

Can Cultural Worldviews Influence Network Composition?

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Most sociological research assumes that social network composition shapes individual beliefs. Network theory and research has not adequately considered that internalized cultural worldviews might affect network composition. Drawing on a synthetic, dual-process theory of culture and two waves of nationally-representative panel data, this article shows that worldviews are strong predictors of changes in network composition among U.S. youth. These effects are robust to the influence of other structural factors, including prior network composition and behavioral homophily. By contrast, there is little evidence that networks play a strong proximate role in shaping worldviews. This suggests that internalized cultural dispositions play an important role in shaping the interpersonal environment and that the dynamic link between culture and social structure needs to be reconsidered.

Introduction

With the recent consolidation of the “cultural turn” in American sociology (Jacobs and Spillman 2005; Friedland and Mohr 2003) the perennial tension between culture and social structure has returned with renewed urgency. While this problem has always been a core sociological concern, what is distinctive about the new cultural sociology is its bold attempt to move beyond the well-worn ways in which the answer to this issue was formulated in the classical tradition. The new cultural sociology rejects the simple privileging of structure over culture and examines the ways in which “social being” and “social morphology” are shaped and transformed by mobilization of meaningful collective symbols and the deployment of practical patterns of appreciation and evaluation in interaction (Alexander and Smith 2003; Spillman 2002; Eliasoph and Lichterman 2003).

This rejection, however, does not in any way constitute a return to a “Parsonian” account in which cultural patterns—embodied in ideas, symbols and values—are the primary drivers of social structure. In the new cultural sociology, culture and social structure must be kept empirically and analytically distinct (Archer 1996; see also Kroeber and Parsons 1958). The issue of the structural determination of culture and the cultural formation of structure cannot be solved by appealing to a single, general formula (Sewell 2005); they must be reopened and subject to empirical specification and theoretical reformulation in concrete social contexts.

In this article, we aim to contribute to this line of inquiry by investigating the relationship between cultural worldviews—here treated as broad orientations

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toward moral evaluation—and social network composition. We follow network theory (Breiger 2004; Wellman 1988) and recent developments in cultural sociology in thinking of social structure as “influential and persistent sets of interrelationships among actors.” (Spillman 1995:132)¹ We also move beyond the current emphasis on culture as publicly available texts, objects and artifacts (Geertz 1973), and conceive of it as involving broad orientations toward “meanings and values” as well (Spillman 1995:131). We focus on what Griswold (2004) has called “implicit culture” in distinction to the “explicit culture” embodied in expressive objects. This view of culture is comparable to the broad orientations toward the social and physical worlds—usually referred to as “cosmologies”—which have been a core concern in anthropology (Douglas 1978; Sahlin 1994; see also Davis and Robinson 2006).

The case of the relationship between cultural worldviews and social networks is an important test case for the analytical approach afforded by the new cultural sociology. Network theory, at least in the United States, generally relies on a one-sided “morphological determinism” that emphasizes persistent patterns of relations as the “efficient” causes of ephemeral cultural contents (Emirbayer and Goodwin 1994). Due to this strong presupposition, the effect of culture on network relations has received surprisingly little empirical consideration.

We advance a model that allows analyzing the interplay of culture and network relations. We begin with a critical review of the models of “culture in action” found in contemporary network analysis. We then go on to identify plausible mechanisms that may link the culture and network domains. As a test of the value of our framework, we use panel data from the National Study of Youth and Religion to examine changes in ego network composition over a three-year period among a sample of over 2000 U.S. adolescents. Specifically, we examine predictors of changes in the number of respondents’ strong ties who use controlled substances, who get in trouble in school, and who volunteer in the community. We focus on these outcomes because much research has focused on the importance of peer networks in promoting both deviance (Akers, Krohn, Lanza-Kaduce and Radosevich 1979) and volunteering behaviors (McAdam 1986). We find strong evidence that moral orientations play a decisive role in shaping future network composition, net of previous network composition and other structural controls. We conclude by discussing the implications of the model and empirical findings for cultural sociology and network theory.

Culture and Social Structure in Network theory

Since its rise to prominence as a full-fledged “paradigm shift” in the late 1970s and early 1980s (Wellman and Berkowitz 1988), network analysis has had a combative—and in our view problematic—relationship to culture (Gould 2003). Wellman (1988:33), for example, in a programmatic statement of the network approach, dismisses explanation by way of shared cultural and normative orienta-

tions as “psychological and not sociological in character... [S]tructural analysts [instead] first seek explanations in the regularities of how people and collectivities actually behave rather than in the regularities of their beliefs about how they *ought* to behave... [A]ccounting for individual motives is a job better left to psychologists.” Instead of concerning themselves with cultural motives, network analysts “...interpret behavior in terms of *structural constraints on activity*.” Instead of “assuming that inner forces... impel actors in voluntaristic, sometimes teleological, behavior toward desired goals... [network analysts] treat norms as *effects* of structural location, *not causes*.” (italics added) Gould (2003:258) perceptively notes that “network analysts have something in common...with materialists who see people as servants of historical forces that they did not themselves create.”

This collapse of culture into social structure is an attempt to resolve the structure-culture problem by fiat. By assuming *a priori* that we can never observe an effect of culture on networks, the structuralist approach offers a *metatheoretical* solution to what should be an empirical question. It also leaves an important question unanswered: where do social structures come from? If the weakness of functionalist sociology was to posit norms and values as the “unmoved mover” of social action (Swidler 1986:274), it is fair to say that most network-oriented research does the same with relational ties and structural position. It is therefore not surprising that we find a rethinking of the relationship between culture and social structure in more recent considerations of network theory.

