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Food choices and peer relationships: Examining ‘a taste for necessity’ in a network context

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Abstract

The knowledge of how our taste preferences in food are shaped by our social lives has largely developed without attention to the roles played by relationships with other people. While the well-known sociological work of Pierre Bourdieu highlights the relationship of economic, cultural, and social capital with food consumption, very little scholarship concerned with food has given explicit empirical attention to social network connectivity as a form of social capital. To bridge this gap, this investigation utilizes data from a prospective cohort study of health in which both the food choices of several thousand individuals and their social ties with peers are examined. Comparing the relative social connectedness of individuals and their common food choices provides a new perspective on taste formation and maintenance and provides new evidence of how interpersonal mechanisms play a role in food choice and taste preferences.

INTRODUCTION

The topic of the food we consume, and how these foods are connected with our social, cultural, and economic circumstances has been the subject of extensive sociological inquiry (Bourdieu, 1984; Mennell, 1996; Grignon & Grignon, 1999; Beardsworth & Keil, 2002). In addition, sociologists have a long tradition of illuminating how food rituals are an integral part of being a functioning member of human society (Elias, 1982; Simmel, 1997). We recognize that dining practices are shaped by cultural context (Visser, 1991), and that the development of cuisine and the field of professional food preparation and consumption, consisting of multiple individuals interacting in multiple roles, is an ecology unto (Ferguson, 2004). It has also been shown that culinary professionals adopt parts of food-related practices they observe from others, leading to the creation of new hybrid forms (Rao et al., 2005), and that consumers have been shifting towards an ethos of cultural omnivorousness in their food choices as a marker of social distinction in modern times (Johnston & Baumann, 2010).

Yet despite these notable contributions to what might be described as the sociology of food and eating, the American sociological gaze has given surprisingly little attention to what individuals eat and how social relationships with others may be implicated in food choices. I argue that paying close attention to a person’s food choices and social relationships gives needed depth to an underdeveloped dimension of Bourdieu’s influential “taste of necessity” hypothesis, illuminating additional pathways by which our social environment shapes what we consume.

BACKGROUND

Some of the most durable thinking on the symbolic roles of tastes in our social lives was originally advanced by Pierre Bourdieu, who examined tastes in food and cuisine as part of the 1960s–70s French lifestyle. From this work, he advanced a hypothesis that "[n]ecessity imposes a taste for necessity which implies a form of adaptation to and consequently acceptance of the necessary…"1984; p.372). Bourdieu then developed an argument that social class tastes are shaped by class-based habitus – for example, among the working class, economic constraints play a significant role in how individuals make food choices. For Bourdieu, it is not only the item consumed that is significant, but also that the symbolic power of taste preferences reinforces the space of social positions in ways that vary by gender and social class, among other dimensions. While Bourdieu focused on the expansiveness of the entire French diet, Michaela DeSoucey (2010) investigated how the production and consumption of a single food item, foie gras, can serve as a nexus of national pride, culinary practice, and moral approbation, helping to maintain national boundaries. Another fine example of recent thinking on consumption practices is the research of Josee Johnston and Shyon Baumann (2010), who reveal with a study of "foodies" that omnivorous consumption serves as the defining legitimate form of consumption in modern times. For foodies, eating a variety of different kinds of cuisine and knowing a great deal about one's consumption ecosystem can be a strong signal of one's social position, rather than a highbrow/lowbrow sensibility about taste.

Despite the rich substrate of symbolic meaning that can be derived from examining eating, it remains the case that simple documentation of *what* is consumed, and who is consuming it, has been underappreciated in studies of American eating. While tastes inform the choices we make in food, other factors, such as price, convenience, and experience can matter just as much. Theories of taste development posit that our prior taste experiences matter a great deal. Whether we like a food, or feel an aversion is in part determined by repeated exposures (Pelchat & Rozin, 1982; Rozin & Zellner, 1985). From infancy, humans are biologically conditioned to prefer the sweet and familiar to other kinds of tastes (Birch, 1999; Drewnowski & Monsivais, 2012).

Returning to Bourdieu's notions of class-based conditioning, one determinant of tastes that was considered in his relational conception of habitus but never explicitly developed in his empirical treatment of tastes, was social influence – and more specifically, the roles that social relationships to others may play in shaping our own tastes. Relationships can be considered as a form of social capital, which in turn can affect and be affected by cultural and economic capital. Tastes in food, on the other hand, can be considered a form of latent cultural capital, made active when deployed as symbolic boundaries to demarcate group membership (Pachucki et al., 2007). To the extent that human relationships shape tastes in food, it would represent a pathway by which social capital can be transformed into cultural capital.

It is taken for granted that the propensity to share food with others shapes how, and what we eat. At a very young age, we learn what to eat from our parents, and over the course of our lives continue to take cues about what to eat from those around us as well. Psychological research using food diaries has established that the mere presence of others can exert an influence over the quantity of what a person consumes (de Castro & de Castro, 1989; de Castro, 1994). In more naturalistic research, researchers in a recent cafeteria-based experiment observed that caloric intake was affected by the gender of one's dining companions and the size of the group (Young et al., 2009). Social network research on eating behaviors in network settings has observed similarities in what people eat depending upon who they nominate as a social intimate. Rosenquist and colleagues (2010) and Pachucki and colleagues (2011) each used survey data from a longitudinal health study to provide evidence consistent with social network influence in both drinking behaviors and diet patterns, respectively.

Given this body of prior research, the present investigation focuses on two areas that seem to be relatively underdeveloped in the sociology of food. First, while Bourdieu investigated food tastes in the context of the French lifestyle, there has not been a comparable investigation to look at American food consumption with the same level of detail. The assessment of population-level food choice typically falls into the domain of health and wellness. Here, epidemiologists and population health scientists tend to be more interested in the measurement of nutrients or the overall diet and associations with disease outcomes than with the individual food preferences that individuals report. Population health research on eating tends not to be concerned with how foods can serve as markers of social class and cultural status. As Bourdieu and followers argue, social status is shaped by an individual's possession of social, cultural, and economic capital (Bourdieu, 1998; Veenstra, 2007; Bourdieu, 2008).

