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RICE UNIVERSITY

Influences of Contextual Information and Social Connectedness on Political Behavior

by

Martin Johnson

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

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ABSTRACT

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Should people listen to their neighbors’ political advice? Many models of social influence cast the people in an individual’s social environment as monitoring their opinions and enforcing conformity. However, it is not necessarily clear that these neighbors have an incentive to bear costs associated with the coercion of political deviants. I suggest social influence may be the result of individual decisions to pursue benefits associated with following the advice of actors who have provided useful information in the past. I use original public opinion data, survey-based experiments, and social experiments conducted in a behavioral research laboratory to examine the effects of an individual’s social interactions and observations of others, social connectedness resulting from these experiences, and their willingness to trust social sources of information.
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Classic and Contemporary Studies of Contextual Influence

This dissertation investigates recurring questions central to our understanding of how people in a democratic community make political decisions. Are the decisions a person makes about candidates, issues, and civic involvement her own independent choices, or the product of decisions made by others? Do people listen to their neighbors’ political advice? When are individuals influenced by their neighbors’ political views? While questions about the relative independence and interdependence of individual decision making have been explored for decades, even centuries, political scientists continue to debate the mechanisms that underlie social influence (Burbank 1998; Kenny 1998) and, consequently, what kinds of people can be influential.¹

I cast social influence as the result of a person’s decisions to pursue benefits associated with following the advice of people who have provided useful information in the past. A person’s successful use of low-cost information she obtains by consulting her neighbors should strengthen her relationships with those people. Repeated over time, these positive experiences can make her milicu a persuasive element in evaluating candidates and taking positions on political issues. An individual who finds her neighbors provide information that is not useful, or even information that leads her to make

¹ Although loved ones, friends and acquaintances, neighbors, and co-workers remain among the usual suspects.
unsatisfying choices, should have much weaker relationships with her neighbors and be more likely to seek useful information elsewhere.

Viewed from this perspective, social influence is largely a matter of the trust a person places in the people around her and the trustworthiness and value of the information these people provide. This is to the contrary of existing research that anticipates social influence as the result of the coercive behavior of friends and relations aimed at enforcing conformity, or the artifact of an individual's craving to belong to a particular community of contacts or kin. The alternative perspective I offer suggests political decisions are independently made, although under certain conditions, on the basis of advice or information provided by others.

By attempting to understand social influence as the result of an individual's willingness to trust information provided by the people who share their milieu, this investigation is able to integrate divergent perspectives on social influence with contemporary scholarship on the strength of an individuals "connection" to their social environment. Many scholars suggest social ties — social connectedness, repeated personal interaction, or embeddedness in a community — exemplify a form of trust that aids people in their efforts to overcome collective action problems (Knack 1992b; Ostrom 1998; Taylor and Singleton 1993) and encourages political participation and civic engagement (Oliver 2001; Putnam 2000; Skocpol 1999).

In this exploration of social influence, I develop a somewhat different understanding of social connectedness as an individual's psychological engagement in a particular social environment (see Oliver 2001). Viewed in this light, an individual's social connectedness gauges the depth of his attachment to those around him, rather than
the breadth of his social network, emphasized by some social thinkers (Granovetter 1973; Gladwell 1999), or the bonds of reciprocity emphasized by others (Coleman 1988; Putnam 2000). Social connectedness is the product of the iterative process of repeated positive social interactions an individual enjoys with others in a particular social setting, such as a neighborhood or internet chat room (Chayko 2001). I expect socially connected people to be more likely to follow the political advice of the people with whom they surround themselves, other things being equal.

This chapter reviews literature on social influence, contextual effects, and social connection. I examine the major methodological and theoretical controversies I intend to address in this dissertation. In addition to setting the stage for the theoretical discussion presented in the Chapter 2, this introduction outlines the investigation presented in three subsequent empirical chapters, and a final chapter that discusses potential avenues of future research.

**Classic and Contemporary Research on Social Influence**

Social influence is the process by which other people in an individual’s social surroundings affect their opinions, beliefs, preferences, and behaviors. Scholars have long thought an individual’s social context influences his attitudes, political beliefs, and behavior. For example, a number of studies find that the class and partisanship of people in an individual’s milieu influence their votes and opinions (Tingsten 1937; Finifter 1974; Huckfeldt 1979). After decades of research, scholars continue to take an interest in these contextual processes in part because social influence is difficult to convincingly demonstrate and clearly explain. Research in this area is plagued by theoretical and
methodological complaints, as well as conceptual disagreements over the location of influence process.

There is, however, agreement on the principal expectation that: "...the actions of individual citizens are to be understood as the intersection between individually defined circumstances and the circumstances of surrounding individuals" (Huckfeldt and Sprague, 1993:281). In this regard, actors are cast as interdependent and individual behavior is thought to be contingent upon the environment created by the accumulation of individuals and their traits. Underlying contextual explanations of individual behavior is an individual's interaction with others in her social environment, although this interaction can be either personal or impersonal. The product of these social interactions should be a correlation between individual attitudes or behavior, and aggregate group properties. For example, a voter ballots for a Republican candidate because significant proportions of his neighbors vote for the Grand Old Party.

In their study of the 1948 presidential election, researchers from the Bureau of Applied Social Research of Columbia University documented apparent patterns of social influence among voters living in Elmira, New York (Berelson, Lazarsfeld, and McPhee 1954). They find that opinions within groups of personal associates are quite homogenous. Further, the strength of an individual's opinions increase with the unity of opinions among his or her close associates. They also uncovered evidence of political persuasion within families. While documenting these trends, the Elmira researchers were largely agnostic about the causes of social influence: "Whatever the psychological mechanisms, the social and political consequence is much the same: the development of homogenous political preferences within small groups and along lines of close social ties
connecting them. During a campaign political preferences is ‘contagious’ over the range of personal contacts” (Berelson, Lazarsfeld, and McPhee 1954:122)

In other exemplary work, Huckfeldt and Sprague (1995) similarly find evidence of social influence within social networks and present a theoretical model that builds on research associated with the Columbia School (Katz and Lazarsfeld 1955; McPhee 1963). Huckfeldt and Sprague explain social influence as a function of individual’s rational search for low-cost information (Downs 1954), the structural interdependence of actors (Sprague 1982), and a social learning process premised on the extension of social rewards to conformers and social punishment for deviants (McPhee, Ferguson, and Smith 1963). While this is perhaps the most comprehensively argued and established theoretical discussion of social context effects, it has not settled many debates in the literature. Scholars are still wrestling with questions like whether influence flows primarily through social networks composed of family members and close friends or networks of acquaintances (Straits 1991; Kenny 1998), whether influential information is more likely obtained through personal contacts or impersonally discerned perceptions of the social environment (Burbank 1998), and whether contextual effects are of any consequence or in fact quite incidental to our understanding of politics (King 1996).

**Contextual Research and Its Critics**

Complementing persistent interest in social influence, other scholars have remained persistently skeptical about this research. These critiques range from theoretical concerns about the very existence and importance of contextual effects to apprehension about the methodological tools used to identify contextual processes. In particular, researchers investigating social context effects should be concerned that they
have actually identify the residual of sorting behaviors or other processes that give rise to “phantom” contextual effects (Achen and Shively 1995; Brown 1981; Huckfeldt and Sprague 1993) rather than the social influence hypothesized.

Research on social context requires the definition of a social environment – neighbors, a group of friends, or co-workers – and investigating whether the people in that milieu influence one another. This often involves the identification of a geographic area (Agnew 1996; Books and Prysby 1991; Huckfeldt and Sprague 1990) presumed to represent a meaningful social context in which people reside. Consequently, cross-level inference – bridging individuals with other aggregated individuals and the collectives they form – is a central element of contextual analysis. The problems associated with cross-level inferences were popularized by Robinson’s (1950) paper exposing the dangers of inferring individual behavior or psychological processes from aggregate data.2

Because cross-level inference involves exploring how the individual is influenced by an aggregate, it is exposed to its own “contextual fallacy” (Hauser 1970). When we find correlations between the attitudes of individuals and the attitudes of other people in relevant political geographies or political discussion networks, a regular modus operandi for contextual researchers (Kenny 1998), how certain can we be that anything remotely like “influence” drives the correlation? Even in political discussion networks like those analyzed by Berelson, Lazarsfeld, and McPhee (1954), it is difficult to ascertain whether the relative homogeneity of social groups is the product of social influence, a process of self-selection into networks made up of similar people, coincidence, or some combination of factors.

2 See Achen and Shively (1995) and King (1997) for thorough discussions of the ecological fallacy and approaches to it.
Of particular concern is that individuals either select themselves into social environments based on criteria that are correlated with the particular attitude or behavior a research might take an interest in explaining by means of contextual effects. Achen and Shively (1995) demonstrate the potential kind of geographic self-selection that can produce phantom, apparently contextual, with a simulation involving residential choices and support for school funding. In their simulation, individual are assumed not to influence each other. Instead, all members of the population have fixed opinions on school expenditures, which vary between individuals with their social class. These individuals migrate to neighborhoods in the city, based partly on the situation of schools in the neighborhood. As a result, like-minded people tend to live together. Those who favor school spending tend to move into the districts with higher taxes and better schools. A strong apparent contextual effect emerges, however. Individuals in districts made up of middle class residents are more likely to support school spending than people in higher income areas.

Researchers confronted with this or similar data might attribute the observed pattern to social influence. Brown explains the threat to the validity of a contextual inference well: “Adaptation to the current environment cannot logically occur if the migrant’s partisan attributes at the time of the move match the political complexion of the receiving milieu” (Brown 1981:447).

Do people actually sort themselves into social and residential settings in this manner? Based both on theory and evidence, there are strong reasons to think that they do. Tiebout (1956) presents a strong theoretical argument that people sort themselves into political geographies based on their desire for public services and the services these
political jurisdictions offer. Additionally, Mutz and Martin suggest people are more likely to encounter political viewpoints different from their own in their media consumption than in day-to-day social interactions due to demographic trends toward "residential balkanization" (2001:98). However, people appear not to use political partisanship as a criterion either in the selection of a place of residence (Brown 1981) or friends (Putnam 1966).

Focusing on geographically defined social settings, King (1996) assaults contextual influence on two fronts. He contends that context rarely matters relative to the individual characteristics known to affect political behavior (see also Farkas 1974; Hauser 1974). King further suggests that the aggregate effects explored in most contextual research actually masks dynamics, presumably individual-level dynamics, social scientists do not currently understand, although he does not speculate on these alternative processes. He proposes that a more appropriate practical goal for social researchers would be to show context does not matter, in part using the logic that that physicists do not write "write papers on a geographical theory of the electron, coloring detailed maps...by the number of electrons per province" (King 1996:161). Essentially he intimates that interesting social phenomena should not be specific to particular social settings.

Chwe (2000) makes a less extreme argument relevant to the matter of social influence. He suggests communication in social networks facilitate coordination without transmitting influence among agents. Instead of persuading people to act, social networks allow actors to reveal their preferences to each other. Individuals decide
whether to act\textsuperscript{3} based on what they learn. While he does not cast this as an assault on social influence, Chwe's idea presents a challenge. If social networks merely inform actors about the intentions of others and allow only for individuals to act in areas where they enjoy an \textit{a priori} agreement revealed only through the patterns of communication allowed by discussion networks, then no social influence occurs even if actions appear interdependent. Agreement on an issue or about taking an action in the Chwe model becomes a product either of individual characteristics or coincidence.

Confusion over existence of contextual effects and social influence is compounded by lack of consensus on whom we should expect to be influential and why. Most explanations of social influence at some level rely on the coercion of deviants, occasionally complemented by assumptions about the desire of people to feel a sense of belonging to primary groups of family and friends, thus activating a conformity motive. I will argue that a model of social influence need not rely either on political discussion networks to draw social deviants into line or on a "conformity motivation" to anticipate social influence. In fact, these purported mechanisms have helped create division in the literature on the sources of social influence.

\textit{Explaining Social Influence}

Assuming people influence one another at all, who is influential? Members of your family? Friends? Neighbors? The question is ultimately one of social location: Are individuals more likely to be swayed by people to whom they are related, people they know through work or from their neighborhood or their church? Can people be influenced by others with whom they have little personal contact at all?

\textsuperscript{3} Chwe (2000) focuses on decisions to participate in social protest and other collective efforts.
Early political science scholarship on social influence, particularly the Columbia University studies, gravitates toward primary groupings of family members, perhaps augmented with very close friends, as the locus of political influence. Recall, for example, that Berelson, Lazarsfeld, and McPhee (1954) focused on the homogeneity and apparent attitude convergence among family members. Extended by Katz and Lazarsfeld examination of personal influence (1955), this research advances a "social cohesion" model of influence. Intimacy, shared interests, respect, access, and importantly, trust helps draw people to agree with each other on political matters (Huckfeldt and Sprague 1991, Kenny 1998). In this vein, research continues to show that husbands and wives are quite influential on each other’s political choices and behavior (Strait 1990).

The social cohesion model has been supplemented by at least two perspectives. The first of these suggests an individual does not need to know a potential influencer very well to be influenced by him. The other suggests an individual does not need to know a potential influencer at all to be influenced by him.

The social cohesion model relies on the presence of strong ties (see Strait 1991) among political discussion partners for the communication of persuasive messages. Huckfeldt and Sprague (1991, 1995), among others (Weatherford 1982, Brown 1981) expect social influence to operate among individuals who are socially similar, in addition to social intimates. In fact these weak ties may actually be the source of more persuasive information due to the relative homogeneity of networks composed of individuals with strong social ties (Granovetter 1973; Mutz and Martin 2001). Consequently, we might observe stronger patterns on influence among people who do not know each other well simply because there tends to be less initial agreement among these individuals only
weakly tied to one another. In addition, people who are not closely related, but rather similar to each other "structurally" can be influential to one another because they recognize the commonality of their interests (Huckfeldt and Sprague 1991). Members of the same tax bracket, with similar levels of education and lifestyles driving similar cars may have similar policy concerns.

Still others expect little face-to-face interaction is required for influence, with the strength of the biases in the information environment an individual experiences (Orbell 1970; Zaller 1992) and the attributes of the sources of political information (Mutz 1998) primarily influencing its persuasiveness. Burbank (1998) associates Huckfeldt and Sprague with a "personal contact hypothesis" he rejects, finding support for his "perceptual hypothesis" that individuals are influenced when they perceive strong support for one candidate or another in their neighborhood, regardless of whether or not they actually spoke to any other people or maintained a social network of political discussants.

I join Kenny in speculating "that elemental components of each framework are true and that some sort of conceptual reconciliation is possible" (Kenny 1998:242). Specifically, these controversies exist because scholars have not fully recognized social influence as a special case of political persuasion. They have tended to treat contextual effects as a separate phenomenon, replete with its own explanations. Consequently, they have been interested in understanding why a son might be influenced by his mother, a worker by the fellow he has lunch with everyday, or the suburbanite by her neighbors. This has led scholars to focus on coercion, conformity, and bias as sources of social influence.
In spite of their generally agnostic discussion of social influence, the early work of Columbia school researchers hinted that the homogeneity they observed was due in some form to “social control” (Berelson, Lazarsfeld and McPhee 1954:141). Consequently, social influence is cast in terms of support and control “...the private political conscience of the citizen rests upon a near-by group norm represented by the people around him. Without their full support it is not easy to hold strong political attitudes” (Berelson, Lazarsfeld and McPhee 1954:98). These researchers betray their neutrality on causal processes, anticipating an aggressive intervention into the political decision making of an individual by his family and close associates to maintain attitude agreement within the social network.

Building from this work, McPhee developed a campaign simulator model with Ferguson and Smith (1963) to explore influence processes in an electoral cycle. In their initial presentation, these scholars are also neutral about the exercise of power inside social interactions. In the model, a voter receives a stimulus from a campaign and forms an impression. She communicates the impression to another person who communicates the impression he has formed. If the parties agree, then they proceed with their impressions, but if they disagree, both return to the original stimulus and craft an impression for another comparison with others. The “voter makes up his own mind and social influences merely assist him to determine which of his samplings or impressions of reality is stable in the face of cross-checks” (McPhee, Smith, and Ferguson 1963: 82).

However in their exposition and narrative application of this model, McPhee and his co-authors expose the coercive nature of the process of reinforcement they think generates political agreement, associating agreement with rewards and disagreement with
punishment. Their example comes from hypothetical family political discussions. Inside these relationships, they expect the son who agrees with his parents to be treated like a "good boy," but if a child holds different political views, "the parent or influencer has more deviant instances to correct" (McPhee, Ferguson, and Smith 1963:97).

Three decades later, the McPhee model is remembered as anticipating deviants are drawn into line through coercion. Huckfeldt and Sprague (1995) develop a model of social influence with this McPhee process as one of its main three components. First, individuals are rational in their pursuit of low-cost political information, along the lines discussed by Downs (1957). Consequently, when seeking political information, people look first to existing social relationships with neighbor, co-workers, people who join them in worship, etc. Second, building on Sprague's micro-level theory of political interdependence (1982), they expect people to lack control over their opportunity structure for social contacts. This implies, among other things, that individuals will ultimately be exposed to viewpoints different from their own, laying the groundwork for influence. Finally, they who recast the "social learning" model McPhee develops and emphasize the efforts of influencers to compel agreement from the people with whom they discuss politics - rewarding agreement and punishing deviance.

(1) An individual receives a piece of information from the larger (biased) environment. (2) He then forms a response based upon his own predisposition. (3) He shares that response with others. (4) The others then reward or punish that response with agreement or disagreement. (5) If disagreement occurs, he samples his (biased) information context broadly conceived, reconsiders his opinion, and shares it once again. (6) And so it goes (Huckfeldt and Sprague 1995:19).

Huckfeldt and Sprague anticipate routine and regular social contacts will be most influential because these actors, violently, have more "striking power" (1995:19)

The expectation that social contacts coerce and cajole individuals to toe the line politically can be found elsewhere. Knack expects an individual's social surroundings
compel them to vote due to the threat of “external” sanction from friends, relatives, and other associates” (1992a:1). Deviants are thought to eventually succumb to the political pressures exerted by their neighbors – unless they take measures to inform themselves and buttress their political outlook – because “a constant stream of disapproval will eventually wear down most individuals” (Krassa 1990:321).

Models of social influence also frequently assume individuals are driven to conform to the expectations of others to gain acceptance and friendship (Brock and Durlauf 2000; Katz and Lazarsfeld 1955). This allows for the possibility of a softer form of coercion. Rather than being drawn into line by external agents inflicting a punishment or providing a reward, the influenced individual might change his opinions in the direction of the people with whom he interacts because not doing so makes him feel lonely or odd. This is consistent with the observation of social psychologists who find that the most fundamental social motivation is the need to feel a sense of belonging (Rudich and Vallacher 1999; Baumeister and Leary 1995). For example, Harvey (2001) anticipates the strength of partisan attitudes increases in states with publicly available party registration information because individuals in these states desire social and economic acceptance from other partisans and thus behave in a more explicitly partisan manner.

While belonging is likely to be an important psychological motivation for many people, it seems unlikely that politics is a sufficiently salient basis either for conforming or drawing friends into line politically, given the generally low level interest in politics in the American public (Delli Carpini and Keeter 1993). People tend not to make residential choices or sort themselves into friendship groups solely on the basis of
partisanship (Brown 1981; Putnam 1966) or other explicitly political views (Mutz and Martin 2001). The observed political homogeneity of individuals in social network is largely the product of other similarities such as racial and socio-economic characteristics. Consequently, it is not clear why a conformity motive would drive partisan political influence among friends. A Republican could easily feel at home in a social group mostly made up of Democrats if her inclusion in the group was based on other social similarities and politics wasn’t the central topic of conversation at all meetings.

Additionally, the low salience of politics to most people suggests there may not be much value in enforcing conformity either. While coercion models suggest that groups enforce conformity to preserve traditions and achieve group goals (Katz and Lazarsfeld 1955), the preservation of political traditions may not be of sufficient value to motivate members’ costly effort to maintain cohesion. Even in economic groups, where explicit financial motives could compel efforts to maintain cohesion, the benefits of conformity might not overwhelm the costs of contribution or efforts to maintain the group (Olson 1965).

Again, I suspect students of contextual effects and social influence have diverged on their understandings of who can be influential while converging on coercive behavior and conformity motives to explain these phenomena because they have tended to ask their questions narrowly: Why would a person be influenced by neighbor? Why would a person be influenced by their parents? However, by asking the question more broadly, we can begin to reconcile disputes over the sources of social influence: Why would an individual be persuaded by someone else?
Asking the question in this manner, I treat contextual effects and social influence as a special case of political persuasion. By thinking about the conditions under which the sender of a message is able to persuade the receiver of a message, I integrate expectations that influence travels through personal relationships involving face-to-face communication, the strong ties of intimate relationships, the weak ties among people who are structurally similar, as well as impersonal communications.

**Social Influence as Persuasion**

To address social influence as a case of persuasion, I draw on theoretical models of communication and information use. In order to be persuaded, an individual must receive information, accept that information, and draw on it to render a judgment relevant to the information received (Zaller 1992). An individual’s patterns of political interaction and discussion, may tell us more about an individual’s exposure to political information than their inclination to store and use information received in social situations. But opinion change requires all three – reception, acceptance and use of new information.

The exchange of information requires the presence of an agent who sends information, whom I will call the sender, and a person who hears the message, a receiver. Attributes of both the sender and receiver of information affect the receiver’s willingness to listen and use the information they receive. In his important expansion of Converse’s (1964) examination of political persuasion, Zaller (1992) highlights the importance of the receiver’s political expertise. Individuals with little political interest, and thus little political expertise or knowledge, is not likely to be persuaded by information from senders because he simply does not hear the message. People with a great deal of political expertise hear the sender’s message but are sufficiently confident in their
existing judgment that they are less likely to be persuaded. Individuals with moderate interest in politics are likely both to hear the message and have a sufficiently weak opinion on matters that they are persuadable.

Lupia and his co-authors speak more directly to the question of a sender’s attributes. They identify two conditions jointly necessary for persuasion: the receiver of a signal believes its sender shares her interests and perceives the sender as knowledgeable. The satisfaction of these conditions along with the receiver’s belief that she can benefit from the sender’s knowledge is sufficient for persuasion⁴ (Druckman and Lupia 1997:3). In their expansion of this theoretical model, Lupia and McCubbins (1998) explicitly identify trustworthiness as a pre-condition for influence. Persuasion occurs when a receiver is uncertain about what action to take and views the sender as both knowledgeable and trustworthy. They focus on common interests, institutional constraints and other external forces as sources of trust (Lupia and McCubbins 1998:55). However, given the absence of formal rules governing interaction and information exchange in the social environments that motivate this investigation, I focus on how individuals come to trust each other independent of institutional constraints.⁵

Trust involves choosing an action “in spite of the possibility of being disappointed by the action of another” (Luhmann 1988:97). In the case of social influence, trust means acting on the basis of socially obtained information without knowing what outcomes will obtain from doing so. Trust is generally based on the predictability of others — either

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⁴ Extending the model, Druckman and Lupia (1997) suggest a third-party observer not directly involved in the transmission of information can also learn from its exchange, provided they have an impression of the interests and quality of the sender and perceives that he can benefit from the information.

⁵ In fact, some would argue that institutionally driven trust is not trust at all, but rather confidence in a system of rules (Seligman 1998).
their actions or their competencies – but involves an element of risk due to a lack of an underlying sense of familiarity or a system of sanctions (Seligman 1998). An individual might know their neighbor generally follows politics and has provided good political advice in the past, but the possibility exists that she could recommend a poor candidate in the present election.

While not emphasizing explicit claims about trust, classic and contemporary literature on social influence suggest trusted people are influential. Katz and Lazarsfeld (1954) identify social influence among blood relations, in part due to the similarity of their interests, and thus mutual trust, as a function of their kinship (Huckfeldt and Sprague 1991; Kenny 1998). In a similar vein, Huckfeldt and Sprague focus on "structural similarity" (1993) as a basis for perceived corresponding interests. A common theme implied by research on social influence among family members, co-workers, or neighbors is that trusted people can be persuasive. But mutual interests provide only one basis for trusting others. In fact, given the presence of institutional safeguards, Lupia and McCubbins discount perceived common interest as entirely unnecessary for persuasion.

There are many sources of trust.6 Knowing that you share interests with the intended trustee is one basis for trust (Kramer 1999). Institutional rules, incentive structures, and long time horizons are other potential sources for trust or confidence in another person (Hardin 1993). Shared experiences can provide an additional source of trust among individuals (Kramer 1999, Hardin 1996). Along these lines, social influence may be facilitated by the past performance of interactions between a person and those who share his social contexts: "trust between two or more interdependent actors thickens

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6 This discussion focuses on endogenous trust. For entirely different perspectives viewing trust as moral and exogenous see Fukuyama 1995 and Uslaner 2002.
or thins as a function of their cumulative interaction" (Kramer 1999:575). By focusing on the importance of trust, this understanding of social influence draws the phenomenon closer to the growing literature on the salutary effects of social ties, connections, and "capital."

**Social Influence and Social Connectedness**

Many contemporary political scientists suggest that ties to social networks influence not just how a person is involved in politics – as anticipated by students of social influence and contextual processes – but *whether* a person involves himself in civic life at all (Putnam 2000; Skocpol 1999). They frequently suggest that people who are socially connected are more likely to become civically engaged and participate in politics by, for example, voting, because social relationships can reduce the costs associated with voting (Cassell and Hill 1981; Highton 2000; Pomper and Sernekos 1989; Teixeira 1992), or alternatively can raise the costs of not voting (Knack 1992b). However, this literature has largely avoided incorporating insights generated by students of other contextual and social processes (see Knack and Kropf 1998 for an exception).

A number of scholars use the term "social connectedness" to describe an individual’s exposure to their community and interpersonal interactions (Knack 1992a, 1992b; Miller 1992; Teixeira 1992; Timpone 1998), but this literature has not been particularly clear about what social connectedness means or how to approach its study. Perhaps the most detailed discussion of the construct (Timpone 1998) defines social connectedness as "interpersonal, community, and general ties," and "the level of an individual’s integration into his or her social milieu and the fullness of the resulting associative networks." Timpone loosely relates "communal forces," "interpersonal
interactions" and social connectedness (1998: 57), footnoting Huckfeldt and Sprague’s research on social networks as related to the study of social ties. However, he still avoids explaining how the strength of social ties is related to the transmission of information and influence.

I define social connectedness as a psychological engagement in a community and expect socially connected people will be more exposed to influence by the milieu to which they are socially connected. My view is that social connectedness grows with repeated social interaction and that successful social interactions provide the basis for an individual to repeatedly expose herself to a social environment. These positive experiences repeated over time and number of interactions “teach” an individual she can trust the information provided by her environment and put it to good use, raising the probability that it will be influential in her political decision making, other things equal.

In on-going collaborative work (Johnson, Shively and Stein 2002), my co-authors and I have explored a strategy for assessing social connectedness independent of self-reported behavior. We measure the mental accessibility of an individual’s judgments about a specific social context – their neighborhood. This measurement technique is informed by literature on information-processing (Hastie 1986; Higgins and King 1981) and theories of attitude accessibility (Basilli 2000; Fazio 1995; Huckfeldt et al. 1998a). A desirable property both of this understanding social connectedness and the measure using the accessibility of an individual’s judgments about his neighborhood is that it more also reduces our exposure to the threat of misidentifying “phantom” contextual effects as processes of social influence.
A Look Ahead

In the next chapter, I elaborate on the theoretical explanation I offer for social influence, how it builds on the research discussed here, and its differences. In particular, I abandon assumptions about coercive behavior of message senders. Similarly, I avoid assumptions about the sender's motivations to conform in pursuit of friendship and acceptance, given the potential inconsequentiality of their political opinions to members of their social network. By casting social influence in terms of more general understandings of political persuasion, I develop a leaner and more internally consistent understanding of contextual effects which centers on the strength of an individual's association with her social milieu and willingness to trust others in it.

In a series of empirical chapters, I will then begin testing hypotheses about this alternative understanding of social connectedness and social influence. First, I will ask who becomes socially connected? I find that the strength of an individual's social connection to their neighbors depends in part on their opportunity structure for social interaction, informational needs, and interest in developing informational short-cuts. Traditional explanations for social connectedness, like an individual's membership in social groups, are less effective in strengthening the form of social connectedness I am interested in here. This chapter will also take up the relationship between social ties and voting. The expectation I develop, consistent with research by Knack and Kropf (1998), is that social connectedness should encourage an individual to vote when the people to whom she is socially connected support voting as a useful form of political expression. I find that independent of traditional explanations of participation at the ballot box, and political knowledge, people who are socially connected to neighborhoods with strong
turnout are more likely to vote than people who are socially connected to neighborhoods with low rates of historic turnout.

In the fourth chapter of this dissertation, I extend this model of social influence to other forms of political opinion formation and attitude choice. Again controlling for political knowledge, I find that people who are socially connected to areas whose voters have a stronger historical allegiance to Democratic candidates were more likely to ballot for Vice President Al Gore during the 2000 presidential election independent of their prior partisan identification. Similarly, socially connected people are more likely to respond to social cues about political issues, other things equal. I examine attitudes about the fairness of capital punishment and school voucher programs using an experiment embedded in a public opinion poll.

The third empirical chapter focuses on elements of the causal story I present here that are unobservable using opinion survey data. I construct an experimental investigation of the willingness of members of social groups to trust each other. The treatments of the experiment are intended to manipulate the quality of the experience experimental subjects have while working with other subjects assigned to a group of four people. I find that people who have positive experiences in these social groups are more likely to act in a trusting manner than people who have negative experiences working with others in a milieu.

Finally, I will explore implications of the dissertation, avenues of potential future research and the extension of this framework to other policy relevant behaviors and choices. In particular, the evidence presented here suggests that, contrary to King’s suspicion (1996) that context does not and should not matter, it does. Social
surroundings affect political decision making because these environments can provide useful information people can employ to their ends. Similarly, this research suggests that social context provides more than an arena in which people can inform each other of their thoughts and intentions independent of influence processes, as anticipated by Chwe’s models of common knowledge (2000, 2001). Individuals are, to varying degrees, ingrained in their communities in ways that affect their willingness to respond to the advice of neighbors.

This dissertation begins a research program rather than a culmination of my work in graduate school. The investigation will certainly raise a number of interesting questions, probably more than it addresses directly. Consequently, it provides a number of potentially interesting directions for future research. In particular, I am interested in understanding how social influence may affect the educational choices parents make for their children and the health care choices individuals make for themselves. I am also interested in applying this understanding of contextual effects to existing literatures on race and ethnicity. In particular, I am interested in examining how social connectedness affects how people develop judgments about members of other races given various levels of social and racial diversity. I also intend to examine how social difference, particularly language usage, impedes or facilitated the formation of social ties.

Readers may also be interested in the appendix treating my preparation and use of response time data as a measure of attitude accessibility. This measure is an important element in the chapters that use survey data and the accessibility measure of social connectedness. The appendix theoretically unpacks response time data and uses a statistical model to identify a component of an individual’s response time on a question
that represents the accessibility of judgments on that issue in a manner superior to raw response time scores. The appendix also more fully explores the literature on attitude accessibility than this introduction has, in the interest of a clearer exposition of the issues at hand. Before investigating these statistical and methodological details, and presenting the empirical work of the dissertation, I will develop an argument for an understanding social influence in terms of the trust individuals place in the usefulness of information obtained in social networks and the strength of their social connection to a milieu.
TWO

An Individualistic Perspective on Social Influence

How does an individual’s social context influence his political decisions? This question nags at students of contextual effects. While these researchers, through a variety of methodological innovations, have correlated the views of people and others who share their physical and social surroundings – neighborhoods, workplaces, networks of conversation partners, and the like – the specific causal mechanisms driving contextual influence are often under-specified (Kinder 1998; Manski 2001). This lack of theoretical specificity is particularly problematic given concerns raised by problems like self-selection into social settings, as well as the skepticism critics have expressed about the ultimate importance of contextual influences versus individual characteristics (Farkas 1974; King 1996).

I propose a theoretical understanding of social influence rooted in the judgments of individuals. This is a rationalist perspective on contextual influence premised on the ideas that individuals are goal-oriented, seek to lower their information costs when making political decisions, and have incentives to actively evaluate the low-cost information they obtain from their surroundings and thus more carefully choose what sources to repeatedly listen to than current understandings of social influence anticipate. Importantly, I view social influence is a special case of political persuasion. Persuasion is not likely unless the receiver of a piece of political information has insufficient
information to confidently make a decision in the absence of additional information and she has judged the sender of that information worthy of her trust (Lupia and McCubbins 1998). The argument developed below suggests that a when making a decision, an individual will be influenced by others in her social surroundings when:

1.) she has insufficient relevant information and thus needs additional information to confidently render a judgment;

2.) she views her social context as a supplier of useful information; and

3.) the social context provides an unambiguous recommendation for action.

I expect socially connected people to be more likely to view their social surroundings and the people in these as a reliable source of information. Therefore, a central hypothesis of this individual-oriented understanding of contextual effects is that people who are socially connected to their milieu will be more susceptible to the influence of information obtained from these surroundings than people who do not enjoy strong social ties to the people around them, other things equal. On its face this may sound obvious, even circular, but the contention that social connections facilitate social influence is neither manifest nor adequately treated either in contemporary literature on context effects or the growing body of literature on social ties. This perspective stands in contrast to work on social influence that posits the phenomenon is the product of individual or collective drives for conformity.

Classics in the political science literature, and much contemporary work, cast social influence as a process driven, in part, by coercion (Huckfeldt and Sprague 1993). McPhee’s (1963) “social learning” model Huckfeldt and Sprague apply to contextual effects emphasizes the efforts of potentially influential actors to compel agreement from
the people with whom they discuss politics – rewarding discussants with similar opinions to their own and punishing deviants. Discussants with differing views are thought to eventually succumb to the majority view among their neighbors because the disapproval they receive for being different “will eventually wear down most individuals” (Krassa 1990:321).

Individuals may feel strong motivations to belong (Rudich and Vallacher 1999), but it seems unlikely that politics is a salient basis either for conforming or for acting to compel agreement from friends. Evidence suggests people rarely move to an area explicitly to satisfy partisan goals (Brown 1981) and tend to make friendship decisions independent of partisanship (Putnam 1966). Thus it is not clear why a conformity motive would drive partisan political influence among friends. Additionally, the low salience of politics to most people suggests there may not be much value in enforcing conformity either. While coercion models suggest that groups enforce conformity to preserve traditions and achieve group goals (Katz and Lazarsfeld 1955), the preservation of political traditions may not be of sufficient value to motivate members’ costly effort to maintain cohesion.