Cultural Critiques of Network Theory

Following Archer (1996), Emirbayer and Goodwin (1994) reject the assumption that networks determine culture and the notion that culture and structure are analytically inseparable (i.e., “mutually constituted”). Instead, they suggest that researchers should attempt to model the over-time interplay of normative commitments and network structures. “Network analysis,” they conclude, “... neglects or inadequately conceptualizes the crucial dimension of subjective meaning and motivation—including the *normative commitments* of actors—and thereby fails to show exactly how it is that intentional, *creative human action serves in part to constitute those very social networks* that so powerfully constrain actors.” (1413, italics added)

Inspired by S.F. Nadel’s observation that “a satisfactory approach to social structure requires simultaneous attention to both cultural and relational aspects of role-related behavior,” DiMaggio (1993: 119) raises a related objection he calls “Nadel’s paradox.” Although he interprets the rejection of cultural meanings as a “purely tactical” response to practical problems of measurement and operationalization, DiMaggio also argues that early network analysis (e.g., White, Boorman and Breiger 1976) carried with it the more radical assumption that it could provide a “self-sufficient means of analyzing social systems without recourse to meaning systems and culturally embedded categories.” (DiMaggio 1993:121)

This assumption has two implications. First, network theory's lack of explicit attention to cultural meanings leaves an action-theoretic vacuum that is usually filled by a rational-actor model. Purely structuralist models, DiMaggio (1993:122) argues, "treat network membership and the access of each member to relations as fixed, [and] actors as having a keen sense of their utility functions." Such models generalize a single motivation—instrumental gain—across contexts and ignore the potential role of culture in shaping the character of social relations (see also Smith 2003).²

Second, network theory relies on assumptions about the culture-action link that are rarely made explicit. DiMaggio argues that this implicit framework "bears an affinity to a perspective on action... that is distinct from rational-choice approaches and the Parsonsian [sic] tradition," regarding culture "as a mystifying system of post hoc accounts used by actors to normalize or explain interaction rather than to shape it." Thus the "cultural vocabulary" that corresponds to network analysis is primarily one of "typifications, scripts, systems of classifications and accounts." (121)

The tendency to define "motives" as "vocabularies" produced in local interactions continues even in network theory's "cultural turn," as exemplified by its leading exponent, Harrison White. For White (1997:64), talk of persons, internal motivations and value-orientations is not relevant, because "interactions, ties in socio-cultural context, are coming to supplant persons as building blocks—and a person may come to be seen as a knotted vortex among social networks." Thus, even though White reconsiders the importance of culture in social networks, his structuralist sociology continues to conceive of culture as a post hoc commentary on ongoing projects of control in concrete social contexts (White 1992; Emirbayer and Goodwin 1994). Identities and meaningful narratives are assumed to be the *product* of these enacted control projects rather than the cause.

Although both DiMaggio's (1993) and White's (1992) arguments are concerned with network *structure*, the same considerations apply to research on network *composition* (McPherson, Smith-Lovin and Cook 2001). On this view, any observed association between disposition and behavior is spurious, because both are transmitted through localized network connections (Mark 1998; McPherson 2004). Both Wellman (1988) and Erickson (1982) rely on this "transmission plus influence" model to explain cultural homogeneity in informal "cliques." According to this model "people acquire norms, as they do other pieces of information, through network ties." (Wellman 1988:35) Any homogeneity of attitudes and normative orientations among actors is thus understood to be the *result* of interactional influence processes that *post date* the origins of friendship ties rather than the product of cultural similarities that *pre-date* those ties. Yet this alternative hypothesis cannot be dismissed so easily. If cultural orientations *bias* friendship selection in favor of culturally-compatible alters, then we will observe cultural homogeneity even in the presence of weak or negligible "transmission" effects. Dismissing this possibility *a priori* precludes any examination of cultural effects on the composition of social networks.

Given the confidence with which network theorists advance such claims, one might expect to find a long series of empirical studies substantiating the power of network influence. Though there are many cross-sectional studies that *infer* influence on the basis of positive associations between alter's and ego's attitudes and orientations (see Haynie 2001 for a recent example), the bulk of them do not properly consider that ego and alter may have already displayed substantial cultural similarity prior to forming a tie (Lazarsfeld and Merton 1954). The few studies that do take prior ego-alter cultural similarity into account find that "conformity" effects are greatly deflated, sometimes by more than half (Cohen 1978, 1983; Kandel 1978). Thus, as Cohen (1978:238) concluded in a much neglected study, "while uniformity pressures clearly do operate, they are by no means the sole source of uniformity in cliques... it is rather likely that pair of relations also achieve much of their homogeneity through homophilic choice." Kandel (1978:435) arrives empirically at a similar conclusion: "[p]rior homophily on a variety of behaviors and attitudes is a determinant of interpersonal attraction... friendships that will dissolve are less similar than friendships in the process of formation."

These studies are consistent with Schneider's (1987) influential attraction-selection-attraction model of organizational behavior, which regards persons' prior dispositions as a key variable in determining their choice of social context. Organizational environments are shaped by the prior choices of compatible persons to join the organization and by the higher probability that persons with incompatible dispositions will select themselves out. More broadly, recent critiques of structuralist network approaches to contact selection and relationship formation in the management literature show that such ignored individual-level "psychological" factors as personality play a key role in explaining systematic differences in network composition, range and local structure (Mehra, Kilduff and Brass 2001).

Given the thin empirical record of the primary mechanism through which social network theorists envision "network effects" on culture (but see McFarland and Pals 2005), we argue that the question of reciprocal effects between cultural orientations and network composition is much more open than most contemporary network theory leads us to believe.

Culture, Cognition and the Formation of Social Ties

A Dual-Process Model of Culture

Instead of thinking of culture *exclusively* as disembodied scripts or "vocabularies of motive" used to make sense of one's social position and behavior, we conceive of it as operating primarily through *embodied* and *durable* schemes of perception, appreciation and action. In this model, culture is not primarily linguistic, not primarily conscious and not primarily discursive. Instead, it is embodied, tacit, largely unconscious and composed of fast and "hot" cognitive-affective complexes that play a key role in everyday decisions (Bourdieu 1984; Ignatow 2007; Lizardo 2004; Vaisey 2008, 2009).

