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# Mutual exposure or close peer relationships do not seem to foster increased similarity in food, music or television program preferences

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**Abstract**

We know very little about either the mechanisms through which preferences are created in humans, or the contributions of particular developmental forces: e.g. genetics, parental influence, peer influence, the media. Prior work has indicated surprisingly low correlations (averaging about 0.15) between the food or music preferences of young adult and the mid-point of the biological and rearing parents preferences for the same items. A likely candidate for a substantial influence is peers. In one study, we show that freshman college roommates, randomly assigned, do not become significantly more similar in their food or music preferences over the course of about seven months of mutual exposure. In a second study, we show that in three suburban third grade classrooms, the preferences for food or TV programs in children is not more similar to those of their best friends in the school, than it is to randomly selected other children of the same gender, in their classes. Although our findings are negative (lack of influence), in light of very strong expectations for positive findings, we take them to be notable. These findings add further mystery and puzzlement to the question of: where do preferences come from? The focus in this study is on individual differences among peers and forces that lead to preference similarity. The study does not speak to the influence of general peer norms.


*Keywords:* Development; Genetics; Preferences; Peers

## Introduction

There is a lot of variation across people in preferences for activities or entities. In spite of both the psychological centrality of preferences, and their importance in economics, marketing, and the success of business enterprises, we are surprisingly ignorant about the origin of preferences. This ignorance does not extend to other trait-like characteristics, particularly intelligence and personality. There is an extensive literature on the role of genetics, shared and unshared environment in these domains, with some analysis, as well, about the origin of social attitudes (e.g. Bouchard et al., 1990; Eaves, Eysenck, & Martin, 1989; Rowe, 1994). The bottom line of much of this research on personality and intelligence is that there are substantial genetic influences, and substantial environmental influences, with little of the latter coming from the shared (primarily parental) environment (Bouchard et al., 1990; Harris, 1995; Rowe, 1994; Scarr, 1992).

Our ignorance about the nature and origin of preferences covers both a minimal understanding of the mechanisms through which one acquires preferences (see e.g. Rozin, 1990), and of the source of the preferences (e.g. genetics, parental or peer influence). A substantial but unquantified amount of variation for particular types of entities and activities can be attributed to 'culture,' as for example, different food or music preferences in Asian Indians and Americans. In these cases, a whole variety of cultural traditions and institutions, genetics, and parental influence may all conspire to shape some uniformity within culture (hence accounting for some variance as between-culture). Among other things, cultures have a major influence on the entities and activities that individuals engage in, affording opportunities for mere exposure, social influence, evaluative conditioning, and other mechanisms to operate. However, the extensive within culture variation (e.g. in musical or

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food tastes) cannot presumably be attributed to general cultural forces. Here we have available a few different possible accounts for the variation. First are genetic differences, well known, for example, in the food-related domain, with respect to bitter sensitivity. As well, genetically influenced personality dimensions, such as sensation seeking (Zuckerman, 1979) have been demonstrated to influence human food and activity preferences. Over a wide range of measures, some including preferences, Price and Vandenberg (1980) have shown that resemblance between married partners is, to a large extent, accounted for by assortative mating, rather than mutual influence once married. This, of course, leaves open the possibility of genetic influences on preferences.

Accounts that focus on experience, as opposed to inheritance, sensibly focus on early rearing, and hence parental influence, but also include peer, sibling, and cohort effects. Cavalli-Sforza, Feldman, Chen, and Dornbusch (1982) distinguish three types of influence: vertical (parent–child), horizontal (peers, sibs), and oblique (typically one to many, such as influences of the media, teachers and other role models). And of course, it is possible that some amount of preference variation results from 'random' experiences, such as getting food poisoning from a particular food, or hearing very bad or good news while listening to a particular piece of music.

