomies, situation and role term, produce the strongest and most frequently observed clustering effects. This is not surprising, given that subjects responding to the questions about situation and descriptive term used familiar, culturally defined verbal labels that are common in everyday speech. Furthermore, for these questions, subjects were able to select among the cultural repertoire and specify their own unique personal taxonomies that reflect the way that they each see their particular social worlds. These taxonomies were different for each subject, and differentiated according to the distinctions that the particular subject regarded as salient. So naturally these individualized, tailor-made, more specific taxonomies that correspond directly to the everyday language of social life tend to do better than the fixed theoretical taxonomies.

The apparent effects of the theoretically-derived taxonomies would also be reduced relative to the true effects on memory due to another factor: When forced to learn and apply new, abstractly defined terms very rapidly, subjects must have made some errors in coding their relationships. In contrast to nearly error-free coding of culturally obvious surface categories, these coding errors necessarily decreases the apparent effect on recall of the theoretically-defined categories (cf. Srull 1984: 9). It is rather like asking subjects to code the grammatical structures they are using in speech: in such a reflective task, they may easily fail to make correct identifications of forms that they commonly use and unfailing distinguish – implicitly – in actual speech.

This ambiguity in classifying relationship is not merely an artifact of coding, however. The relational models are the elementary components out of which people construct roles and relationships; any specific relationship is a composite of the elementary models, so that assigning the relationship to any one category is necessarily an approximation that depends on the subject's estimation of which model is most salient, or

most crucial to the relationship. This is a matter of judgment, and inherently unreliable. So the theory predicts that any study based on such coding would inevitably underestimate the true importance of the models in social life. In fact, Haslam (1992) found that people do use features of more than one of the relational models to describe many of their acquaintances.

Among the taxonomies that were fixed and invariant for all subjects, and hence not individually self-tailored to each subject's personal social concerns, relationship mode showed the most clustering. Subjects would not be expected to make coding errors regarding family name, gender or race, and would not be prone to make large, unsystematic errors across the age categories we used (many kinds of systematic errors in estimating ages would have no effect on the results, if all acquaintances were shifted in the same direction by similar amounts). Yet the three theoretically-derived taxonomies tend to predict better than these manifest attributes of the person.

Outside of experiments like these, there are few common occasions when people naturally to try to remember everyone with whom they interact. But presumably there are many times when it is important to be able to remember everyone in a social group (or everyone with whom one interacts in some particular social setting): it may well be necessary to send a memo to everyone at work, or to telephone everyone in the club, or to prepare meals and buy presents for everyone at home. There are also many contexts in which a person wants to bring to mind everyone who occupies some specific role to them: it is important to announce the new baby to all of one's friends, and to consult with all co-workers about the office party. So people must develop the capacity to recall people according to the social situation in which they encounter them, and their social roles. Also, given a novel task like this, an obvious, culturally-available recall strategy is to use the lexical labels describing interactions and social settings.

In contrast, there is no particular functional necessity to remember people according to the elementary relational component that predominates in the relationship. And subjects could not consciously adopt an explicit strategy to recall people according to an implicit taxonomy they cannot reflectively articulate. Although the relational-models theory posits that people structure, evaluate, and coordinate every interaction out of Communal Sharing, Authority Ranking, Equality Matching, and Market Pricing, people rarely, if ever, are required to remember others according to these models. In short, unlike the other factors that people used in retrieving acquaintances, there is no social demand or explicit script that requires people to use the relational models to access their memory for acquaintances. So the relational models are not intrinsically relevant to the task of generating an acquaintance list. But we find that most people do use the four models to remember their acquaintances. This seems to reflect the fact that they are fundamental to social cognition.

CONCLUSION

Psychologists often assume that the individual is the natural – or even necessary – unit of analysis. Methodological individualism presupposes that the individual is the only real, palpably observable, causal entity that exists for subjects to perceive or experimenters to study. In particular, research in person memory and person perception has often focused on how people process the observed or inferred characteristics of the individual: gender, race, age, appearance, dress and grooming, personality traits, attitudes, or actions. But the relational models theory posits that people tend to think about other human beings according to the basic kinds of relationship that exist – or that they wish to create or believe should exist – between them.

The evidence from these two studies of free recall supports the relational-models theory, and a relational approach more generally. Even when people are not engaged in interaction and are not explicitly primed to think about relationships, they tend to think in truly social terms. Runs of individuals with similar attributes occur, but are less common than runs of socially related people. People retrieve sets of people who interact with each other in social groups. Subjects retrieve persons in clusters reflecting the relational terms they use to address and refer to them. They also remember people according to the kind of resource they exchange and whether the exchange is contingent or not. Moreover, people remember clusters of Communal Sharing relationships, clusters of Authority Ranking relationships, clusters of Equality Matching relationships, and clusters of Market Pricing relationships.