Our rejection of the “culture as post-hoc rationalization” model (DiMaggio 1993) in favor of this new model is based primarily on recent advances in cognitive science. The culture-as-rationalization view is based on implausible assumptions about where the cognitive links between culture, motives and conduct should be sought. Most scholars have assumed that, to be motivational, culture would have to be “stored” consciously as ideologies, propositions, preferences, values or stories and have assumed that if cultural contents functioned as network-independent motives, we would find consistency between the beliefs people articulate and their conduct (see e.g., Collins 1981; Swidler 1986). In the absence of consistent evidence for either articulacy or consistency, most network theorists conclude that cultural systems of meaning and value cannot motivate action. Instead, as we demonstrated above, they regard both action and culture as the spurious product of prior network structures.

There are, however, important reasons to rethink the assumption that cultural motives must be conscious (Vaisey 2009). The cognitive and behavioral sciences recognize two analytically distinct levels of mental functioning—the conscious and the automatic (Nisbett and Wilson 1977; Shiffrin and Schneider 1977; Sloman 1996; Chaiken and Trope 1999; Smith and DeCoster 2000; Evans 2008). We now know that most judgments—including social ones (Chaiken and Trope 1999; Smith and DeCoster 2000)—occur below the level of conscious awareness. In the social sciences, this insight is central to most versions of practice theory (Bourdieu 1990; Schatzki, Knorr-Cetina and Savigny 2001)

Most salient to our argument, there is now strong evidence that *moral intuitions* vary systematically between nations (see Haidt and Joseph 2004) and between subcultures in a given country (Haidt 2007; Haidt and Graham 2007). To analyze such differences, Richard Shweder and his colleagues outlined a typology of three analytically distinct areas of moral concern: the ethic of *autonomy*, concerned with harm, rights and fairness; the ethic of *community*, concerned primarily with role obligations; and the ethic of *divinity*, concerned with maintaining spiritual purity and upholding the “natural” or divine order (Shweder 2003). This typology is quite similar to the individualist, community-centered, and religious typology developed by Bellah and colleagues (1985). Though Shweder (like Bellah) talks about these ethics mainly in terms of “discourse,” psychological research has associated Shweder’s “big three” with different intuitions about right and wrong in experimental and observational research (Haidt 2001). These studies have demonstrated important differences in moral intuitions between (for example) India, Brazil, and the United States, as well as between political liberals and conservatives in the United States (Haidt and Graham 2007). This research shows that culture can shape intuitions and emotions as well as providing useful cultural repertoires or “vocabularies of motive.”

Taken together, these findings point to a dual-process model of culture that regards actors as influenced by deeply internalized cultural schemas *and* as capable

of deliberating and rationalizing when required by the demands of social interaction (see Vaisey 2008, 2009). Though this model is simple, it differs significantly from conventional models that define culture as epiphenomenal *a priori* or that set a cognitively misguided standard for detecting cultural influence.

The dual-process model combines Bourdieu's definition of "culture as embodied schemes," which has become central to cognitive anthropology (e.g., Strauss and Quinn 1997; Bloch 1991), with the "analytical dualism" of recent cultural theory, which regards culture and social structure as analytically distinct. Some proponents of this "anti-conflationist" approach regard culture as mainly "objectified" and transindividual (e.g., Archer 1996), but this is not a necessary postulate of analytical dualism. Our version of the dualist approach distinguishes "subjective structures" that have been internalized from the "objective structures" in which "encultured" individuals come to be embedded, including objectifiable patterns of social relationships (see Bourdieu 1996). Our model thus enables an investigation of how individuals come to acquire durable dispositions, and how those dispositions go on to shape their objective structural environments.

Cultural Worldviews and the Formation of Social Networks

Most longitudinal studies reveal surprisingly high levels of instability in personal networks, with approximately 30 to 60 percent of the personal network experiencing turnover in a year's time (see Bidart and Degenne 2005; Suitor and Keeton 1997; see also Wellman et al. 1997 for a synoptic review of recent longitudinal network studies). Suitor and Keeton (1997), using a sample of 56 married women, report that 52 percent of the alters named by respondents in the original interview were not named again at either the 1-year or 10-year follow up. Morgan et al (1997:14) conclude that there is "a considerable degree of instability in who is present in the network over time. In particular, the average overlap of 55% means that just over half of those who were named in one interview or the other appeared in both." These studies show that old ties are constantly being deleted and new ones formed throughout the life course (Suitor, Wellman and Morgan 1997) and that friendship selection and network "fine tuning" represent important—if ill-understood—processes through which people shape their relational micro-environment.

We suggest that cultural worldviews—defined as *implicit* schemes of perception—serve to process information regarding a potential alter's compatibility with ego. In Mary Douglas' (1978) terms, we regard the friendship choice process as inherently "culturally biased." Egos with different worldviews likely have different cognitive and affective reactions to a given alter's self-presentation and interactional style. These reactions inform ego's cognitive-emotive "choice" to pursue (or accept) a relational tie to this alter. This "choice" is nothing like the rational and deliberative process outlined in some theories of network formation (e.g., Bunt, Marijtje, Duijn and Snijders 1999). Nor is it a post hoc rationalization of a bond resulting from two people being "thrown together"

structurally. Instead, we see this as a “fast” and “hot” cognitive-affective process that determines whether two persons “click” as friends.