The 'family paradox' refers to the findings that a variety of measures of parent–child resemblance for preferences is surprisingly low (Rozin, 1991). The first and most prominent aspect of this paradox is the overall child–parent resemblance. Of course, this resemblance includes both genetic and rearing influences, and would intuitively seem to be the single best determinant of preference. Given the low values for parent–child preference correlations (in the range of 0–0.30; Rozin, 1991), any role for genetics is limited. In fact, three twin studies on food preferences have produced conflicting results, from almost no heritable effects (Rozin & Millman, 1987) to modest effects (Falciglia & Norton, 1994) to substantial effects (Krondl et al., 1983a, b). Work on parental influences on child preferences has primarily dealt with food preferences, and involves comparing college students (as children) with their parents, or preschool children with their parents. Actual food preference tests or questionnaire responses about liking have both been employed. Two measures of preference have been used. One is, for any given entity (e.g. lima beans, or classical music), the raw parent–child correlation. Such measures have fairly reliably produced the low, 0–0.30 (mean about 0.15) correlations already referred to (Rozin, Fallon, & Mandell, 1984; Rozin, 1991). In these studies, there is clear evidence that there is opportunity for parent–child resemblance to appear, because parent–child correlations on values, such as attitudes to abortion, are much higher (in the 0.3–0.6 range).

A second procedure that has been used is to correlate a preference profile, across a number of exemplar entities or activities, between parents and their children. While the expected correlation, if there were no parental effect for single-entity correlations is zero, the expected correlation on a preference profile for unrelated children and parents within any culture is not zero, and must be ascertained. Culture-wide or even species wide influences create correlations among unrelated people. Thus, a food preference profile that includes sweet and bitter entities would yield positive correlations on account of the general like for sweet and dislike for bitter. Hence, the proper comparison for a parent–child preference profile correlation is the correlation of the child with a 'pseudo-parent,' someone of the same gender as the parent selected, and from the same culture, who is randomly selected from the sample at hand. This procedure has been used with young children and their parents by Birch (1980a), and with college students and their parents by Pliner (1983; see also Pliner & Pelchat, 1986); in these cases, although the parent–child correlation is higher than the pseudoparent–child correlation, the difference is small.

Hence, the first of three aspects of the family paradox is the low correlation between parents and children, even though these encompass both genetic and rearing effects. One possible account for the low correlations is that insofar as the parents are not congruent for a preference, the child is getting mixed genetic and experiential inputs, which would not lead to any consistent influence. Parent–parent correlations in preferences are modestly large (larger than parent–child) (Cavalli-Sforza et al., 1982; Rozin, 1991), so there is some argument against this position. But more convincingly, if the parent sample entered into the correlation is limited to those who are congruent for the particular preference in question, the parent child correlation increases only very slightly, and non-significantly (Rozin, 1991).

The second aspect of the family paradox (Rozin, 1991) is that although traditionally, mothers have had greater contact with their children, especially in the food domain, mother correlations with their children are not reliably higher than father correlations (Burt & Hertzler, 1978; Rozin, 1991). Burt and Hertzler (1978); Weidner et al. (1985) have suggested, the latter with some relevant data, that one reason for this is that mother's food selections (shopping) may be more influenced by the fathers' preferences than the mothers' own preferences.

The third aspect of the family paradox, which might be expected to follow from the process of modeling, is that same-sex parent correlations are not higher than opposite sex parent correlations (Rozin, 1991).

The small effects that have reliably been reported in the parent-child literature suggest that one might look elsewhere for some of the major causes of preferences. One possibility is siblings, and there is one study with suggestive evidence that sibling food preference correlations (based on profiles) are substantially higher than the correlations for 'pseudo siblings' (Pliner and Pelchat, 1986). (The contrast

here was substantial: 0.50 vs 0.18, but child preferences were assigned to the child by the parent, allowing for a number of biases).

Another natural place to look for influences on preferences is peers, especially since cohort effects on preferences are very salient (Holbrook & Schindler, 1989; 1994; 1996; Sapolsky, 1998; Schindler & Holbrook, 1993). In this paper, we make two attempts to evaluate the role of peers in accounting for similarity in preferences for food, music, TV entertainment, and a few other domains.

