The Influences of Social Capital on Lifelong Learning Among Adults Who Did Not Finish High School

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Table of Contents

Tables

Figures

Introduction

Lifelong learning has become a key concept in planning for economic and social development. The public discussion on lifelong learning is very broad, encompassing continuing education for seniors in an aging but capable population and often oriented to preparing adults for transitions through multiple careers in their lifetime. Previous surveys indicate that people with more education are more likely to access continuing education for personal and professional development. In contrast, this study focuses on issues of lifelong learning for those adults who did not complete high school.

Theoretical Orientation

Sociological analyses are often either in the structural camp, in which social structures are the explaining factor and individual agency is minimized, or the individualist camp, in which individual achievement is de-contextualized from the social and economic environment. Studies of adult learners have focused either on the individualized attitudes and motivations of the learner or on the structural obstacles to participation.

Educators have called for a deeper understanding of the life world of adult learners (Freire, 1970; Fingeret, 1983). Learning theory suggests that people learn new things best in the context of their use. Therefore, communities of practice—one's work setting, peer group, family, etc.—are important contexts for learning. This pedagogical orientation is consistent with an understanding of literacy as a social practice embedded in the meaning and interpretation of daily experience (Reder, 1994; Gee, 1989).

A theoretical model that supports inquiry into the interaction between the learner as actor with his or her environment is needed. This study assumes a structuration[1] model (Giddens, 1984). Adults construct their personal communities and the social capital available to them in interaction with the opportunity structures in which they are engaged. Adults, then, may adopt multiple and different strategies to address their needs for lifelong learning in the context of the demands of daily life. Learning, in turn reconstitutes the life world of the learner. Structuation also has theoretical implications for social capital theory that will become evident in this paper.

[1] Giddens defines structuration as "the structuring of social relations across time and space, in virtue of the duality of structure" (Giddens, 1984 p. 376). By "the duality of structure," Giddens is talking about human agency and social structure as interactive and iterative components from which social structures are produced and reproduced. This is a subtle and complex theory, for more information, see the cited work.

Coleman (1988) introduced the notion of social capital as a vehicle for analyzing the influence of social context on educational attainment. He focused on how interaction within and between families generates transferable value (and values) that support the educational attainment of children in the community. Coleman's initial analysis of the High School and Beyond data has been built upon by other scholars using High School and Beyond and the National Education Longitudinal Survey[2], primarily detailing how family structures create varying social capital. High school persistence is usually the dependent variable. These studies leave two questions unanswered: What implications do the findings have for those who do not finish high school? And do the conclusions suggested by research on high school students hold true for adults? This study will fill the gap with an analysis of adult learners.

The richness of available social capital is an important attribute of context. Multiple qualitative studies have contributed to a deeper understanding of social context as part of adult learning, but this theoretical orientation has not been incorporated into quantitative research previously.

Recently, there has been a burst of inquiry across multiple disciplines to develop a theory of social capital and means of empirical measurement. Reviews of social capital studies have pointed out problems with the logical constructs and measurements used. Most empirical work has depended on secondary analysis of data sets and is open to the criticism that measures of social capital are thin and construct validity is stretched. By building on qualitative community and literacy studies, I hope through this quantitative study to challenge and contribute to previous social capital research by suggesting interpretive dimensions of social capital in addition to the structural-functionalist dimensions.

This study of social capital employs data from the Longitudinal Study of Adult Learning (LSAL), funded by the National Center for the Study of Adult Learning and Literacy (NCSALL) and conducted at Portland State University to increase understanding of the learning process of adults with limited formal education. The LSAL targets those adults who have elected to leave or been pushed out of formal education, a group that has been marginal in previous studies.

[2] "The High School and Beyond study describes the activities of seniors and sophomores as they progressed through high school, postsecondary education, and into the workplace. The data span 1980 through 1992 and include parent, teacher, high school transcripts, student financial aid records, and postsecondary transcripts in addition to student questionnaires and interviews." More information is available at http://nces.ed.gov/surveys/hsb/.
"The NELS:88, which began with an 8th grade cohort in 1988, provides trend data about critical transitions experienced by young people as they develop, attend school, and embark on their careers…All dropouts, who could be located, were retained in the study. A fourth follow-up was completed in 2000." More information is available at http://nces.ed.gov/surveys/nels88/.

It provides longitudinal data on how people continue learning in multiple contexts—through formal adult education programs and in their daily lives. Some of these contexts are work, personal interests, family life, and civic engagement. The LSAL data offer an opportunity to compare the social influences on adults enrolled in formal education with adults not enrolled, and informal learning practices across both groups. Do they have role models or peers who are engaged in learning? Do their families or employers support their learning? In what ways does their community broaden or narrow their aspirations and expectations?

This paper is presented in two sections. The first is a theoretical exploration of the intersections of critical literacy, adult learning, and social capital theories. The intent of this discussion is to introduce key concepts from multiple disciplines and develop a synthetic model of social capital influences on lifelong learning (SCILL) in which adults construct their social environment and the discourses that influence their learning strategies. The second section empirically tests a piece of the SCILL Model related to the structural and discursive dimensions of social capital, using data from the first wave of the LSAL. Multiple measures of social capital will be detailed. I argue that in addition to the structural dimension of social capital, local discourse generated through interaction is an interpretive dimension of social capital. The discussion ties the empirical and theoretical elements, offering implications for the study of adult education participation in adult education for research on social capital.

Definition of Concepts

Lifelong Learning: Following the lead of the adult education literature, lifelong learning includes both formal, school-directed learning and informal or self-directed learning (Cross, 1981; Courtney, 1992; Schuller & Field, 1998). Lifelong learning is the dependent variable of this study's analysis.

Formal Learning: Formal education is offered by educational institutions and organized around schooling discourse (Lankshear & O'Connor, 1999). Formal lifelong learning is measured by participation in adult basic education or GED preparation programs, as these classes are generally a prerequisite for additional types of formal education.

Informal Learning: Many adults pursue learning goals motivated by personal interests and activities independent from any program. Adult learning also occurs informally through interaction with others, intentionally with helpers, tutors, and mentors, and unintentionally. Informal learning is measured by self-reported strategies for learning new things that do not include classes.

Social Capital: Social capital is the intangible, transferable value generated through social interaction. In this study, it is limited in scope to subjects' personal community, defined by their personal social networks, household, and work contexts.

Section 1: Theoretical Development

Dimensions of Social Capital Influencing Lifelong Learning

There are strong parallels in the concepts of social capital and theories of adult learning and literacy. Both social capital and learning are actively constructed through the interaction and practices of individuals in the contexts of their social and technical environments.

"Practice" has multiple interpretations relevant to lifelong learning. In the context of this study, "practice" refers to the activities of everyday life in school, home, work, and social activities that involve literacy and learning. The practices of interaction that build social capital and generate learning also create discourses. "Discourse" in this study refers to the shared meaning constructed by communities and communicated through verbal, body, and written language. Community values enacted in local discourses may influence an individual's choices regarding lifelong learning practices. Learning as an interactive and contextually situated activity (Vygotsky, 1996; Engestrom & Middleton, 1996; Lave & Wenger, 1991) is a form of social capital.

I suggest that local discourses are an interpretive dimension of social capital. This theoretical development addresses several problems in current social capital theorizing: the relationship of agency and structure in the development of social capital; problems of social capital and social stratification, especially the conflicting interpretation of horizontal and vertical networks as structures of social capital; and the movement of social capital generated resources from the collective to the individual.

This theoretical discussion will show how these three concepts—community, practice, and discourse—fit together in a dynamic model of lifelong learning. The second section of this review will demonstrate how the above theoretical constructs have been operationalized in previous research and will present findings of studies relevant to lifelong learning and the LSAL population.

Community as Social Capital

Social capital provides a framework for a dynamic rather than static study of community. Coleman's seminal paper, "Social Capital in the Creation of Human Capital" (1988), which analyzed community effects on completion of high school, instigated extensive literature on the relationship between social capital and education. He defined social capital by its function: "It is not a single entity but a variety of different entities with two elements in common: They all consist of some

aspect of social structures, and they facilitate certain actions of actors, whether persons or corporate actors, within the structure" (p. S98).

Coleman discusses three different forms of social capital: trust, information, and norms. These are often associated with outcomes such as educational persistence, civic participation, and economic development as social capital value is transferred to human, social, and financial value. In Coleman's analysis, social organization structures the interaction that generates social capital. Some characteristics of the structural organization of social capital are part of the macro environment in which the individual or community is placed or has inherited from the historical path of others. Other characteristics of social networks, such as the characteristics of one's friends, are more a function of the choices of the actor. Opportunity structures, whether rich or limited, are presented and acted upon by individuals according to their strategy to survive or enact the self. Individuals can use the support and leverage from their social networks to facilitate endeavors such as lifelong learning. Social capital gives individuals access to resources such as information and other instrumental assistance. Personal relationships also provide emotional or moral support for pursuing aspirations.

Summarized below are the dimensions of social organization that create social capital, as discussed by Coleman (1998), Putnam (1993), and Granovetter (1973).

- **Closure:** Closure is a function of community homogeneity combined with relatively closed social structures that reproduce shared values across generations and enforces them through socialization. The development of shared norms and values depends on a history of trustworthiness among members of the network. A closed community system is related to its density.

- **Density:** Density of social networks in a given community where everyone knows everyone else can be expected to foster greater social trust. Trust is created through processes of exchange and expectation. When trust extends beyond individual exchanges, it fosters a norm of "generalized reciprocity." This mediates the fear of being taken advantage of that often limits collective action or contribution to the public good.

- **Information flows through social networks:** Information contributes to trust and norm- building by extending the reputation of an individual beyond his/her immediate contacts, a reputation that might be traded for other value. Information is often the medium of exchange that creates social cohesion and solidarity, as in the "back fence" conversation. Information facilitates individual actions, such as finding a job, and collective action, such as mobilizing social movements through telephone trees.

Costs of Social Capital

There are also costs to the community solidarity that generates social capital. Some of these costs are constraints on freedom of political voice and external contact, normative pressures to comply with the group over individual interests, and collective or kin claims on individual gains (Portes & Sensenbrenner, 1993; Forment, 1989). Social network studies show that relationships can impose obstacles, such as family obligations, work demands, and restrictive or abusive relationships (Lin et al., 1986; Horsman, 1990). Immigrant communities develop strong social capital because of the bounded solidarity formed by the historical, socioeconomic, and cultural markers that reinforce, rather than open, closed social networks (Portes & Sensenbrenner, 1993). These communities can direct their cohesive social capital to collective strategies of getting ahead by developing microeconomies and buffers to the language and culture of the dominant society. However, the insular nature of these enclaves often has drawbacks in the constraints and obligations on individual community members and isolation from the dominant discourse. Woolcock (1998) proposes a model of balance between "autonomous" social ties that connect individuals with people outside of their community and "embedded" ties within the community that promote social cohesion and collective action.

Although Coleman and Putnam emphasize the social cohesion dimension of social capital, other scholars are interested in forms of social capital generated through social networks with open and heterogeneous characteristics. In addition to being a resource for social cohesion, information is also an important resource for power (Giddens, 1984). Trust and norms can be interpreted as a positive resource for collective action and social cohesion, or as a constraint on individual advancement. Granovetter (1973) demonstrates that open networks (also called "weak ties") are most useful to job hunters because they extend one's reach beyond the strong ties of kin and close community. Scholars interested in competitive advantage within organizations seem to dismiss social support dimensions of social capital as "constraints" while emphasizing the information and leverage advantages of social networks (Burt, 1998a). Burt's interpretation of social capital is that there is one dimension, that of leverage of information and legitimacy through vertical social networks, which can then be indexed according to quantity. Putnam (1993) has a contrary finding based on his study of civic network structures in Italy, "A vertical network, no matter how dense and no matter how important to its participants, cannot sustain social trust and cooperation" (p. 174).