The second motivation for this study involves the examination of the roles that social relationships may play in our tastes in food. While a small number of studies have sought to interrogate what we eat in the context of our relationships, none of them have examined the associations between network connectivity and tastes in specific food items. The present study takes the perspective that focusing on individual foods – apart from the context of the overall diet – may offer new perspective on how our social environments shape how we make choices in food. Bourdieu considered social relationships and networks to be deeply situated in an individual's habitus, and tightly tied to the concept of social capital development (Bourdieu 1998). Yet Bourdieu did not explicitly operationalize how different relationships might affect cultural consumption.

The more specific research aims are: (1) to ask how American consumption of dozens of different foods might vary by gender and education, two common axes of distinction; (2) to examine how reported consumption of different foods may vary by certain network characteristics, specifically, egocentric network size (the number of connected alters), and the extent to which one's socially-connected peers consume the same foods. Because there are such few studies that involve eating in the context of social networks, this study is not positioned as a hypothesis-testing endeavor, but rather as an exploratory project that expands upon research on eating and social stratification, and which attempts to explicitly measure a dimension of previously-theorized claims about cultural consumption and social connectedness. This research seeks to extend Bourdieu's theories of how tastes are shaped by different forms of capital specifically by giving increased attention to how networks (as a form of social capital) can shape our food choices, which are implicated in both our health and enjoyment of life.

DATA AND METHODS

The Framingham Heart Study (FHS) is a longitudinal cohort study that was designed to prospectively investigate cardiovascular risk by following thousands of individuals over the course of their lives. It was begun in 1948, and as the evidence has built that nutrition is significantly associated with risk of cardiovascular disease and metabolic disorders, the study began to include a comprehensive survey of what people eat in a given week in the 1980s.

This semi-quantitative Food Frequency Questionnaire was designed to assess intake of 128 items, including common vegetables, fruits, grains, dairy, meats, beverages (non-alcoholic and alcoholic), and sweets (Hu et al., 1999). The format of the questionnaire was a standard machine-readable 'bubble sheet', and respondents would answer a series of questions about each food item, under food group headings such as "fruits", "vegetables", and so on. As an example, a question about tomato consumption asked whether this item (quantity: 1 tomato) was consumed "never/less than once/month, 1–3 time per month, 1 per week, 2–4 per week, 5–6 per week, 1 per day, 2–3 per day, 4–5 per day, 6+ per day". These categorical responses were then transformed into continuous quantities by trained FHS nutritionists.

For this study, analyses focus only on the primary food ingredients on the FFQ, and thus omit six incidental condiments (oil and vinegar, mustard, mayonnaise, sugar in beverage, salt, pepper) and a single variable describing foods as fried or not fried. The present investigation relies upon food consumption data from the Offspring Cohort at Exam 5 (1991–94). It is important to state that this food survey was created by nutritionists for reasons of ascertaining cardiovascular disease risk. It was not designed to explore symbolic dimensions of consumption that are associated with eating habits. Because this investigation seeks to provide a comprehensive overview of the food item choices of participants in the study, analyses are not restricted to certain food groups (i.e. just fruits and vegetables, or just meats), nor are similar foods collapsed into similar categories (i.e. oranges and grapefruits as Vitamin-C rich foods). This makes interpretation of findings less comparable to some prior research that focuses on specific diet patterns, but offers a potentially richer glimpse into how social connectedness is related to specific food choices.

Because prior research has identified the most significant variation in food consumption by gender and socioeconomic status, this study follows suit. In the FHS Offspring Cohort, there are slightly more women than men at baseline Exam 5 (n=3877; 53% women, 47% men), and it is an older population; the median age of participants is 54. Participants were asked to provide the number of years of education completed as a measure of socioeconomic status. For theoretical reasons this continuous measure is here dichotomized into "college" (including college and beyond) and "no college" (including those with less than 4 years of college or a high school education). Among Americans, it can be argued that the most meaningful socioeconomic distinction in modern times among this age cohort is the difference between those with a college education and those without, more so than occupation or income tier. In Bourdieu's formulation, education and one's family origins informs the acquisition of cultural capital. Unlike more recent generations where a large proportion of newly college-educated young adults face restricted job prospects, the attainment of a college education was the gateway to stability in a middle-class (or higher) life for those of college age around the middle of the twentieth century. This sample contains a majority of college-educated individuals (n=3232; 57% "college or more", 43% "less than college"). To capture a dimension of economic capital acquisition, a categorical measure of household income is also included in some analyses. Of those who provided income information (n=2,610), 10.2% are in the $0–20,000/year category, 17.8% in $20–30,000, 21.0% in $30–40,000, 19.3% in $40–50,000, and 31.8% are in a '$50,000 and above' tier. The sample is skewed towards what might be termed the middle to upper-middle class.

Information derived from participants' medical records was used to identify social relationships between FHS participants. Individuals were asked at their physician exams to identify individuals who could be contacted in case the participant fell out of touch, as well as how the respondent knows the named individual (i.e. friend or type of family member). The names and relationship type of these individuals were then coded from administrative records, and linked with health-related covariates. The first study to develop and make use of these data found a social patterning of obesity over a period of more than thirty years. Christakis and Fowler (2007) discovered a pattern of social contagion whereby prior affiliation with obese individuals was a reliable predictor of one's future obesity status.

The present study relies on information on only the social connections between close peers. These peers could be non-biologically related (i.e. spouses, friends, neighbors, and co-workers) or could be family members (i.e. brothers, sisters, cousins). However, it is important to note that only named peers who are themselves part of the FHS are captured in this dataset. It is certain that participating individuals have far more peers than are represented by this sample. At baseline, participants have an average of 3.7(SD, 3.69) connected alters, which encompasses ego-nominated (outbound) ties to others and alter-nominated (inbound) ties to ego; over time, these relationships change. The software package *sna* for the R programming language (Butts, 2013) and Gephi (Bastian et al., 2009) are used to calculate network statistics and visualize graphs, while Stata (StataCorp, 2011) is used to calculate descriptive statistics pertaining to food items and to test group mean differences.