DiMaggio (1993:125-27; emphases added) recognizes the importance of this process during the early stages of network formation, suggesting that alters’ “attributes (including biographical information)... enable... [ego] to make *snap judgments* about their suitability.” We suggest that these “snap judgments” reflect, *inter alia*, moral intuitions. DiMaggio makes clear the moral dimension of friendship choice when he argues that ego’s judgments are the product of “the ways in which [alters] express themselves—the *values, norms, or attitudes* that can be read into their utterances and more elusive aspects of style.” DiMaggio concludes that it is possible to “conceive of the assessment of sympathy as a cultural *matching process*, in which actors rely subliminally on verbal and nonverbal cues to estimate cultural overlap, experienced as comfort/discomfort and confidence/unease.”

Though DiMaggio highlights the largely *instrumental* pursuit of ties in his own illustration, there is no reason that this framework cannot be extended to relational ties in general. As Bourdieu (1984:241, italics added) remarks, “The social sense is guided by the system of mutually reinforcing and infinitely redundant signs of which each body is the bearer—clothing, pronunciation, bearing, posture, manners—and which, *unconsciously registered, are the basis of ‘antipathies’ or ‘sympathies’*; the seemingly most immediate ‘elective affinities’ are always partly based on the *unconscious deciphering* of expressive features.”

Empirical Implications

Following the dual-process model of culture, we view the observable cues connected to the tastes and expressive styles of others as inputs to culturally-biased cognitive structures. The degree of fit between social input and cultural bias produces emotion-laden judgments of “liking” or “not-liking,” thus serving as a crucial determinant of tie “decay” (Burt 2000) or persistence. We hypothesize that cultural worldviews will have *considerable effects on the over-time composition of the focal actor’s local relational environment* and that these effects will not prove to be the spurious byproduct of the personal network’s pre-existing characteristics. Specifically, we expect that ties to alters whose behaviors, tastes or expressive styles are incompatible with the focal actor’s moral-cultural worldview will tend to decay more quickly than ties with others who exhibit compatible cues, even after accounting for prior network composition and other attributes indicative of social position. We argue that tacit routines of contact-selection enable actors to “seek out social relationships that are compatible with their preferred [cultural] bias and shun those relations in which they feel less at home.” (Thompson, Ellis and Wildavsky 1990:266) This implies that *moral-cultural worldviews will have an effect on the overall composition of the “core” personal network, increasing the prevalence of compatible contacts and decreasing the relative frequency of culturally incompatible alters over time.*

Data

The data for the empirical portion of this research come from the 2002 and 2005 waves of the National Study of Youth and Religion. The first wave of the NSYR is a random sample of 3,290 English- and Spanish-speaking teenagers (ages 13-17) in the United States. The Wave 2 survey was an attempt to contact all of the teen respondents from Wave 1, who were then 15 to 20 years of age. The retention rate between waves was about 78 percent. We employ an appropriate weight for all analyses. Because of missing data, the N for each analysis varies between 2,100 and 2,140.

These surveys are particularly well-suited to the question of cultural influences on network composition for three reasons. First, they contain information on several measures of network composition at two time points. Second, they provide two measures of moral-cultural worldview that have been successfully employed in previous research (Baker 2005; Hunter 2000). Third, they contain a wide variety of socioeconomic, demographic and behavioral data that might also be predictive of changes in network composition, thus allowing adequate controls for confounding factors.

Measures and Models

Dependent Variables

Network Composition: The outcomes of interest here are the number of each respondent's friends who (1. "do drugs or drink a lot of alcohol," (2. "have been in trouble in school for fighting, cheating, or skipping classes," and (3. "regularly do volunteer work or community service." This value was generated by asking the respondent to name up to five "closest friends," and asking which of those friends engaged in the activities in question. This data was collected in 2005, during Wave 2.

Independent Variables

Lagged Dependent Variables

These measures reflect the composition of the respondent's social network at Wave 1 of the survey (2002). They were constructed identically to the measures at Wave 2.

Moral-Cultural Worldview

The NSYR provides two ways of measuring moral-cultural worldview. The first was derived from Hunter's (2000) operationalization of the expressivist-utilitarian-civic-biblical typology offered in *Habits of the Heart* (1985).³ This question asks, "If you were unsure of what was right or wrong in a particular situation, how would you decide what to do? Would you... (1. Do what would make you feel happy (expressive individualist [chosen by 26 percent]), (2. Do what would help you to get ahead (utilitarian individualist [11 percent]), (3. Follow the advice of a teacher, parent, or other adult you respect (community-centered [42 percent]), or (4. Do what you think God or scripture tells you is right (theistic [21 percent])?" A single item is not

ideal, of course, and the available responses do not cover all conceivable possibilities. It is nonetheless well-matched to the Bellah typology and was explicitly designed to measure this typology in youth samples. Hunter (2000) found that this question predicted other survey responses in a large number of domains with a high degree of discrimination. We therefore hypothesize that these differences will also lead to differences in social networks. Because drug use and “getting into trouble” are deviant acts at this age, we expect that the more traditional community and theistic worldviews (compared to the individualist ones) will lead to networks with fewer alters engaged in such behaviors. On the other hand, because both community and theistic moralities are more “collectivist” (Hitlin 2003; Oishi, Schimmack, Diener and Suh 1998) we should expect that they will be positively associated with acquiring or maintaining strong ties to regular community volunteers.