These two potentially contrary characteristics of social capital can be formulated as different kinds of value generated through social interaction. De Souza Briggs (1998, p. 178) labels them "social support . . . that helps one get by," generated by homogenous and closed networks and "social leverage . . . that helps

one get ahead," generated by networks that give one access to power and influence. Theoretically, these two dimensions are differentiated by different network structures. Closed, dense, and homogenous social networks create supportive social capital, and open, loose, and heterogeneous networks create social capital for leverage. However, this analysis has to go further to question the positioning of the social networks themselves in the macro structuration of power.

Criticisms of Social Capital Theory

In his meta-analysis of the social capital literature, Woolcock (1998) summarizes some problems of social capital theory that need to be addressed in future research. First, although there are comprehensive descriptions of the characteristics and functions of social capital, the scope of application of the notion is broad and vague. By definition, social capital is a feature of collective action, but the unit of analysis is often the individual. Many empirical studies of social capital rely on survey data in which characteristics of individuals and families become proxies for social capital measures. Looking at interaction within families and interfamily generational closure, Coleman analyzes "social capital as a resource for persons" (1988, p. S98). But Putnam places social capital in the scope of civic engagement, calling for it to cross social divides, which seems to contradict Coleman's precondition of closure and homogeneity of social norms and values. Woolcock (1998, p. 156) surmises "that there may be various forms or dimensions of social capital." Indeed, the distinction between social capital for support and social capital for leverage discussed above is motion in that direction. Inquiry into social capital must carefully define the dimension addressed, its scope, and its unit of analysis. One of the theoretical problems to address is how the resources of social capital flow from the group to the individual.

Second, the relational ordering of the characteristics of social capital has muddled theoretical modeling of how it works. Functional definitions have made it difficult to distinguish what social capital is from what it does (Edwards & Foley, 1997). At the 1998 American Sociological Association meeting (Social Networks session 157), Dr. Tony Tam argued for differentiating aspects of social capital to enable linear causal modeling. However, if social capital is understood as an instance of structuration, linear causal modeling is problematic because social capital is created through iterations of enactment. Using a systems approach, one can identify measures of inputs, exchange processes, and outcomes, which then have the potential—depending on the actors—to expand, feeding outcomes back into the enactment as $Input_n$. In this proposition, aspects of social organization, such as Putnam's horizontal networks, Coleman's intergenerational closure variables, and opportunity structures such as those discussed by Wilson (1987), are inputs. Examples of exchange process measures are access to time and money (Boisjoly, 1995), family interaction variables (Coleman, 1988; Teachman, et al. 1996), survival

resources (Stack, 1974), and information exchange (Granovetter, 1973). Outcomes such as education, community and economic development, status attainment, and civic engagement are often the dependent variables in studies of transference of social capital value. An example of a second-generation feedback loop is the use of education as an independent variable to demonstrate how opportunity structures are affected by educational attainment (Boisjoly, 1995). Woolcock (1998) argues against defining social capital by what it produces because that confuses the process with the results. This commonly happens when equating civic engagement with social capital.

Third, the discussion of social capital often assumes the values of the dominant culture. Schuller and Field (1998) point out that Coleman doesn't consider that the authoritarianism of the Catholic church may operate to undermine alternative forms of social capital. Putnam's measures of civic engagement have been criticized as explicitly normative in that he ignores oppositional forms of involvement, such as activism in social movements (Lappe & Du Bois, 1997). Resources accessible through social capital are unevenly distributed in society, so the social location of the group influences the availability of resources (Edwards & Fowley, 1997). Wilson (1997) also makes this argument when he demonstrates that African American communities with high concentrations of unemployment become isolated from the social connections that help integrate people into the economy. Burt's (1998b) analysis of social networks in firms also shows that relationships with people who have more legitimacy and power yield more leverage than relationships with people on the same hierarchical level as oneself.

The distinction between social capital for support versus leverage starts to address the macro social stratification structures. Stanton-Salazar (1997) argues that social networks carry distinct orientations that vary with "the *social distribution of possibilities*. Whereas working-class community networks are organized on the basis of scarcity and conservation, the cosmopolitan networks constructed by middle-class members are oriented toward maximizing individual (and group) access to the mainstream marketplace" (p. 4, italics are his). Different network structures translate into different opportunities for education, development, and lifelong learning. Stanton-Salazar criticizes Coleman for neglecting the fact that "the potential for the development of supportive ties is always set in the context of interlocking class, race, and gender hierarchies" (p. 9).

The connection between social capital and the social reproduction of stratification is underdeveloped. This inquiry can go deeper by analyzing the cultural features of social capital—the norms and values that underlie trust and social cohesion. "Norms arise as attempts to limit negative external effects (of individual behavior on the group) or to encourage positive ones" (Coleman, 1988 p. S105). I propose substituting the concept of discourses for the notion of norms and values as forms of social capital. Like norms, discourses capture the enacted cultural

expressions and values of communities. However, discourse is a stronger theoretical construct than "norms and values." Whereas "norms and values" connote a received and reified belief and behavior system, discourses are constructed and fluid. In addition, metadiscourse intersects with social stratification and literacy theory. Critical cultural theory points out that there are multiple cultural contexts in which social capital is embedded. Subgroup discourses may oppose that of the dominant culture or may be conflicted within the community. Qualitative studies that uncover the *meaning* of exchange and *substance* of norms and values begin to uncover multiple outcomes of social capital processes that are obscured by structural-functionalist analyses that don't capture cultural contexts.

Practices as Interactive Processes

Structuration theory (Giddens, 1984) offers ways to think about the dynamic process of discourse and social capital. In structuration theory, structuring properties are patterns of interaction that are recognizable and reproducible beyond the behavior and reach of the individual. Behavior is both informed and molded by social practices while simultaneously and iteratively creating structuring properties. The notion that interactions and practices create social organization challenges the single-direction, structural-functionalist orientation of social capital theory that tends to see value (i.e., trust, information, norms) generated by social organization. This structuralist orientation reduces the importance of agency in social capital theory.

Learning is the nexus of this dynamic. Practices of interaction and learning have the potential to transform the learner, the social capital generated through interaction, and the social organization underlying social capital. Second-order learning (Bateson, 1973; Argyris et al., 1993; Engestrom & Middleton, 1996) is learning to learn so that the actor goes beyond the given social organization of practices and makes structural changes. This is what gives lifelong learning its power for intervention and social change.

"Practices," as they pertain to lifelong learning, can be interpreted in multiple ways. The constructivist perspective is that learning and practices cannot be separated. "Learning is viewed as the appropriation of socially derived forms of knowledge" (Billet, 1998 p. 23). Individuals construct knowledge through their social and cultural practices and personal interpretation. Learners try to make sense of their experience to make it fit their existing schemas. This process transforms both the learner and the social and technical environment of which they are a part. The co-construction of knowledge makes new learning viable in the learner's continuing practice and social environment. Billet proposes "that without ongoing participation in social practice where this knowledge can be accessed and appropriate guidance provided, learning outcomes are likely to be inhibited" (Billet, 1998).

Social Capital and Literacy Practices

Workplaces, home and family life, and social and leisure activities are all contexts for lifelong learning in addition to formal educational environments. One of Coleman's (1988) examples is reading circles, which have recently become popular as book clubs. In their investigation of adult literacy development, Reder and Green (1985; Reder, 1999) find that non-formal learning occurs through interpersonal helping relationships that facilitate accomplishing literacy tasks and model the needed skills. Macro-level changes in the economy and social structures change the patterns of interaction through language (the basis for development of learning and critical thinking skills) in home, schooling, community, and work contexts (Heath, 1990). Pictures replacing numbers on cash registers in fast food restaurants is an example of decreased literacy environment at work. Less involvement in unions and other civic organizations mean fewer opportunities for learning. There is a parallel between Putnam's (1995) analyses showing an apparent loss of social capital and Heath's (1990) concern that the social patterns of interaction emerging over the past few decades are narrowing the quality and quantity of opportunities for situated learning.

The notion of situated learning is tightly linked to critical literacy studies that define literacy practices as inseparable from lifelong learning. Literacy practices involve the social interactions, situational and cultural contexts, implications, and meaning of interaction around a text (Street,1995; Gee, 1989; Barton & Hamilton, 1998). "Literacy practices are almost always fully integrated with, interwoven into, constituted, part of, the very texture of wider practices that involve talk, interaction, values, and beliefs" (Gee, 1996, p. 41). Essentially, text cannot be read outside an interpretive frame of reference. This definition of literacy shares important characteristics with the construct of social capital. One could substitute "social capital" for "literacy practices" in Barton and Hamilton's (1998) statement, "Literacy practices are more usefully understood as existing in the relations between people, within groups and communities, rather than as a set of properties residing in individuals" (p. 7). Lifelong learning could be construed as acquiring multiple literacies as one inhabits different roles and contexts through life. Literacy is also understood as fluency with basic skills that are gatekeepers to other communities of practice.

Theories of situated learning show how social capital generated through interaction in social organization is intimately tied to learning practices. Lave and Wenger (1991) present a compelling articulation of the relationship among community, practice, and learning: "Learning, thinking, and knowing are relations among people in activity in, with, and arising from the socially and culturally structured world" (p. 50–51). Their definition of learning as "the historical production, transformation, and change of persons" (p. 51) frames lifelong learning as inseparable from the practices of daily life.

In *Situated Learning,* Lave and Wenger (1991) focus on learning through engagement with communities of practice. Practitioners relate to each other through social organization and discourses that embody the history and culture, tools and spatial aspects, and specialized knowledge of their shared community. In Giddens' terms, practitioners enact the structuring properties of their social organization. This model of situated learning grew from the historical context of apprenticeships to professions or trades in which new practitioners acquired the knowledge of the community through "legitimate peripheral participation" (Lave & Wenger, 1991, p. 35). One learns through interaction with experienced members of the community, applying and internalizing knowledge through practice that contributes to the productivity of the community. A community of practice folds learning directly into the creation of social capital. Thus, learning is a fourth "value" of social capital.

Discourse as a Dimension of Social Capital

Gee defines discourse as "ways of being in the world; they are forms of life which integrate words, acts, values, beliefs, attitudes, and social identities as well as gestures, glances, body positions, and clothes" (1989, p. 6–7). No practices happen outside of the enactment of discourse. He argues that literacy is inseparable from discourse. Literacy involves the interpretation of text, which implies a socially constructed interpretive frame of reference. Literacy practices are part of the communicative package of discourses. More specifically, Gee defines literacy as, "the mastery of or fluent control over a secondary discourse. Therefore, literacy is always plural, literacies" (1989, p. 9). A primary discourse is learned at home and in one's home community, along with first language, as part of initial socialization. Secondary discourses are acquired through interaction within other social contexts of role and situated practices. Schooling is an example of an institution designed to acculturate students to a secondary discourse.

Discourse theory challenges the normative assumptions of social capital theorists. Coleman's (1988) third form of social capital is the creation of norms and values, which, he says, may not come into existence unless the social structures are relatively closed. Without closure of networks, the ability to sanction non-normative behavior is curtailed. Coleman implies that normative values, as supports and constraints on individual behavior, happen within a bounded community (his example is Catholic schools). This interpretation is vulnerable to "culture of poverty" explanations of educational achievements by suggesting that groups may not succeed in the school system because of their cultural values.