Information on social connectivity is used in several ways. One task here is to examine differences in food choice across groups of individuals with differing levels of connectivity (i.e. ego-network size, where 'ego' is the focal individual, and 'alters' are socially-connected individuals). The next task is to use the food choices of the individuals in a given ego's firstdegree network neighborhood and the mean levels of intake of each food, to derive a series of 121 peer food variables.

Figure 1 provides an illustrative example of how the network data is used to derive peer food variables for analyses. In this case, the 1st-degree ego-network of participant #405 is visualized, and the node color indicates whether or not that study participant eats ice cream. The lines between nodes indicate a social relationship, and the arrows indicate its direction. The label accompanying each node indicates the number of servings per week that alter consumes. We wish to derive the average ice cream consumption of an individual's connected peers. To do so, we build a ratio with the sum of servings per week of ice cream among alters (17.9 servings), with the number of alters (11 persons); this results in a average peer consumption of 1.6 servings/week for participant 405. This calculation is then repeated for each individual in the study as an ego, and then repeated for the remaining foods found on the food frequency questionnaire.

RESULTS

It has been documented extensively that there is considerable variation in eating by gender and social status for a variety of reasons having to do with the unequal distribution of opportunities in the social environment, as well as biological determinants related with physiological need. To date, however, there has not been a careful examination of eating variation in the context of individuals' social network relationships. As such, it is helpful to have a foundation by first examining known major sources of social variation before moving on to discuss those network attributes that are less commonly investigated.

Gender and social status differences in food item consumption

Table 1 reports on strongly significant differences (i.e. $p<0.01$) in servings per week of food items consumed between men and women at two different periods using analysis of variance between groups (ANOVA). With few exceptions, women consume more fruits and vegetables than men. Women appear to have more of a taste for yogurt, cottage cheese, cream cheese, and sour cream, while men prefer ice cream, whole milk, cream, and other types of cheese. Men consume more animal-derived proteins than women, with the exception that women prefer chicken without skin. Men also tend to drink more of most kinds of beverages than women, though women drink more tea and white wine. Notably, men and women do not significantly vary in their tastes for milk (skim or whole), many fruits (such as apples, oranges, peaches, tomatoes, grapefruit, bananas), a few common vegetables (corn, raw spinach, celery, beets, kale/mustard greens/chard), or many of the primary grain/starch sources (white rice, brown rice, pasta).

Turning towards variation in education, we see that there are far fewer food items (n=27) that vary significantly by one's college degree status (Table 2). Across nearly all foods there is a trend that individuals with more education tend to eat greater quantities than those who are less educated. There are several exceptions: those with less than a college education consume more whole milk, hot dogs, and white bread than their peers. But perhaps more notable is that the vast majority of food items surveyed (n=94) do not significantly vary by education level. Thus, one's level of educational attainment seems to have no association with the consumption of most fruits (apples, bananas, cantaloupe, oranges, grapefruit, strawberries, peaches, tomatoes), vegetables (cabbage, cauliflower, iceberg lettuce, beans/

lentils, squash, beets, kale/mustard greens/chard), protein sources (hamburger, meat in a sandwich or casserole, chicken w/skin, processed meats), beverages (coffee, tea, beer, full-calorie cola, liquor), and most sweets and snacks (cookies, cakes, candy, pies, sweet rolls, jams/jellies, peanut butter, popcorn).

Food consumption similarities with connected peers

With these patterns of common social variation established in the American cohort, we turn now towards three analyses of patterns of social relationships as possible markers of differences in food consumption. It may first be helpful to understand how patterns of connectivity vary among individuals who eat different foods. One question to ask is whether consumption of food items varies by the size of one's social network. Table 3 reports on highly significant ($p<0.01$) differences across network size categories (0 alters, 1 alter, 2–3 alters, and 4+). The categorical distinctions were made based upon the desire to make a theoretical distinction between isolates (0 alters) and a parsimonious number of categories along the long-tailed network size distribution.

A majority of foods revealed no consumption differences depending upon the size of an individual's social network. However, there were group differences across network size categories among fifteen food items. Consumption of some of these items appears to have a negative relationship with network size (grapefruit, tomato juice, broccoli, cabbage/cole slaw, brussels sprouts, alfalfa sprouts, shrimp/shellfish, other grains). Consumption of several food items has a positive relationship with network size (processed meats, white bread, pizza) such that consumption of these foods increases with the size of one's network. Finally, with several items (tomato sauce, hot dogs, coffee, white wine), consumption seems to neither consistently increase nor decrease with each tier of network size. One interpretation of these group differences is that individuals with larger networks report less consumption of nutrient-rich food items, and more consumption of cheaper, nutrient-poor items.

A next question to ask is: Is the food item consumption of connected alters related to an ego's own food item consumption, after controlling for important socio-economic and demographic characteristics? Here, multi-level dyadic regression analyses (Valente, 2010) model an ego's food item consumption as the outcome, and the alter food item consumption as the main predictor, adjusting for gender (binary: male / female), educational attainment (binary: college educated or not), income (a 5-tier categorical variable), and network size. Models account for ties between ego and multiple alters, and cluster on ego to account for the non-independent nature of observations using robust standard errors.

Table 4 reports on the results of these regression analyses. In the case of the majority of food items, (n=89), after controlling for gender, education, income, and network size, the peer level of consumption was associated with ego's consumption of that same item. For sake of presentation, the table arrays together the results of only the main effect of 103 different regression analyses. As a guide to interpretation, in the case of alter hot dog consumption (unadjusted coefficient=0.11, robust standard error=0.02) indicates that for every alter that increases their weekly consumption of hot dogs by 1 unit, ego's consumption will increase by 0.11 servings. In contrast, with blueberries (unadjusted coefficient=0.05, standard error=0.02), a unit peer group increase in blueberry consumption would result in a 0.05-unit increase in ego's consumption.