The present investigation more explicitly incorporates the role individual choice plays in the process of social influence. Whether an individual uses the information he or she receives from the people who share their neighborhoods, workplaces, religious communities, and other social settings should largely be determined by judgments they make about these people and the information they provide. A particularly relevant judgment a person can make about those in his surroundings is whether or not he trusts and values their advice. For example, suppose that collective opinion among people in a
social environment supports a particular side in an issue or some other public matter, an individual should be swayed by cue when he has observed satisfying results after siding with the majority of the people in this milieu in the past. When individuals perceive that the recommendation they receive from the people around them will help them make a better decision, we should observe a pattern of contextual influence that looks a lot like conforming.

The approach I develop here makes fewer assumptions about fewer agents. Consequently, it presents a leaner and more parsimonious understanding of the process that drives social influence. Below, I elaborate on what I mean by “social context” and my points of departure with earlier studies of social influence, particularly those based on a Columbia School-style model of coercive reinforcement. Then I apply a general understanding of political persuasion to the special case of social or contextual influence and develop hypotheses to be explored and tested in the remainder of this investigation.

*Between the Personal and Impersonal: Social Contexts*

The study of social influence rests on cross-level theorizing and inference. In order even to ask questions such as whether and how people are influenced by their social surroundings, we must first contemplate and define an aggregate or collective that could be of some influence on an individual. A person’s social context is made up of other people who surround them in a particular physical or social space. It makes little sense to discuss social context without referring to a specific arena that hosts social interaction or mutual observation. I think in terms of the social contexts provided by a residential
neighborhood, a workplace, a religious congregation, or even an Internet chat-room.¹ While there are a number of interesting questions worth could asking about work environments (Mutz and Mondak 2000), ecclesiastical settings (Wald, Owen, and Hill 1990), or the new media of electronic social interaction (Strachan and Hildreth 2001), the present investigation will focus on the contexts provided by residential neighborhoods.²

This investigation is premised in part on the idea that a social context provides individuals with information: signals or cues that advise particular courses of action and may aid in decision. But how does their social context present information to an individual? The persons who share an individual’s neighborhood could send signals through a variety of mechanisms: direct face-to-face conversation, non-verbal personal interaction, as well as alternative methods such as political yard signs and bumper stickers (Huckfeldt and Sprague 1993). Thus an individual’s social context is simultaneously made up of personal and impersonal communication. It is not necessarily the same kind of intimate network that Lazarsfeld and Katz (1955) study or the broad collectives – represented by public opinion poll results or unknown authorities – engaged in Mutz’s impersonal influence (1998). Social contexts exist close to individuals in the places where they live, and are likely to be constructed of intimate relationships, many more weak ties (Granovetter 1973), and even more observations and perceptions of

¹ Complicating this, contexts are nested within other contexts. A neighborhood, for example, may represent a small portion of “the south side of town,” itself a social context meaningful to its residents. This section of town is part of the larger community, a county (Huckfeldt and Sprague 1990), and so forth. This geographic nesting is particularly important in the literature on racial context effects (Carsey 1992, Oliver and Mendelberg 2001, Voss and Miller 2001). For the sake of simplicity, the current research focuses on the initial and immediate social context represented by an individual’s neighborhood and leaves the more complex problem of multiple contexts to future research.

² This research will also explore a generic social context abstracted in a laboratory setting for an experimental investigation of repeated social interaction.
neighbors blocks away (Burbank 1997).

Additionally, I contend that the social context provided by a neighborhood is meaningful to people. The term "social context" is a bit of jargon, but other names for social contexts — "the neighborhood," "the office," "your synagogue," and the like — simultaneously represent a physical location and its inhabitants in a manner people easily recognize. While this is potentially an empirical question, I will offer a small bit of evidence that the concept of social context makes intuitive sense to the subjects of our study. After several thousand survey interviews testing, piloting, and implementing survey questions for this study, never has an interviewer complained that a respondent stumbled when asked about his or her "neighborhood" or the people "at work." These collectives may represent different sizes and levels of intimacy across respondents, but the people I observed have not disputed the idea that they are surrounded by social contexts.

Finally, because people understand that these collectives surround them and that these collectives provide information, individuals are generally able to characterize their social context. People meaningfully say they live in a "Democratic box" or a "Republican enclave": They live in an area they think of as peopled by individuals with predominately Democratic and Republican party identification, respectively. In a similar investigation of perceptions about political environments, Burbank (1998) also finds people willing to talk about their neighborhood as a social environment and its political properties. What remains is developing an understanding of whether these signals are influential and why.
Individuals and Discussants: Agents and Enforcers, or Agents and Signalers?

In developing a more individualistic account of social influence, I use as a point of departure the work of Huckfeldt and Sprague (1995), who provide perhaps the best theoretical understanding to date of the processes that underlie contextual effects. Their model is based on three premises. First, they assume citizens are procedurally rational in their search for information (Downs 1957). In order to minimize the cost of learning about political and public matters, individuals turn to a variety of social bases of information – neighbors, co-workers, and others. Second, they view humans as interdependent with the ability to exercise some discretion in their choice of political discussants. However, they enjoy only limited control over the opportunities for discussion partners their social environments provide (Sprague 1982). The result is that people are exposed to political discussants with opinions on political matters which potentially differ from their own and the views they are exposed to in more homogeneous groups of intimate friends and family members (Berelson, Lazarsfeld, and McPhee 1954). Finally, modifying McPhee (1963), they assume a social learning process in which political discussants reward or punish individuals on the basis of their conforming or deviant political views.

While I also assume potentially influenced agents as cognitive misers, my understanding of social influence differs from this model substantially on the nature of social interdependence and attitudinal reinforcement. I view agents as having far more control over their political discussions than Huckfeldt and Sprague anticipate. They by no means cast individuals as helpless pawns of social environments, but I expect individuals to be somewhat more aggressive in evaluating the information provided by
political discussants and consequently in evaluating those political discussants. Individuals have a choice over what kinds of information to consume. This is less a matter of selective exposure than it is a matter of choice over what information to actually retain and use. If a social environment chronically provides information that is of little value, an individual may not consume and use the information, even if they are essentially forced into situations that require them to be exposed to this useless information.

I also avoid assumptions about the coercive behavior of an individual’s political discussants which may be inconsistent with the assumption that individuals are procedurally rational and seek to lower their information costs. The process of enforcing conformity requires an individual’s political discussion partners to invest their own costly effort in investigating the opinions of potential deviants. It requires the influential discussant to undertake even costlier measures to express their displeasure or at least their own difference from the influenced discussion partner in order to influence them. This understanding of a coercive reinforcement process is problematic for two main reasons. It may be inconsistent with other assumptions of the Huckfeldt and Sprague model and talk past a variety of possible impersonal social influences by requiring a face-to-face schedule of reinforcement.

Huckfeldt and Sprague explicitly assume that agents are procedurally rational and thus try to lower the costs associated with informing themselves about the issues and candidates placed before them in making political decisions. Is it rational for a deviant’s political discussant to undertake the costly and unpleasant task of punishing them? Group attitudinal conformity is essentially a public good in the view of Katz and
Lazarsfeld (1955), useful for preserving tradition and achieving group goals. Consequently, given the assumption that agents are rational, we should expect this public good to be underprovided for (Olson 1965) by the discussants charged with enforcing conformity. To enforce conformity, a discussant must inform himself about the deviant’s views and then do something to express displeasure. Further, it is not necessarily clear that conformity is sufficiently valuable to merit anyone using his costly effort to generate community agreement. Even presuming the most convenient scenarios for this reinforcement process, such as a group of several like-minded people in conversation with a single deviant, no actor necessarily has an incentive to provide enforcement services. Expressing displeasure with the deviant may expose an enforcer to the risk of alienating a friend or being seen as petulant and unpleasant.3 Finally, it not clear that a rational agent in pursuit of a sense of belonging would return to a social relationships with a political discussant that punished him for his political views.

The reinforcement model also requires face-to-face interaction. It is presumed
that, at least in its narrative application (McPhee, Ferguson, and Smith 1963), enforcement occurs when the discussant expresses approval or disapproval – reward or punishment – to the influenced deviant. By implying the necessity of personal interaction to enforce conformity, these models seem to talk past a range of potentially influential social signaling that require no face-to-face conversation, such as political yard signs and trees festooned with yellow ribbons. There must be another way of understanding the

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3 Mentioned in Chapter 1, other understandings of personal influence associated with the Columbia research (Katz and Lazarsfeld 1955) assume that people may conform on their own with less coercion as a function of their need to belong to a group. This also presents problems of internal consistency hinted at here. If a person is motivated by a sense of belonging to avoid conflict by toeing the line, why would a discussant risk their own sense of belonging by expressing a view – supporting either or any side of a given issue – in the first place?
social influence that is both internally consistent and that speaks to a wider range of situations of influence.

Instead of placing the costs of monitoring on actors external to the potentially influenced agent, I return this task to the information user. External sources provide information that actors can easily and inexpensively obtain. I follow Lupia and McCubbins (1997) and assume that an individual has incentives to avoid costly mistakes associated with using bad information and thus, in addition to seeking political information from the social context, they actively evaluate the information they receive based on its value in making good decisions. When an individual takes into account information from a particular source and makes a decision she finds profitable, beneficial or otherwise satisfying, she should be more likely to attend to that source in the future. Thus over time she may come to favor particular cue-givers, “rewarding” discussants from a particular social environment by favoring them as an information source. On the other hand, individuals who associate less satisfying outcomes with the information they receive in a particular milieu are expected to “punish” these potential discussants by avoiding or ignoring them.

I avoid more heroic assumptions about conformity drives and costly external enforcement by assuming that individuals may require low cost information and that they want to make better than worse decisions and therefore take care in using information provided by social sources. This view recognizes potentially influenced individuals as more active evaluators of social information, given their incentives to avoid costly errors. This view is consistent with more general models of influence processes (Druckman and Lupia 1997, Zaller 1992, Converse 1964).
The effect of jettisoning the "social learning" model is that I shift the explanation for contextual influence away from the context and toward the individual. Further, my understanding of social influence does not require individuals to engage in face-to-face interaction in order to influence one another. Thus, it covers information exchanged both in personal social interaction as well as in the indirect consumption of socially provided information such as yard signs and more general perceptions of community-level opinion. In the next section, I apply such a general model of political persuasion to the case of social influence in order to better understand the conditions under which a decision-maker might be influenced by the people who share their social context.

**Information, Persuasion, and Social Influence**

Contextual effects represent a special case of persuasion. The general expectation is that information provided by an individual's social surroundings leads them to do something. For example, if a person (I) is influenced by her social context (SC) and resides in a predominantly Republican neighborhood, she will be more likely to vote Republican (R) regardless of her political predisposition: SC persuades I to move in the direction of the R position, and become a stronger Republican if already espousing a Republican identification, and a leaner toward Republican candidates if she were originally identifying with the Democratic candidates or an independent. Casting the social influence process in the more general terms, I draw on theoretical models of information use to better understand conditions under which individuals might choose to be influenced by their social surroundings.

An important insight from contemporary literature on communication and persuasion is that an individual's proximity to an information provider (or even their
receipt of information) is not a sufficient condition for persuasion. To be persuaded, an individual must receive a piece of information, accept that information, and draw upon it to render a relevant judgment (Zaller 1992). With statistical models that correlate aggregate and individual attributes, we can at best discover whether an individual is proximate to like-minded others, but not whether he accepts and uses any information obtained from them. Further, research designs that trace an individual’s patterns of social interaction and discussion also tell us more about his exposure to political information in social situations than his inclination to store and use the information received. Persuasion is not likely unless the receiver actually hears or observes the sender’s signal, but this is not a sufficient condition.

Broadly stated, an individual’s willingness to use information from a source hinges on her beliefs about herself and the source. With the communication process taken as implicit (the receiver is exposed to and hears the sender), Lupia and McCubbins (1998) suggest that the receiver can be influenced by the sender when two conditions are satisfied. The receiver must believe that she can benefit from the sender’s knowledge⁴ (see also Druckman and Lupia 1997:3) and must trust the sender. The receiver’s belief that she can benefit from the sender’s advice entails a judgment that she will make a better decision by following the sender’s advice than by ignoring it. If she does not feel that she knows enough about A and B to choose one over the other, she will turn to the sender for advice.

⁴ Extending the model, Druckman and Lupia (1997) suggest a third-party observer not directly involved in the transmission of information can also learn from its exchange, provided they have an impression of the interests and quality of the sender and perceives that he can benefit from the information. Consequently, this understanding of persuasion applied to contextual influence allows us to incorporate personal direct communication and signaling, as well as impersonal and indirect forms of communication such as the yard signs and yellow ribbons mentioned above.
Lupia and McCubbins (1998) are interested as well in the conditions under which a sender of information will be judged trustworthy. They focus on institutional constraints and external forces that provide incentives for senders to be trustworthy (1998:55). However, given the absence of formal rules governing interaction and information exchange in the social environments, I focus on how trust develops independent of structures. Common interests are another possible source of trust among people. Previously, I made the point that the social cohesion model of social influence (Katz and Lazarsfeld 1954; Kenny 1998) and the structural similarity model (Huckfeldt and Sprague 1993) recognize the importance of perceived common interests as a source of influence. But common interests provide only one potential basis for trusting others (Kramer 1999). In fact, given the presence of institutional safeguards, Lupia and McCubbins discount the necessity of perceived common interest for persuasion. An additional source of trust can be found in the shared experiences of individuals and the people who potentially influence them.6

Following other students of trust and trustworthiness (e.g., Hardin 1996), I expect a receiver of information will trust its sender as a function of their own experience with that cue sender – the pattern of outcomes the receiver associates with their use of information obtained from a particular source. This is essentially a “Bayesian” learning model of the formation of trust in sources of information. An individual has an impression of the trustworthiness of a source based on the outcomes he associates with the use of information the last time he consulted the sender, and outcomes associated

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5 For example, there are no penalties for misleading your neighbors – such as telling them you support Ralph Nader for President when you actually plan to vote for Al Gore.
with the time before that, back to his first use of information. These may not all be specifically recalled, but summed into an implicit or explicit judgment about the trustworthiness of the source and the usefulness of the information it provides.

By adopting this perspective that trust is in part learned and rational, I expect an individual’s beliefs about the people in her social environment – the senders of socially provided information – will be shaped by the history of outcomes she associates with these sources. Other things equal, when an individual perceives her environment provides information that can be used to produce satisfying outcomes – such as helping her select a better candidate – she will be more likely to accept and use the information they provide. She conforms, not to fit in, but to achieve these desirable outcomes. Consequently, the perspective I am developing views the social influence process as a rational choice individuals may make. In order to claim the benefits of favored candidates, better policy outcomes, and the like, individuals may decide to lean on the low cost information provided by sources who consistently help him make better decisions. When an individual observes negative outcomes associated with the information gleaned from or the experience of interacting with her neighbors, she will be less likely to act in accordance with this cue and may use her contextual signals as a marker for what not to do.

My expectation then is that individuals should behave as if they judge their social contexts as either providing good or bad information. This is very different from the expectation of coercion models of social influence which anticipate people within those

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6 This discussion focuses on endogenous trust. For entirely different perspectives viewing trust as moral and exogenous see Fukuyama (1995) and Uslaner (2002).
contexts judge influenced individuals. Rather than casting these contexts as providing rewards to conformists and punishments for deviants, I essentially am suggesting that individuals "reward" a social context that continually provides good information by revisiting it repeatedly and attending to its social cue. The potentially influenced individual "punishes" contexts that provide information that is either not useful or actually detrimental to good decision making by ignoring it over time.

**Political Expertise and Informational Needs**

The focus of this dissertation is political decision-making: Choices made among issue positions and candidates, and how social interaction might influence these. Consequently, an individual's experience with thinking and reasoning about politics should modify their willingness to understand and use information from external sources, including their social surroundings. For example, Zaller (1992) argues and shows that individuals with a great deal of experience thinking about politics – and thus a great store of knowledge about politics – are less likely to fall under the influence of messages drawn from exposure to mass communications. Orbell (1970) has applied a similar logic to contextual influence.

An individual's belief in the benefit of socially provided information, and thus the satisfaction of Lupia and Druckman's sufficiency condition for persuasion, should be modified by the political experience or knowledge enjoyed by the receiver of a social cue. If voters already feel they have sufficient knowledge from other sources, they should be less likely to pursue or attend to information from additional sources, including their

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7 While desirable outcomes, the benefits associated with conforming to a particular social signal, could include personal "collateral benefits" of solidarity (Chong 2000), so should small but direct gains from using the advice information of sources that habitually point her in the right direction.
social context. These very experienced voters are not necessarily skeptical or less trusting of the advice of their neighbors, but given their confidence in their own judgments, simply less likely to consult others.

Extending Zaller’s logic further, I do not expect individuals with relatively low levels of political expertise to ably integrate cues provided by their social surroundings into their meager thoughts about politics. Presumably they trust their neighbors’ political advice, but in spite of this are likely to selectively ignore even the low-cost information it provides with regard to politics, because of their lack of interest in politics. Politically uninterested people lack the motivation to consume and incorporate new information like social cues into their judgments (Rahn, Aldrich, and Borgida 1994), unless forced.

My expectation is that even where individuals appear to trust their friends and neighbors and the information they provide about politics, the influence of the information received in the trusting relationships will be further modified by political expertise. Additionally, the mediating influence of political expertise should be curbed, as anticipated by Converse, Orbell, and Zaller, with less social influence observed among persons with the most and least political expertise and considerably more social influence observed among individuals with moderate experience with political thinking. This, of course, being the case provided that the context has historically provided useful information and thus earned the trust of the potentially influenced person.

In all, this is consistent with the assumption that individuals are Downsian in their collection and use of political information (Huckfeldt and Sprague 1995). Relatively uninterested people collect little or no information, even from the lowest-cost sources imaginable, because this information is of little or no use to them. At the highest levels of
political expertise, individuals do not waste their time with extra information from additional sources, again, even extremely low-cost information. It should be people in the middle range of political expertise who, if they trust the information provided, should get some use out of the advice provided by those around them.

*Putting It Together: Information, Interaction, & Connectedness*

I have now introduced most of the elements of this individualist perspective on social influence. At the core of this perspective is the idea that individuals are procedurally rational in their collection and use of information about politics. Rational voters try to lower their information costs by turning to readily available sources of information such as neighborhood friends, co-workers, and other people with whom they come into contact. These individuals evaluate sources of information based on the outcomes they associate with their use of the information these sources provide. So if they find that choosing in the direction their neighbors recommend tends to produce satisfying outcomes, they will be more likely over time to consult these neighbors and use their advice because they learn to trust their neighbors advice. Another way to describe what happens as they turn to these neighbors time and again for information and advice, however, is that these individuals also develop a stronger social connectedness to a particular milieu.

Social connectedness is an individual's psychological engagement with a particular social context. It is the result of the observation of positive outcomes associated with repeated social interaction or observation of a social context. In my view, an individual becomes socially connected to a specific milieu, such as workplace, neighborhood, and the list of possible arenas discussed thus far. In thinking about social
connectedness, I emphasize depth over breadth. For example, imagine an independent and self-assured person with a fat Rolodex and packed Palm Pilot who does not listen to anybody’s advice on many topics. This person enjoys a large social network and a great number of social ties, but has no meaningful “connections,” a lack of engagement with this legion of contacts.

A socially connected person engages in the iterative process of interaction and information seeking. For example if a person is socially connected to their neighborhood, they should be more likely to consider the mix of yard signs, talk over the back fence about the news of the day, and attend the neighborhood picnic. As she becomes increasingly socially connected to this milieu, she would learn to trust the information it provides about politics, and other matters. observing positive outcomes based on her exposure and use of the information provided by the collective aggregate of neighbors whom she observes and with whom she interacts.

Who becomes socially connected? Some degree of social interaction or at least observation is required for the reception of social signals. Reinforcement through frequent and repeated social interaction – positive and useful experiences – is required for social connections to develop. But an individual’s opportunities for social interaction – their length of residence in a community, type of residence, how far they have to leave their neighborhood to travel to work, etc. – should also affect the frequency of neighborhood social interactions and the development of social connectedness.

That said, individuals experiencing positive interactions should be more likely to seek out additional opportunities to interact in the pleasing milieu. This repetition of specific interactions should reinforce an individual’s mental representations of those
social situations, psychologically connecting an individual with positive experiences to his or her neighborhood. Information conveyed within these successful associations should affect behavior in a manner that draws the behavior of the receiver closer toward conformity with the signal, without an rewarding and punish context, but rather individual benefits or costs obtained via the aid of the signal provided by the context. When social interactions prove less fruitful, enjoyable or satisfying, individuals should be less likely to seek them and more likely to avoid them, choosing some other milieu to reward with their attendance or avoiding others generally.

Individuals with a great deal of political expertise may be less socially connected than those with less political self-confidence. Evidence also suggests that politically knowledgeable people choose to attend more closely to current political news than people with little political experience (Price and Zaller 1993), and thus may not need additional information from their social surroundings. If political “experts” do not need the information provided by their social contexts to make informed decisions, they should seek it less frequently, and may even eliminate an entire basis of interacting with or observing those around them.

*Hypotheses*

This investigation builds upon research on contextual influence and political persuasion, drawing on an individualistic explanation for why an individual might be swayed by people around him. It is premised on the following ideas:

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8 To the extent that the opportunity structure forces these unappealing associations, I would anticipate they would have the opposite affect on behavior. A person could be psychologically engaged in his community but bristle to it, using signals it provides as an indicator of what not to do or how not to think about particular issues. I could call this form of psychological engagement “social estrangement,” but this investigation will focus on positive relationships, following Granovetter (1973).
• Individuals rationally select low-cost information from social sources;

• Individuals faced with incentives to avoid costly mistakes in political decision making actively evaluate information and sources based on outcomes associated with its use and thus assume a high level of control over what information to consume and which discussion partners are worthy of their trust; and

• Finally, people with the most and least political experience are less likely those with moderate political experience to seek and use this low-cost information.

The theoretical perspective on social influence in this chapter forms the basis of specific expectations to be explored in this investigation. Many of these expectations are unanticipated and untreated in existing models of contextual effects and social influence. In the final section of this chapter I will outline my specific expectations and contrast them with expectations by models based on coercion as the engine of social influence and models that focus solely on the information environment individuals occupy. Figure 2.1 provides stylized flow charts for each of these models.

On the left side of Figure 2.1 is a coercion model of social influence I associate with Katz and Lazarsfeld (1955), McPhee. Ferguson and Smith (1963), and Huckfeldt and Sprague (1995). An aggregate of neighbors produces a social context and a contextual cue about, for example, whom to vote for in an upcoming election. In this social context, an individual discusses politics with his neighbors and is exposed to the cue. He is compelled to behave in a manner consistent with the cue both because it comes from people who share his interests and because they monitor his attitudes and behavior, sanctioning him if he fails to move in their direction. This model anticipates social influence among people who regularly interact with a network of neighbors.
Figure 2.1. Social Influence Processes

Coercion Model

Neighbors

Context

Interaction (face-to-face)

Individual, Attitudes & Behavior

monitoring and sanctioning

Information Model

Neighbors

Context

Expertise

Individual, Attitudes & Behavior

Persuasion Model

Neighbors

Context

Interaction

Connection

Expertise

Individual, Attitudes & Behavior

Outcomes observed

monitoring and sanctioning
In the information-oriented model (Burbank 1997; Orbell 1970; Zaller 1992), an individual receives a contextual cue from a biased information environment and shifts in the direction of the cue because of the overwhelming bias. That is, unless she either fails to receive the cue because she is not sufficiently interested in politics to attend to the information or she is so confident in her own judgments about politics that she does not incorporate the information. This kind of model suggests moderately interested, informed, and politically aware people will be influenced by their surroundings, regardless of their patterns of social interaction with neighbors.

The persuasion model I offer integrates these perspectives. Consequently it speaks to a wider array of scenarios for social influence – the personal and impersonal – as well as research on the effects of social ties. An individual receives a contextual cue either by interacting directly with neighbors or indirectly by reading the yard signs and other political signals. The influence of this social cue is mediated both by the receiver’s willingness to attend to and use the information and her need for political information. Each individual has a level of social connection to that environment, reflecting her willingness to attend to the social cue, essentially a collection of judgments about the trustworthiness and value of the information that context provides. This social connectedness should mediate the influence of the contextual information on an individual’s political judgments. However the influence of the social signal is further modified by her political expertise. Joining proponents of information-only models, I anticipate socially connected people will be influenced when they both need information and receive it. Moderately informed, socially connected voters – people who both attend
to information from their social environment and need to further inform themselves on their political options — should be influenced by their surroundings.

This social connection should develop with the individual’s recognition of past successes. The flow chart’s dashed lines depict my expectations for the development of social connectedness. With each use of information from a social context, a receiver observes an outcome and evaluates both the information she receives and its sender in light of these outcomes. In a sense then, she monitors and sanctions her neighbors based on these outcomes.

In the chapters that follow, I will further develop the points raised here, starting with question: Who is socially connected to their neighborhood social context? In part, this will involve developing a new indicator of social connectedness that taps the concept of psychological engagement more directly than any other contemporary survey based measure of social connectedness reliant on self-reported behavior. Both coercion and information-only models of social influence are silent on how the use of contextual influence affects social ties. In chapter 3, I explore the relationship between social interaction and social connectedness. I expect people with regular social interactions and increased opportunities to interact with their neighbors to be more socially connected to their neighborhoods than people with fewer opportunities and infrequent meetings with the people who share their residential spaces. My expectations can be articulated in the form of testable hypotheses.

H₁: Individuals who regularly interact with their neighbors will be more socially connected to their neighborhood than those who interact less frequently with neighbors.
Secondly, I expect social connections develop and strengthen as a function of the informational needs of individuals. People who are less informed about politics may develop stronger ties because they want to keep up-to-date on current events and what other people think are important. Consequently, political expertise or knowledge should not only mediate the influence of the information people receive from their neighbors, but it should also affect the development of their willingness to use information from their social context in the first place, with politically knowledgeable people less likely to seek out neighborly interaction than less informed people.

**H2:** Individuals with high levels of political expertise will be less likely to develop social connectedness with their neighbors than less experienced political thinkers.

In addition to examining the development of social connections in Chapter 3, I will also scrutinize the relationship between these social ties and political participation. Most existing scholarship on social connectedness anticipates a positive relationship between the strength a person’s social ties and his willingness to participate in collective decision making (Klofstad 2001; Miller 1992; Pomper and Sernekos 1981; Timpone 1998). This research casts voting as a collective action problem and strong social connections encouraging a person to help provide the good of collective decision making (Knack 1992b) or suggests social ties lower the costs of participation (Teixeira 1992).

I anticipate a different relationship between social connectedness and electoral participation. Socially connected people, holding their political expertise and other things constant, should be more likely to vote *if* their neighbors vote (Knack and Kropf 1998). A person’s social context provides a cue about voting – participation is something that neighbors recommend as useful or hold in low esteem. Socially connected people
with a great deal of political expertise should be less subject to the contextual cue. Similarly, socially connected individuals with low levels of political expertise should be less likely to listen to the political advice of neighbors, given their lack of interest in political things, in spite of their tendency to attend to social cues in general.

\[ H_3: \] Socially connected people are more likely than people with weak social ties to be influenced by the information provided by their social context.

But, as discussed above, social influence even among socially connected people should be further mediated by political expertise:

\[ H_4: \] Individuals with political expertise and knowledge should be less susceptible than unknowledgeable voters to the influence of information provided by their social context, given their confidence in their own decisions.

\[ H_5 \] Individuals with less political expertise and knowledge should be less likely to consume and use contextual information about politics, given their inattentiveness to it.

In chapter 4, I will test hypotheses similar to \( H_3, H_4, \) and \( H_5 \), but applied to the question of social influence on issue opinions and candidate choice.

Finally, I will explore the relationship between social interaction and trust in Chapter 5. The causal story I have introduced anticipates that individuals who have positive experiences interacting with their neighbors and using the information they exchange with these neighbors will learn to trust these neighbors and the information they provide. I will test these expectations using a behavioral experiment:

\[ H_6: \] Individuals who enjoy positive, benefit-producing social interaction will be more likely to continue interacting with others in their social milieu.

\[ H_7: \] Individuals who enjoy positive, benefit-producing social interaction will be more likely to trust the people with whom they interact in a social context.

Trust forms an important basis for strengthened social ties and drives social influence.
The strengthening of trust due to information usage and repeated social interaction is entirely unanticipated by the information-only model, which expects social influence solely as a matter of person's residence within a biased information environment. It is also not anticipated in these terms by a coercion model of social influence. That said, a Columbia-style model is not silent on the matter of trust. Specifically, these models usually expect social influence among people who trust each other on the basis of shared interests, either as a function of their kinship or structural similarity. The persuasion model I discuss expands on this existing scholarship by expecting trust to form due to a set of repeated and shared experiences as well.

In chapter 3, I begin this exploration of social connectedness, trust, and social influence by examining the correlates of an individual's psychological engagement in his neighborhood. The chapter introduces an alternative way to conceptualize and measure social connectedness that avoids both the confusions associated with equating the construct with other forms of self-reported civically minded behavior or demographics. In addition to auditing and exploring this construct, I also apply the persuasion model of social influence as discussed to individual decisions to participate in the 2000 presidential election, using original public opinion data and validated voting behavior.
THREE

A Rational-Psychological Connection to Others

The extended meaning of connect goes far beyond the original ‘to conjoin, link, fasten together.’ In the lexicon of reaching out, it has become the vogue term for ‘to establish rapport’ and beyond that, ‘to feel a surge of mutual understanding’…”

William Safire

Social connectedness has received much attention in the study of voting and other political behavior, although the construct has a number of different names. Like the related concept of social capital, social connectedness is credited with increasing political participation, fostering civic engagement, and impelling individual contribution to collective efforts. In fact, because politically minded researchers almost interchangeably use terms such as social connectedness, ties, attachments, integration, and embeddedness, it is not clear that any of these are sufficiently distinct from another to merit the use of so many labels. Each roughly connotes the idea that an actor can in some sense be joined to the people around him and beyond that, with deference to Safire, enjoy a special rapport with them. For example, Pomper and Sernekos (1991) offer interactions among neighbors gathered at precinct polling places and over the exchange of baked goods as exemplifying thick social connections, but call the phenomenon community integration.

For this research, I adopt a single term for the sense of conjoined rapport an individual may develop with others in his or her physical surroundings: social connectedness. In this chapter, I elaborate on this facet of interpersonal relations and
how it is different from social capital. In addition, I propose an alternative to existing strategies for measuring social connectedness and explore how people become socially connected by identifying a set of specific hypotheses and testing them with survey data collected in suburban neighborhoods of four states. Finally, I explore the relationship between social connectedness and political participation.

**Social Connectedness in Contemporary Voting Studies**

More often than not, scholars who study the effects of social connectedness leave the term under-defined, if at all (for notable exceptions, see Timpone 1998 and Uhlaner 1989). Otherwise thoughtful and rigorous scholars treat the construct as if it needs no introduction. They assume readers need only an intuitive understanding of social connectedness. Teixeira uses the broad definition of “interpersonal, community, and general social ties” (1992:36). The title of an American National Election Study pilot report specifically refers to social connectedness but neither defines nor mentions the construct in its text (Knack 1992a). And Miller (1992) notes that scholars have a variety of understandings of social ties, but neglects to reconcile these with a specific definition. It appears that social connectedness is a “metaphorical concept” used when “we intuit that...relationship is sufficiently strong to warrant the metaphor” (Chayko 1998:13).

In spite of this tendency toward vague definitions, a stable set of indicators have been used to tap social connectedness, including age, marital status, friendships with neighbors, activities with neighbors, church attendance, and residential mobility, among others (Miller 1992; Teixeira 1992; Pomper and Sernekos 1991). Researchers expect older, married, church-going people with friends and a tendency to live in one place for a long period of time to be more socially connected.
Scholars are also clear and consistent about how they expect social connectedness to affect political behavior: "voter participation, beyond all other factors will be higher among persons who are more fully integrated into their communities" (Pomper and Sernekos 1991). Knack (1992b) also credits social connectedness with helping communities enforce pro-voting norms. And Teixeira indicates that "interpersonal, community, and general social ties provide a substantial proportion of an individual's motivation to vote" (1992:36). Others attribute a more modest influence on turnout to social ties, but nonetheless credit these connections with boosting the likelihood of an individual participating (Highton 2000; Miller 1992).

By taking this functional approach, scholars often generate conclusions about their demographic indicators of social connectedness rather than the construct itself. For example, Teixeira's review of literature blaming decreased political participation on declining social connectedness suggests that "little can be done to reverse the decline in turnout (1992:155, n.13)," because "people cannot (or should not) be made to get older, get married, attend church, or stay in the same place" (1992:155). While Teixeira concludes these analyses overestimate the role social connectedness plays in encouraging turnout, he also draws conclusions about indicators rather than the ties they represent.

Conversely, Timpone provides a theoretical discussion of social connectedness aimed at clarifying the use of demographic variables research designs, criticizing the use of demographic traits to gauge social connectedness. Timpone's approach to measuring social connectedness is rooted in Johannes Athusius' associative view of the social and political world: a set of concentric and overlapping interpersonal networks defined by social and geographic relations with the individual at its core. Family relations and
informal associations are linked and nested within ever-larger units including a community, province, and ultimately the commonwealth.

To define social connectedness, Timpone ultimately follows Teixeira’s “interpersonal, community, and general social ties” (1998:59), but he makes the significant advance of measuring social connectedness independent of demographic traits. His social connectedness scale relies on four questions included on the 1992 American National Election Study: whether respondents indicate they know any neighbors, engage in volunteer work, join community organizations, and give money to a church or charity. Does this measure get at the idea that individuals are “tied” to others? Timpone tries to measure sociability as it is expressed in civic activity and association membership, but only one of the four items explicitly refers to other people. The other activities – volunteer work, joining community organizations, and donating funds – could be completed in solitude, simply by writing and mailing a check in some instances.

Further, Timpone’s finding that people who say they vote also claim to perform other civic activities is not surprising given the potential for patterns of social desirability bias in responses to the questions asked. Social desirability bias leads about 12 percent of survey respondents to overreport their political participation (Deufel and Kedar 2000, Belli et al. 2001). Each of Timpone’s social connectedness scale items present a respondent the opportunity to represent his or her actions as other-regarding. Further research might find the same people are influenced by social desirability effects to overreport their community involvement and political participation. The measure may actually operationalize civicly minded ambition more than attachments to other people. Is there a way to think about social connectedness and its measurement that both emends
research reliant on demographic traits (thus confounding causes and indicators) and avoids social desirability and the endogeneity represented by using forms of civic and political engagement to predict other forms of civic and political participation?

**Shifting the Discussion: Social Connectedness as a Psychological Construct**

Studying social ties, Oliver refers to an individual’s “psychological engagement in community life” (2000:362). He associates engagement in a community with interest in politics and participation. This conceptual shift bridges physical metaphors for social relations with a discussion of the psychological manifestations of social bonds. Given the absence of actual physical “ties” between and among actors, identifying social relationships with psychological characteristics may provide much needed leverage over the question of how social connectedness influence political decisions.