APPENDIX: THE FOUR RELATIONAL MODELS

A. P. Fiske (1991, 1992) proposed a relational-models framework that provides a unified theory of social relations. It is based on a synthesis of research and theory in anthropology, social psychology, sociology, and allied disciplines. The theory posits that four elementary relational structures are the cognitive sources for generating social action, for understanding and evaluating others' social behavior, for coordinating, for planning, for encoding, and for remembering social interaction. The four fundamental models are Communal Sharing, Authority Ranking, Equality Matching, and Market Pricing.

Communal Sharing (CS) is a relationship of equivalence, in which all the people in some bounded group are "the same" for the social purposes in question. Membership in the collectivity is all that matters: people ignore individual identity. Close kinship relations, particularly the mutual identification and attachment component of the relationship between mothers and young children, are a prototype of CS, as is intense romantic love. A

Communal Sharing dyad or group makes decisions by consensus, seeking unanimity and speaking with one voice. In transactions, the group pools resources and operates on the principle, "What's mine is yours." Authority Ranking (AR) is an asymmetric, linearly ordered relationship in which superiors take precedence while subordinates respectfully defer to them. In making decisions, there is a chain of command in which authorities issue orders that lower-ranking people obey. In transactions, senior people may expropriate things from their juniors, who have to "pay tribute," but, conversely, high rank implies pastoral responsibility for followers, according to the principle of noblesse oblige. Equality Matching (EM) is an egalitarian relationship in which people aim to maintain an even balance. Typical manifestations are turn-taking, in-kind reciprocity in which people get back the "same thing" they give, distribute justice as equality among shares, an-eye-for-an-eye revenge in which people match harm for harm on a one-to-one basis, and compensation in which people replace a loss with the same thing that was taken away. One-person, one-vote elections are the most common form of decision-making in this mode, although people sometimes use fair lotteries. Market Pricing (MP) is a relationship based on proportionality, in which people organize their interactions with reference to some system of ratio values. The most salient examples are prices, wages, rents, and interest rates, all of which represent ratios of exchange. People using this model make decisions according to rational[4] calculations of cost and benefit or supply and demand, as when the market determines what commodities are produced, where, how, and by whom. In transactions, people make exchanges according to the price (or utility) ratios of the items.[5]

According to Fiske's theory, people usually use these four fundamental relational schemata whenever they interact with other people or deal with putative beings such as gods, spirits, and ancestors. Occasionally, especially under extreme stress, social relations collapse and people treat others merely as means to extrinsic ends, using pure coercive force or stealth. In these cases, the interaction is Asocial. More often, people simply ignore each other, not taking each other into account at all; this is the Null relationship case. For the most part, however, combinations of these four models are the basic social motivations and normative obligations that direct social interaction. People also have unique, special purpose models for such things as forming the receiving line at a wedding, communicating with spies, or detecting witches. But the relational models are unique in the diversity of domains and cultures in which they appear, and in their motivational and normative directive force.

NOTES

[1] The only plausible major factor that we did not assess was personality. Subjects had to provide information about so many variables on so many different people that it did not seem feasible to add a multi-dimensional personality assessment to their other tasks.

[2] The key distinction in Clark and Mill's theory is whether the things that people give, want, and expect from each other are contingent on what the other person gives them (or is predicted to give them subsequently), or are contingent only on the other person's needs. The paragraphs given to subjects describing each of the categories in each of the three taxonomies can be obtained from the author.

[3] Despite our instructions to include people whose names the subject did not know, only 7.2% of the nonstudent acquaintances and 1.5% of the student acquaintances were people whose names the subject may not have known, judging by the way subjects identified them. This suggests that the lists substantially underrepresent anonymous interactions with street people, store clerks, bureaucrats and the like: the majority of these relationships are probably either Null, Asocial, or Market Pricing.

[4] The etymology reveals an important structural fact: rationality requires a ratio-scaleable metric by which any two benefits and costs can be compared. So ratios are at the root of the rational.

[5] Note that many features that are associated with Market Pricing in contemporary US culture are not treated by the relational models theory as invariant or defining features. These culture-specific implementations of MP include individualism, selfishness, competitiveness, intent to maximize, material subsistence activities, freedom of choice, and voluntary contractualism. In a collaborative section with Scott Weinstein, Fiske (1991) provides a formal, content-free, mathematical axiomatization of the relational structures and operations entailed in each of these models.

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