One explanation for the relatively large number of foods that appear to be associated between an ego and peer group may be due to the level of consumption levels of a given food item in the greater cohort from which the peers derive. For instance, celery is the vegetable with the strongest correlation between ego and peer consumption volume; the more individuals in the cohort that report consuming celery, the greater the likelihood of a strong magnitude of association between ego and peers. Still, despite secular trends in FHS consumption, there were 32 food items that were not significantly ($p>0.01$) associated between ego and peers (cream, nondairy whitener, prunes, raisins, grapefruit juice, strawberries, red chili sauce, tofu/soybeans, raw spinach, kale/mustard/chard, alfalfa sprouts, processed meats, other hot cereal, English muffins/bagels, muffins/biscuits, other grains, low-calorie cola, low-calorie non-cola soft drinks, non-cola soft drinks, non-caffeine cola, chocolate, candy bars, candy without chocolate, readymade cookies, brownies, doughnuts, homemade cake, homemade sweet rolls, readymade sweet rolls, readymade pies, nuts, and wheat germ).

One way to partially disentangle peer group and cohort consumption is to conduct a sensitivity analysis that investigates which food items differ significantly in consumption between close peers and members of the entire cohort. As before, the procedure for calculating peer food intake relies on first assessing each connected peer's reported intake. These intake measures are then averaged across the number of total alters who eat that particular food, in order to create a first (peer) reference group. Separately, the mean population intake of each food is calculated to produce a second (cohort) reference group. Using the peer mean intake and population mean intake values, two deviation measures are created that indicate the absolute value of the difference between ego and peer intake, and ego and cohort intake, respectively.

Table 5 reports on results from a series of paired two-sided t-tests are that compare whether there is a statistically significant intake difference between ego and cohort mean intake, and ego and peer mean intake. By scrutinizing both the overall probability that the group difference is non-zero (i.e. the null hypothesis) and the direction of this probability, we can assess whether ego's intake is closer to the cohort mean or closer to that of her peers.

In the case of 11 foods, ego's value was significantly ($p<0.01$) closer to the peer mean than to the cohort mean, suggesting that the peer relationship may be implicated in the similarity between ego and peer intake. These foods include several vegetables (brussels sprouts, raw spinach, alfalfa sprouts), legumes (tofu/soybeans), grains (pasta, other grains), beverages (decaf coffee, liquor, non-dairy whitener), and liver. For the majority of other food items (n=110), ego's value was significantly closer to the cohort mean than to her peers at both time periods. Though there was also similarity between ego and peer intake with these foods, the relationship between ego and cohort was stronger, suggesting that the peer similarity was an artifact of the cohort similarity. The full detail of each of the tests of group differences for the 121 food items is not reported here (though they are available from author).

DISCUSSION AND CONCLUSIONS

Clearly, our food choices are determined by far more than economic determinants, even if those are powerful influences. Bourdieu's heuristic of luxury and necessity is useful as an entry point to understanding the range of forces that condition our choices and preferences. This investigation sought to expand upon the luxury/necessity heuristic by explicitly giving attention to the social relationships between people and examining how these relationships affect one's food choice. The findings presented here reveal that even individuals who may have restricted opportunities and lower cultural capital (i.e. those with less than a college education) demonstrate a great deal of choice in what they consume. Moreover, the findings involving social networks suggest that one's social ties to others are underappreciated as a factor that shapes food choice, and supports the claim that networks play an important role in shaping taste formation and expression alongside economic determinants.

This study began with an investigation into gender and social status variation in food choice. From examination of gender variation, we find that roughly 59% of foods (n=71) show no statistically significant difference in consumption. It would be tempting to claim that strictly speaking, men and women show more similarity than difference in their food choice. However, this surface-level interpretation is far too naïve, as some of the food items surveyed are more incidental (i.e. red chili sauce) than central (i.e. eggs) to the American diet. Still, it cannot be ignored that men and women are similar in a large number of their tastes, and because on average, men and women have differing energy requirements, it is not entirely surprising to see differences in intake of protein and fat sources. Other differences seem somewhat more culture-bound and likely have little to do with physiology, such as the differences between white wine drinkers (women consume more) and red wine, beer, and liquor drinkers (men consume more of all items).

Turning towards variation in tastes by education status, it seems less controversial to state that educated and less educated Americans are more similar in their tastes than not, because 78% (n=94) of surveyed food items showed no significant differences in consumption. With this said, the significant differences in white bread, whole milk, and hot dog consumption (the items less-educated individuals ate more of) are more difficult to explain in terms of nutritional need. In terms of Bourdieu's proposition about a taste for necessity, white bread and hot dogs are clearly less expensive food options. As Monsivais and colleagues (2012) have demonstrated, energydense foods are very cheap and can explain a large proportion of social disparities in food purchases. Yet if necessity strongly determined tastes in food in the manner that Bourdieu generally hypothesized, we might expect to see even more low-costs foods with significant differences in consumption between more and less-educated individuals, and this does not seem to be the case.

The more novel contribution of this study is to give empirical depth to an underappreciated determinant of American food choices – the people to whom we are socially connected. Though only 12.4% of foods examined demonstrated significant intake variation by network size, it does seem worth noting that consumption of a variety of fruits and vegetables, as well as grains and shrimp/shellfish consumption decreased as network size increased while intake of more nutrient-dense, low-cost items (processed meats, white bread, pizza) increases with network size. One might speculate that white bread is low-cost, that processed meats are easy to prepare at large scales (i.e. in casseroles), and pizza can be termed a more "social" food, easily shared by multiple people in commensal settings. If one consumes food frequently in settings with large numbers of people, a scenario can be imagined wherein these particular types of foods are consumed more frequently.

Turning towards the link between ego and peer consumption, a large majority of foods (85%) showed a significant association in consumption, though these associations had highly variable magnitudes. It is notable that in the case of nine foods (tofu/soybeans, brussels sprouts, yams/sweet potatoes, raw spinach, alfalfa sprouts, pasta, other grains, liver) and two beverages (decaffeinated coffee, liquor), one's peer consumption is a better predictor of one's own intake than the cohort mean. Of the foods, all but liver are consistent with a vegetarian diet. We might speculate that individuals with plant-based diets tend to be more connected to one another, though it is beyond the scope of this investigation to demonstrate this. Still, a sizeable amount of evidence shows that plant-based diets are healthier in some respects (Ruby 2012), so it is not a stretch to argue that healthier eaters may cluster in social networks. Indeed, this finding harmonizes with what Pachucki and colleagues (2011) also see in their longitudinal investigation of diet pattern similarity in the FHS, that being socially tied to someone with a healthy diet predicts that an individual will later adopt that diet.