Critical discourse theory argues that the dominant culture, although perhaps invisible to members of the dominant discourse community, imposes prescriptive norms that are made visible when contested by different discourse communities

(Omi & Winant, 1986). Contrary to Coleman's prerequisite of structural closure, there are default sets of norms and values in the society at large that legitimate power and reproduce social organization. The sanctioning closure that Coleman calls for is also enforced in the macro social system through the structuring processes of signification, legitimation, and coercion (Giddens, 1984). As the term "signification" suggests, literacy is deeply implicated in these processes. Signification as the recursive encoding of meaning in communicative practices (Giddens, 1984). Legitimation is the social acceptance of the legitimacy claims to power and control of resources of the ruling class. Modern democracies organize society by relying on signification and legitimation, rather than coercion, to enforce and reproduce the normative order. Like literacy practices and social capital itself, signification can be said to reside in the interaction between actors. Literacy—the ability to write and interpret meaning—has been a powerful legitimating force in history (Goody, 1987). Discourses organize shared signification or interpretive frames of reference. Meaning and interpretive frames of reference cannot be separated from socially constructed power relations, as will be shown in the following discussion of education. Dominant and contesting discourses are enacted through the structures of social capital and cultural capital in the structuration of social stratification. Although he doesn't use the structuration theoretical frame, Bourdieu (1974) makes this point. Dominant discourse is a structuring property of legitimation and signification that enacts the ruling social order. All subcultural discourses engage this context in some way.

Theories of discourse communities bridge the reproduction of social stratification to social capital. The construction of ones literacy, or comfort with multiple discourses, depends on one's personal community(ies) of practice and social networks. The exchange value of a discourse depends on its role in the structuration of the dominant discourse and legitimation of the structures of power. The social position of the personal community that comprises ones stock of social capital influences engagement in and access to discourses relative to the power structure. The legitimacy status of one's discourse community translates to increased access to information and resources through social capital. While network closure may offer some kinds of social capital in subcultures, the dominant culture enacts a discourse of getting ahead and competition that gives value to vertical networks. This critical discourse analysis locates social capital in the processes of stratification and explains the seeming contradictory mechanisms of vertical and horizontal networks as vehicles of social capital that is not apparent from a structuralist analysis.

Discourse and Literacy

One explanation of the high correlation between socioeconomic status and literacy scores is that the standardized tests of literacy measure one's ability to navigate the structuring properties of the dominant discourse. Functional literacy is, by definition,

the ability to function in society: "Using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential" (Kirsch, et al., 1993 p. 2). Although critical literacy scholars have challenged this orientation (Street, 1995), it is this measure of literacy and fluency in dominant discourse that have the most important implications for policy and individual success in the world of the dominant discourse. The problem is the structuration of access to communities of practice that *develop*—rather than select for—these literacy competencies. The structuration of access is a function of social capital, which creates access to communities of practice.

The dominant discourse asserts that education is the institutional vehicle for the acquisition of the cultural and human capital necessary for success. A myth of the dominant discourse is that upward mobility is possible through education (adoption of dominant literacy and cultural practices). But just as money without cultural capital is not enough,[3] education does not necessarily guarantee mastery of a discourse, particularly for those whose primary and community discourses are different from or even conflict with the dominant discourse.

Far from being the "great equalizer," the education system does not remedy the gaps in literacy between children whose parents are less educated and those whose parents have secondary and postsecondary credentials (Reder, et al., 1998). Bourdieu (1974) argues that the education system legitimizes class hierarchy by building on and reproducing cultural practices that are congruent with the ruling class and eliminates other practices from the system. Reder's (1999) "literacy selection" model builds on that idea by showing that those with low literacy are selected out of the education system rather than developed by it.

Formal Learning Practices

One contested arena of practice is participation in adult education programs. ABE programs are the institutional gatekeepers for adults who don't have a high school diploma. The product of successful completion is a GED (general educational development) credential, which then opens the door to postsecondary education, jobs that offer more potential development, and many training opportunities. I say this is a contested terrain for two reasons: These programs serve very few of the total adults who might participate, and data hasn't conclusively demonstrated that GED program participants show significant skill improvement (Beder, 1999).

Most research on participation in adult education comes from motivational psychology; lifespan development; and situational, institutional, and dispositional

[3] As illustrated in popular culture ridicule of *The Beverly Hillbillies* and the more recent *Fresh Prince of Bel Air*.

barriers, which have tangential relevance to the question of the influence of social capital on lifelong learning. However, Cross (1981, p. 124) proposes a "chain of response" framework of interactive variables incorporating social structures, life transitions, attitudes, expectations, and information. This framework illustrates the interaction of agency and structural forces in an individual's critical path toward participation. It points to several potential social capital influences. As mentioned in the earlier discussion of social capital, information is an important form of social capital. The chain of response model points to the information resources of social capital as an important contribution to lifelong learning. The norms and values of reference or peer groups that influence the attitudes of potential participants are also a form of social capital. Attitude reinforcement may move in the direction of group support or peer models for learning efforts.

More broadly, group affiliations might also be a structuring property of culturally incongruent or incompatible class values between the individual's community and educational institutions. Voluntary associations may be an intervention point for interested members in lifelong learning. However, Putnam (1995) and Wilson (1997) point out that many of the potential membership groups, such as unions, are declining. The interactive practices of daily life are also learning contexts. The engagement one has with voluntary associations and the kinds of personal networks one constructs affect attitudes towards and barriers to lifelong learning as well as facilitate information about opportunities.

Qualitative studies that question the meaning of literacy and education in people's life world provide grounded propositions of how this works. What are some of the collective stories about "getting ahead" and "getting by" that might influence lifelong learning? How do people negotiate local discourses and the dominant discourses when making their individual decisions about pursuing learning? Is the congruence between an individual's story and that of the primary discourse of which they are a part important in allocation of resources?

Theoretical Propositions from Qualitative Studies

Social Capital that Bridges Divides

Empowerment is a common theme in ethnographies of literacy. These stories build on the notion of lifelong learning as a liberatory process in the tradition of Freire. Delgado-Gaitan's (1990) *Literacy for Empowerment* tells the story of engaging first-generation immigrants from Mexico with the literacy practices of the school system that their children attend. Delgado-Gaitan wanted to know how Spanish-speaking parents learn to participate in their children's schooling. She found that the discourse of schooling and expectations of teachers did not connect with the primary

discourses and literacy practices in their homes despite the fact that parents sacrificed a great deal to support their children's success in school. Language and cultural barriers intervened in parent–school communication.

Delgado-Gaitan concludes that participating in school needs to be taught to immigrant parents as a new practice. Through the intervention of the study itself, parents overcame the isolation of individual households and had access to the facilitative resources of the researcher to organize themselves for collective action. The ability to take collective action is a resource of social capital. This initiative engaged parents in a community of practice through which they learned leadership and organizing skills, as well as English and literacy skills, that enabled them to work with the school and extend the model to other schools. Immigrant communities are usually considered to have bounded solidarity (Portes & Sensenbrenner, 1993), a quality of closure that builds social capital, because of shared language and experience that differentiates them from the dominant culture. Whatever social capital there was available within the community wasn't sufficient in and of itself to bridge the gap in social structure between it and the school system. In this instance, the closed social networks were opened up by an intervening network connection, the Latina researcher who was able to stand in both discourse communities.

Social Capital for Getting By

Ethnographic community studies have contributed powerful evidence for how group norms are created and sanctions enforced. Writing before the current articulation of social capital, Gans (1982) and Stack (1974) present detailed descriptions of trust-building processes and normative values that influence community members' strategies for upward mobility. Stack's ethnography *Strategies for Survival in a Black Community* is the classic example of social capital to "get by." People exchange resources and thereby build trust that can be relied upon in the absence of other material assets. The expectation of collective access to resources is a leveling pressure acting against individual accumulation of wealth. In Gans' (1982) *The Urban Villagers*, a working-class community is held together by a peer group culture that differentiates itself from others through their localized discourse. In both ethnographies, individual efforts to move up by going back to school or move out geographically are experienced as a breech of trust and a violation of the group discourse. Individuals must risk losing their known survival strategy of group solidarity to test new opportunities. These studies show that the local discourse community may not be aligned with the dominant discourse of individual attainment. In these cases social capital may work against an individual's pursuit of literacy and lifelong learning.

Fingeret (1983) investigated the social networks of adult learners. Drawing on social network and exchange theory, her study argues against the stereotype of "illiterate" adults as socially isolated and dependent. Instead she found that the people she talked to have multiple abilities; their literacy abilities are not what defines them in their social relationships. People naturally exchange abilities that are their strengths with others to reciprocate for help in weak areas. "Getting by" exchanges include being a good listener, taking care of children, fixing things, giving haircuts, helping to read a legal document, or paying bills. She places the subjects of her study on a continuum from "cosmopolitans" to "locals." Cosmopolitans are economically or socially successful, have heterogeneous social networks, and are integrated into literate society. The social networks of locals are more homogenous, and they are tied to a local discourse. "Rewards and status are conferred within the subcultural context rather than in the larger societal scheme" (p. 139). Note that the network structures of Cosmopolitans correspond to the structure of social capital of leverage, whereas locals have networks similar to the social capital of support. Another important contribution that Fingeret makes is the reminder that people create their social networks by "reading" social contexts, making decisions and taking actions about the exchanges they engage in and the characteristics of their community.

Like Stack and Gans, Fingeret suggests in her analysis that developing one's literacy abilities may disrupt the mutual exchanges underlying social relationships. Social capital in this case might be a pressure to maintain the homeostasis of network relationships. Fingeret makes a strong argument for the agency of the learner in constructing their social resources.

Oppositional and Conflicting Discourses

Based on his work in Oakland, California, Ogbu (1995) presents an analysis that differentiates the discourse of education in the black community from those among voluntary immigrants and the dominant discourse. Ogbu finds that the "folk theories" (i.e. discourses) about getting ahead are conflicted regarding education. Verbally, education is valued. But history and experience has contributed to an understanding that the educational efforts of African Americans are not rewarded by the dominant society. The folk theories offer alternative strategies for getting ahead through collective effort or through alternative economies. The group develops a collective expectation of low academic achievement that might reinforce lowered aspirations of low achievers or undermine high achievers. One strategy is the cultivation of cultural markers of black identity that resist the history of oppression and genocide of African Americans in the United States. This resistance discourse includes rejection of schooling as part of the reproduction of social stratification. Learning and literacy are equated with trying to be white, which then undermines

one's own culture and status. This puts the individual at risk of loosing peer support as discovered by Stack and Gans.

Ogbu's analysis applies to the black "underclass," which is structurally isolated from the dominant discourse (Wilson, 1987). Depending on class, integrated status, and influential social organizations in the community, such as political movements and religious leadership, African Americans might have multiple opportunity structures and choose different strategies. The history of African American resistance shows the power of collective action in shaping the dominant discourse (Omi and Winant, 1986) and the ability of individuals to take advantage of the opportunity structures available to them to get ahead. Ogbu's (1995) work is important to the thesis that discourse mediates the availability of social capital for learning. The substance of the discourse may powerfully direct agency away from strategies of lifelong learning and individualized status mobility.

Gender and Agency

From a social capital perspective, Horsman's (1990) chapter title "The Social Disorganization of Women's Lives" is very telling. "Social organization" is considered by Coleman (1988) to be a prerequisite for the development of social capital. Horsman's ethnography explores the meaning of literacy and "upgrading" (the Canadian term for getting a GED) among working-class women in Nova Scotia. Horsman demonstrates how social structures and discourses of gender impose disorganization on women's lives, undermining their agency. In this community, young women are often taken out of school to help the family. The normative expectation is that education is not necessary for their roles as wives and mothers. Patriarchal family structures and the rural environment reinforce the women's social isolation. Husbands have the power to curtail their freedom by limiting their access to driving skills and cars. Single mothers are isolated by the demands of caring for their children. The welfare system, which channels women into basic skills education, reinforces a discourse of deficiency and self-blame for women's lack of education or inability to get their GED while caring for young children. Women may resist this labeling by the dominant discourse by dropping out. However, participation in classes or tutoring sessions also gives women the opportunity to socialize. Creating social capital then becomes an aspect of literacy development. Network studies have explored the negative outcomes of social relationships such as the social demands in Horsman's study that curtail rather than enrich possibility (Lin et al., 1986). A study of the influence of social capital on lifelong learning has to account for the possible negative effect of social capital and for its possible absence.