## Study 1

The first study assesses the effect of sharing a room for an academic year on the preferences of roommates. In this case, one might predict only modest social influence effects, since the participants are already young adults, and the exposure is for somewhat less than an academic year.

### *Method*

Participants in the present study were 50 pairs of roommates at the University of Pennsylvania aged 17–20, with a mean of 18.4 years. Ninety-eight of the students were in their first year of college, and two were in their second year. All participants shared a one room double with a roommate of the same sex, from September to the time of collection of data in April, or for approximately seven months. Random assignment of same-sex roommates is the general procedure for freshmen. The random assignment was confirmed in the questionnaire; 38 pairs of participants indicated that they had not selected their roommate. These 38 constituted the principal subjects for analysis. Ten pairs of roommates agreed that they had selected each other, and these are considered a comparison 'selected' sample. Two pairs of roommates were not in agreement as to whether they were randomly assigned or self-selected, and these two pairs were dropped from the analysis. At the time of assessment, all roommates were living with the same roommate with whom they started the year.

A pair of 67-item preference questionnaire was delivered personally to each pair of roommates, when in their rooms. Participants were instructed to fill out the forms separately, without consultation, and to each place them in an envelope provided. These were collected later.

The first section of the questionnaire assessed mode of assignment to the roommate, some demographics, and satisfaction with the roommate. Pliner and Hobson's (1992) 8-item general neophobia scale followed. A few questions were included about dieting and other food related behaviors, political attitudes, and about music (e.g. preferred musical volume; see Table 1). The remainder of the questionnaire dealt with preferences for food and music. Participants completed a preference chart for foods and types of music for both before college and at the present time. Preferences were measured with the standard 9-point hedonic scale with 1 = dislike extremely, 2 = dislike very much, 3 = dislike moderately, 4 = dislike slightly, 5 = neither like nor dislike, 6 = like slightly, 7 = like moderately, 8 = like very much, and 9 = like extremely. Twelve food items were selected that had previously been shown to vary and have different means across Americans (salad, potato chips, chocolate, pizza, frozen yogurt, cereal, Chinese food, ice cream, fish, fruit, bagels, and sushi), along with 15 different music styles (broadway/show tunes, American folk, easy listening, traditional, blues, rock,

Table 1
Non-selected and self-selected roommate correlations on preference and other items

| Item | 38 non-selected pairs | | 10 selected pairs | |
|---|---|---|---|---|
| | *r* now | *r* before | *r* now | *r* before |
| 12 Food preferences (1–9 rating scale) Mean (s.d.) | 0.13 (0.17)* | 0.09(0.16) | 0.25(0.35)* | 0.17(0.34) |
| % Roommates higher now than before | 9/12 = 75 | | 8/12 = 67 | |
| Range | −0.28/0.38 | −0.15/0.35 | −0.38/0.65 | −0.44/0.59 |
| 15 Music preferences (1–9 scale) Mean (s.d.) | 0.17 (0.17)** | 0.15 (0.16)** | 0.30 (0.36)** | 0.27 (0.38)** |
| % Roommates higher | 8.5/15 = 57 | | 6.5/15 = 43 | |
| Range | −0.15/0.49 | −0.15/0.50 | −0.34/0.75 | −0.38/0.75 |
| How would you describe yourself politically? (7 point scale; very liberal to very conservative) | 0.13 | 0.14 | 0.02 | −0.01 |
| *Other items* | | | | |
| Compared to others, at what volume do you listen to your music? Soft/moderate/loud/very loud | 0.06 | – | 0.46 | – |
| How many hours a week do you listen to music? | 0.85 | – | 0.91 | – |
| How many hours a week do you watch television? | 0.71 | – | 0.81 | – |
| How happy are you with your roommate? (Very happy/happy/moderate/unhappy/very unhappy) | 0.72 | – | −0.17 | – |
| Pliner-Hobden neophobia scale (8 items) | 0.16 | – | 0.69 | – |

*$p < 0.05$, **$p < 0.01$.

modern, opera, classical, rap/hip-hop, pop, heavy metal, country, punk, and jazz).