There are a number of limitations of this research. These data provide no information about when these foods were consumed (breakfast, lunch, dinner), nor how they were prepared (i.e. cuisine), both dimensions of which would be of value in understanding the social contexts of consumption. A limitation of the social network information is that no data were available on commensality. Just because two individuals are identified as socially connected does not mean that they necessarily consume food together. In addition, we have no information about the strength of ties, nor what these social relationships may mean to connected people. As Veenstra (2007) argues, it makes it more challenging to understand the contributions of social networks as a form of social capital if networks' relationship with cultural capital or economic capital is unclear. For instance, though one's educational background shapes one's cultural capital, it is not clear that food item choices are an adequate marker of cultural capital. What is done with food items – for instance, their mode of preparation, relative rareness, importance to a particular cuisine – is a more important determinant of cultural capital than simple consumption of the food items themselves. With such data it is difficult to make a convincing argument that an individual increases or decreases their relative cultural capital in proportion to changing composition and configuration of their social network.

Still, food choices do proxy our taste preferences to an extent that is difficult to discern. Individuals generally do not consume what they do not find palatable, though the foods we truly prefer may not be always available, affordable, or healthful at every moment we may desire them. Future research on tastes in the contexts of social networks that carefully attends to the symbolic dimensions of food consumption will be more successful in making a strong argument for the fungibility of forms of capital. Though this article has only examined a unidirectional relationship – that social networks can shape food choices – other research suggests that the reverse can also be true, to the extent that food choices represent a form of cultural taste preference (Lizardo, 2006).

Although the FHS captures a broad swath of different kinds of Americans in terms of gender, education, income, and occupation, it is also an older population, mainly limited to the northeast United States, and does not contain the ethnic and racial diversity of the American population. With this said, there is no other currently available population-based dataset that contains information on food choice and social network information. It is the hope that future research will be able to make use of even richer data sources as they are developed.

This research adds to a growing area of scientific inquiry that suggests that our eating behaviors share common roots with other persons in our social networks. It is certainly the case that our choices in food reveal a great deal about our social circumstances, but it is also the case that our choices of who we associate with can also reveal much about what we eat. Future network research on food will benefit from investigating economic aspects of different foods and diets, food's connection with one's cultural context, and food's relationship with different aspects of network connectivity.

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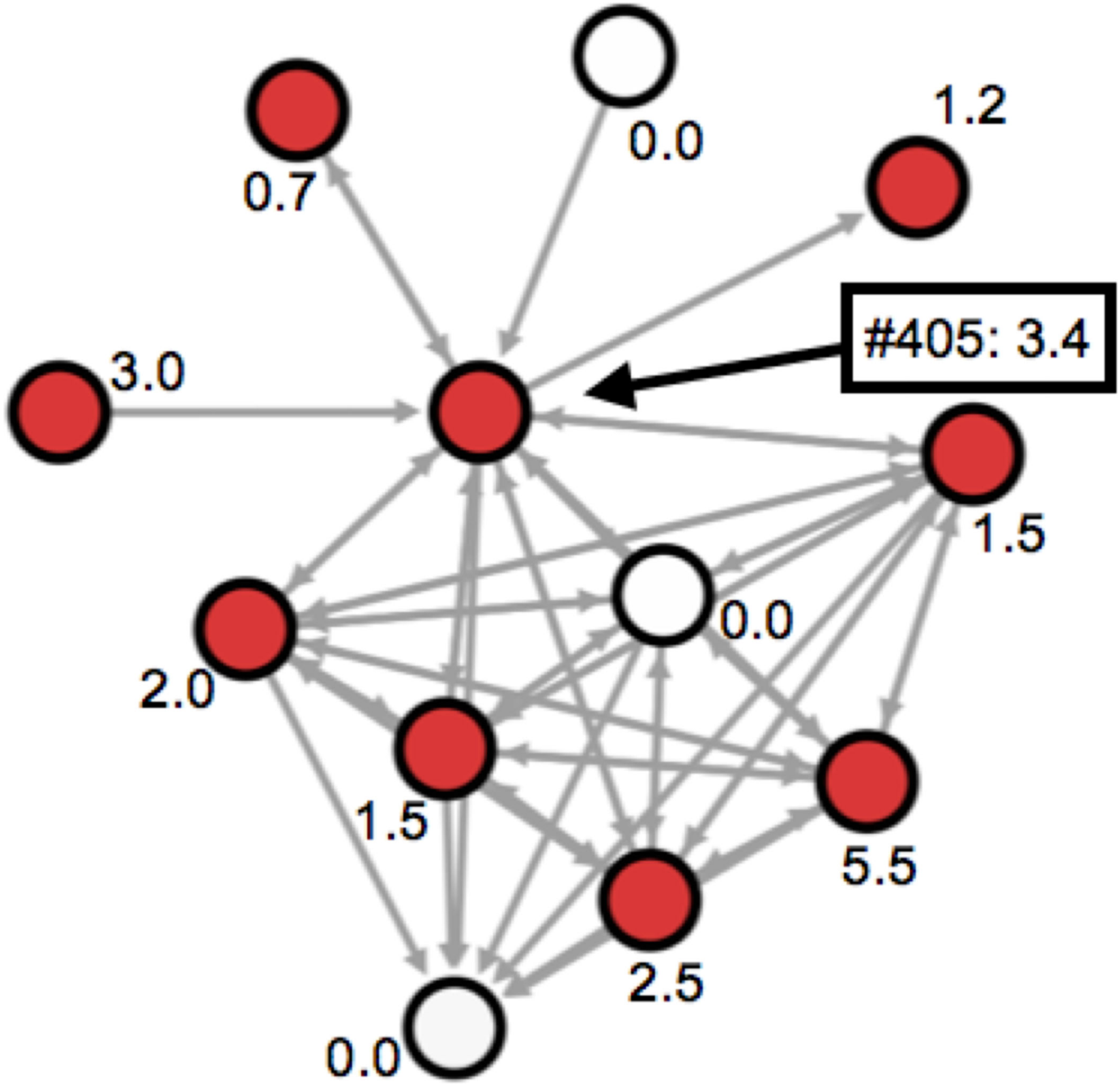

Figure 1. Ice cream consumption, ego network of participant 405

The focal individual #405 (i.e. "ego") has a weekly consumption of 3.4 servings of ice cream. This ego is connected to 11 others (i.e. "alters"), each of whom has a varying level of ice cream consumption. The average weekly peer consumption of ice cream is 1.6 servings per week.