I build on this to define social connectedness as an individual’s psychological engagement with a particular social context – their neighborhood, workplace, religious congregation, etc. An important form of social connectedness could be location-specific. In this research, I focus on an individual’s social connectedness to her neighborhood. Thinking about the construct in these terms relates this work to a literature in sociology focused on community attachment: “whether a person feels a sense of community” (Kasarda and Janowitz 1974:334). This different term “community attachment” (Sampson 1988) is representative of a concept quite similar to the conjoined rapport scholars interested in social connectedness study: a set of relationships that join individuals to each other and to collectives of other actors such as clubs, groups, or neighborhoods. A socially connected person regularly thinks about his surroundings and the people who share these environs.
Not long ago the *Houston Chronicle* newspaper printed a feature story on Chris Oxley and a group of men he sees almost every day. Oxley lives in the Museum District neighborhood in Houston. Each morning, he and about a dozen friends gather at a Starbucks coffee shop on the corner of Montrose and Hawthorne to get, as Oxley describes it, “some people contact before I have to go in an deal with the phones all day” (Kever 2001). Mostly in their early-30s, some of these coffee house regulars met in college and have “reconnected.” Others fell into the conversation each morning by being in the right place at the right time. On Saturdays and Sundays, some of these coffee talkers say they find themselves lingering at the coffee shop all day. I suspect Oxley enjoys a socially connectedness to these folks, as I am using the term. Because most of these people also live in the Museum District area. I also suspect Oxley is socially connected to his neighborhood.

The important aspect of these interactions is their near-daily occurrence. As I mentioned in the previous chapter, I emphasize depth over breadth in thinking about social connectedness, but the level of intimacy among these regular discussion partners is not particularly important. Depth in my view is more a matter of frequency of contact and consideration than emotional intensity. In fact, the members of Oxley’s group do not necessarily even think of each other as friends: “really, it’s people you have nothing in common with, other than drinking coffee with them,” one of the regulars at Starbucks says. These interactions and the people who engage in them mutually refresh, rejoin, and reconsider these ties daily. But why?

I propose these social connections exist because the actors who maintain them find the relationships beneficial. The decision to go to the Montrose Starbucks each
morning is a rational choice each individual makes. In a variety of ways, each profits from these interactions deriving benefit from discussions about politics, movies, and news they have over coffee each day. Some members even characterize it as a "support group. We lean on each other when we need to."

An individual becomes socially connected as the result of an iterative process of interacting with others or making observations about them in a particular social environment. The incentive to engage in this lies at least in part with the low-cost information the social context provides about news, business, politics, or even movies. For example, when an individual sees or learns something in this environment – a job lead, stock tip, information about a candidate – that helps him make a beneficial decision, the individual should be more likely to pursue further interaction with that source.

**Social Connectedness and Social Capital**

This story of Oxley and his pals has all of the trappings of a story about social capital. Putnam himself associates social capital with the forms of conjoined-rapport discussed here. He says "social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them" and that six waves of interest in concept "call attention to the ways in which our lives are made more productive by social ties" (Putnam 2000:19). In particular, he identifies a subclass of social capital – "bonding" social capital that "constitutes a kind of sociological superglue" (Putnam 2000:23). To draw even more similarities between social connectedness and social capital, existing literature on social connectedness intimates that ties encourage political participation by providing avenues for enforcing norms and obligations (Knack 1992a, 1992b) and by encouraging associations (Timpone 1998,

So how is social connectedness discussed here different from social capital? Referring to Coleman’s discussion, social capital is “a variety of entities with two elements in common: They all consist of some aspect of social structures, and they facilitate certain action of actors” (Coleman 1988:98). He identifies three major forms of social capital: that which is rooted in creating obligations, another which facilitates the flow of information, and a third revolving around the enforcement of social norms. By providing such a broad template, Coleman set the stage in social capital research for broad definitions (Portes 1998), a proliferation of indicators which are not clearly related (Putnam 2001), and a variety of causal interpretations (Levi 1996). I intend to focus on a singular construct – social connectedness as an individual’s psychological engagement with a specific milieu, the result of positive social interaction – rather than a variety of conceptual entities (e.g., Coleman’s two elements and three major forms of social capital).

Second, my discussion of social connectedness presumes nothing about specific actions. Researchers interested in social capital frequently gauge its presence by observing the normatively pleasing outcomes they associate with social capital (Portes 1998). Contrary to the expectations of other students of social ties, socially connected individuals may not be more likely to vote than people with weaker social ties. I hypothesize that socially connected people are more likely to take cues, other things equal. Rather than promoting a particular valence to behavior, the social connectedness I investigate may promote conformity. This is a different kind of behavioral prediction
than the deterministic and normatively charged proposition that socially connected people will be more likely than others to vote. However, before developing these predictions about the behavior of socially connected people, it might be useful to explore who becomes connected to their social surroundings.

In remainder of this chapter, expanding on my theoretical discussion of social connectedness, I also introduce an alternative measure of the construct. I offer evidence that this measure is a valid gauge of the strength of social ties between an individual and her surroundings. Additionally, to demonstrate that the theoretical exercise and measure are not redundant of existing perspectives and methods, I show that existing theoretical approaches fail to explain social connectedness and that causal factors I discuss are related to the construct. Finally, I use social connectedness to help explain why some people vote and others fail to ballot, testing my prediction that social connectedness promotes conformity rather than participation.

*Who Connects?*

An individual’s development of social connectedness lies in his repeated interaction with others or careful observation of them in a particular milieu, not necessarily in the emotional closeness of the relationships (Huckfeldt and Sprague 1991). The critical factor is the reinforcement that occurs during this repetitive process. Consequently, another way to ask the question of who becomes socially connected is to ask who regularly interacts with or observes others. I expect an individual’s social connectedness to their neighborhood to be a function of their opportunities to interact with neighbors, the outcomes they associate with these interactions or observations, and their search for low cost information. Frequently used indicators of social connectedness
such as an individual's length of residence at an address might be related to his social connectedness to a neighborhood because residential stability allows him to accumulate a greater number of personal interactions or impersonal observations of his neighbors.

Social connectedness, a psychological engagement with a community, forms in part as the result of the successful use of information obtained in the milieu. An actor informally scans his environment and uses the information he obtains to make a decision. Good results lead him to seek this socially provided information again. In part, this is because an individual learns that he and his neighbors have similar interests and approach problems from a similar viewpoint. These learned commonalities provide the basis for taking further cues in the future. Bad results communicate divergence and lead him to find another source of information.

That said, an individual can only begin polling the environment and experiencing positive or negative outcomes associated with the use of this information when she has opportunities to do so. An individual cut off from his neighbors cannot possibly begin the process that leads to the formation of relationships of conjoined rapport with others in the neighborhood. Consequently, an individual's opportunities for social interaction — how far they have to leave their neighborhood to travel to work, how many friends they have, even the physical structure of their neighborhood (Krassa and Flood 2000) — should also affect the frequency of neighborhood social interactions and the development of an individual's social connectedness to it.

Independent of this opportunity structure, individuals who do not see the need to collect information from their environment should tend to be less socially connected, more likely to proceed on their own. If political “experts” do not need the information
provided by their social contexts to make informed decisions, they should seek it less frequently and develop less of a sense of social connectedness, other things equal.

A profile of socially connected individuals emerged from these expectations about opportunity structure, the results of social interaction, and the search for low cost information. This profile is different from the literature's married, older, residentially stable image of socially connected voters. I expect individuals with opportunities for social interaction, a sense of similarity with neighbors, and modest political knowledge to be psychologically engaged with, or socially connected to, their neighborhood.

**Measuring Social Connectedness: The Accessibility of Community Attachment**

A measure of social connectedness should neither be confined to or conflated with demographic traits, nor should it be plagued by endogeneity with politically interesting dependent variables. Further, the measure should be guarded against potential errors associated with self-presentation or social desirability biases raised by asking people to describe their own sociability or community activity. We need a behavioral measure of social connectedness independent of self-reported behavior and demographic traits.

Johnson, Stein, and Shively (2002) have introduced a measure of social connectedness that relies on the use of response time data, the length of time required by a survey respondent to answer questions about their neighbors and neighborhoods. The logic behind this measurement strategy is intuitive. Fazio (1990) defines an attitude as an association in memory between an attitude object and an evaluation of that attitude object. Thus, we can think about the strength of an attitude as the ease with which an individual associates an attitude object with their evaluation of it. A subject's response time to a question about a given attitude is frequently used to measure attitude
accessibility because "the less cognitive work the individual would have to do to respond to the query... The less time the individual would require" (Fazio 1995:249).

We extend the thinking to mental constructs generally, arguing a person's mental image of their neighborhood and the people can be more or less accessible. When an individual has less accessible impressions of her social surroundings than another person, we expect her to render judgments about that context more slowly. The slower response marks the person as less socially connected than one rendering judgments more quickly.

On a practical level, this measure of social connectedness is collected from survey respondents using a computer-based "stop watch" to time the pause between the end of an interviewer's question and a respondent's answer (see Bassili and Fletcher 1991; Bassili 1995a, 1995b). As Bassili (1996) notes, the response latency methodology for measuring attitude accessibility is unobtrusive, reliable and a valid predictor of attitude stability and associated properties of salience and importance.¹

Research Design and Hypotheses

I test a variety of expectations raised by my discussion of social connectedness using original survey data. Rice University and the University of Houston conducted a computer assisted telephone survey² of likely presidential voters in four battleground

¹ The collection and interpretation of latencies is far from foolproof. For example, interviewers may make errors in their collection of response time data and respondents may, for example, lose interest in the survey instrument, distorting response times. Much can be done to improve the use and interpretation of raw response time data. Appendix A explores the theoretical components of response time scores and statistical techniques that can improve the use of response time in the study of political behavior.

² The survey was conducted for the Houston Chronicle and focused on 15 suburban counties in four state. The sample includes suburban voters in Dupage, Lake, McHenry, Kane and Will counties in Illinois; Oakland and Macomb counties in Michigan; Bucks, Montgomery, Delaware, and Chester counties in Pennsylvania; and Bergen, Middlesex, Monmouth, and Union counties in New Jersey. These counties have few minorities, are middle and upper middle class, and more strongly Republican than their states. Initially 1,205 registered voters were interviewed in September 2000. We re-interviewed 829 voters in late October (18th-24th) and 616 members of the original sample in February 2001, including 506 respondents who contributed data to all three panel interviews.
states during the 2000 presidential campaign. Interviews were conducted with registered voters on two occasions prior to the November election and again after the inauguration. In addition to questions about politics, issue positions, and political behavior to be explored in the next two chapters, the survey instruments for the first and third panel interviews contained social and demographic items intended to help us explore this alternative conceptualization and measurement of social connectedness.

**Social connectedness**

The dependent variable for this analysis is social connectedness, measured as the accessibility of a respondent’s judgments about their neighborhood surroundings. The measure is based on a respondent’s speed in replying to the question “supposing that for some reason you had to move away from the neighborhood where you currently live, would you be sorry to leave, or pleased to leave.”  

Kasarda and Janowitz (1974) use this question to measure community attachment and variants have been used both in aggregate (Sampson 1988) and individual-level analyses (McLeod et al. 1996). Confronted with the question, respondents judge the totality of their residential environment – their neighbors and the place in which they live. Faster respondents should

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3 The response time measure has been adjusted using a statistical model described in Appendix A to remove the influence of two systematic features of response time data. First, some respondents are faster than others across all questions. Thus the scores are purged of each individual’s baseline response speed across questions. Second, the data has been purged of the mean time required for each question across all respondents. This short span of time is attributable to attributes of the questions themselves and does not reflect the accessibility of a respondent’s judgments about their neighborhood. The statistical model assumes the raw response time scores are distributed according to the exponential distribution, given the fact that this is duration data. The independent variables are dummy indicators for each respondent and each question. The model’s predicted values are estimates for each respondent’s response time for each question, given the individual and question response time means. The residuals (observed values minus predicted scores) provide a measure of attitude accessibility cleaner than the raw scores. The measure is centered around zero, has meaningful negative values, and is obtained in meaningful temporal units (hundredths of seconds). A respondent with a score of -200 on this adjusted response time measure for a given question answered the question two seconds faster than the adjustment model predicted given her average speed across all questions and the average time required for the question across all respondents.
be more socially connected to their communities than slower respondents. Low or negative scores on the measure indicate a person is more socially connected. Johnson, Shively and Stein (2001) conducted several tests intended to support the validity of this response time measure of social connectedness. While the measure contains more information and more explicitly operationalizes the psychological rapport described by social connectedness, it should also be related to self-reported measures of social contact and community attachment, if only weakly.

Figure 3.1 compares difference in mean adjusted response times to the social connectedness question for respondents with infrequent, moderately frequent or occasional, and frequent self-reported social interaction with their neighbors. The number at the top of each bar provides the mean adjusted social connectedness response time score, in hundredths of seconds, for that group of respondents. On average, survey respondents who reported regular contact with their neighbors responded to the social connectedness question significantly faster than respondents with infrequent contact with their neighbors (t = 1.62, p < .05, one-tailed test).

Other indicators are also related to the response time measure of social connectedness. In Figure 3.2, it appears that respondents who said they were very interested in what happens in their neighborhood answered the Kasarda-Janowitz item more quickly than those with no interest (t = 1.74, p < .05, one-tailed test). Comparing response times by the substance of answers to the question used for this measure of social connectedness (Figure 3.3), respondents who indicated they would be sorry to leave their neighborhood responded significantly faster than those who said they would be pleased to leave (t = 3.89, p < .001). Finally, respondent scores on Timpone’s (1998) behavioral
Figure 3.1.
*Self-reported contact with neighbors and social connectedness*

![Bar chart showing the mean response latency for community attachment across different frequencies of contact.](image)

<table>
<thead>
<tr>
<th>Frequency of Contact</th>
<th>Mean Response Latency for Community Attachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrequent</td>
<td>181</td>
</tr>
<tr>
<td>Moderate</td>
<td>156</td>
</tr>
<tr>
<td>Frequent</td>
<td>121</td>
</tr>
</tbody>
</table>

Figure 3.2.
*Interest in neighborhood and social connectedness*

![Bar chart showing the mean response latency for community attachment across different levels of interest in the neighborhood.](image)

<table>
<thead>
<tr>
<th>Interest in Neighborhood</th>
<th>Mean Response Latency for Community Attachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Interested</td>
<td>234</td>
</tr>
<tr>
<td>Slightly Interested</td>
<td>148</td>
</tr>
<tr>
<td>Somewhat Interested</td>
<td>143</td>
</tr>
<tr>
<td>Very Interested</td>
<td>93</td>
</tr>
</tbody>
</table>
Figure 3.3.
Affect toward neighborhood and social connectedness

![Bar chart showing response latency on community attachment question.]

Pleased to leave neighborhood

Response to community attachment question

Figure 3.4.
Two measures of social connectedness

![Bar chart showing response latency on community attachment.]

Score on Timpone (1998) scale
measure of social connectedness is modestly related to the accessibility of a respondent’s community attachment, shown in Figure 3.4. Survey respondents who said they spoke with friends, joined, contributed to, and volunteered in organizations responded to the community attachment item significantly faster than individuals with little or no self-reported involvement in community projects \((t = 1.820, p < .05, \text{ one-tailed test}).\)

I model social connectedness as a function of independent variables that gauge three potential sources of social connectedness: 1.) Instances of self-reported social interaction and opportunities to interact with neighbors; 2.) the pursuit of low-cost but useful information; and 3.) other more traditional correlates of the construct.

**Opportunities for Social Interaction**

Individuals who indicate that they have frequent social interaction with their neighbors should be more socially connected to their neighborhoods than individuals with less neighborly social contact. This is consistent with my expectation that social connectedness is born of repeated interaction, not just interaction or discussion within friendship or acquaintance networks. While demonstrated as a bivariate relationship above, I anticipate this relationship will hold in a multivariate model as well.

To guard against social desirability biases inflating respondent’s reports of social interaction, I constructed a measure that combines information about a respondent’s reported social interactions in their neighborhood over time and their perceptions of their social interactions in general. In both the first and third panel wave, respondents were asked “How many days in the past week did you talk with someone in your neighborhood?” In the first interview, the question was presented with minimal introduction and as a result, the modal response was seven days, with a mean of four. In
the third wave of interviews, however, the question was preceded by a general question about neighborhood conversation: “Would you say that you have a conversation with one of your neighbors every day, several times a week, or about once a week.” By slowing respondents down and having them contemplate their social interactions, the mean response decreased to three. The modal response in the panel-back was one day of interaction each week.

I combine information from each of these three items to construct a dichotomous measure of frequent social interaction. The general question asked in the third interview was recoded to set “everyday” to 7. Several times a week is coded as 3; once a week is set to 1; and don’t know and refused responses are coded 0. I summed the three items (Cronbach’s α = 0.73) and split the measure at its mean. Individuals who indicated at two different time points and thinking about their interactions in general that they engage in frequent social interaction are coded as a 1; other respondents are coded 0.

In addition to this self-reported measure of social interaction, I expect an individual’s opportunities for social interaction to be independently influential on their social connectedness. Individuals are capable of misreporting their patterns of social interactions and other behaviors due to memory failure and social desirability biases. However, I also expect social connectedness to develop as a function of observation of others, as well as direct interaction. I assume that individual’s with more opportunities for social interaction will also have more opportunities to observe others in their surroundings, a behavior logically related to social connectedness, but not easily measured by conventional survey items without asking respondents the research question.
To operationalize a respondent's social opportunity structure, I use questions about the number of friends they have within a 10-minute walk, how far they must travel to work ("How many minutes does it usually you to get to work?"), and their length of residence at a given address. These measures are intuitively related to social connectedness. Individuals with more friends in their neighborhood should be more likely to engage in social interactions with others given the presence of these friends. Further, individuals with longer commutes should have fewer opportunities to interact with and observe their neighbors because they spend so much time on the road and less travel time in their neighborhood. As noted above, individuals with long tenures of residence in a place could be expected to have accumulated a large store of social interactions resulting in a higher level of social connectedness.

Seeking Useful Information

Another set of independent variables is aimed at exploring the association of the development of social connectedness with an individual's search for useful information. The suburban voter survey asked respondents whether they perceived their neighbors to be like them, or different. Individuals who perceive that their neighbors share or have similar interests should be more socially connected than individuals who perceive differences between themselves and their neighbors. People with high levels of political expertise should be less social connectedness to their neighbors than individuals who need more political information.4 This is because individuals possessing a greater facility

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4 Respondents were asked five factual questions about American politics that serve as the basis of a knowledge index similar to those constructed by Delli Carpini and Keeter (1993) and Zaller (1992). The questions included knowledge of the U.S. Senate majority leader, responsibility for judicial review, percent of vote required in Congress for a veto override, current party control of the U.S. House of Representatives, and the more conservative of the two major national political parties.
with politics should be less likely to seek the advice of others in their neighborhood and thus less likely to develop a psychological engagement in their proximate residential area.

**Other explanations**

The model below contrasts this interaction/information perspective on social connectedness with more conventional expectations for social ties. In particular, the model tests the hypotheses that social connectedness is strongly related to group membership and other outward forms of civic engagement such as doing volunteer work and contributions to churches and other charities (Timpone 1998):

- "Most people say they have less time these days to do volunteer work. What about you, were you able to devote any time to volunteering during the last 12 months?"
- "In the last 12 months, have you worked with others or joined in organizations in your community to do something about some community problem?"
- "Many people are finding it difficult to make contributions to church or charity organizations as much as they used to. How about you, were you able to contribute any money to church or charity in the last 12 months?"

The model includes variables representing the presence of children in a respondent's household and a respondent's affiliation with a religious denomination. While scholars more frequently suggest people are attached to social networks through their spouses (e.g., Straits 1990), the suburban voter study did not include a question about marital status. However, this literature also expects parents to have bases for social connectedness through their children. Others suggest that the members of churches and other religious communities are more socially connected than non-observant individuals
(Miller 1992). I also ask whether older voters are more socially connected. Teixeira expects young people to have less "rootedness" (1987:24) than older voters, so I include the age of the respondent in years.

Table 3.1 reports regression coefficients for this model explaining social connectedness. The model's estimated standard errors are corrected for the design of the survey's sample, clustering observations by county.\(^5\) In all, it explains about 6 percent of the variation in social connectedness across survey respondents, but lends a great deal of support for the interaction-information perspective on social connectedness. Negative coefficients indicate a greater social connectedness. Individuals with a great deal of social interaction with neighbors, a large number of friends, and commutes to work shorter than 5 minutes all have stronger and more accessible judgments of their neighborhood, indicating that they are more socially connected to them.

Interestingly, the conventional measure length of residence is not a statistically significant predictor of social connectedness cast as psychological engagement in a community.\(^6\) Signed in the anticipated direction, with longer residential tenures associated with more stronger social connection, length of residence is not a predictor of social connectedness controlling for an individual's frequency of social interaction and other opportunities to engage neighbors.

\(^5\) I have removed African-American respondents from this analysis. They comprise only about 2 percent of the respondents. Because I anticipate different contextual effects, conflated with racial politics, to operate among African-American respondents (Huckfeldt and Kohfeld 1989), I have removed blacks from the analyses reported in this dissertation. In Chapter 6, however, I discuss plans to expand this research to include more racial and ethnic minorities.

\(^6\) The relationship between length of residence and social connectedness could be curvilinear, consistent with Teske, Schenider, Mintrom, and Best's (1993) theoretical elaboration on movers, who might more actively engage politics in their new neighborhood to learn about it, as well as my expectations about the accumulation of social interactions producing stronger social connections over time. However, when added to the model, the quadratic term barely reached conventional levels of statistical significance (p<.10) and did not significantly improve the model's fit (F\(_{1, 419}=1.65, \ p<.25\)).
**Table 3.1.**  
*Opportunity, knowledge, and traditional explanations of social connectedness*

<table>
<thead>
<tr>
<th>Social interaction and opportunities</th>
<th>Coefficient</th>
<th>(robust s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent Social Interaction</td>
<td>-64.725 **</td>
<td>(22.626)</td>
</tr>
<tr>
<td>Number of Friends</td>
<td>-1.048 **</td>
<td>(0.394)</td>
</tr>
<tr>
<td>Works within 5 minutes of home</td>
<td>-59.129 †</td>
<td>(36.449)</td>
</tr>
<tr>
<td>Length of Residence</td>
<td>-0.300</td>
<td>(1.069)</td>
</tr>
<tr>
<td><strong>Pursuing information</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived Similarity of Neighbors</td>
<td>-37.399 **</td>
<td>(14.354)</td>
</tr>
<tr>
<td>Knowledge of Politics</td>
<td>19.333 *</td>
<td>(9.649)</td>
</tr>
<tr>
<td><strong>Other explanations and controls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joins Organizations</td>
<td>-46.140</td>
<td>(29.913)</td>
</tr>
<tr>
<td>Does Volunteer Work</td>
<td>13.337</td>
<td>(41.110)</td>
</tr>
<tr>
<td>Contributes to Charity</td>
<td>-25.288</td>
<td>(60.146)</td>
</tr>
<tr>
<td>Parent</td>
<td>27.752</td>
<td>(28.420)</td>
</tr>
<tr>
<td>Religious Identifier</td>
<td>43.148</td>
<td>(40.270)</td>
</tr>
<tr>
<td>Age</td>
<td>0.082</td>
<td>(1.284)</td>
</tr>
<tr>
<td>Constant</td>
<td>113.478</td>
<td>(84.224)</td>
</tr>
</tbody>
</table>

*N=442*  
*R²=.059*  

***p<.01; **p<.05; *p<.10; † p<.10, one-tailed test*

Note: Robust standard errors (adjusted for county clustering) included in parentheses.
The model lends support to hypotheses related to the pursuit of useful information among socially connected people. Respondents who perceive that their neighbors are like them are more socially connected. As expected, politically knowledgeable people who may not be inclined to consider the political views of their neighbors and thus have one less topical area to explore in their geographical surroundings, are less socially connected than respondents with less knowledge and more need for information.

None of the more conventional indicators of social connectedness do much to explain this alternative measure of the construct. Timpone's questions about joining, volunteering, and contributing to organizations fail to reach conventional levels of statistical significance. Although the coefficients for respondents who join local organizations and contribute to charity suggest these people are more socially connected than people who do not join or contribute, they are not statistically significant. Parents and religious identifiers are no more socially connected to or psychologically engaged in their neighborhood than other respondents. This suggests that the measure is actually exogenous to the forms of civic-minded behavior and demographics that have driven previous work on social connectedness.

**Social Connectedness and Political Participation**

So how does social connectedness influence voting? Contemporary literature on social ties and participation suggests that individuals with strong community ties will be more likely to vote both because it is a social activity (Cassell and Hill 1981) and because they are bound to their neighbors in complex relationships of trust and reciprocity (Putnam 2001, Knack 1992b). The logic suggests that given their participation in these
reciprocal relationships, socially connected citizens should be more likely to participate in collective activities, such as collective decision-making (i.e., voting).

Having critiqued contemporary thinking about social connectedness and, in particular, how to measure the ties that join individuals to their communities, I produce somewhat different expectations about how social connection affects voting behavior. Specifically, I do not necessarily expect socially connected individuals to be more likely to vote. As explored here social connectedness reflects the choice an individual makes to participate in community life in order to, among other thing, inform herself about politics and glean recommended political strategies from others. Consequently I expect that, other things equal, an individual who is socially connected to others around her will be more likely to vote when she receives a social cue that voting is a worthwhile political activity (Knack and Kropf 1998). If a socially connected person lives among people who think of voting as a waste of time, these social ties should not make him more likely to vote, because the people he looks to for information about politics have deemed voting an activity not worth undertaking. A socially connected person who lives among people who value voting and regularly turn out to the polls should be more likely to vote as a function of hearing good things about voting from her neighbors.

Thus my expectation is that an individual’s social context provides advice about the value of voting as a political strategy. Neighborhoods with high rates of turnout are peopled with individuals who judge voting a valuable and worthwhile activity. The residents of neighborhoods with lower rates of balloting may place little faith in the value of political participation. In the previous chapter, I elaborated a set of expectations about when this kind of signal from neighbors should be influential to a person’s political
decision making. These conditions involved the judgments an individual makes about her milieu, as well as her own need for information and exposure to political information from her social context.

A person's social connectedness — the residue of repeated decisions about the trustworthiness and value of information provided by the social context — should mediate the influence of a contextual cue. His expertise in dealing with politics should also mediate the influence of the social signal, but in a complicated manner. People with political expertise and thus a great store of informational "ballast" (Converse 1962) should be less influenced than individuals with less information about politics. Further, people with little-to-no experience dealing with politics should also be less influenced by their neighbors' political advice because they lack the motivation to gather it, in spite of their need for information and inclination to trust others around them. Moderately informed, socially connected people should succumb to the influence of their social environment. They are willing to trust the information their neighbors provide. They are more likely to collect and use the information from their neighbors, and are not as set in their ways as more politically experienced individuals (Zaller 1992).

To explore the relationship between social connectedness and electoral participation, I use validated voting data for respondents to the telephone survey of likely voters in battleground states during the 2000 presidential campaign.\(^7\) In addition to using the response time measure of social connectedness and the measure of political expertise

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\(^7\) I validated survey respondent voting behavior at county election offices in Dupage, Lake, Kane, and Will in Illinois; Bucks, Montgomery, Delaware, and Chester in Pennsylvania; and Bergen, Middlesex, Monmouth, and Union in New Jersey. Voting histories in McHenry County (IL) and McComb and Oakland counties (MI) were collected using telephone and facsimile communications with county, township, and village election officials. I confirmed voting histories for 97.4 percent of respondents.
based on factual knowledge of U.S. politics, I also measure a contextual cue on support for political participation (normal neighborhood turnout) and several controls intended to operationalize existing individual-level explanations for voting behavior.

**Participation Contextual Cue**

In addition to collecting individual voting histories for respondents to the suburban voter survey, I gathered aggregate turnout histories for the 1988, 1992 and 1996 elections in each of their precincts. I use this information to operationalize a contextual cue about political participation at the neighborhood level.\(^8\) The mean normal rate of turnout for the precincts represented in this sample was 73 percent. To model the expected relationship between a contextual cue and the political behavior I expect it to influence, I interact the contextual cue with both social connectedness and political knowledge. Further complicating the estimation, the mediating effects of political knowledge must include a quadratic term as well, because I expect only moderately informed voters to be influenced by the contextual cue. The fully specified model includes main effects for the contextual cue, social connectedness, political knowledge, political knowledge squared, as well as all relevant interaction terms, seven total.

**Other Explanations**

Literature on voting behavior identifies a number of individual-level explanations for turnout (Leighley 1995). Socio-economic factors like education and age are among

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\(^8\) To compute this measure of normal turnout I averaged the percent turning out in each precinct for each of the presidential elections. However, this precinct-level data varies in its completeness. For some precincts we were only able to collect data for one (3 percent) or two (19 percent) of three presidential elections prior to the 2000 contest. Consequently, I adjust the measure of average turnout by regressing the mean precinct turnout on the precinct turnout for each individual presidential election. Using predicted turnout scores from these equations I calculate an adjusted mean for the three presidential elections. This adjustment attenuates the influence of the 1996 Clinton reelection, with its substantially lower turnout, for precincts where we have data for fewer than three elections.
the most consistent predictors of political participation (Wolfinger and Rosenstone 1980). Membership in or association with organizations such as unions which work to mobilize voters or close identification with a political party should also predict voting (Rosenstone and Hansen 1993). Finally, rational choice “calculus of voting” models suggest that voters should be more likely to turnout as electoral competition increases (Aldrich 1993). I include controls for these individual-level factors in the model in order to determine if contextual factors and social connectedness affect voting behavior independent of these correlates of voting.

Most of the measures for these individual factors come from the survey instrument. I measure self-reported levels of education with responses to the question, “What is the highest grade of formal education you have completed? Less than high school, high school graduate, trade school, some college, college graduate, or post-college graduate?” Age is measured in years, computed using the respondent’s self-reported birth year. Respondents were also asked “Is anyone in your household a member of a labor union?” This question form the basis for a dichotomous measure of union membership, with union households coded 1 and non-union households coded 0. Strength of party identification is measured using the follow-ups to a standard three-point party identification question: “Would you say that you are a strong or not very strong (Democrat or Republican)?” for partisans, and “Do you lean toward one party or the other?” True independents were coded 0 on the partisan strength measure. Leaning independents and not strong partisans were coded 1 and strong partisans were coded 2.
Finally, political competitiveness was measured using the normal two-party vote in the 1988, 1992, and 1996 presidential elections.\(^9\)

**Findings**

Table 3.2 presents the results of a logit regression model predicting the validated electoral participation of registered voters in the four-state suburban voter study.\(^10\) The dependent variable in the model is binary, with 1 indicating that I confirmed the respondent’s participation in the 2000 presidential election. Respondents who did not vote, according to election officials, were coded 0. These survey respondents as a group voted at a higher rate than the rest of the nation in 2000. According to the Federal Election Commission, 67.5 percent of registered voters cast a ballot for president in 2000, but almost 90 percent of the suburbanites surveyed (89.61 percent) voted.

The effect of turnout cues should manifest among respondents who are socially connected to their neighborhood. Further, the relationship between the social cue and the behavior it elicits should vary with political knowledge in a curvilinear fashion: Only respondents with moderate amounts of political knowledge and expertise should be swayed by the information they receive from their social context. Respondents with little political knowledge, even if closely connected to their neighborhoods, will not respond to

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\(^9\) I collected data for the two-party vote from 1988, 1992, and 1996, along with turnout data and voting histories. To compute a competitiveness measure, I adjusted and averaged the mean Democratic vote share for each precinct and folded the measure so that it ranges from 0 to 50. A score of 50 indicates a very competitive district with Republicans receiving on average 50 percent of the two-party vote and Democrats receiving 50 percent. Lower numbers indicate less competitive districts. A score of 10 indicates the advantage party receives 90 percent of the two-party vote on average.

\(^10\) Due to the wide variation in the size of election precincts in these 15 counties, I have inversely weighted the observations in our sample by the average number of registered voters in each precinct for the years 1988, 1992, and 1996. This weighting variable is also adjusted to minimize the influence of missing data. As with the previous model estimating social connectedness, I have removed African-Americans from this analysis for reasons similar to those articulated in footnote 5.
### Table 3.2: Voting cues mediated by social connectedness and political expertise

<table>
<thead>
<tr>
<th></th>
<th>Coefficient (Robust s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Precinct Normal Turnout</td>
<td>0.0309</td>
</tr>
<tr>
<td></td>
<td>(0.0572)</td>
</tr>
<tr>
<td>Social Connectedness</td>
<td>0.0469</td>
</tr>
<tr>
<td></td>
<td>(0.0381)</td>
</tr>
<tr>
<td>Social Connectedness * Normal Turnout</td>
<td>-0.0004</td>
</tr>
<tr>
<td></td>
<td>(0.0006)</td>
</tr>
<tr>
<td>Political Knowledge</td>
<td>-2.4821</td>
</tr>
<tr>
<td></td>
<td>(2.6891)</td>
</tr>
<tr>
<td>Political Knowledge$^2$</td>
<td>0.6558</td>
</tr>
<tr>
<td></td>
<td>(0.5134)</td>
</tr>
<tr>
<td>Social Connectedness * Political Knowledge</td>
<td>-0.0448</td>
</tr>
<tr>
<td></td>
<td>(0.0221)</td>
</tr>
<tr>
<td>Social Connectedness * Political Knowledge$^2$</td>
<td>0.0094</td>
</tr>
<tr>
<td></td>
<td>(0.0044)</td>
</tr>
<tr>
<td>Political Knowledge * Normal Turnout</td>
<td>0.0353</td>
</tr>
<tr>
<td></td>
<td>(0.0429)</td>
</tr>
<tr>
<td>Political Knowledge$^2$ * Normal Turnout</td>
<td>-0.0088</td>
</tr>
<tr>
<td></td>
<td>(0.0077)</td>
</tr>
<tr>
<td>Social Connectedness * Political Knowledge * Normal Turnout</td>
<td>0.0005</td>
</tr>
<tr>
<td></td>
<td>(0.0003)</td>
</tr>
<tr>
<td>Social Connectedness * Political Knowledge$^2$ * Normal Turnout</td>
<td>-0.0001</td>
</tr>
<tr>
<td></td>
<td>(0.0001)</td>
</tr>
<tr>
<td>Precinct Competition</td>
<td>-0.0004</td>
</tr>
<tr>
<td></td>
<td>(0.0390)</td>
</tr>
<tr>
<td>Education</td>
<td>0.2456</td>
</tr>
<tr>
<td></td>
<td>(0.1425)</td>
</tr>
<tr>
<td>Union Membership</td>
<td>-0.4484</td>
</tr>
<tr>
<td></td>
<td>(0.5156)</td>
</tr>
<tr>
<td>Age</td>
<td>0.0230</td>
</tr>
<tr>
<td></td>
<td>(0.0135)</td>
</tr>
<tr>
<td>Strength of Party Identification</td>
<td>0.4363</td>
</tr>
<tr>
<td></td>
<td>(0.1997)</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.8340</td>
</tr>
<tr>
<td></td>
<td>(3.8329)</td>
</tr>
</tbody>
</table>

N = 429  
$\chi^2 = 44.40^{***}$  
Pseudo $R^2 = .18$  
LL = -90.696

***p<.001; **p<.05; *p<.10

Note: Robust standard errors (adjusted for county clustering) included in parentheses.
the political cues it offers. Respondents with the greatest political knowledge should resist social influence due to their strong preexisting prior opinions about politics. As expected, many of the traditional, individual explanations for voting behavior affected turnout among these suburban voters. Level of education, respondent age, and party identification are all statistically significant predictors of individual turnout. Political competition and union membership were not related to individual turnout. However, independent of these traditional correlates of political participation, social influence appears to have affected voting. In particular, the critical three-way interaction term and its quadratic are both statistically significant.