*Results*

*Roommate correlations in preferences*

Pearson correlations were computed with the points being the values for each of 38 pairs of unselected roommates on the variable in question. No relation among roommates would lead to a Pearson r of zero. The results for unselected roommates, evaluating the effect of seven months of shared living (though eating is in a dormitory dining hall, not in the room) are very modest, and are evaluated with *t*-tests for significance of correlations or differences between correlations, with $p < 0.05$ two-tailed as the significance criterion. Unselected roommate correlations average 0.13 for food preferences now, a minimal and non-significant effect. The correlation was 0.09 for food preferences before college. There was a non-significant (0.04 percentage point) increase resulting from the seven months of shared environment (Table 1). Comparable results for the 15 music preferences show a mean *r* of 0.17 ($p < 0.01$, vs predicted zero across the 15 foods), but a value of 0.15 for before college ratings: $p < 0.01$), with no significant increase in resemblance as a result of the year together. Similar correlations were produced for the single item on political orientation (0.13 now, 0.14 before; Table 1), and for the items on which we collected only 'now' data: 0.16 for neophobia and 0.06 for preferred volume of music (Table 1). On the other hand, correlations are high and significant for activities which roommates are constrained to coordinate; hours per week of listening to music ($r = 0.85$) and hours watching television ($r = 0.71$). And, not surprisingly ratings of happiness with one's roommate are substantially correlated (0.72).

Generally, correlations are higher for preferences among self-selected roommates (Table 1), with the notable exceptions of political preferences and happiness with one's roommate! Because of the small *n* of 10 for selected roommates, even substantial correlations fail to reach statistical significance.

Combining the results from the 12 food preferences, 15 music preferences, and one political preference, there are no significant differences ($p < 0.05$, two-tailed) between preferences now and preferences before for either the randomly paired groups (mean *r* difference = 0.03) or self-selected pairs (0.05). Furthermore, although the self-selected roommates show somewhat higher correlations than randomly paired roommates (mean *r* difference = 0.11 for now and 0.10 for before), neither of these differences reaches significance. This results in part from the small *n* of 10 for self-selected roommates, and their high variability in the *r* values across preferences (see standard deviations in Table 1). Thus, at best, the results suggest a possible very weak influence effect of living together.

An alternative analysis considers the pattern of preferences now across all 32 measures (the 28 preferences in Table 1, the neophobia score, plus responses to three other food related questions [frequency of dieting, vegetarian status, and whether the person is embarrassed to buy chocolate in a store], for random and selected roommate pairs. In order to evaluate this correlation it is necessary to compare it to the correlation generated by random pairings of non-roommates, since general cultural and cohort factors produce a resemblance across roommates. This was accomplished by randomly attaching two same sex-roommate pairs (pair A with members A1 and A2, and pair B, with members B1 and B2) of the same type (random or selected) and comparing the correlation within each pair (A1–A2; B1–B2) with the mean of the two correlations across pairs (for pair A, A1–B1, A2–B2), and for the other pair (B1–B2) with the mean of the other two across pair pairings (A2–B1, A1–B2). The mean within pair correlation for random roommates was 0.77, compared to 0.76 for pseudo-paired roommates. Comparable values for the 10 pairs of selected roommates were 0.84 and 0.74, respectively. None of these modest differences are statistically significant, although again, they favor roommate resemblance over pseudo roommate resemblance, and selected over randomly paired roommates. While 22.5/38 (n.s.) of random roommates showed a higher correlation than their pseudo pairs, 9/10 ($p < 0.01$, one tailed) of selected roommates did.