Table 1

Significant differences in food intake by gender, 1991–95 (Exam 5)

	Men			Women			
	Obs (n=)	Mean	SD	Obs (n=)	Mean	SD	p-val
Dairy							
Ice cream	1588	1.26	2.16	1776	0.80	1.72	<0.001
Yogurt	1576	0.58	1.77	1790	1.09	2.08	<0.001
Cottage/ricotta ch.	1578	0.27	0.60	1785	0.53	1.13	<0.001
Cheese	1601	2.54	3.31	1804	2.11	2.55	<0.001
Sour cream	1568	0.19	0.49	1776	0.28	0.93	<0.001
Fruits							
Cantaloupe	1583	0.41	0.71	1794	0.66	1.06	<0.001
Watermelon	1566	0.21	0.64	1773	0.31	0.57	<0.001
Strawberries	1589	0.35	0.63	1804	0.63	1.27	<0.001
Blueberries	1595	0.22	0.53	1799	0.34	0.67	<0.001
Vegetables							
String beans	1596	0.92	0.95	1802	1.14	1.21	<0.001
Broccoli	1588	1.03	1.13	1800	1.61	1.54	<0.001
Carrots, raw	1590	0.92	1.87	1784	1.50	2.92	<0.001
Carrots, cooked	1587	0.93	1.03	1797	1.13	1.27	<0.001
Winter squash	1588	0.40	0.54	1792	0.60	0.76	<0.001
Summer squash	1602	0.51	0.73	1806	0.74	0.94	<0.001
Yams/sweet potatoes	1602	0.16	0.38	1812	0.23	0.52	<0.001
Spinach, cooked	1598	0.37	0.57	1803	0.46	0.73	<0.001
Iceberg/head lettuce	1586	2.36	2.36	1797	2.99	3.25	<0.001
Romaine/leaf lettuce	1593	1.03	1.86	1804	1.51	2.39	<0.001
Garlic	1604	1.45	2.49	1809	2.11	3.22	<0.001
Protein sources							
Eggs	1594	1.60	2.23	1799	1.12	1.25	<0.001
Chicken, w/ skin	1543	0.94	1.24	1742	0.66	1.05	<0.001
Chicken, no skin	1562	1.78	1.59	1784	2.23	2.13	<0.001

	Men			Women			
	Obs (n=)	**Mean**	**SD**	**Obs (n=)**	**Mean**	**SD**	**p-val**
Bacon	1595	0.59	1.03	1801	0.32	0.66	<0.001
Hot dogs	1596	0.76	0.99	1805	0.43	0.66	<0.001
Processed meats	1601	1.48	2.79	1803	0.65	1.24	<0.001
Hamburger	1505	1.25	1.22	1685	0.82	0.79	<0.001
Dark fish	1597	0.31	0.51	1800	0.24	0.49	<0.001
Grains & starches							
White bread	1581	6.35	8.06	1796	4.92	6.77	<0.001
French fries	1591	0.76	1.01	1802	0.39	0.63	<0.001
Chips	1598	1.17	1.84	1800	0.90	1.50	<0.001
Pizza	1598	0.89	0.97	1810	0.70	0.90	<0.001
Pancakes/waffles	1605	0.40	0.66	1807	0.33	0.62	<0.001
Chowder/cream soup	1591	0.40	0.58	1801	0.29	0.48	<0.001
Beverages							
Cola	1581	1.50	3.72	1794	0.65	2.51	<0.001
Non-cola soft drinks	1597	0.79	2.04	1805	0.50	1.91	<0.001
Coffee	1587	13.53	11.35	1800	11.36	10.87	<0.001
Tea	1568	2.05	4.99	1775	3.85	6.84	<0.001
Beer	1593	3.92	7.64	1801	0.53	2.23	<0.001
Red wine	1591	0.99	2.73	1793	0.62	2.17	<0.001
Liquor	1604	2.26	5.42	1811	1.29	3.74	<0.001
Punch/lemonade	1592	1.00	2.65	1797	0.68	2.01	<0.001
White wine	1581	0.94	2.67	1797	1.35	3.53	<0.001
Sweets & snacks							
Cookies, readymade	1589	3.34	6.51	1789	2.48	4.84	<0.001
Doughnuts	1592	0.95	1.87	1792	0.41	0.83	<0.001
Pie, readymade	1569	0.22	0.47	1771	0.13	0.40	<0.001
Peanut butter	1596	1.80	3.34	1797	1.34	2.68	<0.001
Popcorn	1597	1.13	2.69	1805	1.57	3.40	<0.001
Nuts	1594	0.83	2.04	1801	0.50	1.18	<0.001
Cake, readymade	1582	0.31	0.64	1782	0.25	0.68	0.008

Note: The unit of analysis is servings peer week of each food item. ANOVA F-test used to calculate group mean differences. 71 of the 121 surveyed food items are not shown here due to non-significant ($p>0.01$) differences.