While logit coefficients are a challenge to interpret, this fully specified model makes the task even more difficult. Additionally, it is not clear whether the statistically significant coefficients for the interaction terms manifest themselves in statistically significant or substantively interesting effects on the dependent variable that lend support or fail to support these expectations about moderately informed socially connected voters. I use CLARIFY (Tomz, Wittenberg, and King 2001) to more meaningfully interpret the model. This allows me to compare the estimate of a respondent’s probability of voting in a low turnout area to a respondent’s probability of voting in a high turnout area, across each level of political expertise or knowledge. The change in the predicted probability of voting as the contextual cue changes should be statistically significant for moderately informed socially connected voters but not statistically significant for voters with a great deal of political knowledge or voters with little political knowledge and experience.

I estimated the probability of voting for respondents with stronger versus weaker social connections to their neighborhoods at each level of political knowledge, varying
the rate of turnout for their precinct and holding the other individual-level characteristics at their mean or median values.\footnote{These mean and median values for the control variables produce the typical case of a respondent, 53 years in age, with some college education, no union members living in their household, expressing a weak partisanship, and living in a modestly competitive district (advantaged party receiving 40 percent of the vote on average).} For the purposes of these probability estimates, I cast respondents with scores one standard deviation faster than the mean on the social connectedness (-191) measure as “socially connected” and respondents one standard deviation slower than the mean (501) as not connected to their neighborhood. I compare the effects of changing the normal precinct-level turnout from two standard deviations below (54 percent) the mean for this sample (73 percent) to two standard deviations above (92 percent) the mean.

Among respondents who were not socially connected, none of the six changes in the predicted probability of voting for respondents, moving from a low turnout precinct to a high turnout precinct within each level of political knowledge, were statistically significant. However, among socially connected respondents one of the estimated probability changes was statistically significant. Not surprisingly, given the theoretical expectations discussed in chapter 2, that statistically significant estimated probability change was found in the middle of the range of political knowledge, rather than among respondents at the extremes of highly or poorly informed respondents.

Figure 3.5 graphs estimated probability changes associated with moving from a lower-than-average-turnout precinct to a higher-than-average-turnout precinct for a socially connected voter at each level of political knowledge. The solid line is the single statistically significant probability change associated with the contextual voting cue for socially connected, moderate-to-well informed voters, scoring a four on the political
Figure 3.5. Probability of voting: Socially connected voters by political knowledge
knowledge test included in the survey instrument. Typical-case voters living in an area with lower than average turnout were predicted to vote with a probability of .763. The model predicts that voters in an area with more vigorous precinct participation are almost certain to vote (with a probability of .985). The estimated probability changes for voters with more and less political knowledge were not statistically significant.

While this is not a dramatic demonstration of my expectations, they do lend support to the line of thinking developed in the discussion in this and Chapter 2. Even in this highly participatory sample, with 89.6 percent of respondents voting, we observe a contextual effect on decisions to participate at the polls among specific individuals. Socially connected respondents, with moderate knowledge and expertise with politics, living in lower than average turnout areas were about 15 percent less likely to vote than the average suburban voter study respondent. Similar respondents in high turnout areas were about 10 percent more likely to vote than the average survey respondent according to these estimated probabilities.

**Conclusion**

This chapter has elaborated an alternative conceptualization for a person’s social connectedness to his neighborhood. The discussion recasts social connectedness as a psychological property of individuals resulting from their relationships and experiences, rather than an exclusively sociological construct. Social interaction, observation of others, and the quest for low-cost, useful information appear to strongly influence an individual’s development of social connectedness with their neighbors and proximate surroundings. The indicator developed to measure this relies on the sound psychological
theory of attitude accessibility to gauge the strength of an individual's social connectedness to her immediate surroundings.

This rethought construct and the measure developed here have also proven useful, if suggestively so, in explaining social influence on individual decisions to participate in an election. Rather than supporting the proposition that social ties monotonically and automatically encourage political participation, it appears that social connectedness affect the use of contextually provided advice about the value of participation. An individual's use of social cues provided by her neighbors is mediated by the strength of her attachment to those neighbors, as well as her own informational needs. As expected, moderately informed voters socially connected to their residential milieu react to social cues provided by neighbors. They are more likely to vote when more of their neighbors vote and less likely to vote when neighbors regularly abstain.

The next step in this exploration of the relationship between social connectedness and political behavior is testing the hypothesis that socially connected people should be more likely to use the low-cost information neighbors provide in making other political decisions. In the next chapter, I build on the work of Johnson, Shively, and Stein, that expects social connectedness to mediate the influence of social cues on candidate choice. I use additional data from this four-state suburban election study to explore the influence of cues attributed to the neighborhood on respondent opinions about the death penalty. I also examine the influence of neighborhood partisan cues on voting for Gore or Bush in the 2000 presidential contest. Socially connected individuals are expected to conform to signals provided by their neighbors, not because they are coerced to do so, but rather because they have learned that they profit from the advice of these friends and neighbors.
FOUR

Social Connectedness and Political Position Taking: Evidence from the 2000 Presidential Election and a Survey-Based Experiment

Signals provided by a person’s social surroundings appear to influence the decisions of some individuals to participate in an election. But do neighbors listen to each other’s advice on candidates and issues? Why would the people who live near an individual influence their opinions and behaviors? This dissertation is motivated by questions such as these. A great deal of literature suggests people do listen to the advice of friends and neighbors to make political decisions (Berelson, Lazarsfeld, and McPhee 1954; Burbank 1998; Huckfeldt and Sprague 1993; Tingsten 1963; Weatherford 1982). However, many of these studies remain exposed to the possibility that the effect they identify as social influence – found in a strong correlation between an individual’s opinions and those of her neighbors or friends – is not actually due to social influence but rather self-selection into a social context or even coincidence (Achen and Shively 1995; Kenny 1998). Consequently, many readers remain skeptical about alleged contextual effects and social influence models (Hauser 1974; King 1996).

In the previous chapter, I developed an understanding of the process of social influence and found support for the proposition that people with strong social connections to their neighbors and neighborhood, who need political information and are willing to listen to their neighbor’s advice, are likely to be influenced by this advice. Specifically,
socially connected people with moderate experience dealing with politics appeared responsive to a neighborhood-level social cue about the value of voting. These individuals were more likely to turnout in November 2000 when their neighbors voted in larger proportions in prior elections than when their neighbors voted less frequently. I also demonstrated that people needing low cost information, with interests similar to their neighbors, and opportunities to interact or observe these people, tend to develop stronger social connections with their residential neighborhoods than others. I contend that individuals with these stronger ties to their neighborhood are more likely to have judged neighbors as providing useful information over time.

In this chapter, I further test expectations about social connectedness, political expertise, and social influence using more data from the suburban voter study conducted in four highly contested battleground states during the 2000 presidential election, discussed in Chapter 3.\footnote{Rice University and the University of Houston conducted the panel study of suburban voters for the \textit{Houston Chronicle} newspaper. It focused on registered voters in 15 suburban counties of four highly contested states in the Northeast and Midwest. The sample included in Dupage, Lake, McHenry, Kane and Will counties in Illinois; Oakland and Macomb counties in Michigan; Bucks, Montgomery, Delaware, and Chester counties in Pennsylvania; and Bergen, Middlesex, Monmouth, and Union counties in New Jersey.} I examine the influence of the neighborhood milieu both on an individual’s candidate choice for the 2000 presidential election and their position on a public controversy, the fairness with which the death penalty is applied in the U.S. Moderately informed socially connected voters who live in strongly Democratic areas were more likely to vote for Gore in 2000, holding their prior partisanship constant. I do not find a similar effect for people with less political expertise, more political expertise, or weaker social connections to their neighborhood. I also find evidence of social influence on perceptions of the fairness of capital punishment, employing a survey-based
experiment that offers a slightly different approach to the question of contextual effects. However, before explaining these complementary research designs, it will be useful for me to review the argument outlined in Chapter 2.

**Context, Information and Influence**

It makes little sense to discuss social context without referring to a specific arena that plays host to social interaction or mutual observation. The present investigation will focus on the milieu set within neighborhoods. Signals provided by a social context are communicated through a variety of mechanisms: direct face-to-face conversation, non-verbal personal interaction, as well as alternative methods such as political yard signs and bumper stickers (Huckfeldt and Sprague 1993). Therefore the people who share a social context are not limited in their communication with one another to intimate networks Katz and Lazarsfeld (1955) study or the mediated mechanisms of Mutz’s impersonal influence (1998). Instead, individuals within a social context simultaneously engage in both personal and impersonal communication. They enjoy intimate primary relationships, many more weak ties (Granovetter 1973), and have even more opportunities to simply observe neighbors and develop perceptions of them, even those who live blocks away (Burbank 1997).

Following Huckfeldt and Sprague (1995), I assume individuals pursue low cost information to help them make political decisions, and that they face incentives to avoid costly mistakes (Lupia and McCubbins 1997). It follows, then, that people will be careful in their use of information provided by social sources. When an individual takes into account information from her social context and makes a decision she finds beneficial or otherwise satisfying, she should be more likely to use that source in the
future. Thus, over time she may come to favor particular cue-givers, “rewarding” discussants from a particular social environment by favoring them as an information source. This transforms a potentially influenced individual into a more active evaluator of social information, consistent with more general models of influence processes.

Coercion models of social influence suggest just the opposite. Research in this vein casts the people who make up an individual’s social context in the role of the monitor and enforcer of community attitudes and beliefs. Researchers who base their expectations on a process of coercion anticipate individuals are influenced by those around them via a social learning process that rewards conformity and punishes people with deviant opinions.

There are at least two problems with this model. First, it is not entirely clear that opinion agreement has a sufficient value to provoke someone to police the beliefs of others. Consequently, the enforcement of community opinions is transformed into a collective action problem to which rational political discussion partners would have no incentive to contribute their costly effort. Paired with the assumption that individuals are rationally pursuing low-cost information (Huckfeldt and Sprague 1995), this problem implies the social influence model is internally inconsistent, assuming some actors (influenced persons) are rational and others (influential political discussants) may not be rational because they selflessly contribute to the enforcement of community sentiment. Second, the coercion model presented by McPhee and his coauthors (1963) requires face-to-face social interaction for the social learning processes rewards and penalties to be communicated, thus speaking past a variety of potentially influential impersonal
interactions and opportunities to communicate (Burbank 1997; Hucksfeldt and Sprague 1993).

Rather than make assumptions about individual coercive neighborhood attitude enforcement or complementary assumptions about an individual’s motivation to conform (Harvey 2001; Katz and Lazarsfeld 1955), I expect social influence to be rooted in the judgments individuals make about people who live around them and the information these people provide. This perspective treats social influence and contextual effects as a special case of political persuasion rather than its own separate phenomenon. Social surroundings should influence an individual when she has insufficient relevant information to confidently make the decision at hand, and thus needs additional information to confidently render a judgment, views her social context as supplying useful information; and the social context provides a clear recommendation for action.

An individual’s receipt of information or their proximity to an information provider is not sufficient for persuasion. To be persuaded, an individual must receive the information, accept that information, and draw upon it to render a relevant judgment (Zaller 1992). Druckman and Lupia identify two conditions that are jointly necessary for persuasion: The receiver of a signal believes its sender shares her interests and perceives the sender is knowledgeable. The satisfaction of these conditions along with the receiver’s belief that she can benefit from the sender’s knowledge is sufficient for persuasion² (Druckman and Lupia 1997:3). Broadly stated, an individual’s willingness to

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² Extending the model, they suggest a third-party observer not directly involved in the transmission of information can also learn from its exchange, provided he has an impression of the interests or trustworthiness and quality of the sender and perceives that he can benefit from the information. Consequently, this understanding of persuasion applied to contextual influence allows us to incorporate personal direct communication and signaling, as well as impersonal and indirect forms of communication such as the yard signs, bumper stickers, and yellow ribbons tied around trees.
use information from a source hinges on her beliefs about the source. Specifically, she will be influenced when she believes she can benefit from the advice the source provides and considers the source to be worthy of her trust.

**Source Credibility and Social Connectedness**

Other things equal, when an individual perceives that the people in her environment provide information that can be used to produce satisfying outcomes – such as helping her select a better candidate – she will be more likely to accept and use the information they provide. She conforms, not to fit in, but to achieve these desirable outcomes. In order to claim the benefits of favored candidates, better policy outcomes, and the like, individuals may decide to lean on the low cost information provided by sources that consistently help her make better decisions.

But who finds their neighbors’ advice useful? The short answer is that socially connected people are more influenced by their social surroundings than others (Johnson, Shively, and Stein 2001). This will, however, require some explanation. Earlier, I introduced two key assumptions. First, individuals seek low cost information from sources such as neighborhood friends. Second, people evaluate these sources based on the outcomes associated with their use of the information provided. Consequently, if an individual recognizes that consulting his neighbors tends to produce satisfying outcomes, he will be more likely to consult these neighbors and use their advice, resulting in more frequent interactions, more frequent observations, and more thinking about what the neighbors are doing.

I join Oliver (2000) in defining social connectedness as an individual’s psychological engagement with a particular social context. An individual becomes
socially connected to a specific milieu, as the result of repeated social interaction or
observation within that social context. This perspective emphasizes depth over breadth.
For example, imagine an extremely independent person with a fat Rolodex. This person
enjoys a large social network and a great number of social ties, but has no “connections,”
lacking a psychological engagement with this legion of contacts. On the other hand, a
socially connected person engages in the iterative process of interaction and observation.
As she becomes increasingly socially connected to her milieu, she would learn to trust the
information it provides about politics, and other matters, observing positive outcomes
based on her exposure and use of the information provided by the collective aggregate of
neighbors whom she observes and with whom she interacts.

Given this anticipated pattern of frequent interaction with and consideration of his
social environment, I expect a socially connected person to be more likely than an
individual with weak social ties to be influenced by information provided by his social
context. This expectation is based both on the individual’s exposure to the political cue
as well as his likelihood to accept and use the information. Social connected people
should be more likely to receive the advice their contexts have to offer. However,
because they are more likely to trust their neighbors, socially connected people should
also be more likely to incorporate these recommendations, other things equal.

Information Needs and Political Expertise

However, finding the source credible and trustworthy is only part of the process
that leads a person to be persuaded by the sender of information. According to the
Druckman and Lupia (1997) and Lupia and McCubbins models (1998), sufficient
conditions for persuasion are met when the information receiver trusts the sender and
believes she can benefit from the sender's cue. I expect an individual's prior experience with thinking and reasoning about politics should affect their willingness to use information from external sources, including their social surroundings. Individuals with a great deal of experience with politics, even socially connected people should be more likely to resist the information receive from their context. Zaller (1992) demonstrates that individuals with a great deal of experience thinking about politics, thus holding a great store of knowledge about politics (Converse 1962), are less likely to fall under the influence of messages drawn from exposure to mass communications. Orbell (1970) has applied a similar logic to contextual influence. Consequently, I have argued that people with a greater expertise with and knowledge of politics should be less likely to seek socially provided information about a candidate or issues, let alone use that information. These politically experienced voters are not necessarily skeptical or less trusting of the advice of their neighbors, but given their confidence in their own judgments, simply less likely to consult others.

I also expect people with less experience thinking about politics, people with little interest or knowledge of public affairs, to also avoid the influence of their milieu. People who are inexperienced and unknowledgeable about politics tend to lack the motivation to collect new political information from the mass media (Zaller 1992) or other sources and incorporate this advice or data in their thinking about politics (Rahn, Aldrich, and Borgida 1994). If they were somehow compelled to consume a piece of information from a source they trusted, these poorly informed people would be strongly influenced by it given the paucity of their existing knowledge of politics. This is an important detail for the investigation that follows because in the empirical model of candidate choice, I
examine the influence of a true contextual cue that individuals collect for themselves, if at all. In that research setting, I anticipate no social influence among socially connected people with little political knowledge, experience, or interest, because I do not expect these people to actually retrieve their neighbor’s political advice given their lack of interest. However, in the survey-based experiment focused on death penalty attitudes, I provide a piece of information about public opinion about capital punishment directly to survey respondents. With this research design, I expect a much stronger pattern of social influence among voters with low levels of political experience and knowledge, because I expose them to a social cue rather than asking them to gather it for themselves.

Signal Strength

Finally, I expect the clarity of the signal provided by a social context to effect its influence on an individual. Orbell (1970) demonstrates that social influence is unlikely when the information provided by a social context is ambiguous. When a social context contains equal numbers of individuals on both or multiple sides of an issue, the recommendation of these sources of information is indeterminate. I expect the influence of a social cue will be stronger when it provides the receiver with unambiguous information or advice.

Candidate Choice: Social Influence and the 2000 Presidential Election

Chapter 1 identifies a few suspicions about research on contextual influences on political attitudes and behavior. One of the most potent criticisms of this research is that an individual’s social context cannot necessarily be taken as exogeneous. Researchers often attribute a correlation between individual and aggregated scores on some dependent

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\(^1\) The analysis of candidate choice reported in this section of the chapter draws material from Johnson, Shively, and Stein (2001).
variable — voting, partisan choice, and other attitudes and behavior — to contextual effects. However, it is both theoretically predicted and empirically demonstrated that individuals select their place of residence based on particular traits — levels of public service (Tiebout 1956), school characteristics (Teske, Schneider, Mintrom, and Best 1993), and other social and economic attributes, leading to patterns of "residential balkanization" (Mutz and Martin 2002). Because individuals do frequently sort on community traits, studies of contextual influences need to somehow avoid the threat of selection bias.⁴

Researchers have offered methodological solutions aimed at dispelling concerns about patterns of self-selection. Erbring and Young (1979), for example, operationalize cues from an individual's social context as the scores on the dependent variable of all other individuals with whom the respondent is in contact and estimate relationships between opinions expressed in each discussion pair. Identifying the legion of each respondent's discussants is a daunting task and since, in their model, influence works both ways in each dyad, estimating discussant effects requires structural equation techniques where the number of equations estimated (i.e., dyadic interactions) could exceed the number of individuals in the network (Achen and Shively 1997:228). Huckfeldt and Sprague (1989) offer a compromise model that identifies each respondent's main political discussants. But even this technique relies on a correlation between aggregated opinions and individual attitudes.

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⁴ Achen and Shively (1995) illustrate the potential for geographic selection to produce "phantom" contextual effects — correlations between individuals and groups that appear to be, but are not, the residual of social influence. Chapter 1 recounts their example in which no social influence occurs, but self-selection into neighbors based on related characteristics drives a correlation between aggregated and individual attitudes about school funding.
The alternative approach offered in Chapter 2 should mitigate the problem of selection effects, as opposed to contextual effects. I identify specific kinds of people who should be susceptible to persuasion in the first place, as a function of their expertise with political matters. Further, I propose a specific psychological mechanism that, to greater and lesser extents, links individuals to their contexts (i.e., social connectedness). Whether an individual is able to answer questions about his neighborhood with greater or less ease (i.e., response time) should not necessarily be correlated with his prior selection of residential location, but should be related to the influence of his current context on his opinions and behavior. If contextual effects are present we would expect that those for whom the context is most relevant and important will exhibit the effects most strongly. Consequently, I anticipate a relationship between aggregate and individual opinions and behaviors under specific circumstances supported by this theoretical discussion.

**Social Influences on Candidate Choice**

To test my expectation that moderately informed people who are socially connected to their neighborhoods will be influenced by their neighbors' candidate choice, I use data from a survey of registered voters in 15 counties conducted during the 2000 presidential campaign.\(^5\) The research design mirrors the analysis reported for voting behavior in Chapter 2. I am interested in the effects of a social cue mediated both by an individual's social connectedness, measured using the accessibility of their judgments about their neighbors, and their level of political expertise, measured by their knowledge

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\(^5\) In 1988, the GOP percentages in the suburban counties sampled for this opinion survey were 8.8% above their statewide mean. However, this gap narrowed to 7.1% in 1992, as President Bush barely beat Clinton in these counties (52% to 48%), a fact that greatly contributed to his loss of all four states, and the presidency. Bob Dole did even worse in 1996, receiving 47% of the suburban vote, only 4.9% above his mean state vote.
of politics. To explore this mediated relationship, I construct a model of candidate choice — a voter’s self-reported support for Republican candidate George W. Bush or Democratic nominee Al Gore — during the 2000 presidential campaign. The dependent variable in the model is coded 1 for each Gore supporter and 0 for each Bush voter. Supporters of third party candidates are excluded from the analysis. The independent variables are discussed below.

**Measuring Social Connectedness**

Introduced in Chapter 3, I rely on a measure of the mental accessibility of an individual’s judgments about their neighborhood to quantify their social connectedness to that milieu. Accessibility is the “readiness with which a stored construct is utilized in information processing” (Higgins and King 1981). The strength of the attitude object evaluation is hypothesized to be the main determinant of the likelihood an attitude will be activated from memory when an individual confronts the attitude object. Stronger attitudes are more consequential, especially for predicting behavior, and more influential in the formation of other attitudes (Krosnick and Petty 1995; Abelson 1995). When an individual’s social context is more accessible as a mental construct, it should be more influential in their reception, encoding and storage of information gleaned from that context (Higgins and King 1981). Students of attitude accessibility suggest that when respondents are probed about attitudes that are stronger and more salient, they will respond to questions more quickly. Consequently, response time is a widely accepted measure of attitude accessibility (Bassili 2001) and has been attracting the interest of public opinion researchers (Bassili and Fletcher 1993).

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6 Only 18 supporters of third party candidates were included in the third interview of the suburban voter panel.
The measure of social connectedness used here relies on a community attachment Kasarda and Janowitz (1974:334) use to measure "whether a person feels a sense of community." It asks respondents: "Supposing that for some reason you had to move away from the neighborhood where you currently live, would you be sorry to leave, or pleased to leave?" The question requires respondents to think about the totality of their residential environment – their neighbors and the place in which they live. The length of time an individual requires to render a judgment – positive or negative – about their neighbors and residential circumstances serves as the basis for my measure of their social connectedness. Faster responses to this question should identify an individual as more socially connected to their neighborhood and neighbors.

On a practical level, this data is collected using a computer-based timer to record the span of time between the end of an interviewer’s question and a respondent’s answer. As detailed in Appendix A, measures of attitude accessibility drawn from survey data should be purged of extraneous temporal content. I do this by adjusting the raw data, removing the mean response times required by each individual survey respondent independent of the question asked and the mean time required for each question across all respondents. Accessibility is measured as the difference between observed response times and those predicted for each individual and question. Respondents with negative latency values answered a specific question more quickly than the statistical model I use predicts, given their mean response time across questions and the mean response time for that question across individuals. Importantly, the measure controls both for variations in response time attributable to individual baseline response speeds (Fazio 1990) as well as question wording, type, and placement in the survey (Tourangeau and Raskinski 1988).
This measure is continuous, bell-shaped, and has meaningful temporal units, hundredths of a second. Low or negative scores indicate a more socially connected person.

Political Expertise/Knowledge

To measure political expertise, I construct a standard measure of political knowledge. Five factual questions about American politics and government were asked of each survey respondent. The questions are taken from Zaller (1992) and Delli Carpini and Keeter (1993) and include knowledge about the current U.S. Senate majority leader, responsibility for judicial review, percent of vote required to override a presidential veto, current partisan control of House of Representatives and the more conservative national political party. Correct responses to each question were coded 1, incorrect answers – including “Don’t Know” responses were coded 0. An additive index was constructed, ranging from 0 indicating the respondent answered no question correctly, to five, indicating they provided the correct answer to each of these question.

Precinct context

As part of the collection of voting histories for the investigation of electoral participation, I also collected aggregate turnout data for each respondent’s precinct and the vote shares for the two major party candidates in each of the three presidential elections prior to the 2000 contest (1988, 1992 and 1996). This information allowed me to compute a normal Democratic vote estimate at the precinct level.7 I expect that, other

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7 To compute this measure of normal democratic vote we averaged the democratic vote share for each of the presidential elections. However, this precinct-level data varies in its completeness. For some precincts we were only able to collect data for one (3%) or two (19%) of three presidential elections. Thus the mean democratic vote share reflects one, two or three presidential elections. Consequently, we have adjusted our measure of average democratic vote share by regressing the mean score on the vote share for each individual presidential election. Using the predicted Democratic vote share from these equations we calculate an adjusted mean democratic vote share for the three presidential elections. This adjustment attenuates the influence of the 1996 Clinton reelection on the normal democratic vote measure for precincts where we have data for fewer than three elections.
things equal, a socially connected voter will be more likely to deviate in a Democratic direction from his partisan identification in a more Democratic political context.

**Voter party identification**

Prior party identification is used as a control variable in this analysis of voter candidate choice. Respondents were asked about their partisan identification in the first of three panel interviews for the suburban voter study, about two months before the November election. This measure is coded to match the dependent variable – Democrats are coded 1; Republicans and independents are coded 0.

**State controls**

Finally, because presidential campaigns vary so significantly by state affecting the overall tone of the information voters have about presidential candidates (Shaw 1999), the model also includes dummy variables for each of the four states providing respondents in our sample. The Illinois dummy variable is excluded.

**Results: The 2000 Presidential Election**

As discussed above, I anticipate a relationship between contextual political cues and voter choice, other things equal: As the Democratic percentage of the normal vote increases in a voter’s precinct, certain voters should be more likely to ballot for Gore. This relationship, however, should be mediated by the voter’s social connectedness to his neighborhood as well as his own political knowledge and expertise. To test these hypotheses the model includes a three-way interaction term for contextual political cue, social connectedness and political knowledge, and its quadratic. The model is fully specified with the inclusion of all lower order interactions.
**Table 4.1. Influence of Partisan Contextual Cue on Vote Choice, Mediated by Social Connectedness and Political Knowledge**

<table>
<thead>
<tr>
<th>Term</th>
<th>Coefficient</th>
<th>(Robust s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Precinct Normal Democratic Vote</td>
<td>-.0111</td>
<td>(.0915)</td>
</tr>
<tr>
<td>Social Connectedness (RT measure)</td>
<td>-.0411</td>
<td>(.0229) **</td>
</tr>
<tr>
<td>Democratic Vote*Social Connectedness</td>
<td>.0006</td>
<td>(.0005)</td>
</tr>
<tr>
<td>Political Knowledge</td>
<td>-.2130</td>
<td>(2.960)</td>
</tr>
<tr>
<td>Political Knowledge$^2$</td>
<td>-.0219</td>
<td>(.4489)</td>
</tr>
<tr>
<td>Democratic Vote*Political Knowledge</td>
<td>.0136</td>
<td>(.0600)</td>
</tr>
<tr>
<td>Democratic Vote*Political Knowledge$^2$</td>
<td>-.0006</td>
<td>(.0092)</td>
</tr>
<tr>
<td>Social Connectedness*Political Knowledge</td>
<td>.0275</td>
<td>(.0124) **</td>
</tr>
<tr>
<td>Social Connectedness*Political Knowledge$^3$</td>
<td>-.0040</td>
<td>(.0016) **</td>
</tr>
<tr>
<td>Democratic Vote<em>Social Connectedness</em>Political Knowledge</td>
<td>-.0005</td>
<td>(.0003) **</td>
</tr>
<tr>
<td>Democratic Vote<em>Social Connectedness</em>Political Knowledge$^2$</td>
<td>.0001</td>
<td>(.0000) *</td>
</tr>
<tr>
<td>Democratic Party Identifiers</td>
<td>3.6442</td>
<td>(.4107) ***</td>
</tr>
<tr>
<td>New Jersey</td>
<td>-.8463</td>
<td>(.3601) **</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>-.5670</td>
<td>(.3360) *</td>
</tr>
<tr>
<td>Michigan</td>
<td>-.6123</td>
<td>(.3747)</td>
</tr>
<tr>
<td>Constant</td>
<td>-6.259</td>
<td>(4.6287)</td>
</tr>
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</table>

<table>
<thead>
<tr>
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<th>Value</th>
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</thead>
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<tr>
<td>N</td>
<td>412</td>
</tr>
<tr>
<td>Chi-square test</td>
<td>92.16</td>
</tr>
<tr>
<td>Pseudo R$^2$</td>
<td>.296</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-200.32</td>
</tr>
</tbody>
</table>

*** p<0.01; ** p<0.05; * p<0.1
Table 4.1 presents a logit regression model\textsuperscript{8} predicting the likelihood of a respondent reporting support for Gore.\textsuperscript{9} Because the model includes a control for Democratic party identification, the substantive interpretation of our dependent variable is the deviation of the vote choice from the respondent's self-reported partisan identification. As with the voting logit model reported toward the conclusion of Chapter 3, the logit coefficients presented in Table 4.1 cannot adequately communicate the relationships among presidential vote choice, partisan contextual signals, social connectedness, and political knowledge. Logit equations are usually a challenge to interpret, but this fully specified model featuring a quadratic three-way interaction makes this task virtually impossible. The critical three-way interaction term and its quadratic term are themselves statistically significant. But to interpret the results more effectively I need to estimate the changes in probabilities of voting for Gore across the interaction of context, political knowledge, and social connectedness.

I use \textit{CLARIFY} (Tomz, Wittenberg, and King 1999) to judge the statistical significance of the change in probability of voting for Gore moving from a strongly Republican to strongly Democratic precinct. Figure 4.1 graphs the change in predicted

\textsuperscript{8} Due to the wide variation in the size of election precincts in these 15 counties, I have inversely weighted observations in our sample by the average number of registered voters in each precinct for the years 1988, 1992, and 1996. I adjusted this measure of average registered voters by regressing the mean score on the number of registered voters for each individual presidential election. Using the predicted number of registered voters from these equations I calculate an adjusted mean number of registered voters for the three presidential elections. This adjustment attenuates the influence of the less competitive 1996 Clinton reelection on the measure of average voter registration for precincts where we have data for fewer than three elections.

\textsuperscript{9} As with the other analyses reported in this dissertation, African-American respondents were removed from this analysis. The areas surveyed for the suburban voter study are peopled primarily by whites. Black respondents comprised about 2 percent of the respondents. Rather than confound the inferences of this study with the effects of racial politics, I have chose to focus on Caucasian respondents. A more racially heterogenous sample will allow me to explore the ramifications of this form of social connected on interracial political questions as well as the political participation and choices of other racial and ethnic groups.
Figure 4.1. Probability of Gore support: Socially connected voters by political knowledge
probabilities for socially connected (who responded one standard deviation faster than the sample's mean response time on the community attachment item, -191) associated with a shift from a strongly Republican precinct (13 percent normal Democratic vote) to a strongly Democratic precinct (99 percent). Moderately informed voters (scoring 4 on the political knowledge scale), who are socially connected, were strongly influenced by their cue in the predicted direction. At no other level of political knowledge was there a statistically significant contextual process, nor were any of the probability changes computed for voters with weaker social connection to their neighborhood (537). This confirms both expectations about the role social connectedness and political expertise play in mediating a contextual cue.

Figure 2 maps the probability of voting for Gore among moderately knowledgeable voters across values of social connectedness (response times on the right bottom axis with a range of {-537, 847}, two standard deviations above and below the mean social connectedness) and contextual support for Democrats (normal precinct Democratic percentage of two-party vote with a range of {13, 99}).

As expected, the relationship between contextual cues and vote choice is profoundly influenced by the voter's social connectedness. Among these moderately informed voters, the faster an individual responds to our question about affective community attachment, the more likely is that individual to conform with a community signal.

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Figure 2 shows the predicted probability of voting for Gore across the range of values of social connectedness and Democratic strength at the precinct level, holding political knowledge equal to 4, representing moderate-to-highly informed voters. The figure also holds the model's control variables to their modal levels, with party identification set to 0, indicating Independent and Republican respondents; and the state set to Pennsylvania.
Figure 4.2. Probability of Gore Support: Connection and context among moderately informed voters (Knowledge=4; n=122)
Discussion

This empirical demonstration lends further support to the social influence process discussed in Chapter 2. Individuals with moderate levels of information appear influenced by their neighbors as a function of their social connection to their neighborhood. Further, this analysis reveals stronger influence among voters exposed to a strong social cue – a higher level of normal precinct-level support for one party or the other – than a weaker cue. Along the front edge of Figure 1, moderately informed strongly socially connected voters swing convincingly in the direction of their environment, with voters living in highly Democratic areas almost certain to vote for the Democratic nominee, independent of their prior partisan commitment, and voters in GOP-dominated areas almost certain to vote for the Republican, again regardless of their prior political leanings.

I have thus far established social contexts influence the candidate choices and participation decisions of moderately informed socially connected individuals. These people act as if they need political advice, are willing to take it, and are willing to trust their neighbors' political leanings as guidance. Beyond this, these results suggest that social influence is affected through the usefulness of the information neighbors provide to an individual, rather than the efforts of these neighbors to wear down potentially persuadable receivers of information. However, an additional empirical demonstration might lend further credence to the proposition that an individual who needs information and is favorable inclined toward placing faith in his neighbors does so due to the benefit of the information and not just to fit in or out of a fear of reprisal from political discussion partners.
In the next section of this chapter, I anticipate and find evidence of social influence in a situation that proponents of a coercion model might not expect to find it. If social influence requires a social reinforcement schedule of exposure to neighbors who monitor and sanction or reward individuals for the positions they take on political issues, what should we find when individuals are provided with information about their context and invited to take a position on a political issue in the privacy of their own home and within the anonymity of a telephone survey of randomly drawn individuals? Without the reinforcement feedback loop, adherents to the coercion model should expect little or no social influence. However my prediction, implied by an informational persuasion model of contextual effects, is substantially different. I anticipate people who need political information, receive it from their social contexts, and have judged these contexts as trustworthy (evidenced by their social connectedness to it), will be influenced by the information they receive. I have designed a survey-based experiment intended to ask whether people will be influenced by their neighbors without direct exposure to these neighbors or the coercive feedback process assumed by 50 years of research on contextual influence.