Learning as Social Capital

In a more recent work, Fingeret and Drennon (1997) document what many adult educators have found in their practice—that social and personal transformations resulting from taking classes are often more evident than better technical literacy skills. They profile several learners involved in a volunteer literacy program. Following the theoretical premise that literacy practices are contextual, Fingeret and Drennon find that the impact of learning is also situational. "When an adult who has not used literacy in a situation does so for the first time, the situation—and the social relationships within the situation—change" (p. 2). Participating in the practice of attending literacy classes is a new situation for most adults. The decision to step into the new practice and continue it carries the weight of the person's history, psychology, and current life situation. Learning becomes a vehicle for the transformation of these personal processes, especially if the learning environment is conducive to building trust and supportive relationships. These learners identified peer support as an important element to learning because some relationships outside the learning environment became fragile as the learners' changed. (This was also suggested in the studies by Gans and Stack.) Orientation to the program by learners like themselves provides a "zone of proximal development" (Vygotsky, 1996) in which the learners' understanding is enlarged by engagement with others whose abilities are more developed. One of the outcomes of literacy development is greater self-confidence in setting and achieving goals, solving problems, and engaging literate society. Fingeret and Drennon's study illustrates how learning can be a direct form of social capital and how that learning then builds another iteration of networking, expanding the social capital resources of learners.

Multiple Discourses Mean Multiple Outcomes

These stories show that the equation of social capital to educational attainment is not simple and direct. They help to formulate some propositions about how multiple dimensions of social capital interact with socioeconomic position and how discourse plays a role in implementing social capital. People are usually part of multiple social networks and discourse communities. If one is a member of the dominant discourse community, homogeneous social networks work synergistically as social support and leverage. If one is a member of a subordinate discourse community, synergy depends on group and individual strategies for engagement with the dominant discourse. These strategies might be individual or collective acculturation and adoption of dominant discourse characteristics, pluralistic assertion of difference and self-legitimation, or oppositional attempt to de-legitimate the dominant discourse.

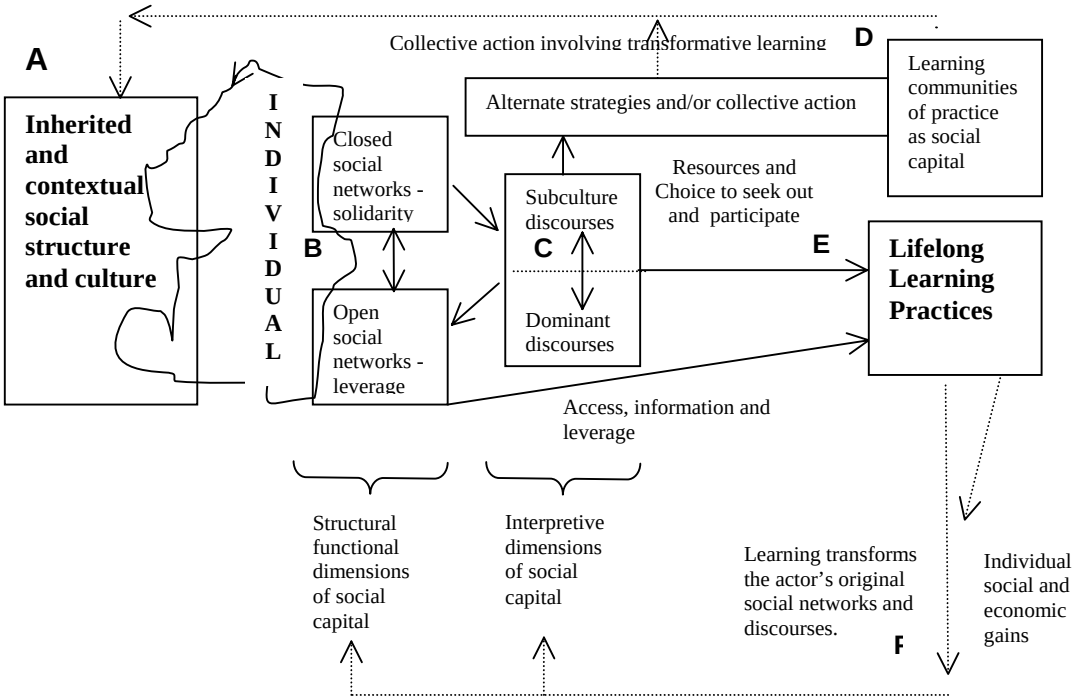
Among marginalized communities social capital of support might help overcome barriers by sharing affective and instrumental resources. Examples of instrumental support are help with transportation, childcare, money, job flexibility,

computer access, and homework. Affective support might take the form of modeling possibilities, encouragement, and positive valuation of endeavors. Social networks might also impose barriers, such as family responsibilities, work demands, abusive relationships that limit activities and freedom, and negative valuation of endeavors. Social capital might be available in a community, but the individual's use of it may be mediated by the community's discourses about individual mobility and/or education.

Discourse is an interpretive dimension of social capital—the meaning generating through interaction. Discourses have differential power according to their role structuration of the normative social order. Collective strategies might conflict with the dominant discourse of lifelong learning and sanction or stigmatize an individual's investment in learning. The dominant discourse's gatekeeping functions may inhibit people from oppressed communities from accessing communities of practice for acquisition of secondary discourses. The discourse of a bounded community may need to be bridged by a facilitator to interpret between it and the dominant discourse.

Below is a diagram of a structuration model of social capital influences on lifelong learning. Moving from left to right, the individual interacts with his or her social context and enacts personal community in the form of social networks. Communities create their own discourse in interaction with their position relative to the dominant discourse. The actor may choose to engage in lifelong learning practices directly or with the support of a personal community. Alternatively, the community may create strategies for collective action that also are communities of practice for lifelong learning. Individual development feeds back into social position and the construction of personal community.

Figure 1: Structuration Model of Social Capital Influences on Lifelong Learning



A) An individual inherits part of their social positioning—the socio-economic status and educational attainment of their parents, the primary discourse of their family and community, their race and/or ethnicity—some of which have been shown to predict their probability of completing high school.

B) As an adult, the individual builds on their own historical path within these macro and community level properties to enact the social relationships and opportunity structures of social capital. These might be a combination of roles and networks involving both closed networks support or "getting by" (1) and/or open networks for leverage and information (2) Social networks may facilitate access to and participation in lifelong learning practices.

C) One acquires discourses through practices and interaction within one's primary and personal communities and through engagement with the dominant discourse. The discourses are an interpretive form of social capital that directs its use and choices of the individual to engage in lifelong learning practices.

D) Lifelong learning practices may take the form of a community of practice that generates its own social capital and discourse.

E) Individuals may also choose formal or informal learning strategies for personal development.

F) Learning transforms the social context.

Empirical Evidence from Quantitative Studies

This section will discuss the findings in these areas with the purpose of informing the methodology of this study. These studies show important variables predicting lifelong learning for adults without high school degrees. They show the potential power of social capital as an explanatory value and previous attempts to operationalize social capital in survey research. Other than the qualitative work already discussed above, I found only one study showing the relationship of social capital to learning for adults. Most of the related quantitative work falls into the following categories:

- the characteristics of adults with low educational attainment with regard to literacy abilities and variables predicting lifelong learning
- the influence of social capital on high school completion
- the influence of social capital on civic engagement
- the social capital characteristics of groups falling in the target population of this study

The following discussion of characteristics of the population refers to different learning contexts as defined by each study.

Characteristics of Adults with Low Educational Attainment

The majority of those without a high school credential experience a constellation of life experiences that limit their opportunities to develop literacy and engage in lifelong learning.

Parents' Education

Cervero and Kirkpatrick (1990) found that the best predictor of participation in non-credit adult education is the father's education level. The same study showed that learners' educational aspirations predict enrollment in classes for credit. Parents' education is also highly correlated with literacy scores in the National Adult Literacy Survey (NALS) and International Adult Literacy Survey (IALS).[4] On a scale of 1 to 5, people whose parents had less than a high school education have document literacy scores at or below level 2 (Statistics Canada, 1997). Parents' education probably predicts both literacy level and the probability of participating in adult education. Coleman (1988) included parents' education as human capital in his regression for the effects of social capital on high school attainment.

[4] See footnote 1 on these scales.

Literacy Skills

Literacy level independently predicts participation in continuing education, particularly when combined with leaving school without a credential. Of the IALS core population (native-born adults age 16–55, who are native speakers of English), those scoring at level 1 in document literacy are less than half as likely than those scoring at levels 2–5 to have taken training or education in the year previous to the interview (Reder, 1998).

Age

Younger adults are more likely to be enrolled in adult basic education (ABE) programs. The National Household Education Survey[4] (NHES) reports 23% percent of adults 16–24 participated in basic skills programs compared to 5.9% of the general population (OERI, 1997).[5]

Labor Force Status

Involvement in the labor force gives people opportunities to realize the potential return on their investment in learning. The NHES data show that adults who are in the labor force, whether or not currently employed, are more likely to participate in ABE or GED programs (Collins et al., 1997). In the 1994–1995 data represented in IALS, people with document literacy scores of 1 or 2 had twice the unemployment as people scoring at levels 3–5, and a significant correlation between unemployment and literacy persists when controlling for other employment-related variables such as age and experience (OECD, 1997). In a study of life experience and adult development outcomes, Merriam and Yang (1996) found that those respondents to the National Longitudinal Study '77 who had experienced unemployment "felt more controlled by external forces" (p. 77). Work experience may also influence self-perception of one's abilities and provide contexts to experience learning activities that may bridge to basic skills training. Data from the IALS show that 8% of adults who have not experienced learning for a job have ever participated in basic skills training, compared to almost 19% of workers who have had job-related training (Reder, 1998).

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[5] Adult education sample population for this statistic is adults over age 16 who met one of following criteria: 1) had not received a high school diploma or its equivalent; 2) received a high school credential through GED testing in the previous 12 months; 3) was 20 or older and received a high school diploma or its equivalent in the previous 12 months. NHES surveyed households and excluded institutionalized populations (Kwang & Collins, 1997). Adult basic education included GED preparation. Whether ESOL was included was left to the interpretation of the respondent (OERI, 1997).

The above studies demonstrating the characteristics of the target population for this study indicate that the following variables make important contributions to predicting lifelong learning:

- parents' educational attainment
- literacy skills
- socioeconomic status as measured by income, labor force attachment, and type of occupation
- age

Social Capital and High School Completion

Coleman (1988) first used the High School and Beyond longitudinal database to test the explanatory value of social capital for high school dropouts as compared to the traditional measures of parents' education and socioeconomic status. Coleman measures the family organization for potential interaction between parents and children, to which he infers transfer of values and norms regarding educational attainment across generations. Closure is measured by comparing students attending Catholic school with those attending public schools. Coleman assumes intergenerational closure of a shared value system when children attend Catholic schools and when parents know the parents of their children's friends. Coleman finds that social capital—the interaction between parents and children and closure of intergenerational values—is more predictive of educational attainment than parents' educational attainment alone.

Scholars have since repeated the investigation using both High School and Beyond and the National Educational Longitudinal Study database. These studies have attempted to enrich Coleman's measurement of social capital by complicating the notion of family and including more contextual variables (Teachman, Paasch, & Carver, 1996). Teachman et al. found that changing schools, either because of divorce or a move, is the strongest predictor of leaving high school before completion. This supports the social capital thesis, because moving disrupts the closure and social relations of one's community. Contrary to expectations, Teachman et al. also found that parental interaction with schools is *not* very important in predicting a decision to drop out and found no difference between white and black subjects in how social capital operates regarding high school students' educational attainment. When Teachman et al. controlled for financial, human capital, and social capital variables, African Americans had reduced odds of dropping out.

These studies identified three important social capital measures that predict leaving high school before finishing: interaction within a household, intergenerational closure as measured by shared institutional participation or

knowing the parents of your child's friends, and mobility. There may be characteristics inherent in these variables beyond measurement of social capital that explain their predictive power. For example, frequent school changes also disrupt the child's curriculum, and Catholic school attendance may also involve a different pedagogy. This research gives us some idea how the research population in this study came to their level of educational attainment. There are important social and economic consequences of this status for their prospects of lifelong learning.