Overall, these results show a minimal, if any, effect of shared rooming experience on convergence of preferences. However, it is necessary to note that in these living conditions, roommates eat in the dining service, so they are not necessarily consuming meals together. They are more likely to share musical experiences, and the music effects are marginally higher.

*Preference similarity and satisfaction with roommates*

The correlation in rated happiness with roommates across the 38 unselected pairs was a very high 0.72. This mutual agreement allows us to segregate the unselected roommate pairs in terms of the 'success' of the pairing. We can then reasonably predict that happier roommate pairs will show higher preference correlations, on the general grounds that close or admired others are more likely to serve as models. We used the overall correlation in similarity for the 32 items as the relevant measure. The correlation between mean happiness and preference similarity was a surprising −0.14. Maximally happy roommates ($n = 19$; both scoring the top value of 5 on this scale) showed a mean correlation of 0.77, compared to relatively unhappy roommates ($n = 9$; mean score below 4), whose average correlation was 0.81. This surprising non-significant reversal of prediction is difficult to interpret. Of course, most incompatible roommates split up before the year is over. Perhaps those that are unhappy and very different in preferences might separate, because it is particularly hard to

live with someone whom one dislikes who also has different preferences. The nine remaining rather dissatisfied pairs may remain together because, since their preferences are rather similar, they are relatively easy to live with. On the other hand, we note that of our 50 original pairs, none had switched roommates during the year, suggesting that this is an uncommon event.

## Study 2

In this study, we increase the likelihood of a mutual influence effect by examining the resemblance in preferences between good friends in the third grade of a suburban elementary school. In contrast to study 1, the participants are much younger, and perhaps more labile in their preferences. In addition, the degree of exposure is greater, for most children, over years. Of course, by its nature friendship involves not just mutual influence but mutual selection (the equivalent of assortative mating). Hence, any increase in similarity of preferences that we note in friendship pairs places only an upper limit on mutual influence, since we cannot separate selection and influence effects.

### *Method*

#### *Participants*

Participants were the children in the three classes in the third grade of a suburban Philadelphia elementary school. Of somewhat over 60 students, we received parental consent forms from 52, who constitute the sample. The district is primarily middle and upper middle class and primarily white, but includes an area that is predominantly lower middle class, and predominantly black. There were 26 girls and 26 boys.

#### *Procedure*

Children filled out a two page questionnaire in class, with assistance from the teacher and two of the authors, when needed. Each question, in addition to being written in the questionnaire, was read with explanations by the authors. Children were asked to write their name, the names of 'three of your best friends in your grade at school,' to list 'three of your favorite foods,' and in the same format, 'three of the foods you dislike the most,' your 'three favorite TV shows' and 'your favorite color.'

Children also rated 13 foods, selected to cover a wide range of popularity with children, and six popular TV shows. The scale used was: 'I hate it', 'I dislike it a lot', 'I dislike it', 'it's OK', 'I like it', 'I like it a lot', 'I love it', and 'I've never had/seen it.' The foods were: pizza, broccoli, spicy food, warm milk, fruit yogurt, fish, chocolate, hamburger, tomatoes, bananas, black licorice, lunchables, and Chinese food. The TV programs were: Pokemon, Rugrats, Doug, Evening news, Sesame Street, and Who wants to be a millionaire?

### *Results*

#### *General preferences*

In the course of creating the data base for peer comparisons, we gathered some basic data on suburban third graders' food and TV preferences. On the fixed list, chocolate (mean 6.64) and pizza (6.00) were the most liked foods; no one gave chocolate a score of less than 4 (neutral) on the seven point scale. The most-liked free reported foods were pizza by a long margin (36) followed by ice cream (14), chocolate (10) and pasta (10). On the fixed list, warm milk (1.80) and black licorice (1.98) had the lowest mean liking, and there was also a general dislike for vegetables. In the free reports, spinach (24) dominated the disliking nominees, followed by broccoli (15). The highest liking scores for TV programs were for Millionaire, Doug, Rugrats, and Pokemon with the News and Sesame St way behind these. The same first four programs were the most common nominees in the free-reported favorite programs. The favorite color was blue (20/52) followed by red (11/52).