**Social Influences on Death Penalty Opinions**

In addition to exploring the influence of actual contextual cues on candidate choice, political participation, and other policy-relevant behaviors, an implication of the theoretical perspective I am outlining is that modestly informed socially connected individuals will be influenced by political information attributed to their neighbors. Again, this also hinges on whether the social signal makes a sufficiently clear recommendation. To explore the hypotheses about this cue-taking form of social
influence, I developed a survey-based experiment, embedded within the final panel interview of the four-state suburban voter study.

Diagrammed in Figure 3, this experiment involved asking respondents whether they think the death penalty is fairly or unfairly applied in the U.S. While both major party candidates supported capital punishment during the 2000 presidential contest, the issue was the focus of much debate and news coverage, especially during the primary campaign season. Of particular interest was Republican nominee George W. Bush’s record on death penalty enforcement during his tenure as Texas governor (Sawyer 2000).

The experiment has a $2 \times 2$ design with a separate control group, producing five treatment conditions. Respondents were provided either with a cue attributing some public opinion about capital punishment to people who live in their neighborhood or to voters across the nation. A second manipulation involved the clarity of the signal provided – respondents were given either a “weak” signal and told that half of their neighbors or the nation held a particular view, or a clearer “strong” signal that a majority (65 percent) held this view. The direction of the cue was the same for respondents in each treatment cell. They were told about public perception that the death penalty is unfairly applied. The survey’s control group condition asked the question of interest and provided no informational stimulus. Respondents were randomly assigned to these conditions and debriefed about the information provided in the experimental treatments at the end of the survey.\(^{11}\)

\(^{11}\) The short debriefing at the conclusion of the survey informed respondents that they had been provided with estimates of public opinion based on county-level information obtained in earlier surveys, which might not accurately reflect public opinion.


Figure 4.3. Experimental design for social influence experiment

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Neighborhood</th>
<th>Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>In general, do you believe the death penalty is applied fairly or unfairly in this country today?</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Strong/Clear</td>
<td>—</td>
<td>Talking to people in your neighborhood, we found that most of them – about 65 percent – think the death penalty is applied unfairly in the United States. In general, do you believe the death penalty is applied fairly or unfairly in this country today?</td>
<td>Talking to people across the nation, we found that most of them – about 65 percent – think the death penalty is applied unfairly in the United States. In general, do you believe the death penalty is applied fairly or unfairly in this country today?</td>
</tr>
<tr>
<td>Mixed</td>
<td>—</td>
<td>Talking to people in your neighborhood, we found that about half of them think the death penalty is applied unfairly in the United States. In general, do you believe the death penalty is applied fairly or unfairly in this country today?</td>
<td>Talking to people across the nation, we found that about half of them think the death penalty is applied unfairly in the United States. In general, do you believe the death penalty is applied fairly or unfairly in this country today?</td>
</tr>
</tbody>
</table>

Note: At the end of the survey, respondents were debriefed. They were informed that the estimates for public opinion that we shared with them were based on county-level information we obtained in earlier surveys and may not accurately reflect public opinion.
I expect to see differences between socially connected people and individuals with weaker social ties in the strong/neighborhood cue treatment cell responding to this specific signal. Further, this social influence among socially connected people, mediated by their political expertise, should operate only in this strong/neighborhood treatment cell. I do not expect socially connected people to succumb to the influence of other across the nation or any of the weak treatment condition.

As discussed above, I have slightly different expectations in this analysis about how political expertise will affect cue-taking among socially connected voters. In the previous analyses, survey respondents were, in a sense, responsible for having collected their own contextual cue. I expected people with little expertise, knowledge, and interest in politics to resist the influence of the contextual cue, anticipating that they would fail to collect the information or properly process it (Zaller 1992). However, in this empirical demonstration, I will supply the contextual cue to survey respondents directly. As a result, I expect to observe strong patterns of social influence among socially connected, low-expertise voters, as well as moderately informed voters. These individuals have little existing experience with politics and thus will be most influenced by new information, provided they receive the information (McGuire 1968). The hypothesis is narrow, but clearly anticipated by the perspective on social influence I develop. I should observe a significant relationship between social connectedness and death penalty support in the strong local cue treatment cell among respondents with low-to-moderate levels of political expertise.

The model reported in Table 4.2 estimates the effects of information about local and national opinion on the death penalty, social connectedness, and political expertise on
the beliefs individual express about capital punishment using dummy regression with interactions. Dichotomous variables representing each of the four treatment categories presented in Figure 1 were statistically interacted with social connectedness, political knowledge and their interaction in order to estimate the influence of these on respondents receiving each of the four different informational cues. The influence of social connectedness, political knowledge and their interaction for respondents in the control group are characterized by the main effects for the variables. The control group is the excluded category in this dummy-variable regression.

The measures of social connectedness and political expertise, operationalized using knowledge, are the same as those discussed in Chapter 3 and the candidate choice model. The model also includes controls for the political ideology (Young 1991) and sex of respondent.\(^{12}\) Ideology is measured using a three-point scale, representing responses to the question "When it comes to politics, are you liberal, moderate, or conservative, or have you not thought much about this?" Liberals were coded -1, moderates 0, and conservatives 1. I expect political ideology, coded in this manner to be negatively correlated with the perception that the death penalty is unfairly applied. The sex of respondent measure is coded with male respondents set equal to 1 and female respondent to 0. Men are traditionally more supportive of the death penalty than women (Ellsworth and Gross 1994) and could be less likely to view the policy as unfairly applied.

\(^{12}\) From the standpoint of experimental design, these control variables are unnecessary. However, they are included because they represent alternative ways to understand beliefs about the death penalty and thus may be of interests for students of opinion in this policy area.
Table 4.2. Perception of death penalty unfairness by cue strength and source

<table>
<thead>
<tr>
<th></th>
<th>$\beta$</th>
<th>(Robust s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Control Group</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.3379</td>
<td>(0.4171)</td>
</tr>
<tr>
<td>Social Connectedness</td>
<td>0.0004</td>
<td>(0.0018)</td>
</tr>
<tr>
<td>Political Knowledge</td>
<td>-0.0753</td>
<td>(0.1023)</td>
</tr>
<tr>
<td>Social Connectedness * Political Knowledge</td>
<td>-0.0000</td>
<td>(0.0004)</td>
</tr>
<tr>
<td><strong>Most Neighborhood</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>main effect</td>
<td>-1.1495**</td>
<td>(0.5737)</td>
</tr>
<tr>
<td>Social Connectedness</td>
<td>-0.0088***</td>
<td>(0.0035)</td>
</tr>
<tr>
<td>Political Knowledge</td>
<td>0.2061</td>
<td>(0.1273)</td>
</tr>
<tr>
<td>Social Connectedness * Political Knowledge</td>
<td>0.0023**</td>
<td>(0.0009)</td>
</tr>
<tr>
<td><strong>Half Neighborhood</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>main effect</td>
<td>-2.0247*</td>
<td>(1.1773)</td>
</tr>
<tr>
<td>Social Connectedness</td>
<td>0.0003</td>
<td>(0.0057)</td>
</tr>
<tr>
<td>Political Knowledge</td>
<td>0.3942</td>
<td>(0.2746)</td>
</tr>
<tr>
<td>Social Connectedness * Political Knowledge</td>
<td>-0.0001</td>
<td>(0.0014)</td>
</tr>
<tr>
<td><strong>Half Nation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>main effect</td>
<td>-2.9517***</td>
<td>(0.8749)</td>
</tr>
<tr>
<td>Social Connectedness</td>
<td>0.0015</td>
<td>(0.0021)</td>
</tr>
<tr>
<td>Political Knowledge</td>
<td>0.5662***</td>
<td>(0.1491)</td>
</tr>
<tr>
<td>Social Connectedness * Political Knowledge</td>
<td>-0.0002</td>
<td>(0.0006)</td>
</tr>
<tr>
<td><strong>Most Nation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>main effect</td>
<td>-1.4584</td>
<td>(0.9108)</td>
</tr>
<tr>
<td>Social Connectedness</td>
<td>0.0012</td>
<td>(0.0027)</td>
</tr>
<tr>
<td>Political Knowledge</td>
<td>0.2746</td>
<td>(0.1785)</td>
</tr>
<tr>
<td>Social Connectedness * Political Knowledge</td>
<td>-0.0002</td>
<td>(0.0007)</td>
</tr>
<tr>
<td><strong>Male Respondents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideology</td>
<td>0.6055***</td>
<td>(0.1579)</td>
</tr>
</tbody>
</table>

N = 538
$\chi^2$ (13 d.f.) = 40.01***
Pseudo R$^2$ = 0.07

***$p<.01$; **$p<.05$; *$p<.10$

Note: Standard errors are adjusted for clustering at the county level.
Results: The Application of Capital Punishment

Table 4.2 presents a logit model estimating the influence of our variables of interest on the views these suburban respondents expressed about the unfairness of the death penalty. Individuals who indicated that they consider the death penalty unfair are coded 1, while respondents were coded 0 if they said the death penalty is fairly applied or if they did not know how to judge the issue. Again, African-American respondents were removed from the analysis reported in Table 2. These respondents should be affected by community attitudes about the death penalty differently than white respondents, given the politics of capital punishment (Ellsworth and Gross 1994).

The first cluster of variables listed include social connectedness, political expertise (measured using political knowledge), and the interaction of these variables on the subjects who were randomly assigned to the control group, receiving no signal about public opinion on the issue. While the main effect for political expertise or knowledge is close to reaching conventional levels of statistical significance, none of these variables appear to influence the responses of individuals in the control group.

The coefficients characterizing the interaction of connectedness and political knowledge in each treatment cell are of particular interest. Of these, only the interaction reported for treatment cell two (respondents who received a strong cue about public opinion attributed to their neighbors) reaches conventional levels of statistical significance ($p<.05$). While this suggests social connectedness, mediated by political expertise, influences cue taking in that treatment cell, we cannot understand these effects and determine whether they are meaningful until we interpret the three-way interactions of social connectedness, political knowledge, and the dichotomous treatment indicators.
The hypothesis I want to test anticipates an influence of social connectedness on the opinions an individual expresses under limited conditions – a strong community-level stimulus and a low-to-moderate level of experience with politics. Consequently, I am interested in whether the estimated slope coefficient for social connectedness is different from zero in each treatment cell at each level of political knowledge.

Table 4.3 presents estimated slope coefficients for social connectedness, and standard errors for those slope coefficients, in each treatment cell and at each observed level of political knowledge. These coefficients were calculated using the estimated parameters for the main effect of social connectedness, its interactions with the treatment indicator and political knowledge (holding political knowledge at each of the levels presented in the table), and the three-way interaction of connectedness, political knowledge, and each treatment. Standard errors are calculated using the variance and covariance estimated for these parameters (Aiken and West 1991:54).\(^\text{13}\)

Of the estimated slopes for social connectedness, only four are statistically different from zero at the p<.01 level (two-tailed test) or better: the slopes for social connectedness among subjects who possess relatively low or moderate levels of political knowledge and received a strong local cue. Each of these coefficients is signed negative,

\(^{13}\) The complexity of the model, particularly its inclusion of so many interaction terms, prevents its estimation using CLARIFY (Tomz, Wittenberg, and King 2001). However, Aiken and West provide a tractable way to develop hypothesis tests for the effects of social connectedness in each treatment cell and at each level of knowledge. The following formula can be used to compute the standard error of coefficient recovered from a three-way interaction:

\[
s_0 = \left[s_{11} + Z^2s_{44} + W^2s_{55} + Z^2W^2s_{77} + 2Zs_{14} + 2Ws_{15} + 2ZW^2s_{17} + 2ZWS_{45} + 2WZ^2s_{47} + 2W^2Zs_{57}\right]^{-\frac{1}{2}},
\]

where

- \(s_{11}\) = the variance of the main effect for the variable of interest,
- \(s_{44}\) = the variance of the variable of interest interacted with mediator 1, \(Z\)
- \(s_{55}\) = the variance of the variable of interest interacted with mediator 2, \(W\)
- \(s_{77}\) = the variance of the three-way interaction
- \(s_{14}\) = the covariance of the main effect and the 1\textsuperscript{st} interaction term.

(The other covariances are similarly displayed.)

\(Z = \) a test value for mediator 1
\(W = \) a test value for mediator 2
**Table 4.3. Social connectedness and death penalty perception, by treatment and political expertise**

<table>
<thead>
<tr>
<th>Political Knowledge</th>
<th>Control Group</th>
<th>Strong Local</th>
<th>Weak Local</th>
<th>Weak Nation</th>
<th>Strong Nation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (0)</td>
<td>.00042</td>
<td>-.00835**</td>
<td>.00076</td>
<td>.00195</td>
<td>.00063</td>
</tr>
<tr>
<td></td>
<td>(.00182)</td>
<td>(.00379)</td>
<td>(.00483)</td>
<td>(.00126)</td>
<td>(.00202)</td>
</tr>
<tr>
<td>Low (1)</td>
<td>.00038</td>
<td>-.00613**</td>
<td>.00062</td>
<td>.00169</td>
<td>.00060</td>
</tr>
<tr>
<td></td>
<td>(.00136)</td>
<td>(.00277)</td>
<td>(.00373)</td>
<td>(.00105)</td>
<td>(.00161)</td>
</tr>
<tr>
<td>Moderate-Low (2)</td>
<td>.00035</td>
<td>-.00391**</td>
<td>.00048</td>
<td>.00142</td>
<td>.00057</td>
</tr>
<tr>
<td></td>
<td>(.00093)</td>
<td>(.00177)</td>
<td>(.00265)</td>
<td>(.00087)</td>
<td>(.00122)</td>
</tr>
<tr>
<td>Moderate (3)</td>
<td>.00032</td>
<td>-.00169**</td>
<td>.00034</td>
<td>.00116</td>
<td>.00053</td>
</tr>
<tr>
<td></td>
<td>(.00060)</td>
<td>(.00085)</td>
<td>(.00165)</td>
<td>(.00076)</td>
<td>(.00093)</td>
</tr>
<tr>
<td>Moderate-High (4)</td>
<td>.00029</td>
<td>.00054</td>
<td>.00020</td>
<td>.00089</td>
<td>.00050</td>
</tr>
<tr>
<td></td>
<td>(.00060)</td>
<td>(.00066)</td>
<td>(.00099)</td>
<td>(.00075)</td>
<td>(.00081)</td>
</tr>
<tr>
<td>High (5)</td>
<td>.00026</td>
<td>.00276</td>
<td>.00006</td>
<td>.00063</td>
<td>.00047</td>
</tr>
<tr>
<td></td>
<td>(.00089)</td>
<td>(.00151)</td>
<td>(.00134)</td>
<td>(.00084)</td>
<td>(.00095)</td>
</tr>
</tbody>
</table>

(*** p<.01; ** p<.05; * p<.10)

Note: Standard errors computed using Aiken and West’s (1991) methodology are included in parentheses.
indicating that as a respondent in this treatment cell is more socially connected he is more likely to indicate the death penalty is unfair. As hypothesized, the social connectedness effect among moderately knowledgeable respondents provided the weak local cues, or either of the national cues does not reach conventional levels of statistical significance.

Figure 2 graphs probability changes associated with statistically significant social connectedness slopes from Table 4.3 (p<.01 or better). Individuals with low levels of political knowledge are influenced by a strong community cues about the death penalty as a function of their social connectedness. Individuals with little political knowledge who are socially connected (i.e., those having an adjusted response time one standard deviation, about two seconds, faster than the mean on the community attachment item) are more likely to say they think the death penalty is unfair when told their neighbors think the death penalty is unfair. Individuals with modest political expertise who are given the neighborhood cue also move in the direction of the cue as a function of their social connectedness, but not as strongly.

The results suggest socially connected people respond to information contained in a strong/neighborhood signal, but only socially connected people with moderate-to-low political knowledge. As political knowledge increases, the influence of the neighbors’ recommendation decreases. This influence only occurs when the contextual cue suggests a majority leans strongly in a particular direction. The ambiguous social signal did not influence opinions among even socially connected individuals.\footnote{In a similar survey-based experiment that focused on the school voucher issue, I found individuals possessing little experience in political matters and enjoying strong ties to their neighbors disproportionately influenced by representations of local public opinion (Johnson 2001). The estimated slope coefficients for social connectedness in the strong/local cue treatment among respondents with low-to-moderate levels of political knowledge were not significantly different from 0, but were different from the estimated coefficients for similar subjects assigned to the control group (p<.05).}
Figure 4.4. Low-to-moderately informed respondents influenced by strong local cue as a function of social connectedness

Note: Estimated probability changes were computed for slopes that reach conventional levels of statistical significance (p>.10).
Conclusion

This survey-based experimental investigation of attitudes toward capital punishment lends support to the same process of social influence I observed affecting voting and candidate choice. The results in each of these research settings and designs are consistent with my expectations for the roles played by social connectedness, political expertise or knowledge, and signal strength in contextual influence. Individuals who are psychologically engaged in their neighborhoods, in need of information about political issues, and provided with and consume a clear recommendation by their neighbors – or a clear recommendation attributed to neighbors – are influenced in the direction of the cue.

Further, the social influence we observe in the death penalty experiment was manifested in the privacy of survey respondents’ own home and in the neutral and relatively anonymous setting of a public opinion survey conducted over the telephone. These political discussions shielded respondents from the potentially coercive external environment some students of contextual influence envision and still identify patterns of contextual effects similar to the social influence observed influencing other political behaviors. The content of social cues matters to socially connected people for the information and recommendation these cues provide. Conformity is valuable not just for the solidary benefits it provides but for its policy ends as well.

In the next chapter, I turn my attention to aspects of the causal story I am unable to adequately observe or test using survey data. I have alleged that an individual is influenced by her environment largely through the development of strengthened social connections to that environment, the residue of a process of repeated positive experiences with others in that milieu. Repeated positive experiences, I go on to suggest, affect the
willingness of that individual to trust her neighbors and the information they provide. As a result, people do not succumb to the influence of others in their social environment out of fear of reprisals from their friends and neighbors, but rather because these people chronically provide them with useful and satisfying assistance in making choices.

While quite plausible and supported by the analysis of social connectedness as a dependent variable in Chapter 3, this story ultimately relies on unobserved or unobservable actions of survey respondents. How can we reliably measure this historical process of repeated interaction and ascertain whether it produces positive or negative outcomes for a survey respondent? Additionally, recent scholarship suggests that traditional survey-based measures of trust are neither valid nor reliable (Glaeser et al. 2000). Consequently, I will make use of an alternative methodology to explore the effects of repeated positive social interaction on the development of trust among the individuals who people a milieu, an experimental investigation conducted in a behavioral research laboratory rather than over the telephone.

This experiment assigns individuals at random to minimal social groups in a laboratory settings and assigns tasks to these groups in a way intended to manipulate the quality of their experience interacting with their fellow group members. I then explore their willingness to trust members of this group using a variation of the centipede game (McKelvey and Palfrey 1992). I find positive and negative experiences in these social environments strongly affect the willingness of group members to behave toward each other in a trusting manner, consistent with the discussion outlined in Chapter 2. In Chapter 5, I fully review these experimental results and discuss their implications for research on social influence.
F I V E

Social Interaction and Trust: Evidence from a Social Experiment

Other empirical chapters of this dissertation have focused on the influence of neighborhood cues on electoral participation, candidate choice, and issue position-taking. I have found evidence that people who are socially connected to their neighborhood are influenced by information they receive from their social environment, and that this relationship between social connection and cue taking is mediated by each individual's level of expertise dealing with politics. People with very high levels of experience dealing with politics and thus a great deal of political knowledge are less likely to respond to information provided by their environment than people with low or moderate levels of political knowledge (Zaller 1992; Orbell 1970).

This chapter examines causal factors I expect to affect social influence, complementing the survey results presented thus far. Treating social influence as a special case of persuasion. I have asked under what conditions an individual will be persuaded by the information he receives from others in his social environments. I expect that individuals will be influenced by the social cues they draw from their surroundings when, among other things, they trust the people who occupy these social

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1 This research was supported by Professor Rick K. Wilson and the Rice University Behavioral Research Lab, funded in part by National Science Foundation Grant SES 99-78057.
environments with them. Consequently, I am interested in the formation of trust among individuals located in a social context, such as a neighborhood.

My expectation is that a person's connection to her surroundings forms as a result of a process that also breeds trust, discussed in Chapters 2 and 3. A socially connected person develops social ties to a milieu as the result of an iterative process of seeking and using information from her environment, and then evaluating the results she associates with using this information. Positive outcomes should encourage a person to consider the advice of people in that milieu again in the future. The same process that generates her social connectedness to a neighborhood, for example, should also inform or teach her that she can trust the information her neighbors provide. In this chapter I ask whether there is an explicit causal linkage between enjoying positive experiences in a social setting and a person's willingness to trust others in that social setting.

**Trust and Social Influence**

Drawing on game-theoretic and psychological understandings of persuasion, Lupia and McCubbins (1998) argue that persuasion occurs when an individual is initially uncertain about what action to take and views the provider of a recommendation to be both knowledgeable and trustworthy. They focus on common interests, institutional constraints, and other external forces as sources of trust (1998:55). However, given the absence of formal rules governing interaction and information exchange in the social
environments\(^2\) that motivate this investigation, I focus on how individuals come to trust each other independent of institutional constraints.\(^3\)

While not making any explicit claims about trust, classic and contemporary literature on social influence frequently indicates that people perceived to share common interests with an individual are most influential to him. Katz and Lazarsfeld (1954) and Berelson, Lazarsfeld, and McPhee (1954) identify social influence among blood relations, thought to have similar interests as a function of their kinship. However, others suggest this kind of familial intimacy is not necessary for the perception of common interests. Huckfeldt and Sprague focus on "structural similarity" (1993) as a basis for perceived common interests. They suggest neighbors and co-workers are influential in part because they are likely to have similar socio-economic characteristics, and thus appear to have the same interests. Along the lines discussed by Lupia and his co-authors (see also Druckman and Lupia 1997), I argue that an important commonality between social influence among family members and among co-workers or neighbors is that trusted people can be persuasive. Other things equal, I expect individuals to be influenced to act in accord with social signals they receive when they trust others in their social environment. Common interests provide only one potential basis for trusting others. In fact, given the presence of institutional safeguards, Lupia and McCubbins (1998) discount perceived common interest as unnecessary for persuasion. An additional source

\(^2\) For example, there are no real penalties for telling your neighbor you support Ralph Nader for President when you actually plan to vote for Al Gore.

\(^3\) In fact, some would argue that institutionally driven trust is not social trust at all, but rather confidence in a system of rules (Seligman 1998).
of trust can be found in the shared experiences of individuals and the people who potentially influence them.

Trust involves choosing an action “in spite of the possibility of being disappointed by the action of another” (Luhmann 1988:97). In the case of social influence, trust means acting on the bases of socially obtained information without knowing what outcomes will obtain from doing so. Trust is generally based on the predictability of others - either their actions or their competencies - but involves an element of risk due to a lack of an underlying sense of familiarity or a system of sanctions (Seligman 1998). You might know your neighbor generally follows politics and has provided good political advice in the past, but the possibility exists that she could recommend a poor candidate in the present election. However, given past successes associated with following her advice, you trust the recommendation she makes and vote for her preferred candidate. In any case, this is a probabilistic judgment. People should trust when the probability of benefit is high enough to merit engaging in the risk or cooperation (Gambetta 1988).

Again, there are many sources of trust. Knowing that you share interests with the intended trustee is just one of those bases for trust (Kramer 1999). Institutional rules, incentive structures, and long time horizons are other potential sources for trust or confidence in another person (Hardin 1993). Here, I focus on shared experiences, or learned trust (Hardin 1996).

Earlier, I found support for the proposition that individuals become socially connected to a particular social environment by repeatedly interacting with individuals in it in large part because they find over time that they benefit from doing so. This social

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4 This discussion focuses on endogenous trust. For entirely different perspectives viewing trust as moral and exogenous see Fukuyama 1995 and Uslaner 2001.
connection provides two informational benefits. First, socially connected people have a higher level of access to information about the recommendations their social environments provide. Second, they should be more likely to trust their social environments, reflected in this pattern of returning to a particular milieu time and again to solicit a recommendation. Camerer and Knez (2000) formalize an intuitive argument presented by Blau (1964) which suggests that cooperative, trusting relationships grow over time as interaction partners move from less risky exchanges to increasingly risky deals. The less risky situations provide a precedent for the potentially costlier and more dangerous interactions.

I ask whether individuals who enjoy a series of positive social interactions subsequently trust their “neighbors” more than individuals who experience either no social interactions or have a set of bad experiences interacting with others in the laboratory setting. While I am ultimately interested in the use of the informational content that is exchanged in social situations, moving a step beyond the issue of trust, an investigation of cue-taking behavior will require additional experimental research.

This chapter examines the results of an experimental investigation into trusting behavior among individuals in a laboratory setting. Subjects participated in a version of the “centipede” game (Binmore 1987; McKelvey and Palfrey 1992; Rosenthal 1981), which allow players to increase exponentially their earnings, provided they trust each other and prove worthy of this mutual trust. A Nash equilibrium prediction of the game is that actors will not behave in a trusting manner and will earn far less than they might

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5 This argument is not intended to imply that individuals experiencing hardship with others will be less trusting of the people who have shared their burden. In fact, many would contend that strong social bonds are formed due to common adversity. However, if the people who surround them rather than circumstance cause the negative experiences a person endures, these experiences should reduce trust and rapport.
working together. The principal manipulation in the experiment is intended to affect the success of subjects' social experiences with a group of potential counterparts for the centipede game. I find players who enjoy successful and positive experiences with their counterparts are more trusting in their play of the centipede game than players who have no social experience with their counterparts or unsuccessful, negative experiences in a social context. Players who enjoy positive social interactions with their counterparts prior to the centipede game earned more than those who endured negative experiences.

**Experimental Design**

The four-move centipede game shown in Figure 5.1 pairs individuals and offers the ever-increasing piles of unequally divided money (Rosenthal 1981; McKelvey and Palfrey 1992). At each node, a subject is allowed either to take the offered pile, which advantages her in its unequal division, or pass the decision to the next player. Subjects are shown the entire game tree at the beginning of and throughout game play. With each decision to pass, each subject knows the pile will increase, by how much, and that the other player will have an opportunity to take the larger pile on the next. If the players are both trusting and trustworthy, they can work together to exponentially increase their earnings 16-fold. At each of two potential decision nodes, players are asked to make a judgment about their counterpart: Is my partner a person with whom I can work to reach that best final payoff?

If each player passes at every node, the players are better off together than they otherwise would be under any other scenario. However, the most straightforward

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9 Another Nash prediction of the centipede game involves the subjects’ beliefs about the types of players - altruistic or rational, strategic or sincere - that populate the experimental subject pool. Characterizing this alternative equilibrium is unnecessary for the discussion at hand. However, interested readers should consult McKelvey and Palfrey's discussion of quantal response equilibrium modeling (1992).
Figure 5.1. The centipede game
prediction for the game is that the first player will take the offered pile at the first node (Binmore 1987). Subjects rarely act in this manner. Similarly, in past plays of the centipede game, subjects have been even less likely to obtain the Pareto-optimal outcome maximizing total payoffs. In their investigation of several hundred plays of a four-move centipede game, McKelvey and Palfrey (1992) find that about three-quarters of games end at either the second (35.6%) or third (37%) node. Smaller percentages of games in their study ended at the first (7.1%), fourth (15.3%), or final (4.9%) nodes.⁷

In this experiment, prior to playing the centipede game, subjects will undergo treatments intended to manipulate their success or failure in obtaining desirable outcomes with others in a social setting. I expect that developing a track record of successful interaction within a social network will induce respondents to be more trusting of the people in that milieu.

Treatments

The precedent for associating the members of a milieu with positive outcomes and successful social interaction was manipulated using two versions of a coordination game (see Wilson and Rhodes 1997). Groups of four subjects⁸ were asked to jointly select one of three colors during 11 rounds of play.⁹ The decision matrix is shown in Figure 5.2. The

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⁷ McKelvey and Palfrey attribute non-Nash play to "irrationality," altruism, error, and guile. However, the game invites players to reciprocate trust, as each risks substantial loss in each pass decision.

⁸ All subjects were told that they were assigned to "Group M." By assigning the group a name, I intended for people to invest the group as a whole with responsibility or blame for good or bad outcomes. Rather than call the group something that might inspire confidence, like "Group A" or "Group #1," Group M is minimal name for a minimal identity.

⁹ Each coordination decision presented subjects with three colors randomly selected from a set of six colors: Orange, Yellow, Green, White, Gray, and Brown. Subjects were shown cards or squares labeled with the names of these colors rather than cards showing the actual hues and tones because in pilot versions of the experiment the brighter colors (Yellow and White) proved to serve as focal points for subjects. Consequently, I reverted to using color names rather than colored cards as described by Wilson and Rhodes (1997) and Rhodes (1998).
**Figure 5.2. The coordination game**

Amount you earn when other group members pick the same color you choose

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gray</strong></td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td><strong>Orange</strong></td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td><strong>Green</strong></td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
</tbody>
</table>
amount of money a subject was credited with for each round depended on the number of other members of their group selecting the same color they chose. If an individual chose a color no other subject selected, she would be credited $1.00 for that round of the coordination game. If all four members of the group choose the same color in a round, each player earns a $5.50 credit for that decision. Subjects were paid for only one of these decisions, chosen at random at the conclusion of the experiment. However, subjects were informed about how many members of their groups chose the same color they chose and how much money they were credited with at the end of each round.

The experimental design crossed two factors with two manipulations each:

1. Communication. In a “high communication” condition, subjects were allowed to signal their intended moves in each round prior to making a final color choice. Given the opportunity to signal their intentions, subjects in this treatment should converge more often on a single color, earn higher credits for they play in each round, and have more positive experiences than players assigned to the other manipulation in this factor. The “low communication” condition did not allow for signaling and required subjects to select colors with no knowledge of others’ intentions. Successful coordination experienced by these players would be achieved only by chance. Isolated subjects should be less likely than communicators to earn satisfying payoffs.

2. Composition. A second pair of manipulations is intended to affect subjects’ beliefs about the homogeneity or diversity of their group. Prior to playing the coordination game shown in Figure 5.2, subjects were presented with a series individual

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10 In each round, a player has a .15 probability of uniquely choosing a color, a .59 probability of choosing a color one other person chose, a .22 probability of choosing the same color as two counterparts, and a .04 probability of choosing the same color as all other group members.
decision tasks which asked to choose one of three colors on each of nine screens. After choosing these colors, subjects were told that a computer had analyzed their choices and assigned them to a group. The design allows me to compare the behavior of subjects told they have been grouped with people who made choices similar to the colors they picked and those informed that they are in a group made up of individuals with different color preferences.\textsuperscript{11} This design also allows me to directly contrast the effects of similarity on the development of trust with the influence of positive social interaction. However, given time and budgetary constraints, all of the subjects in the experimental sessions discussed here were told they were assigned to a diverse group. The experimental results presented here allow me to comment only on the effect of communication as it facilitates coordination in the experiment. Expanding into other treatment cells as part of future research will allow me to address the issue of how diversity and homogeneity influence the development of trust among group members.

**Control Group.** This design allows for four main treatment cells. But in addition to the test cells, several groups of subjects were assigned to a control condition which contained none of the social interaction stimuli. These subjects played one centipede game and required less time than the groups receiving the social interaction treatments.

The experiment’s design is charted in Figure 5.3. Again, for the purposes of this dissertation, I have focused only on subjects in the diversity treatment. The results reported here focus on the play of subjects in the shaded treatment cells.

\textsuperscript{11} The homogeneous/heterogeneous treatments also ensure that in the low communication treatment group, subjects blame each other and themselves for the failure of their group to coordinate. Experimental research on group process indicates that without a rationale, such as group heterogeneity, subjects are more likely to attribute negative experiences to the structure of the experiment and the experimenter, rather than they inability to work together as a group (Leary and Forsyth 1987).
**Figure 5.3. Experimental treatments**

<table>
<thead>
<tr>
<th></th>
<th>Homogenous</th>
<th>Diversity</th>
<th>Neither</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Communication</td>
<td>-</td>
<td>A</td>
<td>-</td>
</tr>
<tr>
<td>Low communication</td>
<td>-</td>
<td>B</td>
<td>-</td>
</tr>
<tr>
<td>Neither</td>
<td>-</td>
<td>-</td>
<td>C</td>
</tr>
</tbody>
</table>
After playing 11 rounds of the coordination game, subjects in treatment cells A and B were asked whether they would like to continue working with the group or disband. This referendum on the group gives me a manipulation check on the treatments to determine whether subjects assigned to each of the treatment cells had a positive or negative experience working with their counterparts. Then subjects were presented with the centipede game shown in Figure 5.1. In the experimental instrument, this game was called “Take or Pass.” I hypothesize the following:

H₁: Subjects in the High communication treatment should more easily converge on color choices as they play the coordination game prior to the centipede game, thus having more positive experiences in their social milieu.

H₂: Based on negative experience with their social network, subjects in Cell B will be more likely to want to disband as a group than subjects in Cell A. who enjoy more positive experiences in their social context.

H₃: High communicators (Cell A) should be more likely than subjects placed in Low communication Cell B to trust their fellow group members. and be more trustworthy. Specifically, subjects in the Communication treatment should be more likely than to pass at each node than subjects in the Low communication treatment.

Support for these hypotheses would buttress claims that successful experiences due to interaction with or observation of others in a social environment is a source of trust, not necessarily social similarity or the perception of specific common interests, given my assignment to all subjects to the diversity composition treatment.
Subjects and Experimental Procedures

Four experimental sessions were conducted with between 12 and 28 subjects in each. The design requires each session to include a number of subjects divisible by four. A total of 80 students at Rice University in Houston (Texas) participated in the experiment, with 28 assigned to each of the treatment conditions and 24 assigned to the control group. These subjects were recruited from campus dining halls and invited to participate in a decision making experiment. They were told the experiment would require less than an hour of their time, that they could earn a considerable sum of money for their participation, and that their earnings would depend on their decisions and the decisions of others participating in the experiment. All experimental sessions occurred at the Rice University Behavioral Research Laboratory.¹²

An experimenter seated each subject in a cubicle that afforded them privacy and anonymity during their session. These experiment participants were allowed to access the internet and instructed to remain silence facing their computer terminals before the experiment began. After the experiment started, all interaction among the participants was conducted through their computer terminals. Subjects were randomly assigned to a group of four players.¹³ These groups were then randomly assigned to one of the three treatment conditions.¹⁴ A complete protocol is provided in Appendix B.¹⁵

¹² To examine the experimental facilities, please see the laboratory’s website, brl.rice.edu.