Social Capital and the Study Population

The significance of social capital for adult learning is more complex. Schuller & Field (1998) map formal and informal lifelong learning to measures of high and low social capital in the community. They use data from Northern Ireland to investigate an area characterized by high levels of social capital as measured by family structure, church and voluntary society membership, and charitable giving. Although conforming to Coleman's prediction of high educational attainment for youth, participation in adult education programs is low. Their interpretation of this finding is that social capital replaces human capital resources for access to employment and other benefits usually associated with lifelong learning. The evidence from Northern Ireland suggests that "high levels of social capital lead, in general, to higher-than-average levels of informal and nonformal learning" (p. 233).

Putnam (1995) approaches the relationship between social capital and education from the other direction. His measures of social capital—civic engagement such as association membership, political involvement, and civic trust, measured by attitudinal statements in the General Social Survey—show a decline in social capital in the United States. His analysis shows that "education is by far the strongest correlate . . . of civic engagement in all its forms, including social trust" (p. 667). He estimates that the increases in levels of education in the United States should have increased social capital during the last 20 years by 15–20 % (p. 668). This is not the case, however.

Verba, Scholzman, and Brady (1995) discuss a more complex relationship between civic engagement and education, similar to the relationship between education and work. Like literacy and educational achievement, civic engagement is a quality transferred across generations through socialization. Verba proposes an analytical path from education to occupational status and income, which then influence political participation. Resources such as information and civic skills are accumulated through participation in organizations, which is predicted by education and socioeconomic status. However, in their study of neighborhood participation in five cities, Portney and Berry (1997) found that African Americans in poor neighborhoods indicated a strong sense of community and had twice the participation

in neighborhood associations than in issue-related associations or than whites in low-income neighborhoods. The authors attribute this to the effective neighborhood organizations and outreach in their sample. Their work shows that the correlation between education and socioeconomic status with civic voice can be disrupted, giving more people access to the lifelong learning involved in civic practices.

As adults with low educational achievement are concentrated in low-income socioeconomic groups, it may be helpful to look at some studies about the use of social capital in these communities. Analyzing data from the Panel Study of Income Dynamics, Boisjoly, Duncan, and Hofferth (1995) uncover more details about how social capital works as exchange. Time and money resources representing exchange values from the "stock" of social capital were found to be complementary, not substitute, resources. The *quality of relationship* to either friends or family is more important to accessing social capital than the resource that is exchanged.

They also found that race is not directly linked to social capital among adults. However, education is an important distinguishing factor between African Americans and whites. The data support qualitative studies showing more friendship exchanges in low-income African American communities (Stack, 1974). Boisjoly et al. (1995) call into question Wilson's (1987) thesis of social isolation among low-income African American communities. Highly educated African Americans are more isolated from friendship networks, even though they have more access to help outside the family. Access to social capital generally was not quantitatively different for whites than for African Americans, or for high- and low-income groups. Boisjoly et al. (1995) did not distinguish between different qualities of social capital, such as social support versus leverage, which may explain qualitative differences not visible in the quantitative assessment. Generally, the networks of people with less education are predicted to be homogenous and centered around kin relationships. "The key insight of network studies is that the resources available through contacts vary, and the advantages and numbers of contacts clearly increase with education" (Powell & Smith-Doerr, 1994, p. 373).

Summary of Approaches to Operationalizing Social Capital

There are four main measurements for social capital: the underlying organization of networks that structure social interaction; processes of exchange that build trust; the presence of associations, which are both a feature of social organization and embody social cohesion and exchange; and, attitudinal measures of social trust or sense of community.

Social network analysis has a rich literature and validated methods of examining the structures of relations underlying social capital. This approach is often used to track paths of information and influence, or the leverage dimensions of social

capital (Burt, 1998a; Granovetter, 1973). However, the work of many social capital theorists is based on secondary analysis of data that doesn't include the exhaustive enumeration of personal networks that this methodology demands.

Another approach to measuring social capital is to identify exchange processes or interactions that create trust. Friedman and Krackhardt (1997) combine network analysis within an organization with the exchanges of advice and feedback to identify social capital reservoirs. Boisjoly et al. (1995) used "time stock" and "money stock" as resources of exchange available through one's friends and relatives to measure social capital. As high social capital is theorized to support more civic engagement, involvement in associations and expression of civic voice is also used as a proxy for social capital. The General Social Survey has attitudinal measures of civic trust that are used in secondary analyses as an indicator of social capital.

Section 2: Empirical View

Analysis of LSAL Data Testing Social Capital Influence on Lifelong Learning

Method

Data for this analysis were collected in the first wave of the Longitudinal Study of Adult Learning (LSAL). In the Portland area, 940 people between the ages of 18 and 44 who are English proficient and did not graduate from high school or get a GED credential before the study began were interviewed and given standardized literacy assessments. Half of this sample was drawn from students who have attended at least one ABE or GED preparation class at a local community college. The other half was selected from the general population through random-digit dialing and screened to fit the study criteria. The two sample frames are weighted to generalize to the defined study population. Details of the LSAL study design can be found in Appendix A.

The theoretical constructs of interest that were operationalized in the LSAL instrument are:

- Position in macro social structures
- Structural organization and dimensions of social capital
- Discourses related to lifelong learning in the respondent's personal community
- The dependent variable of lifelong learning practices

These questionnaire items can be found in Appendix B.

The analytical model is extracted from the more complex and abstract theoretical model suggested in the previous discussion (Figure 1). There are two logistic regression models, one testing influences on the probability of participation in formal education and the other the probability of engagement in informal learning. The Formal and Informal (these constructs, as operationalized in this study, will be capitalized in the text: Formal and Informal) models are parallel; each has the same independent variables stepped into the model in a sequence of nested theoretical blocks designed to test the research hypotheses. These blocks, defined in detail below, are social position (P), education discourse (D), and social capital (S). The constant and control variables (C) are included in each model.

The models are run on SPSS version 9 using maximum likelihood estimation on weighted data. Hypotheses are accepted or rejected on the chi square change

statistics corresponding to the introduced block, significant at a .01 confidence level. A conservative estimation of probability is chosen because of the large degree of measurement error discovered in preliminary testing. The correlation matrix of the entire set of model variables shows low levels of correlation between all variables. A preliminary univariate model of each proposed independent variable was run on both dependant variables. Predictors significant at .25 or less for either of the dependent variables are included in both models (Hosmer & Lemeshow, 1989). Learning disabilities, household support for participation in ABE, and satisfaction with K–12 school experience were initially considered for inclusion but were excluded from the model because they did not reach a .25 level of significance.

Presentation of the SCILL Model

The following model and hypotheses are run to predict participation in Formal learning and engagement in Informal learning. Each nested model corresponds to a research question.

The SCILL (Social Capital Influences on Lifelong Learning) Model

Model C:	$\text{Log}(p/(1-p)) = \alpha + \beta_c C$
Model C+P	$\alpha + \beta_c C + \beta_p P$
Model C+P+D	$\alpha + \beta_c C + \beta_p P + \beta_d D$
Model C+P+D+S	$\alpha + \beta_c C + \beta_p P + \beta_d D + \beta_s S$
Model C+P+D+S+DxN	$\alpha + \beta_c C + \beta_p P + \beta_d D + \beta_s S + \beta_{dn} DxN$

Research Question 1:

Does position in macro social structures influence participation in lifelong learning?

> **H_1** Position in macro social structures influences individual lifelong learning when controlling for other factors.
> **H_{1null}** Social position has no influence on lifelong learning practices.

The null hypothesis that social position has no influence on lifelong learning will be rejected if Model C+P is significantly different than Model C.

> **Model C+P:**
> Controlling for literacy skill, age, weeks worked, and children in the household, the probability of participation in formal education is predicted by social position. Where P = β *parents' education +β *poverty + β *occupational prestige +β * gGender + β *ethnicity (Anglo = 0).

Research Question 2:

Does the education discourse in personal community influence engagement in lifelong learning?

H_2 Education discourse influences lifelong learning when controlling for other factors.
H_{2null} Education discourse has no influence on lifelong learning practices.

The null hypothesis that education discourse has no influence on lifelong learning will be rejected if Model C+P+D is significantly different than Model C+P.

Model C+P+D:
Controlling for literacy skill, age, weeks worked, and children in the household, the probability of engagement in lifelong learning is predicted by social position and education discourse. Where D=β *household support for attending classes + β *agreement with education as a way to get ahead + β *school trust + β *educational goals.

Research Question 3:

Does social capital influence lifelong learning?

H_3 Social capital influences lifelong learning when controlling for other factors.
H_{3null} Social capital has no influence on lifelong learning practices.

The null hypothesis that social capital has no influence on lifelong learning will be rejected if Model C+P+D+S is significantly different than Model C+P+D. The main effects for the SCILL Model are expressed in Model C+P+D+S.

Model C+P+D+S:
Controlling for literacy skill, age, weeks worked, and children in the household, the probability of participation in formal education is predicted by social position, education discourse and social capital. Where S =β *network (isolated = 0) + β *social trust + β *duration of relationship + β *civic participation + whether there are college educated people in network.

Research Question 4:

Are the influences of education discourse mediated by network type?

> **H_4** The predictive power of education discourse is strengthened by interaction with dense networks.
> **H_{4null}** There is no interaction between the interpretive and structural dimensions of social capital.

The null hypotheses that there is no interaction between interpretive and structural dimensions of social capital will be rejected if Model C+P+D+S+DxN is significantly different than the main effects SCILL Model.

> **Model C+P+D+S+DxN:**
> Controlling for literacy skill, age, weeks worked, and children in the household, the probability of participation in formal education is predicted by social position, education discourse, social capital and the interaction effect of network on education discourse. Where DxN =β * (network * agreement with education as a way to get ahead) with small network by "education as a way to get ahead" as the reference group.

Research Question 5:

Do different qualities of social capital influence the strategy for lifelong learning?

> **H_5** Different dimensions of social capital influence the strategies of engagement of lifelong learning.
> **H_{5null}** Social capital does not influence the strategy of engagement in lifelong learning.

The hypothesis that different dimensions of social capital predict different strategies for lifelong learning will be tested by comparing and analyzing the odds ratios of the two parallel final interaction models for Formal and Informal learning.

Discussion of Variables

The Dependent Variables: Lifelong Learning

Engagement in lifelong learning is the dependent variable of interest in this analysis. This variable is derived from indicators of practices of intentional learning beyond mandatory education. As discussed in the literature review, previous research typically divides learning into two constructs: Formal and Informal.

This construct of lifelong learning was tested in a confirmatory factor analysis. Indicators of Formal learning include taking ABE, GED preparation, vocational education, or recreational classes. In the LSAL data, there are two approaches to measuring Informal learning. The first approach asked how respondents usually go about learning new things: by reading, asking an expert or someone they know, hands-on learning by doing, watching a TV program, or looking it up in a library or computer (see Appendix B for items). An exploratory factor analysis using maximum likelihood estimation yielded one factor from these strategy items, which loaded equally. Therefore, an additive scale of informal learning strategies was constructed for these six items with a Cronbach's alpha of .68. The second approach was to measure frequency of informal learning practices: reading a book, watching TV, getting tutoring, or studying on one's own. These indicators, together with the scale of informal learning strategies, comprise the measurement model for Informal learning.

Factor analysis of Formal and Informal learning confirmed two dimensions of lifelong learning that are not correlated with each other (see Appendix C for the confirmatory factor analysis model and fit statistics). This suggests that although formal and informal learning have face validity as distinctive dimensions of lifelong learning, they may be alternative rather than complementary strategies. However, each factor has only one indicator with a weight over .70. "Ever attended ABE/GED class" is the single indicator (standardized weight of .71) for Formal learning, and the informal strategies scale (standardized weight of .80) is the best indicator for Informal learning. These measurement models can be simplified to single indicators. Although having ever attended an ABE class may seem too narrow a definition for formal learning, for this study population it is almost a prerequisite for other types of formal training or education. Without the GED, few people are able to get jobs that offer formal training, and even fewer take postsecondary classes of any kind. Table 1 presents the descriptive statistics for the observed dependent variables. Formal and Informal learning, as operationalized, are not correlated with each other and have a nonsignificant chi square statistic.