Table 2

Education differences in food intake, 1991–95 (Exam 5)

	Non-college			College			
	Obs (n=)	**Mean**	**Std. Dev.**	**Obs (n=)**	**Mean**	**Std. Dev.**	**p-val**
Dairy							
Cheese	1259	2.08	2.81	1685	2.43	2.89	<0.001
Whole milk	1227	0.92	2.91	1659	0.64	2.32	0.005
Fruits							
Blueberries	1251	0.21	0.52	1678	0.33	0.66	<0.001
Other fruit juice	1232	1.06	2.62	1651	1.40	3.04	<0.001
Vegetables							
Carrots, raw	1246	0.89	2.24	1666	1.44	2.61	<0.001
Spinach, raw	1250	0.13	0.47	1681	0.27	0.97	<0.001
Romaine/leaf lettuce	1254	1.04	2.06	1682	1.46	2.30	<0.001
Celery	1254	0.95	1.64	1685	1.25	1.95	<0.001
Alfalfa sprouts	1259	0.03	0.17	1677	0.14	0.59	<0.001
Brussels sprouts	1254	0.12	0.37	1680	0.18	0.49	<0.001
Protein sources							
Dark fish	1257	0.22	0.47	1680	0.30	0.49	<0.001
Other fish	1246	0.59	0.73	1673	0.75	0.83	<0.001
Chicken, no skin	1229	1.87	1.73	1665	2.12	1.97	<0.001
Shrimp/shellfish	1258	0.30	0.40	1686	0.35	0.47	<0.001
Hot dogs	1252	0.64	0.91	1688	0.55	0.80	0.003
Grains & starches							
White bread	1248	6.50	8.29	1672	4.99	6.69	<0.001
Brown rice	1249	0.22	0.75	1678	0.39	0.77	<0.001
White rice	1245	0.77	1.00	1669	0.95	1.15	<0.001
Other grains	1252	0.03	0.18	1676	0.12	0.62	<0.001
Eng. Muff./bagels	1249	1.72	2.49	1683	2.09	2.46	<0.001
Cold cereal	1260	2.23	3.43	1688	2.65	3.03	<0.001
Crackers	1250	3.09	7.10	1679	3.84	7.90	0.007

	Non-college			College			
	Obs (n=)	**Mean**	**Std. Dev.**	**Obs (n=)**	**Mean**	**Std. Dev.**	**p-val**
Chowder/cream soup	1251	0.31	0.51	1677	0.37	0.56	0.005
Beverages							
White wine	1248	0.77	2.54	1673	1.35	3.31	<0.001
Lo-cal cola	1249	1.39	4.20	1679	1.90	4.66	0.003
Red wine	1250	0.67	2.29	1671	0.90	2.56	0.010
Sweets & snacks							
Nuts	1255	0.51	1.12	1677	0.78	2.03	<0.001

Note: The unit of analysis is servings peer week of each food item. ANOVA F-test used to calculate group mean differences. 94 of the 121 surveyed food items are not shown here due to non-significant (p>0.01) differences.

Table 3

Differences in food intake by ego network size, 1991–95 (Exam 5)

	0 alters			1 alter			2–3 alters			4+alters			p-val
	Obs (n=)	**Mean**	**Std. Dev.**	**Obs (n=)**	**Mean**	**Std. Dev.**	**Obs (n=)**	**Mean**	**Std. Dev.**	**Obs (n=)**	**Mean**	**Std. Dev.**	**p-val**
Decreasing consumption													
Grapefruit	219	0.92	1.83	848	0.78	1.60	1041	0.63	1.36	1268	0.59	1.29	0.001
Tomato juice	217	0.47	1.14	848	0.30	0.85	1042	0.32	1.01	1258	0.24	0.97	0.008
Broccoli	220	1.70	1.90	851	1.38	1.36	1049	1.35	1.45	1268	1.24	1.26	0.000
Cabbage/cole slaw	221	0.54	1.32	856	0.50	0.82	1056	0.48	0.93	1276	0.38	0.57	0.001
Brussels Sprouts	220	0.39	2.18	855	0.19	0.52	1050	0.18	0.51	1269	0.12	0.35	0.000
Alfalfa sprouts	220	0.16	0.61	853	0.12	0.56	1054	0.09	0.47	1270	0.06	0.27	0.004
Shrimp/shellfish	221	0.41	0.58	856	0.35	0.49	1056	0.34	0.49	1276	0.30	0.41	0.010
Other grains	221	0.15	0.63	854	0.11	0.71	1049	0.08	0.41	1268	0.05	0.22	0.001
Increasing consumption													
Processed meats	220	0.67	1.09	857	0.92	1.85	1052	1.08	2.28	1275	1.15	2.37	0.005
White bread	217	3.46	5.13	851	5.32	7.08	1043	5.40	7.22	1266	6.29	8.07	0.000
Pizza	221	0.71	0.78	857	0.71	0.88	1055	0.82	0.98	1275	0.83	0.96	0.009
Mixed trend direction													
Tomato sauce	217	1.18	1.11	839	1.16	1.03	1041	1.35	1.29	1259	1.32	1.19	0.002
Hot dogs	221	0.45	0.81	856	0.53	0.75	1054	0.65	0.91	1270	0.59	0.85	0.002
Coffee	221	11.93	11.25	852	11.20	10.34	1046	12.68	11.48	1268	12.99	11.32	0.002
White wine	219	1.40	3.94	844	1.50	3.70	1049	1.07	2.96	1266	0.96	2.73	0.001

Note: The unit of analysis is servings peer week of each food item. ANOVA F-test used to calculate group mean differences. Food items with non-significant ($p>0.01$) differences are omitted ($n=106$ foods).

Table 4

Relationship between ego and alter food item consumption, 1991–95 (Exam 5)