#### *Peer influence*

Fifty of 52 participants listed at least one best friend; the modal value was 2. Of the 113 best friends listed, 101 were same-sex pairs and 12 were opposite sex pairs. For each participant who listed best friends, we checked to see if the listed best friend also listed the target participant. For each pair of mutually listed best friends (28 altogether), we computed a food correlation across the 13 pairs of food scores, and a parallel 6 pair TV correlation. The expected correlation, if there were no specific effect of friendship, would be the correlation produced from two randomly selected, same sex, non-friends. We selected one such person for each member of the friend pair, and used the mean of these two correlations as the control value to compare to the friend correlation. These pairings generated two summary values: the mean correlation for friends versus random pairs, and the number of the pairs of random versus friendship pairs in which the friends had a higher correlation than the mean of the random pairs. The latter comparison was also used for the favorite/least liked free report listings. Here, the measure was the number of items (out of three, or two, or rarely one) that overlapped between the friends versus the random pairs.

With respect to the correlations (Table 2), there is absolutely no effect of friendship on food preferences; the non-significant effect is in the opposite direction! For TV programs, the mean difference is not significant but in the predicted direction, and the friends are greater than the random pairings in 22 of the 28 cases ($p < 0.01$, one tailed, binomial).

For the free-reported favorite foods, TV programs, and color, and most disliked foods, the mean percent overlap

Table 2
Comparison of friend and random pairs on correlations between the 13 rated foods and 6 rated

| Comparison | TV programs (28 friend pairs and 56 friend-random pairs) | | |
|---|---|---|---|
| | Mean Pearson rs | | Proportion times friend |
| | Friends | Random | >Random rs |
| 13 foods | 0.46 | 0.50 | 9/28* |
| 6 TV programs | 0.61 | 0.44 | 22/28** |

*$p < 0.05$, **$p < 0.01$ (one tailed).

Table 3
Degree of overlap in favorite and least favorite foods, TV programs, and colors in third grade good friends and randomly paired children

| Comparison | Mean items overlap | | Proportion times friend > random overlap |
|---|---|---|---|
| | Friends | Random | |
| Favorite foods (26 pairs) | 0.61 | 0.59 | 13/28 (0.46) |
| Least favorite foods (25 pairs) | 0.40 | 0.56 | 9/25 (0.36) |
| Favorite TV programs | 0.63 | 0.30 | 15.5/27 (0.54) |
| Favorite color | 0.32 | 0.28 | 10.5/25 (0.42) |

across the pairs for whom data were available is listed in Table 3. There are no significant differences between friends and random pairs.

### *Popularity*

There is wide variation in popularity of children, as gauged by the number of times they were listed among favorite friends. Eleven children were not listed by any other children, while eight were listed by at least five. We compared these extreme groups in overall preference profiles. One prediction is that the most popular students profile pattern will be closer than the least popular to the averaged profile of the class, on the grounds that the more popular students might be more influential. We computed the correlation between the pattern of each of the 8 most popular and 11 least popular children with the class average, across the 13 foods and 6 TV programs combined together into a correlation based on 19 pairs. The mean correlation for the popular children was 0.74, as opposed to 0.57 for the least popular children ($t = 1.34$, n.s.). We also predict that, by virtue of more contact with other children within their popularity category, the most popular children will show more similar preference patterns among themselves (each of the 8 paired with each other generating one correlation) than would the least popular children (each of the 11 paired with each other). The results support this prediction: the mean correlation for popular, across all 28 possible pairings was 0.55, as opposed to a mean of 0.31 for least popular, across all possible 55 pairings ($t(81) = 3.75, p < 0.001$).