Table 1: Descriptive Statistics of Dependant Variables

Variable	**Descriptive statistics**		
	Values	**Count**	**%**
Formal learning	No (0)	463	50
	Yes (1)	472	50
Informal learning strategies	Not engaged (0)	554	59
	Engaged (1)	383	41

Model Controls

Previous studies have shown literacy proficiency (Reder, 1998) and labor force attachment (Collins, Brick, & Kim, 1997) to predict participation in adult basic education. These predictors are not part of the theoretical model being tested and are included in the equation as controls. As mentioned in the discussion of the sample, age at the time of the interview has the potential to confound other findings, so it, too, is included as a control. Literacy proficiency is indicated by the score on the Test of Applied Literacy document form (Kirsch et al., 1993). Labor force attachment is operationalized as how many weeks were worked in the previous 12 months, coded as less than 4, 5 to 47, and 48 to 52. Preliminary data analysis indicates that having children in the household is a significant predictor of lifelong learning activities, so it is included as a binary variable. The descriptive statistics of the weighted independent control variables and the effect size and significance as univariate predictors of each dependent variable are in Appendix D, Table 1. Literacy proficiency and weeks worked are significant predictors of Informal learning at less than .25 but do not predict Formal learning. Univariate analysis suggests that having children in the household motivates participation in Formal education, but is an obstacle to Informal learning.

Operationalizing Social Position

Disassembling the theoretical model (Figure 1), the first box, "Inherited and macros social structures and context," contains indicators of social position. The subjects may have multiple contexts and social roles through which they access multiple dimensions of social capital. Social position locates the actors, and possibly their community, relative to macro structural stratification. These characteristics are background variables to the extent that the subject cannot directly change them. However, they are theoretically important because they imply resources available through the dominant discourse, such as access to higher education, visions of possibility, and such instrumental resources as stable housing and transportation. Social position is operationalized as parent's education, occupational prestige, gender, language/ethnic/racial group, whether the respondent is at or below the federal poverty threshold, and whether or not there are children in the household. Descriptive and univariate statistics for social position indicators are in Appendix D, Table 2.

Human capital theory would expect higher parental education to positively predict both Formal and Informal learning. Parent's education predicts Informal learning at less than .25 probability but is not significant as a univariate predictor of Formal learning. A dichotomous variable was derived using federal guidelines for poverty level: Households in poverty were assigned (1) over poverty (0). Occupational prestige scores were assigned to workers and nonworkers using the

standardized codes from the General Social Survey (GSS, 1990). These scores are often used in deriving socioeconomic status and can also indicate the occupational demand for literacy skills. The univariate analyses show a positive relationship between prestige and Informal learning and negative prediction of Formal learning.

Ethnicity and gender are demographic categories indicating position relative to the dominant discourse, power, and resources. The literature suggests women may encounter relationship demands and discourses that become obstacles to participation. With male as the reference group, gender is a univariate predictor of both Formal and Informal learning. Ethnicity is a derived variable that combines first language with races to create four categories: European Americans who speak English as a first language, African Americans who speak English as a first language, other race/ethnicities that speak English as a first language, and speakers of English as a second language.[6] The cell sizes for speakers of English as a second language and "other English speakers" are too small to break down into Hispanic/ Asian and other ethnicities. The reference group for these categories is Anglo. As a category, ethnicity is a significant univariate predictor of both Formal and Informal learning at a probability of less than .05.

Operationalizing Discourse Community

As discussed in the literature review, survey research has been the primary source of data for studies of social capital. This partially explains the structural-functionalist emphasis on network analysis. I argue, however, that the community discourse regarding the behavior of interest—in this case, learning—is an interpretive dimension of the social capital that is an important influence on lifelong learning and the strategies subjects enact. The subjects' attitudes and perception of their personal community's attitudes regarding the value of learning and schooling are the discourse of interest here. This theoretical construct, as operationalized by the indicators below, will be referred to as "education discourse" in the remainder of this text.

There are multiple indicators of support for lifelong learning in the subjects' personal communities. The strongest is whether education is named (among other strategies) as a way to get ahead "in discussions with people you know." In addition, we asked a series of attitudinal questions that measure the respondents' values regarding schooling and their perception of their personal community's values. The indicator "school trust" was derived from three dichotomous questions about trusting

[6] From here forward, English-speaking European Americans are referred to as Anglos, and African Americans who speak English as their first language are referred to as African Americans. "Other English speakers" refers to speakers of English as a first language who are not African American or Anglo.

schools to treat people equally (asked about the subject and in reference to the personal community) and viewing school as a good use of time for adults. The Cronbach's alpha for this scale is .56. School trust positively predicts Formal learning and negatively predicts Informal learning. Finally, respondents were asked about their aspirations for careers and educational credentials as an indicator of educational goals. Table 3 in Appendix D presents descriptive statistics of these indicators and their univariate predictive significance on the dependent variables.

Measurement of Social Capital

As shown in the literature review, there are four common ways of measuring social capital: the underlying organization of networks that structure social interaction; processes of exchange that build trust; civic engagement or the presence of associations, which are both a feature of social organization and embody social cohesion and exchange; and attitudinal measures of social trust or sense of community.

Exploratory factor analysis of the social capital indicators failed to converge, indicating that there is not a latent variable of social capital that explains this selection of observed measures. Therefore, single items as discussed below will indicate different qualities of social capital. The LSAL data include indicators of network structures and characteristics, indicators of social trust, and indicators of civic participation. (See Appendix B for all instrument items referenced.)

Network Structures

The structural dimensions of social capital shown in the model are based on the structures of ego-centered social networks, or personal communities. The standard ego-network measures for social capital are size, density, heterogeneity, and compositional quality (Borgatti, Jones, & Everett, 1998). The number of people the respondent identifies as important to them measures size. A low number of people suggests a low quantity of social capital. The following question was used to elicit the number of people in a personal network.

> PPLNUM:
> Think about the people you have contact with at least once a month, by visiting each other for a chat or doing some activity together, like going to a restaurant or a movie. How many people is that?
>
> *Have R think of the specific people and then tell you the number.*

The observed distribution of network size is problematic. The network size has a mean of 10 and a mode of 3, within a range expected from other studies. To

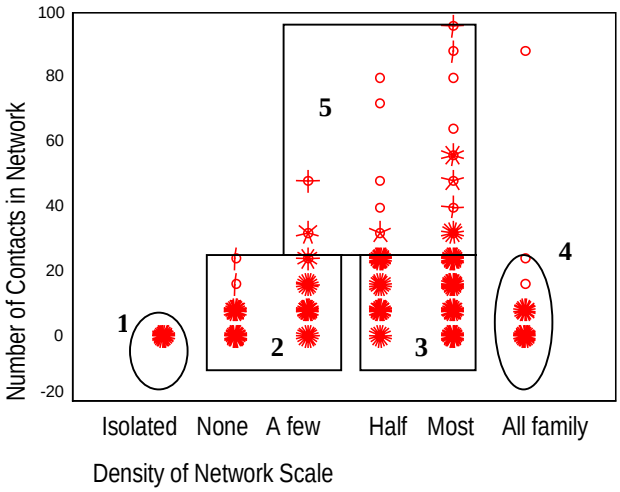
resolve this violation of the assumption of normality on such an important variable, a categorical variable was derived from network size and network density.

Density measures the common connections among members of the network. A dense network, in which most or all of the members know each other, is a "closed" structural feature that may support a subculture discourse and is theorized to impose more normative pressures on the subject. An open network, in which the members are not likely to know each other, is more open to multiple discourses and extends the reach of the network to external information and resources. Density is measured in two ways in the LSAL: as the number of kin in the network and as a Likert scale (none, a few, half, most) of how many of the members know each other without knowing the respondent. I define dense networks as those in which half to most members know each other.

This density variable was recoded to include a minimum value for people with zero or no contacts and a maximum value for cases with networks comprised entirely of family, in which it is assumed that everyone knows everyone else in the network. Forty-five percent of the study population have a network characterized by high density (most members know each other independently from the subject). The mean size of these most dense networks is 13, whereas the mean size of networks in which no one knows anyone else is 3.62 ($F=25.18$, $p=.000$). This suggests that a significant portion of the study population has large networks of people in which the subject is not centrally located.

Figure 2 shows the scatter plot of network size (number of contacts on the vertical scale) by density (six categories on the horizontal scale) and illustrates how network categories are coded. Networks of less than 20 contacts are concentrated in the "half" to "most" density categories. Taking network size of less than 20 as normative, these could be considered a dense, normative group (Box 3). Networks of similar size distribution in the "none" and "a few" density categories could be considered an open, normative group (Box 2). Networks over 20 (Box 5) need to be considered a special grouping, as do the "isolated or small networks" (oval 1) and "all-family" groups (Oval 4). There are five potential comparison groups representing different configurations of expected leverage or support.

Figure 2: Scatter Plot of Network Size and Density



For example, a person who visits with about 10 people during the course of a month, most of whom are involved in the same activity, would have a dense network (Box 3). A person who knows the same number of people but visits them individually, so that none or only a few know any of the others, would have an open network (Box 2).

Interpretation of Network Structures

The isolated or small network category implies a low supply of social capital and is the reference group for the other network types. The all-family group can be interpreted as close intergenerational support and ethnic homogeneity. The all-family group is expected to offer more social capital in the form of support than the isolated group. The amount of access to resources that this group has depends on the social position of the family, as operationalized by parents' education. Parents of those in all-family networks have a mean of 10 years of education, so I expect this network group to offer more support than leverage.

The social capital of the normative open group and big group should manifest as leverage to access educational opportunities, predicting formal participation in lifelong learning. Big networks are also dense and, along with the dense category, should reflect supportive social capital. The behavior predicted by these structural categories is expected to be qualified by other social capital indicators, the respondent's social position, and the network's discourse regarding education.

Social Capital of Leverage

The number of people in the network who went to college can be interpreted as an indicator of leverage, or "social capital to get ahead." At face value, knowing people who went to college provides a model of the possibility of continuing education and may also be instrumental in facilitating access to formal education or stimulating nonformal learning. Because of non-normal distribution in the observed continuous variable, the number of people in the network that went to college was recoded as a binary variable: yes, know at least one person who went to college in network or, no, there are no college educated people in network.

Stability of Relationships Over Time

The stability of relationships over time is another structural characteristic of networks. Subjects were asked how long they had known the non-family member of the network that they had known the longest. The mean is almost 10 years, suggesting long-term shared experience that might contribute to the complexity of the relationship, shared discourses, and stability of networks.

Social Trust

Several measures of social trust adapted from the GSS were included in the survey (GSS, 1993). The question, "Do you mostly believe that people can be trusted, or you can't be too careful in dealing with people?" was asked twice, once about the respondent's own opinion and once referencing what the respondent thought the people in his or her network believe. Thirty-seven percent of the study population agree that people can be trusted, which is comparable to the findings of other studies using this question (Putnam, 2000). As both the attitude of trust and the norm shared by the subject with his or her community are indicators of social capital, these two items were added to form a 3-point scale ranging from 0 to 2.

Civic Engagement

Civic participation is thought to increase social capital because it involves engagement with others for a common purpose. It is a practice of collective action that also opens up opportunities for new literacy practices, broadens horizons, and makes connections across social divides. The practices of community leadership and public voice are competencies that the Equipped for the Future (1998) initiative is benchmarking for adults. An additive index was derived, with one point given for participation in each of the following activities: expressing an opinion by writing a letter to a public figure, agency or newspaper; religious activities beyond attending services; a social or sports group; neighborhood activity; volunteering; and voting. Sixty percent have participated in at least one of these activities, only 1.5% had a

score of 5, and none have done all six activities. Like social trust, this distribution is similar to findings in other studies (Verba et al., 1995). The descriptive statistics for indicators of social capital and their significance for univariate prediction of the dependent variables are in Appendix D, Table 4.