The second measure of moral worldview is an indicator of moral absolutism and relativism that closely resembles that used on the World Values Survey (Baker 2005). This question asks, “Some people say that morals are relative, that there are no definite rights and wrongs for everybody. Do you agree or disagree?” The respondent could agree (1) or disagree (0). Because research in this area shows that relativists are more likely to accept practices that have been traditionally frowned upon (such as abortion or premarital sex; see Baker 2005) and less likely to derive a sense of community from others (Ryle and Robinson 2006), we hypothesize that relativists will develop or maintain more network ties to controlled substance users and maintain fewer network ties to regular volunteers than will absolutists.⁴

Other Controls

In addition to the usual demographic controls, we include several other factors to attempt to rule out potential spurious associations. To exclude the possibility that adult network connections are driving the community worldview response, we control for closeness to parents and adult network closure around the respondent.⁵ To rule out the possibility that religious networks or institutions are driving the theistic response, we control for religious service attendance, religious tradition and the number of close friends who share the respondent’s religious beliefs. These socio-demographic and network controls should account for the meso- and micro-level context that is usually held to shape beliefs, networks and action in the sociology of culture (DiMaggio 1997; Lichterman 1996; Swidler 2001). We also control for relevant behavior at Wave 1 (frequency of using marijuana and getting drunk for drug using networks; cheating, cutting class or getting suspended for “trouble” networks; and volunteering for volunteer networks) to account for behavioral homophily and to isolate the effects of the moral worldviews as much as possible.

Models

Because the outcomes here are counts, we use Poisson regression to estimate changes in network composition. Because we are interested in determining the

effect of a durable state (moral worldview) on change in network composition between survey waves, we use a lagged dependent variable model rather than a fixed-effects specification (Halaby 2004). Though the longitudinal design ensures causal order, the models estimated here assume that the specified lag (two-and-a-half to three years) is an appropriate one for detecting the hypothesized causal relationships. Although this assumption may not be tenable in all cases, it seems plausible for investigating cultural effects on network change in this population.

In addition to estimating coefficients and test statistics, we compare effect sizes using percent changes in the estimated count. For dichotomous variables, we define effect size as the associated percentage change in estimated count. For the other variables, we use the percentage change associated with a one-SD change in the predictor (Long 1997). These values will allow comparing the relative net strength of each predictor.

Results

Do Cultural Worldviews Affect Social Network Composition?

Table 1 shows the results of regression models predicting Wave 2 network composition. The table is largely self-explanatory, but there are several results worth highlighting. Unsurprisingly, network composition in 2002 is a good predictor of network composition in 2005. We cannot know whether or not the same individuals are in the network, but there is a tendency for network characteristics to remain the same. We should not overstate the durability of such networks, however; the polychoric correlations (not shown in the table) between Wave 1 and Wave 2 network composition are .47 for controlled substance use, .29 for trouble and .33 for volunteering. Although there are clear continuities in network characteristics, there is plenty of variation between survey waves. The multivariate models also show that prior behavior (e.g., getting drunk, cheating, volunteering) is a good predictor of future network composition, indicating an expected tendency toward behavioral homophily (consistent with Pearson et al.'s [2006] results). People tend to develop ties with individuals who are similar to themselves in terms of habits and lifestyle (McPherson, Smith-Lovin and Cook 2001).

In addition to continuity and homophily, only *one other factor* was significant in all three models: moral worldview. Compared to the community-oriented reference category (“follow the advice of an adult”), young people choosing the expressivist response (“makes me happy”) are more likely to develop or maintain strong ties with heavy substance users and “troublemakers” and—along with utilitarian (“get ahead”) respondents—less likely to develop or maintain strong ties with regular volunteers. Again relative to the community-centered respondents, youth invoking a theistic moral worldview are less likely to develop or maintain friendships with controlled-substance users and “troublemakers.” It should be noted that these are not simply “religious” youth in the usual sense; religious attendance and conservative religious tradition play no independent role here. The

Table 1: Results of Poisson Regressions Predicting Wave 2 Network Composition

	Substance Using Strong Ties			"In Trouble" Strong Ties			Volunteering Strong Ties		
	β	z	Effect size	β	z	Effect size	β	z	Effect size
Prior Networks									
Using strong ties	.083***	(4.68)	11.1	—	—	—	—	—	—
In trouble strong ties	—	—	—	.132***	(4.86)	11.8	—	—	—
Volunteering strong ties	—	—	—	—	—	—	.106***	(6.04)	16.9
Moral Worldviews									
Expressivist	.129*	(2.21)	13.8	.203**	(2.88)	22.5	-.305***	(4.26)	-26.3
Utilitarian	.080	(1.05)	—	.077	(.84)	—	-.303*	(2.53)	-26.1
Theistic	-.211*	(2.41)	-19.0	-.226*	(2.43)	-20.2	.027	(.36)	—
Community (reference)	—	—	—	—	—	—	—	—	—
Moral relativist	.083	(1.66)	—	-.096	(1.63)	—	-.026	(.45)	—
Other Network Characteristics									
Same religion strong ties	-.010	(.74)	—	-.001	(.06)	—	.042*	(2.51)	8.9
Adult network closure	.004	(.16)	—	-.011	(.40)	—	.033	(1.16)	—
Dating	.094	(1.88)	—	.063	(1.05)	—	-.098	(1.64)	—
Number of strong ties	-.004	(.09)	—	.039	(.83)	—	-.078	(1.47)	—
Prior Behavior									
Frequency of drunkenness	.053*	(2.00)	5.1	—	—	—	—	—	—
Frequency of smoking pot	.130***	(4.05)	9.9	—	—	—	—	—	—
Frequency of cheating	—	—	—	.053*	(2.37)	11.8	—	—	—
Frequency of cutting class	—	—	—	.177***	(5.34)	7.1	—	—	—
Ever suspended	—	—	—	.211**	(3.02)	23.5	—	—	—
Frequency of volunteering	—	—	—	—	—	—	.087**	(3.21)	9.2
Family Characteristics									
Parent monitoring	-.079**	(3.07)	-7.5	-.038	(1.19)	—	.095**	(3.26)	9.8
Two-parent biological family	-.153**	(2.71)	-14.2	-.127	(1.77)	—	.113	(1.50)	—
Closeness to parents	-.030	(1.18)	—	.012	(.41)	—	.010	(.35)	—
Religious Participation									
Church attendance	.009	(.59)	—	-.022	(1.29)	—	.016	(1.00)	—
Conservative Protestant	-.075	(.80)	—	.090	(.78)	—	.074	(.58)	—