¹³ The random assignment of players to groups was accomplished using a random number generator supported by the ColdFusion programming language used to prepare the internet-based interactive computer application for the experiment. At the same time of their random assignment to groups, subjects were also randomly paired with another member of this group and randomly assigned to the position of Player 1 or 2 for the centipede game.

¹⁴ The experiment was designed to provide observations of game play by members of 7 groups assigned to each main treatment and 6 groups assigned to the control condition. To ensure these quotas were satisfied, I produced a randomized list of the necessary 20 groups. Subjects in a given experimental session were usually assigned different treatments, produced by this randomization process.
Descriptive Summary of the Experimental Data

Recapitulating my expectations, willingness to trust others in a milieu should develop as a function of positive experiences in a particular social setting. To the extent that signaling intended choices in the high coordination game helps players converge on a single color and improve their payoffs across rounds of the coordination exercise, I expect subjects in the high communication treatment to have more positive experiences in this abstracted laboratory-based social context and to have more positive feelings about their group and play the centipede game in a more trusting manner. Specifically, subjects assigned to the high communication treatment should be more likely to pass at each decision node than participants in to the low communication condition.

Coordination in Treatment Groups

Averaging the number of group members who agreed with an individual subject across all plays of the coordination game provides a useful index of each player's success or failure in the coordination game, and thus a measure of how positive or negative their experience was in their social interactions. Across the two treatment conditions, subjects were able to coordinate their color choices with an average of two other members of the four-person groups during the 11 rounds of play in the coordination game. However, as expected, there is a strong treatment effect on the ability of group members to coordinate their choices. The members of low communication treatment groups were not able to coordinate their color choices as frequently as members of groups allowed more

\[15\] In addition to the individual and group color choices and the centipede game, subjects in all treatment and control cells were asked to complete a brief attitudinal questionnaire. This instrument asked them questions intended to measure their attitudes about trust and human nature. Because the focus of this analysis is on the experimental treatments, I will not delve deeply into describing the attitudinal data. However, the instrument is included in Appendix B.
communication. Individuals who were not allowed to signal their intentions before making their final color choices were able to coordinate with only one other group member on average (mean=1.33). Subjects who were allowed to signal their intended color choice in each round much more easily converged on common choices with their fellow group members (mean=2.86).  

However, subjects assigned to the low communication treatment were able to coordinate their color choices much more frequently than expected. A histogram showing these of average rates of coordination success is provided in Figure 5.4. Subjects assigned to the high communication treatment coordinated at high rates and fall on the right side of the bold line in the area of the histogram with no shading. Subjects assigned to the low communication fall to the left side within the shaded area on the chart. Some of these subjects were able to coordinate with their counterparts rather well, in spite of restrictions on their communication. Because four group members are choosing among three colors, at least two of them will choose the same color choices in each round. If by chance in early rounds of the coordination game, these subjects fortuitously converge on a particular color, that color can become a focal point when it appears in subsequent rounds. In the low communication treatment, individual coordination with others ranges from agreement with fewer than one other player on average (0.67) to coordinating with slightly more than 2 other players on average (2.17). In contrast, the range of individual coordination with others is much tighter among subjects allowed more communication \{2.25-3.00\}.

\footnote{The difference between these mean rates of individual coordination in the treatment groups is statistically significant (t=18.59, p<.001).}
Figure 5.4. Coordination among group members

Average Number of Group Members Making Same Color Choice
The implication of greater variance among members of the low communication treatment condition in their ability to coordinate is likely a greater variance in the quality of the experiences subjects assigned to the low communication treatment enjoyed. Subjects who were able to coordinate with their counterparts easily in spite of the barriers presented by restricted communication were able to generate much higher payoffs for themselves than those who found it difficult to converge on colors consistently. The members of some groups allowed minimal communication had more success in their social interactions than other subjects in the low communication manipulation. This has important implications for the analysis of centipede game play and conclusions about communication, experience, and the development of trust.

Attitudes about "Group M"

Subjects were asked at the end of eleven rounds of the coordination game whether they wished to continue working with the other members of Group M. or whether they would prefer to disband as a group. As expected, subjects assigned to the communication treatment were more likely to want to continue working with the other members of their group (t=1.84; p<.05, one-tailed test) than those in the low communication treatment. Less than 10 percent of the subjects assigned to the communication treatment wanted to disband (7.1%, 2 subjects), while a quarter of participants in the low communication treatment (7 subjects) wanted to disband their group.

Subjects' desire to continue working with their group was correlated with their ability to coordinate. Participants who coordinated with three others in their group on average were more likely to want to continue working with this group than subjects who coordinated with only one other player on average (t=1.82, p<.05, one-tailed). A fraction
of frequent coordinators wanted to disband their group (7.7%, 2 of 26 subjects), while infrequent coordinators matching with one other group member or less on average were more likely to want to disband (27.8%, 5 of 13 subjects). Students who coordinated with two other group members on average were less likely than those who more easily converged to want to continue working together (16.7%, 2 of 10 subjects).

Subjects in the high communication treatment had more favorable attitudes about continuing to work with their group and more easily coordinated their color choices than subjects assigned to the low communication treatment. This suggests the treatments successfully affected subject experiences with their groups. On average, people assigned to the higher communication treatment had more positive and rewarding experiences working with their group than people in the lower communication treatment, measured by the outcome of the coordination game and their differing evaluations of the group.

**Trusting Behavior in Centipede Game Play**

Table 5.1 shows the distribution of outcomes for the centipede game by treatment group. The game was played once by pairs of subjects: 80 subjects yield 40 plays of the centipede game. In spite of the smaller number of games played under these conditions, the descriptive results are consistent with those observed by McKelvey and Palfrey (1992).\(^{17}\) Most games end in the middle of the decision sequence on the second, third, or fourth nodes. Smaller fractions of players failed to move beyond the first node or worked together to realize the large payoff associated with the last node.

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\(^{17}\) Readers familiar with the McKelvey and Palfrey paper might consider pass decisions to be motivated by altruism. However, decisions to pass all the way to the end of the centipede game are more closely related to the issue of trust. Altruism involves a concern for the pay-offs of counterparts and could motivate a pass decision early in the game to ensure the counterpart receives a higher payout. However, mutual passing to the end of the experiment suggests a reciprocal relationship more appropriately described as trusting.
Table 5.1. Outcomes of centipede game by experimental treatment

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>$f_1$</th>
<th>$f_2$</th>
<th>$f_3$</th>
<th>$f_4$</th>
<th>$f_5$</th>
</tr>
</thead>
<tbody>
<tr>
<td>High communication</td>
<td>14</td>
<td>.00</td>
<td>.00</td>
<td>.29</td>
<td>.21</td>
<td>.50</td>
</tr>
<tr>
<td>Low communication</td>
<td>14</td>
<td>.00</td>
<td>.14</td>
<td>.21</td>
<td>.43</td>
<td>.21</td>
</tr>
<tr>
<td>Control</td>
<td>12</td>
<td>.17</td>
<td>.25</td>
<td>.17</td>
<td>.33</td>
<td>.08</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>.05</td>
<td>.13</td>
<td>.23</td>
<td>.33</td>
<td>.28</td>
</tr>
</tbody>
</table>
A minimal amount of social interaction, represented by the low communication treatment, appears to produce more trusting behavior, shifting the distribution of terminal node locations rightward. These minimal interactions reduce first node defection to zero and more than double the proportion of participants able to obtain the highest payoffs available at the final node. However, the fuller social interaction available to participants in the communication treatment, given the positive experiences associated with their coordination game play, are even more likely to realize the large payoffs. Half of the games played by subjects in this treatment cell enjoying several successful rounds of coordination and communication, reached the fifth node, maximizing player payoffs.

Subjects allowed to send and receive signals in the coordination game on average completed four nodes (mean final node = 4.214). Players prohibited from this signaling fell slightly short of the fourth node on average (mean final node = 3.714). The differences between these groups is statistically significant (t=1.40; p<.10, one-tailed), but not overwhelming. On the whole, even low-communicators, assumed to be low coordinators, fare pretty well and seem to be reasonably trusting of each other.

Non-parametric statistical tests used to compare these game outcomes suggest little difference between the treatment cells. The median terminal nodes are not statistically different across the two treatment manipulations (Wilcoxon rank-sum z=1.33, p=.18). Consistent with the difference of means t-test, the Kolmogorov-Smirnov test suggests players in the communication treatment moved slightly farther through the centipede game than low communication players (D=.29, p=.10). The populations of each treatment cell are not overwhelmingly different, with the Kruskal-Wallis one-way
equality of populations rank test statistic just reaching conventional levels of statistical significance ($\chi^2=3.25$, $p<.10$).

These rather small differences between outcomes in the treatment cells are not surprising given the unexpected success in the coordination game of some low-communication experiment participants. Because some players in the low communication condition coordinated with members of their group at a rate similar to coordination among subjects allowed to signal their intentions in each round, the distribution of outcomes is not as cleanly different across the experimental manipulations. In the next section, I will take into account both the treatment conditions and the variation in coordination among subjects assigned to the low communication condition, modeling each player's decisions to take or pass each pile in the centipede game and the results of the centipede game for each pair of players.

**Modeling Trusting and Trustworthy Behavior in the Centipede Game**

In their investigation of centipede game play, McKelvey and Palfrey (1992) model individual behavior using the premise that at each node, a player makes a decision and these decisions have systematic characteristics: the node of play is one such component. These decisions can be modeled or predicted as a function of these characteristics. I use their intuition to model individual decisions in the centipede game as a function of the node of play during which the decision was made, the treatment assigned to the decision maker, and the decision maker's success in coordinating with fellow group members prior to playing the centipede game.

As pairs of players move through the centipede game, subjects are increasingly likely to take the money and end the game. This may be in part because players risk
substantially more money by passing in later rounds than earlier rounds. For example, Player 1 essentially risks losing 60 cents by passing at node 1 (the difference between the $1.20 payoff she is guaranteed by taking and the $0.60 payoff she would receive if Player 2 takes at node 2), but risks $2.40 by passing at node 3. Therefore, I expect players to be less likely to pass in later rounds than earlier rounds.

Consistent with the hypothesis stated above, I expect individuals assigned to the high communication condition to be more likely to pass — acting as if they trust their counterpart — at each decision node, than subjects assigned to the low communication condition. However, given the range of coordination outcomes observed in the low communication condition, I need to modify this expectation. Above, I indicated that the important difference between the high and low communication conditions is that high communication subjects should enjoy more coordination and have more successful experiences than low communication participants. Individuals who coordinated more frequently with their group in spite of their assignment to the low communication treatment should also have had more positive group experiences than people who coordinated less frequently and should be more trusting than individuals who coordinated less frequently with the other members of their group. My analysis should be sufficiently flexible to capture differences in the experiences of low communication players.

As a first cut on modeling the centipede game data, I estimate the logit model presented in Table 5.2. This model pools all available individual decision data, with each player’s dichotomous decision to take or pass the pile at each decision node reached during play of the game used as the dependent variable. The decision is coded 1 if a
Table 5.2. Individual decisions to pass in the centipede game

<table>
<thead>
<tr>
<th>Decision Node</th>
<th>B (Robust s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-1.156 ***</td>
</tr>
<tr>
<td></td>
<td>(0.236)</td>
</tr>
</tbody>
</table>

| Communication Treatment | 8.134 **     |
|                        | (3.341)      |

| Low communication Treatment | -0.129   |
|                            | (1.003)   |

| Average Coordination with Group Members | -2.233 *   |
|                                         | (1.169)    |

| Low communication Treatment * Coordination | 3.035 **   |
|                                          | (1.336)    |

| Constant | 3.427 *** |
|          | (0.979)   |

N = 135
Log likelihood = -54.137
$\chi^2 = 58.46^{***}$
Pseudo $R^2 = 0.23$

*** p<.001; ** p<.05; * p<.10

Note: The dependent variable for this analysis is each decision to pass the pile to the next player or take the money (pass = 1; take = 0). Standard errors adjusted for subject clustering by group.
player passed the pile to her counterpart and 0 if she took the money and ended the game.

The independent variables are:

- the node of the decision (integers ranging between 1 and 4);
- two dummy variables indicating the treatment assigned to the decision maker (with the control group as the excluded category);
- the average number of group members the decision maker coordinated with during the coordination game (ranging continuously between 0 and 3). all members of the control group are scored at zero on this variable because they had no experiences coordinating with others;
- the interaction between the indicator for subjects assigned to the low communication treatment and the average number of group members the decision maker coordinated.

As expected, there is a negative relationship between pass decisions and the node on which the decision was made. As subjects approach the end of the centipede, they are more likely to take the money and end the game. Subjects assigned to the high communication treatment were more likely to pass at all nodes than subjects assigned to the low communication treatment. Within the low communication treatment, however, we see some interesting variation largely attributable to success in coordination. The interaction between rates of coordination and the low communication treatment indicator is positive and significant. This suggests that subjects who fared better playing the coordination game were more likely to pass at each node even if assigned the low communication treatment.
In order to elaborate on the model's estimates and further illuminate the effects of communication and coordination on decision making at each node, I used CLARIFY for Stata (Tomz, Wittenberg, and King 2001) to compute predicted probabilities for passing at each node. Figure 5.5 graphs these predicted probabilities for five general types of subjects. It compares players assigned to the control group and the high communication treatment, as well as for players who were assigned to the low communication treatment and either coordinated with 0, 1, or 2 other members of their group on average during the coordination game. For each of the lines shown in Figure 5.5, the differences between the predicted probability of passing at node 1 and the probability of passing at node 4 is statistically significant (p<.05).

These estimated probabilities predict that at the first and second nodes, all of the subjects will pass the pile and continue the game. However, beyond the third node, subjects who had no social interactions or who endured a series of unsuccessful and dissatisfying attempts to coordinate with members of their group are predicted to take the money and end the game. Subjects who were able to coordinate effectively with their fellow group members and thus enjoy successful social interactions either as a function of communication or good fortune, are predicted to continue to pass at each decision node. Subjects assigned to the high communication treatment are more likely to pass at each node than people assigned to the control group (p<.05) and are more likely to pass at each node than people assigned to the low communication treatment experiencing little or no coordination (p<.10). The differences between the predicted probabilities of passing at each node among subjects with low communication and no effective coordination and those among subjects with low communication and frequent coordination is also
Figure 5.5. Pass decisions in the centipede game

- No communication, no coordination (0)
- No communication, some coordination (1)
- No communication, more coordination (2)
- Communication, full coordination (3)
- Control
statistically significant (p<.05). These results support the claim that individuals who benefit from a series of positive and successful social interaction learn to trust their partners, even in the face of severe constraints on their ability to exchange information with these interaction partners.

As noted, this analysis is a first cut on analyzing this data. It is suggestive but not as persuasive as it might be, given the attributes of the centipede game. In theory, each player has the opportunity to make two decisions to take or pass during each game, with 40 plays of the centipede game representing a potential for 160 individual decisions, I examine only 135 individual choices to take or pass. When a player’s counterpart chooses to take, he no longer has the opportunity to make any more decisions, and the number of decisions actually made by participants in the centipede game is truncated. Further, this model does not fully capture the structural dynamics or the endogeneity of choices in the centipede game. Each player moving on node 3 or 4 has already observed their own plays and their counterpart’s behavior on the previous nodes, not just selecting a narrower group of decision makers for these later choices, but also substantively changing the nature of the decision itself.

Additional analysis would lend further support to the proposition that positive and negative experiences in a group affect the willingness of its members to trust each other, as the individual-level analysis suggests. To simultaneously cope with the structural dynamics of the centipede game, I shift the level of analysis to examine outcomes of each centipede game played. The dependent variable for this analysis is the number of nodes each pair of centipede game players reached, having values ranging from 1 to 5. If Player 1 took the pile of money on the first node, the dyad outcome is
coded 1. If Player 2 took the pile on the second node at her first opportunity, the pair-
level observation is coded 2, and so on through node 4. However, if Player 2 passed on
his final decision at node 4, the observation is coded 5, because the pair reached a
hypothetical fifth node where no decision was required and the game ended with the pair
of players receiving the high possible total payoffs.

The number of nodes a pair reaches in each play of the centipede game represents
the length or duration of the game. Pairs of individuals confront each other and their
association survives from between 1 and 5 interactions, or decision nodes. A decision to
take the large pile represents a "failure" of sorts, the end of the game. This decision
occurs at the end of a sequence of events – pairs of subjects who continue to play and
reach the final decision node interact for a longer period of time covering a larger number
of interactions than pairs with players who take early in the game. By modeling the play
of subject pairs in the centipede game as a temporally ordered duration process, using
survival analysis (Box-Steppensmeier and Jones 1997), I am able to more fully address the
dynamics of game play.

Generally, duration models characterize the risk of a process ending at any given
moment, provided that failure has not yet occurred (Greene 2000). More importantly,
these models also allow researchers to estimate the average lifespan of a phenomenon
given its characteristics, the independent variables used in the model. How many moves
do pairs of players in the centipede game complete before one of the players takes the
money and ends the game? I address this question by estimating a censored Weibull
regression model, a form of duration model. Weibull regression has been used to study
the length of the Senate confirmation process for presidential nominees (McCarty and
Razaghian 1999), as well as the duration of political regimes (Bueno de Mesquita and Siverson 1995), international alliances (Bennett 1997), interstate rivalry (Bennett 1998), and other forms of conflict (Vuchinich and Teachman 1993).

The Weibull distribution characterizes processes where the risk of failure, or ending, changes over time better than other duration models such as exponential regression (Box-Steinflensmeier and Jones 1997). The descriptive results of the centipede game here suggest players are more likely to take the pile they are offered as they move through the centipede game and the pile increases in size. Players reaching later nodes should be more likely to take than players at earlier nodes, thus the mortality rate – the likelihood of failure – changes as the game progresses.\textsuperscript{18}

I also treat the number of nodes each pair of player reaches as a censored variable. Pairs of players are not allowed to interact further after the fourth decision node. Consequently, we are unable to observe how many more nodes they might last, trading ever-increasing piles of money. This is right-censored data (Greene 2000). I include a censoring variable set to 1 for each of the 29 observations which result in failures, or take decisions, and 0 for 11 centipede game plays which ended at the high-payoff fifth node.

Table 5.3 presents the results of centipede game outcomes.\textsuperscript{19} The independent variables are similar to those used for the individual-level analysis reported in Table 5.2:

\textsuperscript{18} The Weibull model allows the mortality rate – or baseline hazard rate – to vary with the length the dyadic interaction in the centipede game by estimating an auxiliary shape parameter (Box-Steinflensmeier and Jones 1997). The exponential model assumes that the shape parameter is equal to 1 and thus that the baseline hazard rate does not change over time.

\textsuperscript{19} As with the individual-level model this analysis of pair outcomes estimates standard errors corrected for clustering by group. The coefficients reported are for the accelerated failure-time form of the Weibull model, the STATA default option. Consequently, a positive coefficient suggests observations with that characteristic will have longer survival times on average.
### Table 5.3. Terminal node outcomes of centipede game for dyads

<table>
<thead>
<tr>
<th>Term</th>
<th>B (Robust s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Communication Treatment</td>
<td>1.924***</td>
</tr>
<tr>
<td>Low Communication Treatment</td>
<td>-0.109 (0.328)</td>
</tr>
<tr>
<td>Average Coordination Experienced by Final Mover</td>
<td>-0.504* (0.279)</td>
</tr>
<tr>
<td>Low Communication Treatment * Average Coordination Experienced by Final Mover</td>
<td>0.758** (0.387)</td>
</tr>
<tr>
<td>Constant</td>
<td>1.241***</td>
</tr>
</tbody>
</table>

α, shape parameter = 2.912***  
N = 40  
Log likelihood = -27.130  
χ² = 15.14**

***p<.01; ** p<.05; *p<.10

Note: The dependent variable for this analysis is the number of the final node (1-5) each dyad reached playing the centipede game. Pairs of subjects mutually passing on all four moves, thus reach the fifth node are treated as censored in the specification of the Weibull regression model, marked with a censoring variable set to 1 for all genuine failures prior to this fifth node and 0 for the 11 censored observations of this high-payoff outcome. Standard errors are adjusted for pair clustering by group.
dummy variables indicate to which treatment the pair of players was assigned; (control group pairs comprise the excluded category);

- the average number of group members the final decision maker coordinated with during the coordination game (ranging continuously between 0 and 3), all members of the control group are scored at zero on this variable because they had no experiences coordinating with others; to be clear, this variable includes the scores for the player who made the final decision for that pair in the centipede game – for most pairs it is the amount of coordination experienced by the player who decided to take on their final move, but for the 11 censored cases, it represents the level of coordination experienced by Player 2;

- the interaction between the indicator for subjects assigned to the low communication treatment and the average amount of coordination experienced by the final decision maker.

These results for pairs of players are consistent with the model estimated at the individual-level, but it more fully contemplates the sequential dynamics of the centipede game. The significant positive coefficient for the high communication treatment suggests that pairs of players assigned to this treatment cell were likely to last longer in their play of the centipede game than subjects assigned either to the low communication treatment or the control condition. As with the individual-level model, the positive and significant coefficient associated with coordination experienced by the final mover in pairs assigned to the low communication treatment suggests that experiencing coordination mitigates the isolating and negative effects of low levels of communication.
Rather than attempt to characterize the hazard experienced by pairs of players at each node, I will focus on the more intuitive interpretation (King, Tomz, Wittenberg 2000) of this model and use CLARIFY (Tomz, Wittenberg and King 2001) to estimate the average number of nodes pairs of players reach given the model's covariates. Figure 5.6 graphs the expected value of the node reached by players across levels of communication and coordination. As with the individual-level results, this dyad-level model predicts subjects assigned to the high communication group (and thus experiencing full coordination) will proceed significantly farther through the centipede game than pairs in the control group (p<.05). Pairs in the high communication group are expected to fall just short of the fifth high-payoff node (expected value = 4.72 nodes). Control group players are estimated to complete approximately three nodes. High-communication players are also estimated to complete significantly nodes than pairs whose final decision makers experienced low coordination or none at all in the low communication treatment (p<.10).

Importantly, subjects who experience high levels of coordination in spite of their assignment to the low communication treatment are also estimated to complete 4.72 nodes and are thus not significantly different from the high communication treatment players in their play of the centipede game. Pairs within the low communication treatment whose final movers experienced high coordination are not significantly different from pairs within the low communication treatment who experienced less coordination or control group pairs. This is also due in large part to the greater variance in the experiences of players in the low communication treatment.
Figure 5.6. Estimated terminal nodes in the centipede game

- High Communication, full coordination: 4.72
- Low Communication, more coordination: 4.72
- Low Communication, some coordination: 3.59
- Low Communication, no coordination: 2.90
- Control Group, no communication coordination: 3.10
These results are entirely consistent with the results of the individual-level analysis but better cope with the structural attributes of the centipede game. They suggest that individuals and pairs of individuals who experience positive outcomes in repeated group interaction are more likely to trust each other. This has profound implications for the study of social influence, both with regard to the current dissertation project and future research on social influence, contextual effects, and cue-taking.

**Discussion**

This experimental analysis of trusting behavior in the play of a social game has provided me additional leverage on understanding the conditions under which trust develops among people who share a social environment. By partially manipulating the success and failure of experimental participants in social settings, I find support for the proposition that individuals who benefit from positive interactions in a social setting are more likely to trust the people with whom they occupy that social context than individuals who have bad experiences in their milieu. This is consistent with my expectations about the formation of social ties or connectedness to a milieu and the mechanisms of social influence described in Chapter 2.

I had expected only two discrete conditions – good and bad social experiences – for subjects, however, the actual behavior of the experimental subjects and their experiences in the coordination and centipede games provided me a much richer and more interesting source of data. Due to the unexpected range of coordination outcomes in the low communication manipulations. I gained more traction on the independent variable, observing a range of better and worse experiences for subjects in the low communication treatment and uniformly good experiences for subjects allowed more
complete communication opportunities. This has allowed me to compare the effects of experience as distinct from the effects of communication on the development of trust.

Both the analysis of individual choices in the centipede game and the outcomes experienced by pairs of players suggest positive experiences affect trust. Communication affects the value of social interaction experiences by making it more likely that individuals will coordinate their activities when it is beneficial to do so. This is particularly interesting given my mention of Michael Chwe's work (2000) as a potential threat to research on contextual influence in Chapter 1. Chwe models social networks as providing information without necessarily creating lines of influence. Actors coordinate in his model by learning about the preferences of their network partners, but not by being influenced or having their preferences or actions changed by these network partners. The coordination game used here works in much the same way as Chwe's model.

Interestingly, this experiment suggests that given a set of experiences relying on these non-influential but informative social ties, these social connections ultimately facilitate patterns of influence Chwe does not fully anticipate. Given a track record of successful coordination in a social network and the pleasing outcomes coordinating can provide, here larger payoffs, the members of the social network learn that their counterparts can be worthy of their trust. I contend this will make them more likely to respond to and use information provided by their counterparts. Drawing the explicit connection between network-facilitated coordination and cue-taking will require further research discussed in the concluding chapter.
SIX

Answers with Questions: Further Research on Influence, Trust, and Connection

This dissertation has examined social influence as a case of political persuasion. Rather than resulting from coercive reinforcement among friends and neighbors, contextual effects are likely to be the product of individual decisions to collect and use information obtained in social settings. These decisions to access and draw on socially provided information about politics are contingent on whether an individual needs the advice to make a decision, receives it, and is willing to trust particular sources such as neighbors, co-workers, and friends. Consequently, I have expected and found social influence to be contingent both on an individual's expertise in dealing with politics, as well as what I have called her connectedness to a particular social setting or context.

Reviewing the Argument and Findings

Social connectedness is a psychological property of individuals that behaviorally connects a person to his social surroundings. This individual, psychological property is the manifestation of an inherently social process that draws the individual closer to or further from the people who share his social environment. These people and settings can be more or less mentally engaging or involving. I have argued that a person becomes socially connected to his surroundings by repeatedly interacting with others in that milieu, as well as observing and thinking about his neighborhood.
Expanding on work with Stein and Shively (2002), I have explored an individual's social connectedness to his neighborhood as the accessibility of a person's judgments about his neighbors and immediate surroundings. As such, I am interested in the depth and strength of a person's social connection rather than the breadth of his social network. Rather than investigate the number of friends a person claims to have or his self-reported frequency of interaction with political discussants, I have relied on the ease with which a person make specific judgments about his social surroundings to gauge social connectedness. Consequently, my alternative measure of an individual's social connectedness is based on the amount of time he requires to answer survey questions about his neighbors and residential location.

Having a strong connection to a social environment does not necessarily require a person to engage in direct face-to-face interaction, however it should involve his frequent consideration of the potentially endless cues neighbors send each other personally and impersonally through conversation, yard signs, holiday decorations, and other informative devices. I have also argued that people who learn from their neighbors, put this information to use, and benefit from decisions related to the use of this information will be more likely to return to that environment for advice in the future. This kind of positive outcome will increase the frequency with which a person considers information culled from her environment or interacts with local discussion partners and thus strengthens their social connectedness. It also teaches people that they can trust their neighbors and the information these people provide.

This discussion of contextual effects as persuasion and social connectedness as an individual-level property representing psychological engagement and willingness to trust
has raised a number of research questions addressed in this dissertation. Who becomes socially connected? Are socially connected people more likely to succumb to the influence of contextual cues? Is there a relationship between an individual’s positive experiences in a group and her willingness to trust members of that group? The empirical chapters of this dissertation address these questions using public opinion polls joined with voting and election data, survey-based experimental investigations, and laboratory-based social experiments.

I find that individuals who have little political expertise and thus need additional information about politics, who perceive their neighbors have similar interests, and who regularly interact with friends residing nearby have a stronger social connection to their neighbors than people with greater political expertise, who perceive their neighbors do not share their interests, and who enjoy little neighborly contact. The findings reported in Chapter 3 are consistent with my expectations about who should become socially connected—information-seekers inclined to trust the people around them, either as a function of frequent social interaction or shared interests. Importantly, traditional understandings of social ties or connections, either in the form of demographics used to gauge social ties (Pomper and Sernekos 1991; Miller 1992; Teixeira 1992) or self-reported civic involvement (Timpone 1998; Putnam 1966), do much to explain the social connectedness I discuss that psychologically and behaviorally bridges people and their neighborhoods.

I also find that socially connected people are more likely to feel the influence of their social surroundings than those who lack strong social ties. Rarely have researchers attempted to integrate research on social ties and contextual or social influence (but see
Knack and Kropf 1998; Orbell 1970; Putnam 1966). Voters with moderate levels of political expertise and deep social connections to their neighborhoods tend to conform both to political participation and the candidate choices of their neighbors. Registered voters with moderate levels of political expertise and strong social ties are less likely to vote when they live in low turnout areas and more likely to vote when they live among people who regularly vote, regardless of their prior predispositions toward balloting. In the first part of Chapter 4, I develop a similar analysis of candidate choices and find that voters with moderate knowledge of political affairs and strong social ties are likely to have supported Democratic presidential nominee Al Gore when living in a Democratic precinct and more likely to have supported Republican George Bush when residing among Republicans.

Political expertise, measured using political knowledge, plays an important role in this dissertation. It is important to the development of social connections. Highly knowledgeable voters less likely to over time turn to neighbors and thus not as likely as less experienced voters to develop social connections, but political expertise also mediates the cue-taking of socially connected voters. Poorly informed voters and those with moderate amounts of information should be more influenced by new cues because they lack the store of information highly knowledgeable voters possess (Converse 1962; Zaller 1992). However, left to themselves to collect information from their neighbors, two of the analyses reported in this dissertation suggest inexpert voters are not susceptible to political cues from their milieu – even those socially connected voters who would be inclined to trust the information neighbors provide. This is likely because they lack the motivation to gather the information (Rahn, Aldrich, and Borgida 1993). The
death penalty-attitudes experiment reported in Chapter 4 indicates socially connected, low expertise individuals are strongly influenced by social signals when they are directly provided information about their environment and not expected to gather the information for themselves, thus avoiding the motivational problem.

This survey-based experiment is also important in distinguishing my expectations about social influence from those of other students of contextual influence. Many students of social influence base their expectations on a model of reinforcement that relies on an individual’s political discussants to enforce conformity by shaming or otherwise punishing deviants and rewarding conformists (Harvey 2001; Krassa 1990; McPhee, Smith, and Ferguson 1963). This requires face-to-face interaction to cement the influence process and it also may not be consistent with assumptions that individuals are rational in their collection of information (Huckfeldt and Sprague 1995). It is also unclear that community attitudinal conformity is sufficiently valuable to motivate individuals to enforce it and to the extent that conformity has value, it is not clear why rational discussants would invest in the public good of conformity that they would presumably enjoy regardless of their effort.

The experiment discussed in Chapter 4 informed survey respondents that their neighbors or other Americans had strong or weak attitudes about fairness of the death penalty using a 2x2 design. This information was passed to survey respondents participating in the survey in the privacy of their own home and shielded by the anonymity of a random sample opinion survey conducted over the telephone. Students of a coercive social influence might expect to find no patterns of influence in this setting due to the lack of avenues of enforcing agreement, however I expect and find socially
connected people with low and moderate levels of political expertise to be influenced by strong cues attributed to their neighbors. This provides strong evidence that neighborhood social influence is more likely conveyed through individual decisions to follow the advice of neighbors rather than neighborly arm-twisting.

I also find that people are not influenced by information alone. Rather, people must also know something about the quality and applicability of the information they receive to be influenced by it. Consequently, social connectedness and the willingness to trust others in the milieu become important parts of the process of social influence I discuss. The experiences individuals have in a social milieu directly affect their willingness to trust people they encounter there. Using the carefully controlled laboratory-based experiment discussed in Chapter 5, with treatments designed to affect the ease or difficulty of group coordination game play, I find people learn to trust counterparts as a function of having experienced positive or negative outcomes with them. People who had positive experiences working with others in a coordination game were more likely to be both trusting and trustworthy in a second game that provided strong incentives to defect on their partner.

A number of scholars have taken an interest during the last several years in trust, social ties, and the forces that bind individuals to others. While I have touched on similar ideas, my assumptions, expectations, and results have been quite different from those of many people in this field. Perhaps the best example of this is my expectation that, in spite of the best hope of communitarian activists, social ties do not necessarily translate into increased political expression and activity (Putnam 2000; Skocpol 1999). Instead, I have expected social ties and connections to channel conformity – where a person is
surrounded by neighbors who regularly vote, having strong ties to those voters will encourage her participation; however, strong ties among non-voters will only strengthen their tendencies to abstain. Developing neighborhoods and encouraging vibrant communities are worthy goals, but might not produce dramatic increases in the political engagement and participation many activists would promote as well.

**Looking Forward**

In future research, I intend to expand on this dissertation in several important ways. Perhaps the most obvious set of questions will lead to further social experiments. There are at least two investigations that flow directly from Chapter 5. First, I would like to alter the final game subjects play in the experiment. Here I present the results of centipede game, a game which allows me to examine variations trusting and trustworthy behavior. While it is useful to learn about the development of trust, I am ultimately interested specifically in cue-taking. Consequently, I envision using a similar set of group experience manipulations paired with a signaling game that challenges players to use or not use information provided by their counterparts for a decision task. My expectation is that subjects who enjoyed the positive experiences of frequent coordination with members of their social group would be more likely to follow their advice in a game that manipulates their access to information.

One game that might be useful would provide Player 1, but not Player 2, with the schedule of payoffs for the choice Player 2 is asked to make. Player 2 would be asked to choose solely on the basis of a recommendation from Player 1. Using this second cue-taking experiment along with a trust-oriented game like the centipede game discussed here, I might also further explore the relationship between trusting behavior and
following advice. People might be willing to follow the advice of people they would not necessarily trust financially and vice versa. Further experiments that combine both of these elements would provide additional insight on the nature of social influence and social trust.

Additional experimental investigations would also allow me to compare the behavior of individuals who are told their social context is made up of people similar to them to the actions of people informed their social context is diverse. In the current experiment, subjects were informed that their counterparts had important differences from them. The original design proposed for these experiments would also include a “homogenous” group of treatment cells, paired with the “diverse” subject-groups discussed here. Instead of informing respondents that they had been matched with players who are different from them, these treatments would inform subjects they had been group with people who chose similar colors to the colors they chose. Expanding the experiment in this direction could provide more insight about the relative importance of social similarity, positive experiences, and communication on the development of trust. This would be of particular use in integrating my expectations for the development of trust and social connectedness, which have proven useful for understanding social influence-oriented contextual effects, with research about other contextual effects, including the influence of racial context on racial attitudes and other policy-relevant opinions (Sears et al. 2000).