## Discussion

Our results are surprisingly negative. Although negative results, especially with modest sample sizes, must be treated with some skepticism, in this case there is an expectation of very strong positive effects, so negative effects are of greater significance. Rather than helping to resolve the family paradox, we have extended it. Taking our findings together with prior research, it would seem that common genetics and common rearing from the parent-child data, and both peer exposure and some assortative selection of peers, altogether account for a distinct minority of the variance in preferences for food and types of entertainment. There are three possible tentative conclusions from these results.

The first and most interesting is that preferences originate principally from a source that is not among the most popular accounts (genes, parental upbringing and peers). Aside from relatively random occurrences (such as acquired taste aversions), the most likely candidates are what Cavalli-Sforza et al. (1982) call oblique transmission: the media, teachers, or other role models. This could certainly be evaluated, but it is to be noted that one would expect these sources to produce more uniformity than variance in preferences. Alternatively, as suggested by Pliner and Pelchat (1986), siblings (if present) may have a substantial influence. There is one laboratory study (Brody & Stoneman, 1981) that shows strong imitation, in momentary food choice, of peers or older children, and a much smaller effect of younger children.

A second interpretation is that previous results have seriously underestimated the parent–child correlations, and that the present study underestimates peer-pair effects. Under-estimation of the parent–child effects seems unlikely to us, given the agreement among prior studies, using both pre schoolers and college students as the children. However, there has been no study using parents as the children, that is, moving past using participants in the transitional, college years. All of the questionnaire studies, on parent–child and peer-pair similarity, have one feature which may operate to reduce effects. By their nature, since they depend on past experience with foods, these studies ask about preferences for familiar foods. Familiar foods are, in general, less susceptible to the two best documented mechanisms of preference formation, mere exposure and evaluative conditioning. It is possible that controlled studies with introduction of new foods will show a larger effect of both parents and peers.

A third possibility, more likely than the second, is that there is a much stronger peer effect that was not tapped in the two studies here. The roommate exposure was for only seven months, and the roommates ate in a dining service. We do not know how often they ate together. They are probably more likely to share music time than eating time, and our results show a more substantial resemblance for music than food. The results from the third graders are more difficult to account for as artifacts. Unless the preference or friendship

reports themselves are unreliable, the results are impressively negative; close friends have both assortative and exposure factors working together, and show rather little for the joint effect. On the other hand, both of our studies examined peer pairs, as opposed to the exposure to general peer norms that, for example, Harris (1995) has designated as the principal influence. In both the university and elementary school settings we explored, the universe of preferences was from what might be considered a large peer group, segmented into particular pairs of peers. However, since one's best friend or roommate is surely a representative of the peer norms, one might expect a bigger effect than we observed.

Our observation that more popular children are more similar in preferences than are less popular children (Study 2) provides an indication of either an effect of mere exposure (more popular children have more contacts with one another) or a link between general peer norms and preference patterns, since the more popular children are more likely to embody general norms.

Our results contrast with the thrust of much of the recent work in behavior genetics (e.g. Bouchard et al., 1990; Rowe, 1994; Scarr, 1992). One, our minimal parent–child correlations suggest a very weak genetic influence on preferences, at the same time as they support the personality research in showing a weak parental rearing influence. It may be that preferences behave differently from personality, intelligence, and values. The social attitudes items in some prior twin studies (e.g. Bouchard et al., 1990; Eaves et al., 1989) shows a much higher parent child and genetic component than we show in our preference work (Rozin, 1991), but note that our studies also show a much higher parent–child correlation for values than for preferences (Rozin, 1991). One of the few directly contradictory results is the report by Eaves et al. (1989) for a substantial genetic component in interest in jazz, although, in this same analysis, parental rearing influences appeared to be very small.