Black Protestant	.084	(.83)	-	-.222	(1.70)	-.011	(.08)
Mainline Protestant	-.099	(.60)		.070	(.43)	.059	(.32)
Catholic	-.038	(.42)		.008	(.07)	-.014	(.12)
Jewish	-.355*	(2.14)	-29.9	-.192	(.66)	.188	(1.14)
Mormon (LDS)	-.186	(.99)		-.019	(.07)	.114	(.65)
Other religion	-.100	(.66)		-.151	(.78)	.441*	(2.42)
Indeterminate religion	-.163	(1.09)		.024	(.14)	-.411	(1.71)
No religion (reference)	—			—		—	
Demographic and Other Characteristics							
Gender (female = 1)	-.183***	(3.58)	-16.7	-.292***	(4.64)	.012	(.21)
Age (W1)	.020	(1.01)		-.096***	(4.29)	-.004	(.17)
Black	-.188	(1.57)		.248*	(2.13)	-.148	(1.09)
Other race	-.151*	(2.12)	-14.0	.021	(.27)	.085	(1.13)
Southern residence	-.084	(1.67)		-.013	(.22)	-.119	(1.93)
GPA	-.057	(1.64)		-.115**	(2.86)	-.111*	(2.32)
Household income	.027*	(2.53)	9.1	.000	(.01)	.005	(.39)
Parent education	-.006	(.53)		-.028*	(2.10)	.038**	(2.59)
N	2,140			2,116		2,100	
X ²	588.75			474.49		394.62	

Notes: Effect sizes calculated as the percentage change in count associated with the presence (versus absence) of a dichotomous variable or a one-SD change in a non-dichotomous variable. Effect sizes are only displayed for significant variables. Non-dichotomous effect sizes are italicized. *p < .05 **p < .01 ***p < .001 (two-tailed)

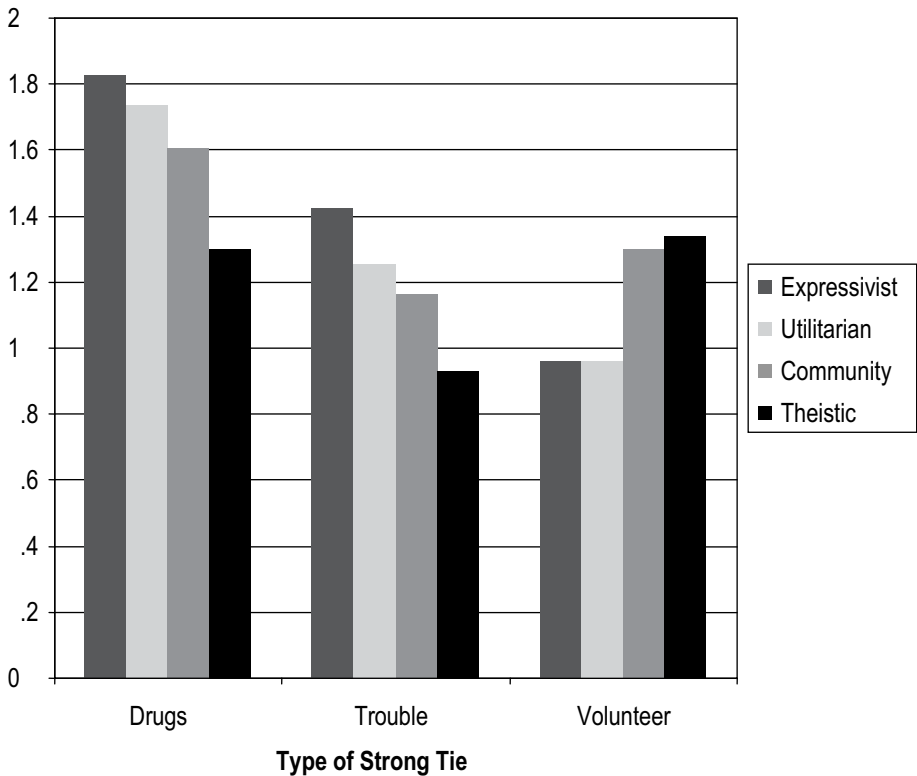
21 percent of teenagers who identify with the theistic worldview are not identical to the teens one might otherwise call “religious” based on behavioral measures. If some form of “social control” is at work here, it is a social control over and above adult connections, parent monitoring, religious tradition, networks of religious friends and church attendance. These youth seem to be those that have *internalized* schemes of perception and action consistent with theistic culture in the United States (Hunter 2000).

The “effect size” column for each model allows comparing the relative strength of the significant predictors. These comparisons seem surprising from a standard network approach, but are consistent with the arguments of Emirbayer and Goodwin (1994) and the findings of Lizardo (2006). Moral worldview has a larger (in some cases much larger) net effect on Wave 2 network composition than a change of one (or several) standard deviations in either Wave 1 network composition or previous behavior. In this population at least, worldview predicts changes in the content of social networks much better than race, sex, household income, parents’ education and a host of other factors. To better illustrate these results, Figure 1 shows predicted counts by worldview for Wave 2 network characteristics holding all other covariates at their means. Taken together, these results are certainly noteworthy—a single, relatively abstract moral question, asked nearly three years earlier, is more predictive of future friendship networks than either prior networks, behavioral homophily or demographic characteristics. Such a possibility is seldom, if ever, acknowledged in the literature on networks and culture (Erickson 1988; Wellman 1988).

Additional Analysis: Do Social Networks Affect Cultural Worldviews?

We have argued that cultural sociology and network theory need to move beyond deterministic and “conflationist” views of the culture-structure relationship to investigate empirically their dynamic relationship. Though the emphasis here is exploring the role that moral-cultural worldviews play in shaping network change, we also briefly consider the other side of the process: how networks influence changes in worldview. From Wave 1 to Wave 2, 54 percent of respondents changed their response to the moral worldview question, though only 33 percent made the substantively larger change (in either direction) between an individualist response and either of the non-individualist responses. With only one item, these figures undoubtedly reflect substantial measurement error, but we should be able to detect significant patterns nonetheless.