The survey-based investigation of contextual effects and the use of accessibility measures of social connectedness has implications for the study of racial attitudes and other policy-relevant attitudes and beliefs as well. In particular, Shively, Stein and I have
preliminary evidence (1999) that whites who are more socially integrated into their neighborhoods, or socially connected, respond to the presence of minorities in their neighborhood in a manner consistent with the expectations of students of the racial contacting hypothesis (Allport 1954). A socially connected white person's attitudes about African Americans grow friendlier as the proportion of minorities in their neighborhood increases. Alternately, whites who are not as well integrated into their neighborhoods respond to the presence of minorities in a manner consistent with the expectations of the "group threat" hypothesis (Key 1949) – growing more hostile to African Americans as their numbers increase. This has interesting potential implications certainly for the study of race relations and political issues charged with racial dimension, and perhaps for other issues as well (Branton 2001).

This research could also have interesting implications for the study of other policy-relevant behaviors as well. Several thoughtful readers have commented on the relatively inconsequentiality of candidate choice and participation decisions to the individual. I contend that part of their rationale for following the advice of neighbors is that voters have an incentive to avoid costly mistakes, but given the incredibly low costs and benefits of voting, the costs associated with choosing the wrong candidate, not voting, or picking the wrong side of an issue seem comparatively small next to the costs associated with choosing a bad health care provider or sending a child to a dangerous school. As a result, I am interested in examining whether social cues and social connectedness influence these kinds of more consequential behaviors and choices, both with private and public consequences.
I am also interested in furthering my understanding of who becomes socially connected and why. The investigation reported here represents a good first step, but there are potentially interesting questions about social ties and individual psychological involvement with the community that revolve around a person's circumstances, race, and ethnicity. For example, do immigrants develop patterns of social connections similar to those developed by the multi-generational residents interviewed for the suburban voters studied so extensively in this dissertation? How does language affect the development of social ties? Do native English speakers develop stronger connections to neighbors who predominately speak English than non-native English speakers or people who do not communicate in English?

Finally, this study has implications for the politics of political campaigns. Knowing both that certain individuals respond to the political advice of neighbors and that these cues affect only certain individual is potentially useful for candidates. Do certain types of campaign communications affect socially connected voters and sway them? Presumably, literature listing the names of neighbors who support a given candidate, targeted for distribution in communities with highly socially connected voters, with could be an effective tool to swing undecided socially connected voters. The applications of these findings bear further investigation, alongside the pure research element of this line of study.

**Conclusion**

In the abstract of this dissertation, I ask whether people listen should listen to their neighbors' political advice. For some people – less informed, socially connected voters – listening to neighbors can be quite useful. Socially provided information is a low-cost
way to glean facts about political decisions at hand. Social influence is at least in part the result of individual decisions to pursue benefits associated with following the advice of actors who have provided useful information in the past. Provided this advice and information comes from people who have given good advice in the past and can be trusted, it appears that it will be used.
APPENDIX A

Timepieces: Components of Survey Response Time and Preparing Latency Data

Chapter 3 and 4 introduce and use a measure of social connectedness that relies on the accessibility of an individual's judgments about their neighbors and neighborhood. This appendix discusses my approach to the preparation and use of response time data collected as part of public opinion survey projects conducted with computer-assisted telephone interviewing. The appendix explains generally how I collected the response time data used in this dissertation and the statistical techniques I to decompose response time data into its constituent parts. I develop a theoretical framework for understanding survey participant question response time that allows me to separate individual and question response time effects from a response time measure of attitude accessibility.

Since the early 19th century, scholars have thought human reaction time provides clues about mental processes and the organization of the mind. Response time research initially focused on speed differences among scientists themselves in timing natural events (Bessel 1823, Brebner and Welford 1980). By the mid-1800s, Donders (1868) used response times to experimentally decompose choices made by his subjects into hypothesized mental steps. More recently, psychologists have found a subject's response speed a useful measure of the ease with which the respondent makes inferences, efficiency in decision and information processing, and the strength of attitudes.
An attitude is the association in memory between mental representations of an object and evaluations of it (Fazio 1990a). The accessibility of attitudes, including political attitudes, is thought to influence the linkage between these attitudes and actual behavior. Given the appropriate set of opportunities, individuals are more likely to act on the basis of accessible attitudes (Fazio 1990b). Accessible attitudes are also more likely to shape the formation and strength of other evaluations. Using speed of response as an indicator of accessibility, preferences revealed quickly should be more consequential than those expressed more slowly, other things being equal (Bassili 1993).

Huckfeldt et al. (1999a) link this study of attitude accessibility to issues of central importance to students of political behavior and mass politics, including the apparent lack of ideological constraint among many voters (Converse 1964) and the use of heuristics in political reasoning (Sniderman, Brody, and Tetlock 1991). The accessibility of political attitudes should relate to their relevance and utility: individuals with more accessible ideology and partisanship should find these orientations more influential on their political decisions and issue positions. They demonstrate that the accessibility of a person's partisan affiliation – the speed with which a respondent answers a question about party identification – significantly influences the strength and direction of candidate evaluations and policy positions. Persons who identify themselves as Democrats and do so quickly relative to other respondents are more likely to support President Clinton than Democrats who express their partisanship more slowly.

Several examples using data collected in the laboratory and from public opinion surveys illustrate the value of the accessibility-latency research program for political science. In their classic paper, Fazio and Williams (1986) find accessible decisions to
vote for a candidate are more likely to be acted upon than less accessible vote decisions. Further, the accessibility of partisan identification increases during the course of a political campaign, as information environments are flooded with news and propaganda relevant to the election (Grant et al. 2000). Recently, Taber and Lodge (2000) use response times from laboratory experiments to study the role emotions play in information use and political decisions.

Current Approaches to Latency Data Preparation

As a practical matter interest in attitude accessibility and response time, measured in fractions of seconds, has been piqued in part by technological developments in field of survey research, particularly the proliferation of computer-assisted interviewing\(^1\) among survey researchers (Bassili and Fletcher 1991; Bassili 2000). Several issues plague the use of collected response times in their raw form. A principal concern is the extreme leftward skew of raw response time scores (Huckfeldt, et al. 1999a). Figure A.1 charts response times to a single question from a 1999 survey of voters in Houston, Texas: “Generally speaking, do you consider yourself a Democrat, Republican, Independent, or what?” The majority of respondents to almost any survey question answer it within the first second or two. Smaller numbers of respondents require additional time to reply. But a more daunting problem with raw time scores is that we do not know exactly what they represent: “There may be nothing scientifically less meaningful than the simple observation that subjects responded in x milliseconds” (Fazio 1990a, 89). Reviewing

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\(^1\) The convention for collecting response times is straightforward, but vulnerable to a certain amount of human error. To collect response times, researchers use computer-assisted telephone interviewing (CATI) software to guide interviewers and their respondents through a survey instrument. After reading a question, the interviewer triggers a stopwatch programmed into the CATI device. When the respondent begins to answer the question, the interviewer stops the clock and records the substance of the answer (Bassili and Fletcher 1991; Huckfeldt et al. 1999a).
Figure A.1. "Messy" distribution of raw response times (party identification)

Raw Response Times for PID Question (hundredths of seconds)

Std. Dev = 324.73
Mean = 164.5
N = 750.00
experimental research using response time, Fazio (1990a) recommends several approaches to address the noise in latency data and difficulties associated with its use.

**Time’s Messy Distribution**

Fazio identifies at least three practices scholars have used to shift the distribution of response latencies rightward and induce a better-behaved variable. It is not uncommon for researchers to eliminate extreme observations on the long right tail of the distribution. Many transform raw scores using reciprocal, square root, or logarithmic functional forms. Finally, investigators dichotomize response time by splitting untransformed data at its median or logged and inverse latencies at their mean (Huckfeldt et al. 1999a).

**Baselining**

Response time research that fails to control for each individual’s base response speed raises concerns about “the extent to which one is indexing the conceptual variable of interest versus an…individual’s general speed of responding” (Fazio 1990a. 87). On this point, Fazio recommends controlling for baseline response time by conducting filler trials that use questions similar to those used in the experimental treatments and using response times for these to compute a baseline response speed. The baselines can then be incorporated into a research design by constructing differences between the baseline and target response times, creating a ratio index, or using the mean and standard deviation of the filler trial response times as the basis for recoding response latencies into z-scores.

**Applying Recommendations**

Fazio’s suggestions represent a menu of possibilities for the preparation of response time data. However, several of the strategies he reviews have important implications for the analysis and use of response latency, particularly as they have been
adopted for the analysis of survey data. First, a number of the coding options he highlights remove meaningful temporal units from the response time data. Second, the strategy of dividing transformed or raw scores into fast and slow responses belies two implicit assumptions worth exploring: Accessibility is a dichotomous concept – an attitude is either accessible for an individual or it is not – and the center of the distribution is the meaningful dividing point. This may be an appropriate way to think about attitude accessibility, but in practice it results in an arbitrary categorization of respondents. Furthermore, it discards a great deal of potentially interesting variation. Given what little we know about the mental processes occurring between the end of a survey question and the beginning of its answer, it would be useful to have a measure of latency that retained as much information as possible, maximizing the leverage researchers have in analyses using response latency.

As for baselining the data, a limitation of survey work is that there are no real experimental filler trials. Instead, researchers using survey-collected response time data designate several questions other than the target latency to be contributors to a baseline response time. For example, Huckfeldt et al. (1999a) construct a baseline from questions about interest in the campaign, contact by a party organization, education, the respondent’s plans to move, length of residence at their current address and five other indicators. The response times to these questions are averaged, as Fazio recommends treating filler trial data. Instead of incorporating the baseline information into the latency measure prior to modeling the effects of attitude accessibility on a behavior of interest, it is included as a regression statistical control. While these indicators are intended to represent a nonpolitical general response speed, their selection is inescapably arbitrary. It
is unclear why these, rather than other questions from the survey, were chosen to contrast with response times for the party identification and ideology questions. Further, the inclusion campaign-oriented and economic question response times calls into question the criteria offered for their selection: "apolitical content" (Huckfeldt et al. 1999a, 895).

Also underlying Fazio's suggestions is the assumption that the response times contain little measurement error. The sophisticated technology and methods available to researchers in a laboratory setting allow a great deal of error to be minimized. But in the more free-form environment of a survey interview conducted over the telephone and often involving two distracted discussion partners, the potential for measurement error seems much greater (but see Bassili and Fletcher 1993).

*Toward a Theory of Survey Response Speed*

In order to construct a measure of response latency that addresses potential sources of systematic measurement error, retains more information than many current approaches while baselining the data for critical individual differences, I start with a more detailed theory of survey response speed. This involves stepping back from the data itself, to ask the more general question: What happens between the instant an interviewer completes their question and starts the computer clock, and the moment the respondent begins to answer, signaling the interviewer to stop timing. Building on the work of Luce (1986) and Tourangeau and Raskinski (1988), identify and isolate the slice of time within a raw response time score that should measure the accessibility of a targeted attitude or mental construct.
Luce (1986) outlines a general model of response to external stimulation and the processes that occur during the time subjects require for their response to stimuli. He suggests each response time is composed of:

1. time for signals to be transduced from physical energy into neural spike trains;
2. transit time for those pulses to pass to the decision center;
3. time for the decision center to process the information and issue a command to a relevant muscle group;
4. transit time between the decision center and the muscular response; and
5. the completion of the task.

Simplifying the model, Luce distinguishes between decision latency (step 3) and a residual attributed in part to a subject's physiological characteristics. Momentarily sidestepping the issue of measurement error, the time between the end of the question and the beginning of an answer then can be theoretically decomposed into at least two parts:

\[ RT = D + R. \]  \hspace{1cm} (1)

where \( RT \) represents response time; \( D \) is decision latency and \( R \) is neural “noise.”

However, given the complexity of tasks associated with the answering of survey items, we can decompose decision latency further by referring to a model of question response. Having received a signal, i.e. the question, a respondent must interpret it, retrieve relevant information, integrate this information, and select an answer (Tourangeau and Raskinski 1988). Thus,

\[ D = Q + A + I + S. \]  \hspace{1cm} (2)

where \( D \) is the decision latency from equation 1; \( Q \) is time the respondent requires to interpret the question; during the length of time \( A \), the respondent retrieves relevant facts
or judgments; I represents time to integrate these; and S is time required for the selection of an answer.

**Question Attributes vs. Attitude Accessibility**

The Tourangeau and Rasinski model suggests that question attributes, in contrast to characteristics of the respondents, influence at least two segments of the total decision latency: Q (question interpretation) and S (response selection). In this same vein, Bassili and Fletcher (1991) establish a hierarchy of response speeds based on the content of questions: simple factual questions tend to have much faster mean response times than complex items, social judgments and questions involving value conflict run even more slowly across all respondents. Questions requiring the longest amount of time are poorly worded or confusing. The composition of response sets, and other properties of the items themselves also influence response times across respondents (Bassili and Krosnick 2000; Fazio 1990a). To the extent that these question effects are common to all respondents, they influence response time independent from the accessibility of an individual's attitudes or other individual characteristics that determine response speeds.

However, Tourangeau and Rasinski also suggest that an individual’s interpretation of a question (Q in equation 2) is influenced by attitude accessibility. Therefore, we must decompose interpretation time into two parts: the speed with which a question can be interpreted across respondents due to its length, complexity, or other attributes; and time each individual requires to interpret the question that varies with the accessibility of attitudes and judgments related to it. Combining equations 1 and 2 and these expectations about question interpretation, and adding a term to represent
measurement error, we generate a full theoretical equation for the components of response time to questions about political attitudes or social judgments:

\[ RT = Q_j + Q_i + A + I + S + R \]  \hspace{1cm} (3)

where \( Q_j \) represents the length of time for question interpretation influenced by its placement or complexity, and should be observable across respondents; \( Q_i \) represents the additional time an individual requires to interpret a question given the accessibility of relevant attitudes. Each of the other components is defined as it was in equations 1 and 2.

**Individual Attributes vs. Attitude Accessibility**

Some respondents process information more quickly (or slowly) than others and thus may be systematically faster (or slower) than others in expressing judgments and articulating attitudes independent of the accessibility of these attitudes (e.g., Fazio 1990a). As a result of this expectation of a baseline processing speed, researchers often control for systematic individual differences in response time, either in the preparation of latency data or in their statistical models (Huckfeldt, et al. 1998; Grant et al. 2000). The effects of baseline processing speed should influence response times across questions, regardless of the content of a specific survey item.

It is useful to think of this baseline response processing speed as being represented by the information integration term (I) in equations 2 and 3 and in part by Luce’s R term, the residual or “noise” latency reflecting cumulative neural transit speeds. Following the logic applied to question effects above, to the extent that individual characteristics influence response time across all of the questions asked, we must consider the effects of baseline processing speed as distinguishable from attitude accessibility. To identify the time required to access a specific targeted attitude, we must
identify the general baseline response time for an individual and remove from the measure this span of the response time that is not unique to the target attitude.

Systematic and Random Measurement Error

What about measurement error? The theoretical model proposed in equation 3 must be modified to recognize the impossibility of a pristine measure of response time:

$$RT = Q_i + Q_t + A + I + S + R + u$$  \hspace{1cm} (3a)

The principal source of error in the measure, at least response times collected in public opinion surveys using active timers, is likely to be interviewers – the people trusted with activating and stopping the computer clock. There are other potential problems: clocks that glitch, sticking computer keys, etc., but the difference between these potential problems and the interviewers themselves is that the people asking the questions are a potential source of systematic measurement error, rather than random mishap. Given the expectation that individuals have different base reaction times, even the most focused team of survey interviewers would introduce error into measures of response time based on differences in their speeds of reacting to respondents. This problem might be mitigated if the same interviewer surveyed each respondent, thus effecting each interview’s response times the same way.

To the extent that that survey centers employ a team of interviewers, some of whom will activate the computer clock more quickly (or slowly) than others, response times recorded for a particular survey participant will be in part a function of the reaction speed of the person who interviewed them. Consequently, we can decompose the error term itself into two components, systematic ($u_s$) and random ($u_r$) sources of measurement error, and generate a final theoretical model for response time data:
\[ RT = Q_j + Q_i + A + I + S + R + u_s + u_r \]  

(3b)

Issofar as each respondent is assigned to a single interviewer, the interviewer-based measurement error is captured as part of a respondent's baseline response speed, at least as these response times are recorded. If an interviewer is systematically faster or slower than other interviewers, this should be reflected in faster or slower baseline response speeds for the respondents that interviewer surveyed. Thus an individual's baseline should include the \( e_i \) term, in addition to the time required for information integration term (I) and the residual physiological noise represented by the \( R \) term above.

**Decomposing Response Time**

The response times recorded for answers to survey questions represent the length of time from the end of a survey question to the beginning of an answer. This is the duration of a respondent's pause before answering a question. Social scientists have become increasingly interested in data linked to temporal processes and have developed an expanding number of techniques to study duration data (King 1989; Boix-Steffensmeier and Jones 1997). Since most individuals will answer a survey question within a few seconds after it has been asked, with smaller numbers of individuals requiring longer periods of time, I use an exponential regression model (Luce 1986), a form of duration analysis, to account for individual and question differences that are distinct from attitude accessibility.

This paper proposes a framework for response time data preparation that attempts to address the systematic measurement error attributable to interviewers, as well as the measure's unruliness, question effects, and baseline processing speed. In spite of the
length and apparent complexity of equation 3, given the sources of each term in the model, it simplifies rather neatly:

$$RT = f(A', Q', I', u),$$  \(4\)

where $A'$ represents time required to access the attitude of interest, $Q_1 + A$ from equation 3b; $Q'$ represents the variation in raw response time scores attributable to nature of the question itself (its general interpretability and the like, or $Q_1 + S$ from equation 3b); $I'$ represents the variation attributable to individuals independent of attitude accessibility (their general facility for integrating retrieved attitudes, the transmission speed or neural noise contained in the Luce model, and the reaction time of the respondent’s interviewer: $I + R + u$, from equation 3b; and $u$ is random measurement error.

While response time data collected in survey environments does not allow us to estimate each of the hypothesized components of raw survey response times, we can apply our specific ignorance about individuals and questions to the problem and estimate the extent to which these affect response time scores. I decompose response time data collected in a 1999 survey of voters in the City of Houston and Harris County, Texas, into these major constituent parts. Response times for each of the survey’s 60 questions\(^2\) ($q$) was recorded for each of 661 respondents ($i$), yielding 34,670 raw individual response times.\(^3\) The data was collected in an $i \times q$ matrix, but stacked into a single vector of time scores ($N=34,670$) with identifiers for the question and respondent providing each

---

\(^2\) The survey included 60 items, two of which had multiple forms, increasing the number of distinct questions to 68.

\(^3\) Conducted for the Houston Chronicle newspaper, the election study contained general questions about partisanship as well as racial attitudes. If response times had been successfully collected for each respondent on every question, this would provide 39,660 response times. However, 12.6 percent of the potential scores were lost to interviewer error, a spoilage figure similar to the those reported by Hunkfeldt et al. (1999a) and Bassili and Fletcher (1991).
response time score attached. To decompose response time into the hypothesized elements discussed above, I use these stacked response time scores as the dependent variable in a dummy regression model. Given the distribution of this response time data, the fact that it has no negative values and trickles out into a very long right-hand tail, an ordinary least squares model is not appropriate (Box-Steffensmeier and Jones 1997; Grant et al. 2000). Instead, I assume the dependent variable is distributed exponentially.  

This model allows me to address two questions implied by the theoretical discussion above: On average, how long does each individual require to form their answer to a question regardless of its content? How much time does each question require regardless of who is answering it? The exponential dummy regression model allows me to estimate a hazard rate, producing an average time of response, for each respondent and each question in the 1999 Houston survey. If I define a random variable, $R_{ij}$, as the time each respondent, $i$, pauses before answering each question, $j$, the probability distribution of $R_{ij}$ has the following form:

$$R_{ij} \sim f(\tau_{ij}|\lambda_i) = \lambda_i e^{-\lambda_i \tau_{ij}},$$ (5a)

where $1/\lambda_i$ is the expected duration for each individual's question response times.

I model this expected duration value as a function of individual and question effects:

$$E(R_{ij}) = 1/\lambda_{ij} = e^{(a + B_i I_n + G_j Q_j)},$$ where

$$R_{ij} = \quad \text{raw response time score for each respondent to a specific question;}$$

---

4 The exponential regression model assumes that the hazard function is invariant to time (Box-Steffensmeier and Jones 1997). This means I assume that for each question and individual, the risk of the individual uttering a response to the question does not grow with time and I do not expect a respondent to be increasingly likely to answer the question as seconds pass after it has been asked.
\[ B_{i}, \quad a \text{ matrix of dummy variables representing each individual} \]

\[ i = \{2, 3, 4, \ldots, 661\} \text{ and estimated coefficient parameters for each;} \]

\[ G_{j}, \quad a \text{ matrix of dummy variables for each survey question } j = \{2, 3, 4, \ldots, 60\} \text{ and estimated coefficient parameters for each; and} \]

\[ a, \quad \text{constant representing the mean response time (for the individual} \]

\[ \text{and question excluded from the dummy regression).} \]

From this model, I am able to recover predicted values for each individual’s response time on each question, given their average response time and the average time required for each question. I measure accessibility as the difference between observed response times and those predicted for each individual and question:

\[ A' = \text{Accessibility}_u (\pm u_{r}^u) = \text{observed RT}_u - \text{predicted RT}_u \quad (6) \]

Attitude accessibility here is the deviation of a respondent’s actual question response time and our best guess of what that response time would have been, given what we know about the respondent’s general speed and the average time required for a given question.

In a perfect world, we could remove from this measure of accessibility all of the measurement error associated with it. However, the technique discussed leaves the measure of latency contaminated with random measurement error. That said, it should remove measurement error associated with systematic interviewer differences, of much greater concern to social researchers. The remaining random measurement error should be uncorrelated with latency scores and should result in overly conservative estimated relationships between the latency of an attitude and other variables (Asher 1974).
In spite of the random measurement error it contains, this latency measure possesses desirable attributes as well. It is continuous and obtained in meaningful temporal units, hundredths of a second, rather than in coarser or more abstract terms. While not distributed normally (Hosmer and Lemeshow 1999), Figure A.2 indicates that for response times to individual questions, the residual measure has a tall and tight bell shape with a long right tail. It possesses meaningful negative values, representing individuals who answer a specific question more quickly than predicted, given their mean response time across questions and the mean response time for that question across individuals.

Most importantly, it removes from our measure of latency confounding influences of individual and question characteristics. To demonstrate this, I will use the G coefficients for each question and B parameters for each individual, converted into meaningful temporal units, to explore the correlates of average question time and individual baseline processing speed.\(^5\)

The interpretation of these parameters and their conversion into meaningful temporal units is somewhat complex. Due to the use of regression with dummy variables, each of these coefficients represents an intercept deviation from the constant. The constant represents a hazard rate for the first respondent in the data on the first question because I excluded dummy variables for this respondent and question from the model in order to avoid overspecifying it. The constant estimated for the model (eq. 5a-b) was 5.202. Taking its exponent and converting from hundredths to whole seconds, we

\(^5\) Of the 660 individual “baseline” hazard coefficients, more than half (361) were statistically significant (\(p < .05\)). Of the 67 estimated question parameters, about two-thirds (45) were statistically significant (\(p < .10\)).
Figure A.2. Estimated deviations from party identification response times

Residuals from Exponential Regression Model for PID Question

Std. Dev = 109.04
Mean = 36.6
N = 588.00
see the model predicts that the first respondent should require 1.816 seconds to answer the first question. The coefficient estimated for the dummy variable for the second respondent, -0.804, suggests that, independent of the question asked, the second respondent answered questions slightly faster than the first respondent was estimated to have answered the first question.

To determine exactly how much faster, we need to use information from the constant, subtracting the exponent of the constant from the exponent of the sum of the constant and the coefficient for the second respondent. Using this transformation to convert the second respondent's coefficient into temporal units, we see that independent of the question, the model predicts the second respondent generally responds about 1 second faster than the first respondent answered the first question. While allowing the first respondent and question to define the center of the distribution of average speeds for individuals and questions is arbitrary, this has little influence on the substantive interpretation of these coefficients. I can determine that baseline response speeds for some respondents are faster (or slower) than they are for others. Similarly, I can compare the average speed of questions centered around the time estimate for the constant.

The average time required for each question, independent of attitude accessibility or other individual respondent influences on response time, is the measured as a deviation from the response time estimated for the model's constant:

\[ Q'_i = e^{(a + G_i)} - e^a. \]  

* Mathematically inclined readers will note that \( e^{R_i} \neq e^{a - R_i} - e^a \). Simply taking the exponent of each individual's coefficient produces the ratio of the individual's estimated response time with the estimated response time for the constant. Incorporating information from the constant in the manner described produces a more easily interpreted measure of each individual's deviation from the constant in hundredths of seconds.
The questions considered here range from running from approximately one second faster than the average to taking about two seconds longer than this mean. Each respondent’s baseline response speed parameter (again, independent of attitude accessibility or question effects) is also recoded as a deviation from the response time estimated by the constant:

\[ I_i' = e^{(a_i + b_i)} - e^a. \] (8)

Individual baselines have more variation than estimated question effects, ranging from about 2 seconds faster than the mean respondent to almost 6 seconds slower.

**Question Effects: Correlates of \( G_i \)**

Why would some questions require more time than others? Bassili and Fletcher (1991) find that response times vary systematically with the content of questions. Specifically, questions requiring factual reports, such as answers to demographic questions, are answered much more quickly than questions requiring new judgments or the statement of more complicated matters. Thus we should expect these kinds of content effects manifesting themselves in mean estimated question times. Similarly, when respondents are provided with a series of like items, they provide answers more quickly as that battery of items progresses (for an example, see Huckfeldt et al. 1998b). Consequently, I expect items preceded immediately by similarly worded questions to require less time across respondents.

In his on-going work on survey design, Krosnick also identifies several factors that could influence the speed of response across individuals (1999; Bassili and Krosnick 2000). Survey respondent satifice in order to end the interview as quickly as possible and may be exposed to concerns about the social desirability of their responses. At the
beginning of a call, respondents may devote their attention to the conversation, but by several minutes into the survey they may tire of it and may even complain to the interviewer. The experience of many public opinion researchers will attest to the fact that interviewers, often rewarded for their ability to complete calls, can cajole respondents along, promising only a few more questions and may even reveal how many items remain in the instrument. Consequently, I expect increasingly quicker responses as the survey proceeds. As for social desirability concerns, I speculate that questions revolving around non-controversial matters could require less time to answer than questions about potentially uncomfortable issues, such as race relations.

The model reported in Table A.1 supports each of these expectations. Negative coefficients indicate faster response times for questions, independent of individual respondents. Responses to questions about demographics and those requiring the revelation of factual material are provided approximately three-fifths of a second faster than other questions on average. Each question asked as part of a series of questions, with response sets identical to the preceding question and consistent wordings, requires less time than others, by about one-fourth of a second. Questions about race require about one-third of a second more time. Finally, respondents substantially increased their speed as the survey progressed. The model predicts the average respondent, other things equal, answered the 38th question a half-second faster than the first.
Table A.1. Correlates of systematic question effects on response time

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>(s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question Number</td>
<td>-1.312***</td>
<td>(0.452)</td>
</tr>
<tr>
<td>Racial Questions</td>
<td>37.515*</td>
<td>(18.220)</td>
</tr>
<tr>
<td>Factual/Demographic</td>
<td>-59.336**</td>
<td>(18.788)</td>
</tr>
<tr>
<td>Series of Similar Items</td>
<td>-27.634*</td>
<td>(13.945)</td>
</tr>
<tr>
<td>Constant</td>
<td>63.619***</td>
<td>(13.006)</td>
</tr>
</tbody>
</table>

Adjusted $R^2 = 0.308$

$N = 67$

*** p < 0.001; ** p < 0.01; * p < 0.5

Note: Standard errors are in parentheses. The dependent variable is the estimated mean for each question - total estimated response time for exponential regression model's constant.
The fact that we can model correlates of these estimated mean question response times and explain 31 percent of their variance, lends support to the proposition that these times are distinct from the time required to access memories targeted by the questions themselves. Thus in constructing a measure of attitude accessibility, it makes sense to control for question effects independent of the latency of attitudes themselves.

**Individuals: Correlates of $B_i$**

Why do some people answer survey questions more quickly or slowly than others? And perhaps I should supplement this question with the expressed concern about systematic measurement error: Why are the times recorded for answers to survey questions for some respondents more quickly or slowly than others? As discussed above, I expect the primary source of systematic measurement error, interviewer differences, to be reflected in the baseline response speeds estimated for respondents, given the assignment of respondents to specific interviewers. To account for this, I model the individual mean response speeds as a function of dummy variables for each interviewer who conducted interviews for the Houston election study.\(^7\)

However, in addition to these interviewer differences, I expect the characteristics of respondents to affect their baseline response speeds as well. In particular, I anticipate that the age of a respondent will affect their base response speed. In her ongoing investigation of the influence of age on cognition, Hasher and her colleagues have underscored the importance of this factor on response time (Hamm and Hasher 1992; Radvansky, Zacks, and Hasher 1996). She finds that in general, older persons have less available inferences than younger subjects. We should expect persons to systematically

\(^7\) The model presented in Table A.2 is simplified to include only the statistically significant interviewer dummy variables ($p < 0.1$).
require more time to integrate the attitudes and stored judgments they access as they age. Visser and Kroscnik (1999) refine these findings to suggest that individuals have a curvilinear pattern of attitude certainty and knowledge during their lifetime: Across social and political issues, individuals express themselves more quickly through middle age, but slow after that. To model this age effect, I have included in the model a variable for the age of the respondent (18-97) and age squared. Finally, I include controls for the race and gender of respondents (Visser and Kroscnik 1999).

Table A.2 reports an ordinary least squares regression that models baseline response speed as a function of interviewer, age, race, and gender. As expected, these estimated individual baseline response speeds do absorb systematic differences in response time collection attributable to interviewers. Of 34 people who conducted interviews for the 1999 Houston study, 19 systematically distorted response times.

The regression also finds significant differences in response time as a function of respondent demographics. Between the time they enter the electorate and middle age, respondent baseline speeds increase by about one-seventh of a second. After their mid-forties, these Houston voters start to slow down, eventually by almost one-half second. While the model estimates male respondents were faster with their answers than female respondents, this difference failed to reach conventional levels of statistical significance. White respondents expressed themselves more quickly than others and black respondents provided answers more quickly than Hispanics and Asian-Americans. While these were primarily control variables, the results suggest there may be systematic differences due interracial interaction in the survey interview context and race-of-interviewer effects (Davis 1997; Finkel, Gutterbock, and Borg 1991) using baseline response times.
Table A.2. Correlates of individual respondent baseline effects on response time

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>(s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent Age (years)</td>
<td>-2.290</td>
<td>(1.642)</td>
</tr>
<tr>
<td>Respondent Age(^2)</td>
<td>0.028*</td>
<td>(0.014)</td>
</tr>
<tr>
<td>Interviewer 1</td>
<td>-77.858***</td>
<td>(19.870)</td>
</tr>
<tr>
<td>Interviewer 2</td>
<td>-137.996***</td>
<td>(22.491)</td>
</tr>
<tr>
<td>Interviewer 3</td>
<td>-137.992***</td>
<td>(15.989)</td>
</tr>
<tr>
<td>Interviewer 4</td>
<td>134.744***</td>
<td>(29.974)</td>
</tr>
<tr>
<td>Interviewer 5</td>
<td>-59.255***</td>
<td>(14.567)</td>
</tr>
<tr>
<td>Interviewer 6</td>
<td>-137.317***</td>
<td>(21.805)</td>
</tr>
<tr>
<td>Interviewer 7</td>
<td>-70.586***</td>
<td>(15.301)</td>
</tr>
<tr>
<td>Interviewer 8</td>
<td>50.273**</td>
<td>(17.250)</td>
</tr>
<tr>
<td>Interviewer 9</td>
<td>-46.990***</td>
<td>(20.236)</td>
</tr>
<tr>
<td>Interviewer 10</td>
<td>-60.611**</td>
<td>(17.109)</td>
</tr>
<tr>
<td>Interviewer 11</td>
<td>-46.629***</td>
<td>(21.800)</td>
</tr>
<tr>
<td>Interviewer 12</td>
<td>-63.529***</td>
<td>(17.235)</td>
</tr>
<tr>
<td>Interviewer 13</td>
<td>-115.953***</td>
<td>(17.990)</td>
</tr>
<tr>
<td>Interviewer 14</td>
<td>-220.351***</td>
<td>(18.667)</td>
</tr>
<tr>
<td>Interviewer 15</td>
<td>-147.610***</td>
<td>(28.283)</td>
</tr>
<tr>
<td>Interviewer 16</td>
<td>-86.171***</td>
<td>(15.945)</td>
</tr>
<tr>
<td>Interviewer 17</td>
<td>-80.760***</td>
<td>(15.946)</td>
</tr>
<tr>
<td>Interviewer 18</td>
<td>-149.187***</td>
<td>(18.106)</td>
</tr>
<tr>
<td>Interviewer 19</td>
<td>-190.805**</td>
<td>(81.922)</td>
</tr>
<tr>
<td>Group</td>
<td>Coefficient</td>
<td>Standard Error</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>White Respondent</td>
<td>-34.819**</td>
<td>(12.059)</td>
</tr>
<tr>
<td>Male Respondent</td>
<td>-7.615</td>
<td>(7.062)</td>
</tr>
<tr>
<td>Constant</td>
<td>144.093**</td>
<td>(46.921)</td>
</tr>
</tbody>
</table>

*adjusted $R^2 = 0.07$

$N = 660$

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.5$

Note: Standard errors are in parentheses. The dependent variable is the estimated individual’s average response time difference from the exponential regression model’s constant.
Comparing Alternative Measures of Latency

Finally, I compare the latency measure generated by the exponential regression model (equation 5A/B) to two other data preparation strategies by estimating several models similar to those Huckfeldt et al. (1999a) use to explore the influence of the accessibility of partisanship on other political judgments. They find that the partisan evaluation of several politicians is responsive to the accessibility. In other words, Democrats with faster response times on the partisan identification were more likely to approve of Democratic office holders more strongly than Democrats who answered the partisanship question more slowly. Similarly, Democrats with highly accessible partisan affiliation were more likely to more strongly disapprove of Republican officeholders.

In 1997, Houston elected Lee P. Brown mayor. While the office of mayor is a non-partisan job, Brown is well-identified in Houston as a Democrat.⁴ I examine support for Brown as a function of self-reported partisan identification and latency on the partisanship question coded three different ways. The regressions I report are different from the Huckfeldt et al. models in an important way: they report logits instead of ordinary least squares regressions. Huckfeldt and his colleagues measure approval on a scale that allowed to more comfortably use OLS. The 1999 Houston survey collected only a dichotomous approve/disapprove measure. That said, the hypotheses are similar: Faster-responding Democrats will be more supportive or more likely to approve of a Democratic officeholder than slower-responding Democrats while Republicans should be

---

⁴ Brown served as a cabinet official in the Clinton Administration, as the Director of National Drug Control Policy. During the 1997 campaign for his first term, Brown’s opponent businessman and perennial Republican candidate Rob Mosbacher, Jr., made his and Brown’s political party affiliations an issue in the campaign.
exactly the opposite. Support for the Democratic officeholder should be stronger or more likely among slower-responding Republicans.