Findings

We can now evaluate the hypotheses, using the findings for the models predicting lifelong learning. The model predicting Formal learning is presented first, with an overview of the fit of each step in a series of nested models corresponding to a research question. I address the hypotheses, summarize the final main effects model, and discuss model calibration and fit in more detail. The same procedure is followed with regard to the Informal model. The results of an interaction effect on both models are then discussed relative to hypothesis 4. Finally, the models are compared and discussed, to address hypothesis 5.

Predicting Participation in Formal Learning

The SCILL Model is as follows:

Model C:	$\text{Log}(p/(1-p)) = \alpha + \beta_c C$
Model C+P	$\alpha + \beta_c C + \beta_p P$
Model C+P+D	$\alpha + \beta_c C + \beta_p P + \beta_d D$
Model C+P+D+S	$\alpha + \beta_c C + \beta_p P + \beta_d D + \beta_s S$

Predicting engagement in either Formal or Informal learning, Model C represents the controls; Model C+P represents the controls plus social position; Model C+P+D represents controls, social position and education discourse; and Model C+P+D+S adds social capital to complete the model. Referring to the last row of Table 2 below, the final logistic regression model for primary effects of social capital influences on Formal strategies lifelong learning fits the data, with a significant chi square of 127.89 (df = 22, p=.000), indicating significant improvement on the independence model. The last column represents the contribution of the last theoretical block over the previous model. Each theoretical block makes a significant addition to the model, with the exception of Model C+P+D, which is not significant at the .01 level. The Nagelkerke r^2, also called a psuedo r^2 in logistic regression, can be interpreted in a way similar to the r^2 of a linear regression as the amount of variance explained by the model. In the Formal SCILL Model, the Nagelkerke r^2 is .171.

Table 2: Goodness of Fit for Main Effects SCILL Model Predicting Participation in Formal Education

Model	N. r^2	χ^2	df	p	Δ	df	P
Model C	.049	35.12	4	.000			
Model C+P	.10	72.52	11	.000	37.40	7	.000
Model C+P+D	.111	81.47	14	.000	8.95	3	.03
Model C+P+D+S	.171	127.89	22	.000	46.41	8	.000

RQ1: Does position in macro social structures influence participation in lifelong learning?

H_1 Position in macro social structures influences individual lifelong learning when controlling for other factors.
H_{1null} Social position has no influence on lifelong learning practices.

The model of social position as a predictor of formal learning, Model C+P, significantly fits the data over and above the constant and control variables (χ^2=37.40, df=7, p=.000). Therefore, the null hypothesis is rejected in the case of formal learning, and we can conclude that social position influences participation in Formal learning programs.

RQ2: Does the education discourse in personal community influence engagement in lifelong learning?

H_2 Education discourse influences lifelong learning when controlling for other factors.
H_{2null} Education discourse has no influence on lifelong learning practices.

The model introducing education discourse as the discursive dimension of social capital, Model C+P+D, as a predictor of formal learning does not reach a significance level of .01. (χ^2=8.95, df=3, p=.03). Therefore, the null hypothesis that discourse has no influence cannot be rejected with confidence. Education discourse in personal community probably does not influence or has very little influence on participation in Formal learning programs.

RQ3: Does social capital influence lifelong learning?

H_3 Social capital influences individual lifelong learning when controlling for other factors.
H_{3null} Social capital has no influence on lifelong learning practices.

The model introducing social capital indicators as predictors of Formal learning, Model C+P+D+S, fits the data over and above the control, position, and education discourse indicators (χ^2=46.41, df=8, p=.000). Social capital influences participation, and the null hypothesis can be rejected.

Summary of the Main Effects Model for Formal Learning

Table 3 shows the odds ratios across the four models predicting Formal learning. Figures less than one predict nonparticipation, and figures over one predict participation. Bold figures are significant at a confidence level of .01, and those with an asterisk are significant at .05. All significant predictors are consistent in direction and approximate value across all four models.

People who have children in their household are 1.5 times more likely to participate in ABE than those who do not. In a previous model that excluded the variable of having children, poverty positively predicted participation. Having children in the household cancels out the predictive power of being in poverty, suggesting that having children—not escaping poverty per se—is an important motivator of participation. People in higher prestige occupations, who own their own business or have management or technical positions, are less likely than people with service, sales, or clerical work to participate in ABE or GED preparation classes. Gender is also a significant predictor. When all else is held constant, women are nearly twice as likely as men to participate in formal education. African Americans and other English speakers are just as likely as Anglos to participate, and those who speak English as a second language are more than twice as likely than Anglos to participate in ABE programs. These findings are robust across all models predicting participation in formal education.

The indicator of "getting ahead with education" is the only education discourse variable that is significant. It becomes significant at the .01 level, predicting participation in Formal education with the addition of social capital block.

Overall, the structural social capital indicators predict nonparticipation in Formal learning. Network types are measured in comparison to the small network. The strongest network predictor, those that are all-family, predict 70% less participation than for those in small networks. Finally, knowing at least one person who went to college predicts a 40% probability of not participating in Formal education. I conclude, therefore, that the null hypothesis (H3)—that social capital has no influence on participation cannot be rejected in the case of formal learning.

Table 3: Odds Ratios of Predictors of Participation in Formal Learning

Variables	Model C Controls	Model C+P Position	Model C+P+D Discourse	Model C+P+D+S Social capital
TALS score	.999	1.002	1.001	1.001
Age at Wave 1	**.958**	**.971**	**.971**	*.973
Number of weeks worked	1.075	*1.224	1.190	*1.218
Children in Household	**1.829**	**1.533**	**1.538**	**1.609**
Parent's education		*1.045	*1.045	*1.050
Poverty		1.060	1.041	.981
Prestige		**.968**	**.969**	**.960**
Gender (men are ref. group)		**1.861**	*1.803	**1.890**
Anglos who speak English are reference group				
ESL		**2.238**	**2.078**	**2.246**
African American		1.425	1.371	1.711
Other English speakers		.965	.881	.834
Get ahead with ed			*1.386	**1.478**
School trust			1.169	1.196
Educational goals			.980	1.000
Small network is reference group				
Big networks				3.350
All family networks				**.318**
Open networks				.968
Dense networks				.617
Social trust				1.154
Duration of relationship				.999
Civic participation				.905
College educated people				**.573**

Bolded numbers significant at .01 or better
* significant at .05

Predicting Engagement in Informal Learning

The discussion of the Informal model will follow the same format as that of the Formal model, without some of the procedural explanation. Referring to Table 4 below, the main effects of the SCILL Model on Informal strategies fit the data with a significant chi square of 109.99 (df = 22, p=.000), indicating improvement on the independence model. Table 4 shows the Nagelkerke r^2 fit statistics for each model predicting Informal learning. The change statistic for each nested model is significant, indicating that each step makes a significant contribution to the prediction of lifelong learning.

Table 4: Goodness of Fit for Main Effects SCILL Model Predicting Engagement in Informal Education

Model	N. r^2	χ^2	df	p	Δ	df	p
Model C	.045	31.50	4	.000			
Model C+P	.082	58.28	11	.000	26.77	7	.000
Model C+P+D	.116	83.44	14	.000	25.16	3	.000
Model C+P+D+S	.151	109.99	22	.000	26.55	8	.001

RQ1: Does position in macro social structures influence participation in lifelong learning?

H_1 Position in macro social structures influences individual lifelong learning when controlling for other factors.
H_{1null} Social position has no influence on lifelong learning practices.

The model of social position as a predictor of Informal learning significantly fits the data over and above the constant and control variables (χ^2=26.77, df=7, p=.000). Therefore, the null hypothesis is rejected, and we can conclude that social position influences engagement in Informal learning.

RQ2: Does the education discourse in personal community influence engagement in lifelong learning?

H_2 Education discourse influences lifelong learning when controlling for other factors.
H_{2null} Education discourse has no influence on lifelong learning practices.

The model introducing the discursive dimensions of social capital, education discourse, as a predictor of Informal learning significantly improves the fit over and above the control and position indicators (χ^2=25.16, df=3, p=.000). The null hypothesis that discourse has no influence is rejected, and we can conclude that education discourse in personal community influences engagement in Informal learning.

RQ3: Does social capital influence lifelong learning?

H_3 Social capital influences individual lifelong learning when controlling for other factors.
H_{3null} Social capital does not influence on lifelong learning practices.

The model introducing social capital indicators as predictors of Informal learning improves the fit over and above the control, position, and education discourse indicators (χ^2=26.55, df=8, p=.001). Therefore, social capital predicts engagement in Informal learning.

Summary of Main Effects Model for Informal Learning

Table 5 shows parameter changes across the four models predicting Informal learning. Age, weeks worked, parent's education, poverty, gender, and ethnicity are not significant predictors of Informal learning. Although literacy proficiency is marginally significant initially, that influence disappears with the inclusion of occupational prestige in the social position model. Of the social position indicators, only prestige is a significant predictor. The small odds ratio reflects the metric of measurement for prestige. A great deal of advancement in occupational prestige—from laborer to manager, for example—would be necessary to change the probability of engagement.

Looking at the education discourse model, Mode C+P+D, the "getting ahead with education" indicator is the strongest positive predictor of Informal learning. People whose personal community discusses education as a way to get ahead are more than 1.7 times more likely to engage in informal learning strategies than those who do not. Trusting schools, however, significantly predicts nonengagement in informal learning. These findings are stable with the addition of network indicators.

The social capital model, Model C+P+D+S, is significant primarily because of network configurations. Compared to small networks, all network categories except big networks predict engagement in informal learning, with all-family networks predicting nearly five times more engagement in Informal learning than small networks. Among other social capital indicators, only civic participation predicts nonparticipation in Informal learning.

Table 5: Odds Ratios of Predictors for Engagement in Informal Learning

Variables	Model C Controls	Model C+P Position	Model C+P+D Discourse	Model C+P+D+S Social capital
TALS score	*1.003	1.003	1.003	1.002
Age at Wave 1	1.001	1.002	1.015	1.018
Number of weeks worked	1.093	1.035	1.008	1.022
Children in household	**.515**	**.515**	**.526**	**.540**
Parent's education		.995	.988	.990
Poverty		.805	.785	.839
Prestige		**1.028**	**1.024**	**1.027**
Gender (men are ref. group)		*1.366	1.300	1.277
Ethnicity -Anglos who speak English are reference group				
ESL		.778	.741	.798
African American		1.283	1.234	1.301
Other English speakers		.711	*.651	.688
Get ahead with ed			**1.782**	**1.722**
School trust			*.757	**.730**
Educational goals			1.135	*1.200
Small network is reference group				
Big networks				3.312
All-family networks				**4.910**
Open networks				*2.400
Dense networks				*2.361
Social trust				1.078
Duration of relationship				**1.029**
Civic participation				**.846**
College educated people				1.080

Bolded numbers significant at .01 or better
* significant at .05

Interaction of Education Discourse with Social Capital

The theoretical premise driving a test of the interaction between education discourse and networks is that the education discourse should influence behavior more powerfully in dense networks than in open networks. Dense networks are thought to reinforce internal discourse whereas open networks invite more contending discourses. With the introduction of the network categories in the Model C+P+D+S, the effect of "get ahead with education" in the Formal model increases by 10% (from 1.39 to 1.48), and in the Informal model, the effect decreases slightly. This

interaction effect of discourse on network is added to Model C+P+D+S and run on both the Formal and Informal SCILL Models as Model C+P+D+S+D*N. The following section discusses the interaction effect on both models. Tables of item parameters for the final models with interaction are in Appendix E. Hypothesis 4 tests this interaction.

RQ 4: Are the influences of education discourse mediated by network type?