Table 2 shows the results of a multinomial logistic regression model predicting moral worldview at Wave 2 using all of the Wave 1 predictors used in Table 1. This model treats the community-centered option as the reference category at both waves. Because the statistical significance of a single coefficient is dependent on its difference from the reference category only, we present Wald X^2 tests for the joint significance of each predictor across all three equations. We do not take the time

Figure 1. Predicted Number of Strong Ties at Wave 2 by Worldview

here to interpret each coefficient, but note only those findings that are directly relevant to our theoretical concerns.

The best predictor of worldview at Wave 2 is worldview at Wave 1. Given our claim about the durability of cultural worldviews, this is perhaps not surprising.⁶ The strong tie variables are not significant predictors of these changes, again suggesting the relative robustness of cognitive structures to proximate peer influence. There is, however, evidence of some structural effects on worldview change. Adult network closure around the respondent is associated with a lower probability of either individualist response. A dense network of adult support seems to dispose teenagers to adopting or maintaining a less individualistic worldview. A similar pattern emerges for parental monitoring, with greater supervision negatively associated with choosing “what makes me happy.” Church attendance is also a good predictor of the theistic response. Overall we see a fair degree of stability in cultural worldviews with a limited, though readily interpretable, amount of structural influence over three years.

Discussion and Conclusion

Our main objective has been to go beyond cultural critiques of network theory and offer a simple dynamic model of cultural worldviews and network formation

Table 2: Wave 1 Predictors of Wave 2 Worldview

	Expressive	Utilitarian	Theistic	Wald
	b	b	b	Test
Prior Worldview				
Expressivist	1.106***	.876***	.025	***
Utilitarian	.534**	.848***	.205	**
Theistic	.553**	.733**	1.242***	***
Community (reference)				
Moral relativist	.225	-.120	-.391**	***
Prior Network Composition				
Using strong ties	-.009	-.081	.015	
In trouble strong ties	-.006	-.172	-.067	
Volunteering strong ties	.049	-.020	.082	
Prior Behavior				
Frequency of drunkenness	.015	.153	.072	
Frequency of smoking pot	.161	.392**	.031	*
Frequency of cheating	.117*	.015	.111*	*
Frequency of cutting class	.057	.160	.141	
Ever suspended	-.203	.254	-.243	
Frequency of volunteering	.045	-.025	-.121	
Other Network Characteristics				
Same religion strong ties	.018	-.040	.058	
Adult network closure	-.162**	-.168*	.061	**
Dating	.035	.034	-.150	
Number of strong ties	.177	.270*	-.028	
Family Characteristics				
Parent monitoring	-.153*	-.117	.122	**
Two-parent biological family	-.165	.029	-.047	
Closeness to parents	-.009	-.034	.024	
Religious Participation				
Church attendance	-.054	-.028	.142***	***
Conservative Protestant	-.307	.182	.536	
Black Protestant	-.255	-.356	-.239	
Mainline Protestant	.350	.411	.375	
Catholic	-.120	.122	-.440	
Jewish	-.177	-1.478	.671	
Mormon (LDS)	-.448	-.025	.682	
Other religion	.466	.654	1.065*	
Indeterminate religion	.488	1.164*	.632	
No Religion (reference)				
Demographic and Other Characteristics				
Gender (female = 1)	-.049	-.286	-.444**	**
Age (W1)	-.065	-.161*	-.001	
Black	-.411	.499	.247	
Other race	-.287	.395	.113	*
Southern residence	-.100	-.173	-.015	
GPA	-.028	.064	.197	
Household income	.000	-.027	-.016	
Parent education	-.019	.066	-.007	
Constant	-.260	-1.343	-2.442*	
N		2,098		
χ^2		650.31		

Note: "Community" response is W2 reference category. * $p < .05$ ** $p < .01$ *** $p < .001$ (two-tailed).

and change. To illustrate the value of this model, we investigated some of its key implications empirically. Consistent with a “dual process” model, our results strongly suggest that cultural beliefs play an independent causal role in the transformation of the local interactional environment.

These results have important implications for conceptualizing the dynamic interplay of culture and social structure. With few exceptions, contemporary network theory relies on the metaphor of networks as durable “conduits” or “pipes” through which ephemeral cultural contents are transmitted (Borgatti 2005). We have argued that this conduit model, while applicable in some circumstances, cannot be the basis of a general theory of networks and culture for two reasons: first, personal networks are hardly sturdy “structures” but are in a constant state of flux. Moreover, tastes, dispositions, and worldviews may be more durable and stable than network ties (Lizardo 2006). Second, because individuals are constantly dropping old ties and adding new ones, processes of *contact selection* and *relationship formation* are continually in progress. Current network theory does not have—and given its metatheoretical presuppositions, cannot provide—a coherent account of self-selection into relational environments (Cohen 1983; Schneider 1987). Nor can it account for how actors select among possible candidates for entry into their intimate circle of relationships. By contrast, we have shown that implicit cultural worldviews seem to play a crucial role in this contact selection process,⁷ and we have argued that embodied culture serves as a kind of relational *filter* that shapes the evolution of personal networks.⁸

It is important to be clear about our definition of culture. While we agree—following Geertz (1973)—that a lot of culture is public and symbolic, we do not view culture solely through the “text” metaphor. We see such an approach as abdicating the primary responsibility—and promise—of a cultural sociology, which is to understand how culture *shapes* action. Though our approach is consistent with assertions about the “autonomy” of culture, we do not understand this autonomy as “*autonomy from*” some other social domain (e.g., the economy, the polity) but rather as a species of *causal* autonomy. That is, we see culture as autonomous insofar as it figures as a causally relevant, “locally independent” factor that shapes patterns of conduct and affiliation.