	Alter Robust					Alter Robust			
	Obs (n=)	**Coeff.**	**SE**	**p-val**		**Obs (n=)**	**Coeff.**	**SE**	**p-val**
Dairy (ego)					Protein sources (ego)				
Margarine	2086	0.13	0.02	<0.001	Hot dogs	2102	0.11	0.02	<0.001
Butter	2094	0.11	0.02	<0.001	Other fish	2081	0.09	0.01	<0.001
Skim milk	2085	0.10	0.01	<0.001	Bacon	2099	0.08	0.02	<0.001
Whole milk	2055	0.09	0.02	<0.001	Chicken, no skin	2068	0.08	0.01	<0.001
Sour cream	2051	0.07	0.02	<0.001	Chicken, w/ skin	2016	0.08	0.01	<0.001
Ice cream	2067	0.06	0.02	0.008	Dark fish	2092	0.08	0.01	<0.001
Other cheese	2105	0.06	0.01	<0.001	Shrimp/shellfish	2104	0.06	0.02	<0.001
Yogurt	2067	0.05	0.02	<0.001	Meat, sand. Or cass.	2065	0.06	0.01	<0.001
Sherbet/ice milk	2053	0.05	0.02	0.002	Liver	2095	0.05	0.01	<0.001
Cottage/ricotta ch.	2064	0.05	0.01	0.001	Canned tuna	2105	0.05	0.01	0.001
Cream cheese	2065	0.04	0.01	0.001	Meat, main dish	2096	0.04	0.01	<0.001
Fruits (ego)					Hamburger	1923	0.04	0.01	<0.001
Apples/pears, fresh	2078	0.11	0.02	<0.001	Eggs	2090	0.03	0.01	0.009
Peaches	2096	0.09	0.02	<0.001	Grains & starches (ego)				
Tomatoes	2099	0.08	0.02	<0.001	Pasta	2095	0.12	0.01	<0.001
Tomato sauce	2065	0.08	0.01	<0.001	Chips	2097	0.11	0.02	<0.001
Bananas	2068	0.08	0.02	<0.001	White rice	2068	0.09	0.02	<0.001
Cantaloupe	2081	0.08	0.02	<0.001	Brown rice	2080	0.08	0.02	<0.001
Apple juice/cider	2067	0.07	0.02	0.002	French fries	2095	0.08	0.01	<0.001
Grapefruit	2079	0.06	0.07	<0.001	Cold cereal	2105	0.08	0.01	<0.001
Oranges	2054	0.05	0.02	0.004	Dark bread	2048	0.07	0.01	<0.001
Blueberries	2087	0.05	0.01	<0.001	Pancakes/waffles	2106	0.07	0.02	<0.001
Orange juice	2075	0.05	0.01	<0.001	Potatoes	2095	0.07	0.02	<0.001
Other fruit juice	2047	0.05	0.01	0.001	White bread	2079	0.07	0.01	<0.001
Watermelon	2046	0.04	0.01	0.003	Cooked oatmeal	2079	0.06	0.02	<0.001
Tomato juice	2078	0.03	0.01	0.007	Crackers	2089	0.06	0.02	<0.001

	Alter Robust					Alter Robust			
	Obs (n=)	Coeff.	SE	p-val		Obs (n=)	Coeff.	SE	p-val
Vegetables (ego)					Pizza	2099	0.06	0.01	<0.001
Romaine/leaf lettuce	2091	0.14	0.02	<0.001	Beverages (ego)				
Summer squash	2101	0.11	0.01	<0.001	Decaf coffee	2060	0.13	0.02	<0.001
Yams/sweet potatoes	2108	0.10	0.02	<0.001	Liquor	2107	0.12	0.02	<0.001
Celery	2102	0.10	0.02	<0.001	Tea	2051	0.10	0.02	<0.001
Carrots, cooked	2087	0.09	0.01	<0.001	Lo-cal cola, no caff.	2073	0.09	0.02	<0.001
Garlic	2108	0.09	0.02	<0.001	Coffee	2089	0.08	0.01	<0.001
Cauliflower	2096	0.09	0.01	<0.001	Red wine	2081	0.06	0.02	0.002
Peas/lima beans	2102	0.09	0.01	<0.001	White wine	2077	0.06	0.02	<0.001
Broccoli	2088	0.09	0.02	<0.001	Cola	2074	0.06	0.02	0.001
Brussels sprouts	2093	0.08	0.02	<0.001	Punch/lemonade	2085	0.05	0.02	0.010
String beans	2097	0.07	0.01	<0.001	Beer	2093	0.04	0.02	0.008
Spinach, cooked	2095	0.07	0.02	<0.001	Sweets & snacks (ego)				
Beans/lentils	2090	0.07	0.02	<0.001	Bran	2105	0.10	0.03	0.003
Carrots, raw	2080	0.06	0.01	<0.001	Cookies, homemade	2074	0.08	0.02	<0.001
Corn	2089	0.06	0.01	<0.001	Cake, readymade	2061	0.08	0.02	0.002
Mixed vegetables	2073	0.04	0.02	0.003	Pie, homemade	2094	0.06	0.01	<0.001
Beets	2099	0.04	0.01	<0.001	Peanut butter	2089	0.05	0.01	<0.001
Iceberg/head lettuce	2082	0.04	0.01	0.001	Chowder/cream soup	2093	0.05	0.01	<0.001
Cabbage/cole slaw	2106	0.04	0.01	0.001	Popcorn	2102	0.04	0.02	0.007
Winter squash	2086	0.02	0.01	<0.001	Jams/jellies	2092	0.03	0.01	0.008

Note: The unit of analysis is servings peer week of each food item, and unstandardized coefficients are presented. Multilevel dyadic regression is used to calculate association between alter food item consumption (main predictor) and ego food item consumption (outcome). Models cluster on the ego to account for non-independence between ego and alters. This table reports on 89 separate models arrayed together for convenience. Analyses adjust for gender, education level, household income, and network size. 32 of the 121 surveyed food items are not reported here due to non-significant ($p>0.01$) coefficients.

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Table 5

Similarities in food item consumption, 1991–95 (Exam 5)

Food item	Obs (n=)	Both p(diff≠0)	Cohort p(diff<0)	Peer p(diff>0)
Brussels sprouts	3012	0.001	1.000	0.001
Yams/sweet potatoes	3036	0.001	1.000	0.001
Spinach, raw	3014	0.003	0.999	0.001
Alfalfa sprouts	3018	0.001	1.000	0.001
Liver	3021	0.001	1.000	0.001
Pasta	3019	0.001	1.000	0.001
Other grains	3007	0.001	1.000	0.001
Decaf coffee	2971	0.007	0.997	0.003
Liquor	3038	0.010	0.995	0.005
Tofu or soybeans	2999	0.011	0.995	0.006
Non-dairy whitener	3000	0.020	0.990	0.010

Note: This table reports results from distinct t-tests on foods which did differ between cohort and peer mean intake (servings/week). A majority of foods (n=110) showed no significant differences between cohort mean and peer mean. For interpreration, a probability that the probability that the peer mean difference >0 indicates greater ego similarity with peers, rather than cohort.