The first pair of reported models use raw response time scores. The specification of this model differs from the format used by Huckfeldt et al. in that it codes response time as continuous and partisanship as dummy variables. The first two columns of Table A.3 report the analysis with no control for baseline response speed. Positive values of response time here indicate slower replies, thus the negative coefficient for the interaction between democratic identification and response time lends support to the hypothesis that fast-responding democrats are more likely to support Brown than slow-answering Democrats.

While lending support to the stated hypotheses, this first raw response speed model fails to control for the possibility that fast respondents are more supportive of Brown. This is not terribly far-fetched. It could be the case that Houstonians are more eager to compliment their mayor than criticize. Model 3b introduces statistical controls for baseline response speed. Again, this lends weak support to our hypotheses. Controlling for baseline response speed, accessibility appears to influence neither Democrats nor Republicans in their assessment of Brown. The coefficients are, however, at least signed in the hypothesized directions.

Table A.4 reports a model with the data prepared and variables coded similarly to the method used by Huckfeldt et al. (1999a). Party identification is measured on a three-

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9 Huckfeldt et al. (1998) measure response time as a dichotomy and partisanship is treated as a continuous variable ranging between 1 and 7.

10 Baseline response speed for this and the following analysis was calculated using response times to questions about place of residence, length of residence, whether the property is owned or rented, intention to vote, whether the respondent voted in 1996, and personal income.
Table A.3. Using raw response times as a measure of accessibility

<table>
<thead>
<tr>
<th></th>
<th>Model 4a: No Baseline Controls</th>
<th>Model 4b: Baseline Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$ (s.e.)</td>
<td>$\beta$ (s.e.)</td>
</tr>
<tr>
<td>Democrat</td>
<td>1.455***</td>
<td>1.132*</td>
</tr>
<tr>
<td></td>
<td>(0.353)</td>
<td>(0.521)</td>
</tr>
<tr>
<td>Republican</td>
<td>-0.408 **</td>
<td>-0.516</td>
</tr>
<tr>
<td></td>
<td>(0.308)</td>
<td>(0.442)</td>
</tr>
<tr>
<td>Raw Response Time</td>
<td>0.002 **</td>
<td>0.000</td>
</tr>
<tr>
<td>(Party Identification)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Democrat*PID RT</td>
<td>-0.003 *</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Republican*PID RT</td>
<td>-0.000</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Raw Baseline RT</td>
<td>—</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td></td>
</tr>
<tr>
<td>Democrat*Base RT</td>
<td>—</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td></td>
</tr>
<tr>
<td>Republican*Base RT</td>
<td>—</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.162</td>
<td>0.174</td>
</tr>
<tr>
<td></td>
<td>(0.266)</td>
<td>(0.374)</td>
</tr>
</tbody>
</table>

$N = 608 \quad \quad \quad \quad N = 470$

$pseudo R^2 = 0.08 \quad \quad \quad pseudo R^2 = 0.08$

$\chi^2 (5 \text{ d.f.}) = 66.35^{***} \quad \quad \quad \chi^2 (8 \text{ d.f.}) = 51.91^{***}$

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.1$; *$^*$ $p < .10$, one tailed

Note: Standard errors are in parentheses. The dependent variable is approval of Houston Mayor Lee P. Brown (1 = Approve; 0 = Disapprove).
point scale with Democrats coded as three, Independents in the middle, and Republican respondents coded as one. Response time was coded using the natural log of the raw response time scores with observations three standard deviations from the mean removed, and divided into a dichotomous variable at the median (Huckfeldt et al. 1998). Fast respondents are coded one, with slower respondents coded zero. Baseline response time is prepared in the same fashion. Controlling for this baseline, the partisanship/latency interaction is signed in the expected direction, but fails to reach conventional levels of statistical significance.

Contrast these results with those in Table A.5. By using the exponential regression residuals for the party identification question, this model controls for baseline response speed without requiring the addition of separate terms. Party identification is coded as a pair of dummy variables. The results suggest that latency influences Democrats in their judgment of Brown, but has less of an effect for Republicans.

Coding latency as a continuous variable measured in fractions of a second allows us to draw more detailed inferences about latency from the model reported. Democrats who answered the partisan identification question a second or more faster than the exponential regression model predicts are extremely likely ($p = 0.86$) to approve of the job the mayor is doing. If the model predicts a Democrat's response speed exactly (i.e. the difference between the observed and the predicted value is zero), he or she supports Brown with a probability of approximately 0.81. For each additional second a Democratic respondent requires to answer the partisan identification question, they are about 5 percent less likely to support Brown. Over the full measure of response time, we
Table A.4. Using a logged, dichotomized accessibility measure

<table>
<thead>
<tr>
<th></th>
<th>Model 4a: No Baseline Controls</th>
<th>Model 4b: Baseline Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$B$</td>
</tr>
<tr>
<td></td>
<td>(s.e.)</td>
<td>(s.e.)</td>
</tr>
<tr>
<td>Party Identification</td>
<td>$0.819^{***}$</td>
<td>$0.930^{***}$</td>
</tr>
<tr>
<td></td>
<td>$(0.152)$</td>
<td>$(0.192)$</td>
</tr>
<tr>
<td>Response Time, PID Question</td>
<td>$0.194$</td>
<td>$0.526$</td>
</tr>
<tr>
<td></td>
<td>$(0.394)$</td>
<td>$(0.526)$</td>
</tr>
<tr>
<td>Party ID*PID RT</td>
<td>$-0.123$</td>
<td>$-0.277$</td>
</tr>
<tr>
<td></td>
<td>$(0.207)$</td>
<td>$(0.293)$</td>
</tr>
<tr>
<td>Raw Baseline RT</td>
<td>—</td>
<td>$-0.151$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$(0.525)$</td>
</tr>
<tr>
<td>Party ID *Base RT</td>
<td>—</td>
<td>$-0.016$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$(0.293)$</td>
</tr>
<tr>
<td>Constant</td>
<td>$-0.972^{***}$</td>
<td>$-1.093^{**}$</td>
</tr>
<tr>
<td></td>
<td>$(0.288)$</td>
<td>$(0.354)$</td>
</tr>
</tbody>
</table>

$N = 608$  
$\chi^2$ (3 d.f.) = 59.30^{***}  
$pseudo R^2 = 0.07$

$N = 470$  
$\chi^2$ (6 d.f.) = 48.96^{***}  
$pseudo R^2 = 0.08$

$*** p < 0.001; ** p < 0.01; * p < 0.1; *^0.1 p < .10$, one tailed

Note: Standard errors are in parentheses. The dependent variable is approval of Houston Mayor Lee P. Brown (1 = Approve; 0 = Disapprove).
Table A.5. Using exponential regression residuals to measure accessibility

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>(s.e.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Democrat</td>
<td>1.237***</td>
<td>(0.317)</td>
</tr>
<tr>
<td>Republican</td>
<td>-0.471*</td>
<td>(0.277)</td>
</tr>
<tr>
<td>Latency in Seconds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference from Prediction</td>
<td>0.001</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Democrat*Latency</td>
<td>-0.004*</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Republican*Latency</td>
<td>0.001</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.253</td>
<td>(0.241)</td>
</tr>
</tbody>
</table>

N = 488
χ² (6 d.f.) = 56.11***
pseudo R² = 0.09

*** p < 0.001; ** p < 0.01; * p < 0.1; * p < .10. one tailed

Note: Standard errors are in parentheses. The dependent variable is approval of Houston Mayor Lee P. Brown (1 = Approve; 0 = Disapprove).
actually are able to attribute a preference reversal to the inaccessibility of partisanship and develop an intuition about when this slowness makes a meaningful difference in an individual’s evaluation of an ostensibly Democratic mayor. Figure A.3 graphs this decay in approval for Brown among Democrats.\textsuperscript{11} Democrats who answered the question 4.51 seconds slower than predicted sit on the line between approving or disapproving of Brown.

Figure A.3 also graphs the model’s estimates for Republicans and a similar preference reversal as a function of response speed. Republicans who answer the partisanship question a second more slowly than predicted are as likely to approve of Brown as they are to disapprove of him. Republicans and Democrats who answer the party identification question about three seconds more slowly than the exponential regression model predicts behave the same way toward Brown according to these predicted probabilities. At three seconds slower than predicted, partisanship becomes inaccessible in a meaningful way: it fails to explain anything about a respondent’s political judgments.

\textbf{Conclusion}

The intent of this project was to theoretically unpack the elements of response time and develop an alternative approach to measuring attitude accessibility using survey data. A useful measure of accessibility should control for the effects of elements conceptually distinct from attitude accessibility and preserve as much information as possible. Given the complexity of the phenomenon of interest, this paper has many

\textsuperscript{11} The probability changes graphed in Figure A.3 were computed using CLARIFY for STATA (Tomz, Wittenberg, and King 2000). The downward-sloping line represents differences among self-identified Democrats and plots probability changes that are statistically significant ($p<0.10$). However, the probability changes for Republicans are not statistically significant.
Figure A.3. Accessibility of partisanship on support for Mayor Brown

Self-Identified Democrats

Self-Identified Republicans

Prob(Approving of Mayor Brown)

sec(-1)  sec(0)  sec(1)  sec(2)  sec(3)  sec(4)  sec(5)

Seconds of Difference from Predicted Response Time
implications and clear limitations. With regard to the latter, the method of data collection — response times collected during a telephone conversation — constrains our ability to more precisely measure any of the hypothesized components of raw response time scores. Laboratory work in the tradition of Donders (1868) uses careful experimental design to isolate decision or reaction components and measure the time for each of these, given manipulations of the required task. None of this care is available to us given our current reliance on single response time scores measured by human interviewers. By applying specific ignorance about individuals and questions in order to unpack these raw scores, I must remain modest in my conclusions or the implications I suggest flow from this research.

Assuming it is not a phenomenon restricted to the 1999 Houston survey, the tendency of respondents to gradually speed up during their interviews has an important implication for telephone survey design. Response time research has done a great deal to explore the trade-off between speed and accuracy (Luce 1986; Fazio 1990a; Pachella 1974). Persons trying to finish a task too quickly are more likely to do a poor job. Thus if respondents really do try to speed up their interview as a function of its length, self-reported behaviors and attitudes should be less and less reliable over the course of an interview (Krosnick 1999). This insight largely confirms an existing intuition of survey researchers: shorter instruments are better.

The analysis of individual baseline response speed also has potential implications for the study of the interaction between interviewers and respondents. A great number of characteristics of respondents may influence individual base response speeds, but clearly the interviewers themselves influence base response time. It remains to be seen whether
interviewers influence the speed of respondents due to conversational style, systematic interviewer error, or other systematic factors such as race-of-interviewer effects (Davis 1997).

As for measuring attitude accessibility, the comparison of this alternative data preparation scheme to other techniques suggests that it is a useful approach to the use of latency in social research. Further, by removing from the measure of attitude accessibility both individual and baseline effects, this measurement technique may facilitate the comparison of the accessibility of multiple attitudes on political behavior by removing effects associated with items used to triggered those target attitudes (Huckfeldt and Morehouse 2001). At the very least, this research should caution students of attitude and construct accessibility to be careful with response latency data collected by survey interviewers and attend to the multiple sources of variation in these raw time scores.
APPENDIX B

Protocol for Repeated Social Interaction Experiment,
Rice University Behavioral Research Laboratory November 14-December 5, 2001

Chapter 5 discusses the results of an experimental investigation of the development of trust among members of social environments. This appendix reports the procedures used during that experiment, conducted in late Fall 2001. Here I detail the recruitment of subjects, consent procedures, and computer environment used to field the investigation.

Recruitment

Undergraduate students were invited to participate in the experiment from eight residential college dining halls at Rice University. This recruiting was primarily done by political science graduate students during the lunch hour (11:45 a.m.-12:45 p.m.). Students were informed about a "decision-making experiment" and were invited to sign up for a particular session. Students were told that if they participated, they could earn a substantial amount of money and that their earnings depended on their decisions and the decisions of others participating in the experiment. As a reminder of the time and place of the session for which they signed up, these students were provided with a slip of paper with the location, time, and place for the experimental session.

---

1 In addition to the recruiting at lunchtime, undergraduate students were occasionally recruited during the evening dinner hour (5:30-6:30 p.m.)
Figure B.1. Consent Form

Experiment: __________________________

Decision Making Experiment

I agree to participate in the decision making experiment being conducted by doctoral candidate Martin Johnson and under the supervision of Professor Rick K. Wilson, Political Science Department, Rice University.

I understand that I will be paid, in cash, my earnings at the conclusion of the experiment.

I also understand that I may choose to quit this experiment at any time. By doing so, I will not be paid for my participation, except $3.00.

Risks and discomforts in this experiment are expected to be minimal. You will be debriefed about the particular purpose of the experiment after your participation, and you are encouraged to seek further information from the experimenter or from the investigators, Martin Johnson and Dr. Rick K. Wilson, Department of Political Science, Rice University, at a mutually convenient time. Your individual performance will not be made public. If you believe your rights have been violated in any way, you should contact Dr. Michael Watkins of Rice’s Human Subjects Committee or Dr. T. Clifton Morgan, the Department Chair of Political Science. Your participation is voluntary, and your refusal to continue or withdrawal at any time will result in no penalty or any loss of benefit to which you are entitled.

Date: __________________________

Name: ____________________________________________

print

Name: ____________________________________________

signature
Consent Form and Check-in Procedures

On arrival, subjects were asked to review and sign the consent form shown in Figure 1. After signing the consent form, subjects were led in to the experimental area and seated at a computer terminal. At that time, they were invited to view web-pages using the research laboratory’s internet connection and to check their e-mail. This gave subjects something to do while other experiment participants arrived and were seated.

In pilot experimental trials, we discovered that by not seating subjects as they arrived, we inadvertently provided subjects with an opportunity to interact and develop sociability with each other. This threatened the internal validity of the experiment, designed to affect social interaction among subjects. By providing students internet access before the experiment began, we prevented them from interacting too extensively outside of the experiment. Subjects were also asked to sit facing their computer screens and to stay pushed up to their computer terminals.

At the start of the experimental session, subjects were asked to stop browsing the internet and open the experiment’s computer program, which had been placed on the task bar at the bottom of their computer screen.² The welcome screen for the experiment is show in Figure 2. In order to ensure that all subjects entered the experiment at the same time, this welcome screen did not allow subjects into the experiment until the experimenter released them using the administrative command pages shown beginning with page 244 of this appendix. When the experimenter determined all of the session’s experimental subjects were ready to begin and that the number of subjects was divisible by four, the experimenter released the subjects into the experiment

² This computer program is itself a website programmed using ColdFusion Markup Language. The data was captured using the Microsoft Access database program.
Figure B.2. Experiment welcome screen

Welcome

Welcome to the experiment.
Please wait for the experimenter to begin.

After their release into the experiment, subjects were read the following statement:

Please enter your name, e-mail address, as well as your identification number and the session number exactly as they appear on your card. You are about to participate in a decision making experiment. If you are careful and pay attention you might make a large sum of money. You will be grouped with other people participating in the experiment today to make a series of decisions. You will be paid in cash at the conclusion of the experiment. You will be paid in private and one at a time. The instructions for the experiment on the computer are self-paced. Continue through the experiment until you can go no further. There are very few rules in this experiment. You may not speak with one another, so I ask you to stay quiet. If you have any questions, I will try to answer them for you. Please do not use the “Back” button or the “right-click” button on your computer’ mouse. The program will trap most attempts to back up and might even get lost. Finally, please do not wander off to other websites during the experiment. If you have any questions, please raise your hand and I will try to answer your questions.
The remainder of the protocol is presented below in screen images similar to Figure 2. They are not numbered, but are presented in the order subjects saw them.

User Login

Enter your name and e-mail address.

First Name: [Your name]
Last Name: [Your last name]
Email (home@host): [Your email address]

Submit

This is an experiment about decision making.
You will be paid for your participation, in cash, at the end of the experiment.
What you earn depends partly on your decisions and partly on the decisions of others.
All interaction between you and other participants in this experiment will take place through the computer.
It is important that you not talk or in any way communicate with other subjects during the experiment.
If you disobey the rules, the experiment will be stopped.

Proceed
There are several different decision tasks in this experiment.

In the first section of the experiment you will be asked to make decisions by yourself.

You will be shown a column of color cards that look like this:

<table>
<thead>
<tr>
<th>Grey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
</tr>
<tr>
<td>White</td>
</tr>
</tbody>
</table>

We will ask you to choose one of these cards.

After you make several color decisions, the computer will analyze the colors you choose and assign you to a group of people for the second part of the experiment.

If possible, you will be assigned to a group of subjects who make color choices similar to yours.

Proceed.

Once you are assigned to a group, the group will choose colors together.

Again, you will be presented with a column of color cards and asked to choose among them:

<table>
<thead>
<tr>
<th>Orange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
</tr>
<tr>
<td>Brown</td>
</tr>
</tbody>
</table>

You will earn money based on the number of people who choose the same color you choose.

If all four of the people in your group pick the same color, you will earn more money than if you are the only person choosing a particular color.

Proceed.
In another part of the experiment, you will make decisions with others about the division of money.

Detailed instructions and an opportunity for you to ask questions will precede each part of the experiment.

If you have questions at any time during the experiment, please raise your hand, remain silent, and an experimenter will assist you.
Do not ask questions of other participants in the experiment.

Proceed

Individual Color Choice

In this first part of the experiment, you will choose one of three color cards on your computer screen.

On each of the next 1 screens we will show you color cards like this:

________
White

________
Green

________
Orange

For practice, choose one of the color cards on this screen by clicking the button next to it with your mouse.
Once you have selected a color card, submit your choice by clicking on the SUBMIT button below.

Submit
If you have any questions, please raise your hand
and an experimenter will come to your terminal.

If you are ready to proceed with this section of the experiment,
please click on the PROCEED button with your mouse.

Proceed

Subjects were asked to complete nine of these individual decision tasks.

1 of 9
Which of these colors do you prefer?

- Yellow
- Orange
- Green
- White
- Red
The computer will now analyze the colors you chose and assign you to a group for the next section of the experiment.

While the computer prepares the group assignments, you will be asked a number of questions.

Please answer each question by using the mouse to select the button next to your answer. After you answer a question, you may move to the next by clicking the "Next Question" button with your mouse.

**PROCEED**

---

**Question 1 of 21**

How often do you lend money to friends?

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
</table>
| More than once a week | About once a week | About once a month | Only a few times

Next Question
## Question 2 of 21

How often do you lend personal possessions to friends?

<table>
<thead>
<tr>
<th>More than once a week</th>
<th>About once a week</th>
<th>About once a month</th>
<th>Once a year or less</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Next Question]

## Question 3 of 21

How often do you leave the door unlocked?

- Very often
- Occasionally
- Sometimes
- Rarely
- Never

[Next Question]
Question 4 of 21

What is your sex?

Female  Male

Next Question

Please indicate how much you agree or disagree with the following statements.

Rate each on a scale ranging from 1 to 6, with 1 indicating you strongly agree with the statement and 6 indicating you strongly disagree with the statement.

PROCEED
Question 5 of 21
I feel disconnected from the world around me.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Slightly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next Question

Question 6 of 21
Even around people I know, I don't feel that I really belong.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Slightly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next Question
Question 7 of 21
I feel distant from people.

Agree | Slightly Agree | Disagree | Slightly Disagree | Strongly Disagree
---|---|---|---|---
√ | √ | √ | √ | √

Next Question

Question 8 of 21
I don't feel related to anyone.

Agree | Slightly Agree | Disagree | Slightly Disagree | Strongly Disagree
---|---|---|---|---
√ | √ | √ | √ | √

Next Question
**Question 9 of 21**

I am trustworthy.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Slightly Agree</th>
<th>Slightly Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next Question

---

**Question 10 of 21**

You can't count on strangers anymore.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Slightly Agree</th>
<th>Slightly Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next Question
Question 11 of 21

People usually tell the truth, even when they know they would be better off lying.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next Question

---

Question 12 of 21

Most people do not hesitate to go out of their way to help someone.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next Question
Question 13 of 21
Most students do not cheat when taking an exam.

Strongly Agree  
Agree  
Slightly Agree  
Slightly Disagree  
Disagree  
Strongly Disagree

Next Question

Question 14 of 21
People pretend to care more about one another than they really do.

Strongly Agree  
Agree  
Slightly Agree  
Slightly Disagree  
Disagree  
Strongly Disagree

Next Question
Question 15 of 21
Most people would tell a lie if they could gain by it.

Strongly Agree
 Agree
 Slightly Agree
 Agree
 Slightly Disagree
 Disagree
 Strongly Disagree

Next Question

Question 16 of 21
The typical person is sincerely concerned about the problems of others.

Strongly Agree
 Agree
 Slightly Agree
 Disagree
 Slightly Disagree
 Disagree
 Strongly Disagree

Next Question
Question 17 of 21

Most people are honest only because they’re afraid of getting caught.

Strongly Agree
Agree
Tightly Agree
Tightly Disagree
Disagree
Strongly Disagree

Next Question

Question 18 of 21

If you act in good faith with people, almost all of them will reciprocate with fairness toward you.

Strongly Agree
Agree
Tightly Agree
Tightly Disagree
Disagree
Strongly Disagree

Next Question
Question 19 of 21
Most people would exaggerate their troubles in order to get sympathy.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Slightly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next Question

---

Question 20 of 21
Most people would stop and help a person whose car is disabled.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Slightly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next Question
Question 21 of 21
People are usually out for their own good.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next Question

Thank you.

The computer has analyzed the colors you chose during Section 1 and has assigned you to GROUP M.

The members of your group chose colors quite different from each other and those you picked.

GROUP M has a total of four members.

PROCEED
Just to make sure you understand the group assignments, we want you to answer a couple of questions about your group.

First, what is the name of your group you have been assigned to?

- GROUP M
- GROUP L
- GROUP N
- GROUP D

Next Question

Secondly, what kind of people are in the group with you?

- a. People who made similar color choices in Section 1
- b. People who didn't choose color in Section 1
- c. People who made different color choices in Section 1

Next Question
Group Color Choice

This section of the experiment is similar to the previous section, with two major differences.

First, you will be making choices with others instead of by yourself.
Second, your choices and the choices of the other members of GROUP N can earn you a considerable amount of money.

Proceed

Group Color Choice

You and the other members of GROUP N will again choose among three color cards on the computer screen.

Each member of your group will see the same three colors, but the order in which they appear may be very different for each person.

Your earnings in this section of the experiment will be based on the number of other members of GROUP N who choose the same color you pick in each round.

You will be asked to make several decisions, but will be paid for only one of these group choices chosen at random at the end of the experiment.

Proceed
At this point, subjects were shown either the pages for a high communication or low communication experimental manipulation. The high communication treatment allowed subjects to send each other signals about their intended choices in the coordination game described. In the low communication treatment, subjects in “Group M” were allowed only to make a final color choice in each of 11 rounds of play, with no opportunity to signal their intentions.

I show the high communication treatment page first, with the low communication treatment following them.
Group Color Choice Instructions

While you and the members of your group will see the same three colors on each of the screens that follow, these colors will be displayed on your screen in a random order and will likely appear in a different order for each member of your group.

Before you make your final color selection in each round, you will be allowed to indicate to the other members of your group the color you might choose.

After you see how many people in your group have chosen each color, you can make your final choice.

Proceed

Group Color Choice Instructions

You and the other members in the group can each change your mind when making a final choice in a round of play.

The money you are credited for each round of play will be based on your final choice.

Proceed
Group Color Choice Instructions

You and the other members of your group will participate in 1 round of this decision problem.

At the end of the experiment, you will be paid on the basis of only one of these group decisions. One of the 1 decisions you and your group make will be chosen at random.

You will have a practice round before you start making decisions that count for potential earnings.

PRACTICE ROUND

Indicate the color you might pick.

Amount you earn when other group members pick the same color you choose

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>Green</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>Cream</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
</tbody>
</table>

Once you have chosen a color, click SUBMIT. You will then be told how many of the members of your group have chosen each of these colors.

Submit
PRACTICE ROUND

You are waiting for the other members of your group to choose a color.
Please be patient. You will be notified when they have made their choice.

PRACTICE ROUND

The other members of your group have made their color choices. Please press CONTINUE to see the colors the members of your group have chosen.

CONTINUE
## PRACTICE ROUND

You choose: The other members of Group B made the following choices:

<table>
<thead>
<tr>
<th>Choice</th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yellow</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Below is a reminder of your previous earnings, given the final choices you and the other members of Group B made.

Please choose a color.

Amount you earn when other group members pick the same color you choose:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>Orange</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>Green</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
</tbody>
</table>

Once you have chosen a color, click SUBMIT.
PRACTICE ROUND

The other members of the group have made their color choices.
Please press CONTINUE to proceed.

CONTINUE

I chose the same color you chose.
If this were a real round of play, you would have earned $5.00.

Continue
1 of 11

Indicate the color you might pick.

Amount you earn when other group members pick the same color you choose

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>White</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>Green</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
</tbody>
</table>

Once you have chosen a color, click SUBMIT. You will then be told how many of the members of your group have chosen each of these colors.

Submit

1 of 11

The other members of your group have made their color choices. Please press CONTINUE to see the colors the members of your group have chosen.

CONTINUE
1 of 11

You chose: White

The other members of Group 6 made the following choices:

<table>
<thead>
<tr>
<th>Color</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>Yellow</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
</tbody>
</table>

Below is a reminder of your potential earnings, given the color choices you and the other members of Group 6 made.

Please choose a color.

Amount you earn when other group members pick the same color you choose

<table>
<thead>
<tr>
<th>Color</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>Yellow</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
</tbody>
</table>

Once you have chosen a color, click SUBMIT.

1 of 11

You are waiting for the other members of Group 6 to choose a color.
Please be patient. You will be notified when they have made their choice.
1 of 11
The other members of the group have made their color choices
Please press CONTINUE to proceed

CONTINUE

1 of 11
I chose the same color you chose
You have been credited $2.50 for the round

CONTINUE

End high communication treatment
Low communication treatment pages

Group Color Choice Instructions
While you and the members of your group will see the same three colors on each of the screens that follow, these colors will be displayed on your screen in a random order and will likely appear in a different order for each member of your group.

Proceed

Group Color Choice Instructions
You and the other members of your group will participate in 1 round of this decision problem. At the end of the experiment, you will be paid on the basis of only one of these group decisions. One of the 1 decisions you and your group make will be chosen at random.

You will have a practice round before you start making decisions that count for potential earnings.

Proceed
## PRACTICE ROUND

Amount you earn when other group members pick the same color you choose:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>Cyan</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>Green</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
</tbody>
</table>

Once you have chosen a color, click SUBMIT.

[Submit]

---

## PRACTICE ROUND

The other members of your group have made their color choices.

Please press CONTINUE to proceed.

[CONTINUE]
PRACTICE ROUND

I chose the same color you chose.
If this were a real round of play, you would have earned $5.50.

Continue

1 of 1

Amount you earn when other group members pick the same color you choose:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>White</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
<tr>
<td>Red</td>
<td>$1.00</td>
<td>$2.50</td>
<td>$4.00</td>
<td>$5.50</td>
</tr>
</tbody>
</table>

Once you have chosen a color, click SUBMIT.

Submit
1 of 11

The other members of Group A have made their color choices.
Please press CONTINUE to proceed.

CONTINUE

1 of 11

I chose the same color you chose.
You have been credited $2.50 for the round.

Continue

End low communication treatment.
Regardless of their assignment in the during the coordination game, all subjects not assigned to the control group were show the following pages.

Before we conclude this part of the experiment, we would like to ask you a few additional questions.

PROCEED

What kinds of groups do you think would do better in this color choice exercise, groups made up of people with similar color preferences or mixed groups?

- [ ] Senior Color Preferences
- [x] Mixed Color Preferences

PROCEED
Do you want another opportunity to match colors with the other members of GROUP M?

- Yes
- No

Would you like to continue working as a group, or disband?

<table>
<thead>
<tr>
<th>Continue working with GROUP M</th>
<th>Disband GROUP M</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Proceed
Instructions. Pass or Take?

In this part of the experiment, you will be randomly paired with another member of Group N.

One of you will be randomly chosen to be Player 1 and the other will be Player 2.

Proceed.
**Instructions. Pass or Take?**

If Player 1 passes the decision to Player 2, both play grow.

The large pile now contains $2.40 and the small pile 69 cents.

Player 2 can either take or pass the pile.

1. **Player 2 "Takes"**, the decision sequence ends.
   Player 2 receives the large pile of $2.40 and Player 1 receives 69 cents.
   2. **Player 2 passes**, it becomes Player 1's turn again.

This continues four times, or two times for each player.

On each move, if a player "Takes", they get the large pile and the other player gets the small pile, and the decision sequence ends.

If the player passes, both piles double again and it's the other player's turn.

The last move is Player 2's.

The large pile will remain $2.40 and the small pile 69 cents.

2. **Player 2 "Takes"**, Player 2 receives the large pile of $2.40 and Player 1 will receive 69 cents.
   3. **Player 2 passes**, the pile doubles again and Player 1 receives the large pile, $97.20.
   4. Player 2 will receive the smaller pile of $6.80.

**Proceed.**

---

**Instructions. Pass or Take?**

This drawing shows each of the decisions Player 1 may make.

<table>
<thead>
<tr>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>PASS</td>
<td>PASS</td>
</tr>
<tr>
<td>PASS</td>
<td>Player 1 receives $19.20</td>
</tr>
<tr>
<td>TAKE</td>
<td>Player 2 receives $4.80</td>
</tr>
<tr>
<td>Player 1 receives $1.20</td>
<td>Player 2 receives $2.40</td>
</tr>
<tr>
<td>Player 2 receives $6.80</td>
<td></td>
</tr>
</tbody>
</table>

If you have any questions, please raise your hand and an experimenter will come to your terminal.

If you are ready to proceed with this section of the experiment, please click on the PROCEED button with your mouse.

**Proceed.**
Instructions. Pass or Take?

You will be Player 1 in this section of the experiment. As Player 1, you will have the opportunity to move first. The amount you can earn at each decision are highlighted below.

You receive: $1.20  
Player 2 receives: $2.40

You receive: $4.80  
Player 2 receives: $2.40

You receive: $2.40  
Player 2 receives: $1.20

You receive: $3.60  
Player 2 receives: $1.80

Press PROCEED to begin.

Proceed

Pass or Take?

You receive: $1.20  
Player 2 receives: $2.40

You receive: $4.80  
Player 2 receives: $2.40

You receive: $2.40  
Player 2 receives: $1.20

You receive: $3.60  
Player 2 receives: $1.80

Would you prefer to TAKE the highlighted pile or PASS it to Player 2?

TAKE   PASS

Proceed
Pass or Take?

You → PASS → You → PASS → Player 2 → PASS → You receive $19.20

You receive $1.20 $4.80
Player 2 receives $2.40 $1.20 $9.60

What do you think Player 2 will do?
Do you think Player 2 will TAKE the offered sum or PASS the decision to you?

TAKE  PASS

Proceed

Pass or Take?

You are waiting for the other player to make a decision.
Please be patient. You will be notified when they have made their choice.
Instructions. Pass or Take?

Player 2 has chosen to take the pile and end the decision sequence.

You

PASSED

Player 2

PASSED

You receive $16.00

Player 2 receives $11.00

You receive $4.00

Player 2 receives $2.00

That concludes the third part of the experiment.

Thank you for participating.

All that remains is to tally your earnings.

Proceed

Your Earnings.

When you were choosing colors with all four members of GROUP M,
you were credited with dollar amounts for each of the 5 decisions you and your fellow group members made.

As we explained at the beginning of the experiment, you will be paid for only one of those rounds, chosen at random by us.

Below, there are 5 cards representing each of the rounds of play from the group part of the experiment. They are shuffled randomly.

Select one of the cards, and you will be paid for the decisions you participated in during that round.

Proceed
Experiment Earnings.

Your earnings for Session 2 will be based on decisions made in Session 1.
You were credited with $2.50 for that session.

You earn $0.60 in the Pass or Take? Task.

You will also receive $3.00 just for participating in the experiment.

Your total earnings for the experiment are $11.91.
Please raise your hand and an experimenter will help you record your earnings
and direct you toward the payment window.

Please do not close this page.

On average, participants in the experiment earned $11.91 (with a range of $4.00
to $27.70). The mean payout to subjects assigned to the high communication treatment
was $16.16. Subjects in the low communication and control groups averaged $11.77 and
$7.00, respectively. While each subject was being paid, she or he was read the following
debriefing and given an opportunity to ask questions:

With this experiment, we are interested in your experiences with groups
and the decisions you make working with others. The experimental design
allowed some participants more communication with their counterparts
and allowed other participants almost no opportunities to communicate
with each other. Some experimental conditioned matched participants
with others after an individual decision task. These groups were
constructed using random assignment. I hope you will not talk with others
about this experiment until it is completed in approximately four weeks.
Do you have any questions?
This investigation required an administrator to start the experiment and allowed
this administrator to monitor players and their earnings.
This lists the subjects who are currently signed up for the experiment.

If you are ready to start the experiment, then check off everyone you want
in the experiment and hit the START button.

Do not START until everyone is present.

Subjects for RSI Experiment, Session Appendix

<table>
<thead>
<tr>
<th>Last Name, First Name</th>
<th>Machine</th>
<th>Check IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two, Player</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Three, Player</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Four, Player</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>One, Player</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Indicate how many rounds of individual and group decision making
you would like these subjects to play.

Individual: [ ]
Group: [T]

Also, in which treatment will you assign each group?

<table>
<thead>
<tr>
<th>GROUP</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This lists the subjects who are signed in and their parameters.

Subjects for RSI Experiment, Session Appendix

<table>
<thead>
<tr>
<th>Last Name, First Name</th>
<th>Group</th>
<th>Treatment</th>
<th>Dyed</th>
<th>Player Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two, Player</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Three, Player</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Four, Player</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Your colors have been assigned for Session Appendix.

Submit
### Subjects for RSI Experiment, Session Appendix

<table>
<thead>
<tr>
<th>Last Name, First Name</th>
<th>Group</th>
<th>Player Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>One, Player</td>
<td>1</td>
<td>$6 10</td>
</tr>
<tr>
<td>Two, Player</td>
<td>1</td>
<td>$5 80</td>
</tr>
<tr>
<td>Three, Player</td>
<td>1</td>
<td>$3 20</td>
</tr>
<tr>
<td>Four, Player</td>
<td>1</td>
<td>$6 10</td>
</tr>
</tbody>
</table>
REFERENCES


Bessel, F.W. 1823. Astronomische Beobachtungen in Königsberg 8:3-8.