We in no way deny the causal autonomy of the objective relational environment. In fact, we see the causal autonomy of objective structures as *implied* by the causal autonomy of culture. By structuring one’s exposure to systematic patterns of experience, objective environments have their own effects on dispositions, sometimes serving to cement them, but at other times—as when environments are suddenly transformed—leading to their transformation. It is certainly not our intention to endorse a new “culturalism” in which cultural patterns are the only efficacious element and social structure is an epiphenomenon. Instead, the main analytical payoff of distinguishing culture from social structure and taking each seriously is to enable investigations of the causal interplay of each domain *over*

time. By investigating the conditions in which culture is decisive for shaping social structure, our approach will necessarily also lead to a better understanding of those contexts within which “network effects” on culture are most likely to be observed.

The network paradigm has an “elective affinity” with a problematic definition of culture as primarily linguistic and discursive, composed of ad hoc rationalizations of the effects of social structure. We agree that post hoc rationalizations for action are ubiquitous, but we do not agree that culture is reducible to justifications (Boltanski and Thévenot 2006), “accounts” (Scott and Lyman 1968) or “vocabularies of motive” (Mills 1940). “Sense-making” discourse is the tip of the cultural iceberg; submerged in less-accessible regions is a realm of implicit culture encoded in non-linguistic form, stored in *procedural* and not *declarative* memory, with the potential to shape our perceptions and reactions to events, including a fairly mundane type of event—friendship selection.

More generally, empirical research in a wide variety of domains is needed to establish the conditions under which cultural matching processes tend to determine the fate of newly-formed relational connections and under which conditions this process is dampened and overridden by “structural” factors. This is entirely within the spirit of recent calls to go beyond the view of social networks as “conduits” and to focus on “*mechanisms of relation formation in conversational settings*.” (Mische 2003:259) Although most sociologists now agree both that “networks matter” and that “culture matters,” we think that it is time to analyze the cultural and cognitive processes related to the formation of social networks and vice versa. The ultimate goal of research in this area will be to develop powerful models of the dynamic interplay between culture, cognition and social structure. We hope this study has taken a useful step in that direction.

Notes

1. There are other contemporary theoretical traditions of “network theory.” Most influential have been recent attempts by Castells (1997) and Urry (2002) to cast the network metaphor as a broad way to characterize recent cultural and structural transformations in late-modern societies. While we recognize this tradition of theorizing as important, our main concern in this article is with the more empirically oriented line of research associated with “American” network analysis (see Freeman 2004 for an enlightening history).
2. White (1997:59-60) recognizes and welcomes this development, noting that “[T]he recent resurgence of ‘rational actor’ models is not inconsistent with my view since there is little that is specifically human about rational actors. *Without persons being presupposed as actors, attention necessarily shifts to confluences of observable processes-in-relations. Out of these emerge actors and locations of social action.*”
3. The wording of this question was slightly modified from Hunter’s original by Christian Smith, the principal investigator of the NSYR.
4. Despite Baker’s (2005) assertion that the Hunter question and the relativism question are interchangeable measures of absolutism, the two are only moderately associated ($\eta = .172$).

5. See the Appendix for descriptive statistics and definitions for all variables.
6. One reviewer pointed out that the between-wave change in moral worldview was “closer to completely random than completely stable.” This is true. If the wave 1 and wave 2 responses were completely random, we would expect 29.7% to give the same specific answer and 52.6% to give the same category of answer (individualist or non-individualist) at both waves. The actual consistency—46% and 66% respectively—is better than this, but only covers 24% and 32% of the distance between total randomness and total stability. This does not undermine our argument, however, for two reasons: first, there is an unknown quantity of real change in the data, which is to be expected with respondents of this age; second, measurement error—especially with a single subjective item—makes approaching perfect consistency unrealistic under any conditions.
7. This is of course not to deny that individuals sometime consciously seek out new friends and sometimes even consciously consider the pros and cons of certain relational partners. However, our main argument is that this type of friendship selection process is the *exception* and not the rule (DiMaggio 1993). Furthermore, the dual-process model predicts that even when individuals are processing information in the more traditional “rule-based” form (Slovic 1996), the biases induced by incorporated moral and cognitive dispositions will still lead to biases in decision-making (e.g., partial consideration of the evidence, differential weighting of attributes, etc.).
8. In this respect, “homophily” may in fact be the end result of this process of culturally mediated contact selection rather than being its cause (Lewis et al 2008).

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Appendix

Most of the control variables used in the analyses (see Table A1) are either self-explanatory or can be found in the documentation at youthandreligion.org. We note variables constructed especially for these analyses:

Parent closeness is the maximum value of the closeness variable reported by the respondent for either parent. The resulting value was standardized (in the full sample) to have mean = 0 and SD = 1.

Network closure was constructed from three variables that were asked of each respondent's social network. For each reported friend, the respondent was asked, which of these friends, (1. "(do/does) your [PARENT TYPE] not really know that well;" (2. "have parents who know YOU by name;" (3. "have parents who know your [PARENT TYPE] well enough to call (him/her/them) on the phone." These responses were combined (the first was reverse coded) to give a sense of how much adult networks were closed around the respondent. The resulting sum (0-15) was divided by 3 to make it comparable to the other network measures.

GPA was constructed from the variable "grades" (y91), which asked, "What kind of grades do you usually get in school?" The original responses were 10 ordinal categories ranging from "all As" to "mostly Fs" with an additional category for "mixed" (n = 159). The GPA scale used in these analyses was made into a scale with range 0 to 4 by rescaling the 10 point ordinal scale and setting the "mixed" responses to the sample mean.

Parent education is the highest level of education for either parent, measured on a 12-point ordinal scale.