The pattern of results in the literature, including this study, pose some important questions about the nature and origin of preferences. The highest preference resemblance result comes from Pliner and Pelchat (1986), who used parental preference ratings for their children. This indirect method is probably lower in validity than direct measures, but this fact alone should reduce rather than increase the preferences. However, there may be a bias in parent reports, inclining them to see their children as more similar to themselves than they actually are in preference domains, just as it has been suggested that reports about opinions at some time in the past tend to be assimilated to current opinions (Markus, 1986). Alternatively, the sibling finding may suggest a route to accounting for a substantial amount of the variance in preferences. There may be a particularly strong effect of siblings, if there are any. But more generally, sibs are almost always of different ages. It may be that a major influence on preferences for children is the preferences of an admired child who is somewhat older, the older sib being a special case of this (see Brody & Stoneman, 1981). A number of studies by Birch, in laboratory/experimental contexts, implicate a significant role for both peers and role models (Birch, 1980b; Birch, Zimmerman, & Hind, 1980).

Mere exposure (Zajonc, 1968) is probably the best documented and most pervasive account for preferences. It has been demonstrated in the food domain (Birch, 1980a,b; Pliner, 1983). Mere exposure might mediate peer or cohort effects, and other resemblance correlations as well. On the other hand, Price and Vandenberg's (1980) study, looking at the effects of 20 years of co-exposure in marriage, showed rather small changes, once assortative mating was taken into account.

There is substantial evidence from a series of studies by Holbrook and Schindler (Holbrook & Schindler, 1989, 1994, 1996; Schindler & Holbrook, 1993) for a 'crticial' or 'sensitive' period in the formation of tastes, in the domains of music, movies, and clothing styles. Exposure to these media genres and styles in between adolescence into the mid 20s seems to have the maximum impact, the peak varying in accordance with the particular domain explored. These are all areas in which styles change rather rapidly, so cohort effects can be expected, and form the basis for evaluation of critical periods. More recently, there has been confirmatory evidence for the later critical period in preference for musical genres and for food (sushi) (Sapolsky, 1998).

The purpose of correlational studies, such as those reported here, is to either provide evidence for or against existing theories, or to constrain or inform future theoretical enterprises. The results do not provide support for the two major theories of preference acquisition, mere exposure and evaluative conditioning. Modeling or social influence, which are vaguer theoretical conceptions, are also not supported. The results, therefore, call for some additional theoretical formulations.

It is important to emphasize that parental or peer influence can be manifested in many ways other than in measured preference similarity. In some cases, influence may cause dissimilarity, as when children wish to oppose parental wishes, or when children wish to distinguish themselves from others. In addition, there are levels of influence more general than preference effects. Influence could have a bigger effect on general attitudes to food, though this would normally be expected to manifest itself in specific preferences.

It seems to us that there is much to be learned by a systematic approach to explaining within culture variance in preferences (and values, as well). Correlations of the sort presented here form one part of such an approach. Within the correlational approach, we recommend extended work on a wider range of preferences, comparison of full adults with their parents, and examination of the influence of admired older role models, as opposed to peers. And it would surely be advisable to include more preference measures in the many adoption and twin studies that are done, with a focus on personality and intelligence. Another

approach is further elaboration and understanding of the basic mechanisms of preference change in humans. Currently, we cannot begin to give an account of how a person comes to like or dislike an object of activity. There are some clear cut accounts for a small percentage of such events, most particularly taste aversion learning, some phobias, and more generally processes of evaluative conditioning. Mere exposure (Zajonc, 1968) and some sort of modeling are certainly also involved, but the mechanisms we have defined so far are probably not complete, and the way they operate in the real world has yet to be discovered. For example, evaluative conditioning, the best documented and most promising account of at least some preferences, cannot always be produced in the laboratory and sometimes fails to occur in real world settings where it should (see Rozin, Wrzesniewski, & Byrnes, 1998, for a discussion of this). There is also a documented influence of modeling on choice and preference, and this line of work could be extended to establish the range of contexts in which modeling might operate. The principal documented mechanisms just noted would all predict substantial positive correlations between parents and their children and between peers, and as the current data and the reviewed results indicate, only minimal positive correlations have been reported. The family paradox might perhaps now be promoted to be called the 'preference paradox.'

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