> **H_4** The influence of education discourse on lifelong learning is strengthened by network structures.
> **H_{4null}** There is no interaction between the interpretive and structural dimensions of social capital.

To test whether network structures have any impact on education discourse, the network categorical variable is multiplied by the dichotomous indicator of education discourse "get ahead with education" to produce a categorical interaction variable that is then entered into the equation. Table 6 shows the goodness of fit for the interaction model over and above the final primary effects on the Formal model.

Table 6: Goodness of Fit for SCILL Interaction Model Predicting Participation in Formal Education

Model	N. r^2	χ^2	df	p	Δ	df	p
Model C+P+D+S	.171	127.89	22	.000			
Model C+P+D+S+DxN	.191	144.66	26	.000	16.78	4	.002

The change statistic (χ^2=16.78, df=4, p=.002) indicates that network structure interacts with education discourse to predict participation in Formal learning. The null hypothesis is rejected in the case of Formal education. Referring to Table 7, the change statistic (χ^2=1.84, df=4, p=.765) for the interaction effect is not significant for the Informal model. I conclude, therefore, that the interaction of education discourse and network influences Formal but not Informal engagement in lifelong learning.

Table 7: Goodness of Fit for SCILL Interaction Model Predicting Engagement in Informal Learning

Model	N. r^2	χ^2	df	p	Δ	df	p
Model C+P+D+S	.151	103.99	22	.000			
Model C+P+D+S+DxN	.153	111.55	26	.000	1.56	4	.816

Summary of Interaction Effect

Table 8 shows the changes in odds ratios from the main effects model to the interaction effects in both the Formal and Informal models. Looking at the main effects Formal Model C+D+P+S, the dense network (shaded) is an insignificant predictor of nonparticipation. In the interaction model, members of dense networks with the discourse of "getting ahead with education" (shaded) are more than twice as likely to participate than members of small networks with this discourse. This is a reversal of direction and large-size effect relative to other predictors in the model. The remaining odds for dense networks, which now indicates people without their "getting ahead with education" discourse, predicts a 70% lower likelihood of participation than for small networks (shaded). The other network types are unaffected, and the remaining parameter for "getting ahead with education" (shaded) becomes insignificant, suggesting that all of its power lies in its interaction with dense networks.

Table 8: Comparison of Primary Effects Models to Interaction Models – Odds Ratios

	FORMAL		INFORMAL	
Variables	**Model C+P+D+S**	**Model + DxN**	**Model C+P+D+S**	**Model + DxN**
TALS score	1.001	1.002	1.002	1.002
Age at Wave 1	*.973	*.973	1.018	1.016
Number of weeks worked	*1.218	*1.202	1.022	1.021
Children in household	**1.609**	**1.569**	**.540**	**.543**
Parent's education	*1.050	*1.053	.990	.990
Poverty	.981	1.014	.839	.821
Prestige	**.960**	**.958**	**1.027**	**1.027**
Gender (men are ref. group)	**1.890**	**2.071**	1.277	1.279
Ethnicity -Anglos are ref. group				
ESL	**2.246**	**1.937**	.798	.804
African American	1.711	*1.706	1.301	1.339
Other English speakers	.834	.848	.688	.687
Get ahead with ed	**1.478**	.213	**1.722**	*1.718
School trust	1.196	*1.223	**.730**	**.731**
Educational goals	1.000	1.003	*1.200	*1.197
Networks- Small is ref. group				
Big networks	3.350	5.983	3.312	3.084
All-family networks	**.318**	*.290	**4.910**	**3.601**
Open networks	.968	.627	*2.400	1.994
Dense networks	.617	**.282**	*2.361	1.930
Social trust	1.154	1.169	*1.078	1.083
Duration of relationship	.999	.995	**1.029**	**1.028**
Civic participation	.905	.969	**.846**	**.848**
College educated people	**.573**	**.927**	1.080	1.065
Network x get ahead with ed -Small is ref. Group				
Big networks		.417		.709
All-family networks		.298		.456
Open networks		.556		1.349
Dense networks		**2.386**		1.029

Bolded numbers significant at .01 or better
* significant at .05

Table 9 summarizes the cross-tabulation of the interaction effect. The first column is the percentage of cases within the identified network type whose community does not discuss getting ahead with education. The second column is the percentage of cases within the network type that do agree with that statement. Column 3 shows the odds ratios for participation in Formal education. Standardized betas are listed in column 4 for the purpose of comparing the predictive value of each network type.

Table 9: Network Category by Percent Agreeing with "Get ahead with education"

Network category	% don't say get ahead with ed	% say get ahead with ed	Odds ratio of interaction	Standardized beta
Big	73	27	.417	.780
All-family	58	42	.298	*1.557
Open	42	58	.556	1.070
Dense	50	50	**2.386**	**2.637**
Small	75	25		1
Network category	50	50		**4.27**

Bolded numbers significant at .01
*significant at .05

Comparing the proportion of positive interactions between network types against their predictive power demonstrates that the increased power of the discourse comes from the density of the network rather than the percentage agreement in the network. A greater percentage (58 percent) of open networks than dense networks (50 percent) agree with "getting ahead with education," yet the interaction has a large effect on dense networks and no effect on open networks. Similarly, "getting ahead with education" does not interact with big networks. Seventy-three percent of big networks do not agree that "education as a way to get ahead," yet the odds ratio for Big networks is insignificant and hardly changes with the interaction.

Comparison of Predictors of Formal and Informal Learning

RQ5: Do different qualities of social capital influence the strategy for lifelong learning?

H_5 Different dimensions of social capital influence the strategies of engagement of lifelong learning.
H_{5null} Social capital does not influence the strategy of engagement in lifelong learning.

Table 10 compares the Formal and Informal change statistics for each nested model. Although hypotheses 1–3 have been evaluated separately for the Formal and Informal strategies of lifelong learning, Table 10 allows a statement to be made across both strategies. The null hypotheses (H1) that social position does not influence lifelong learning can be rejected in both cases. Social position influences both Formal and Informal strategies of lifelong learning. The null hypothesis (H2) that education discourse does not influence lifelong learning cannot be rejected for the Formal case at a confidence level of .01. It is rejected in the case of Informal strategies, however, suggesting that education discourse is more influential on Informal than Formal strategies for lifelong learning. The null hypotheses (H3) of no influence on lifelong learning from social capital can be rejected for both Formal and Informal learning. However, that influence operates in opposite directions: positively for Informal learning and negatively for Formal learning. The interaction effect of discourse by network influences Formal but not Informal learning. The final interaction models for both Formal and Informal learning show significant improvement over the independence model, as shown in the last row of Table 10.

Table 10: Comparison of Model Change Statistics

Model	**Formal**				**Informal**			
	N-r^2 model	**χ^2**	**df**	**p**	**N-r^2 model**	**χ^2**	**df**	**p**
Δ Model C	.049	35.12	4	.000	.045	31.50	4	.000
Δ Model C+P	.10	37.40	7	.000	.082	26.77	7	.000
Δ Model C+P+D	.111	8.95	3	.03	.116	25.16	3	.000
Δ Model C+P+D+S	.171	46.41	8	.000	.151	26.55	8	.001
Δ Model + DxN	.191	16.78	4	.002	.153	1.56	4	.812
Final SCILL Model	.191	144.6	26	.000	.153	111.5	26	.000

Addressing the hypothesis that the dimensions of social capital influence learning strategies differently entails a closer look at the parameters of the two models. Table 11 compares the final interaction models for SCILL. Figures are odds ratios for engagement in Formal or Informal learning with r and significance. Sections numbered 2, 3, and 4 refer to models C+P+D and C+P+D+S, and model C+P+D+S+DxN, or the education discourse and social capital blocks.

Table 11: Comparison of Parameters in Formal and Informal Final Models with Interaction

		FORMAL			INFORMAL		
	Variables	**Odds ratio**	**Sig.**	**R**	**Odds ratio**	**Sig.**	**R**
1	**Position Variables**						
	TALS score	1.002	.35	.000	1.002	.18	.000
	Age at Wave 1	*.973	.02	-.054	1.016	.52	.000
	Number of weeks worked	*1.202	.04	.043	1.021	.87	.000
	Children in household	**1.569**			**.543**		
	Parent's education	*1.053	.88	.000	.990	.17	.000
	Poverty	1.014	.64	.000	.821	.06	-.035
	Prestige	**.958**	**.00**	**-.136**	**1.027**	**.00**	.090
	Gender (men are ref. group)	**2.071**	**.00**	**.133**	1.279	.80	.000
	Ethnicity – Anglo is ref. group.		**.01**	**.063**		.08	.028
	ESL	**1.937**	.03	.048	.804	.30	.000
	African American	*1.706	.03	.049	1.339	.37	.000
	Other English speakers	.848	.41	.000	.687	.03	-.049
2	**Discourse Variables**						
	Get ahead with Ed	.213	.79	.000	*1.718	.06	.036
	School trust	*1.223	.03	.048	**.731**	**.00**	**-.089**
	Educational goals	1.003	.93	.000	*1.197	.02	.056
3	**Social Capital Variables**						
	Small network is ref. group		.00	.137		.11	.000
	Big networks	5.983	.09	.027	3.084	.11	.023
	All-family networks	*.290	**.01**	**-.060**	**3.601**	**.01**	**.067**
	Open networks	.627	.54	.000	1.994	.05	.038
	Dense networks	**.282**	**.00**	**-.071**	1.930	.05	.040
	Social trust	1.169	.17	.000	1.083	.17	.000
	Duration of relationship	.995	.63	.000	**1.028**	.02	.055
	Civic participation	.969	.39	.000	**.848**	**.01**	**-.067**
	College educated people	**.927**	**.00**	**-.077**	1.065	.56	.000
4	**Network and discourse interaction**						
	Network x get ahead with ed -Small is reference group		**.00**	**.093**		.77	.000
	Big networks	.417	.44	.000	.709	.64	.000
	All-family networks	.298	.12	-.019	.456	.40	.000
	Open networks	.556	.28	.000	1.349	.44	.000
	Dense networks	**2.386**	**.01**	**.065**	1.029	.98	.000
	Constant		.04			.03	

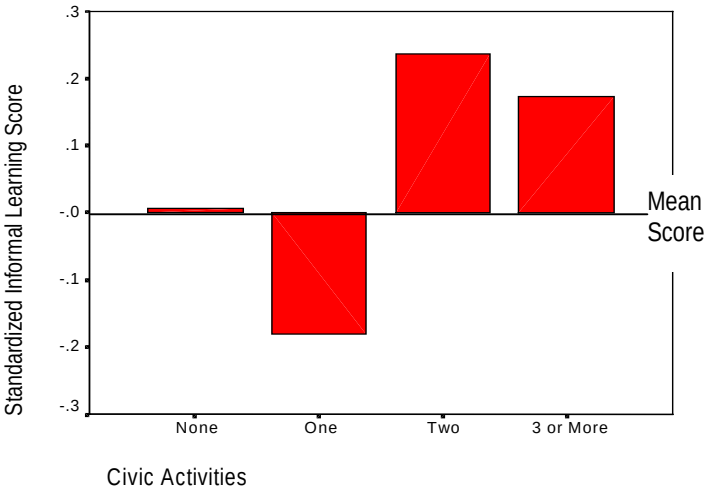
Bolded numbers significant at .01or better, *significant at .05

Section 2, comparing the influence of education discourse, indicates that trusting schools is significant at .00 for nonengagement in the Informal model and significant for participation at .05 in the Formal model. The trend of influence of education discourse is in opposite directions for Formal and Informal strategies. I investigated this finding by running a t-test of the score for trusting schools on participation in Formal learning versus engagement in Informal learning only. The mean score for trusting schools for those only engaged in Informal learning is 1.73 standard deviations lower than those who only participate in Formal programs (t=3.195, df =472, p=.001). This lower trust score significantly predicts nonengagement in Informal learning, and the higher score of Formal learners suggests a positive influence on participation in Formal education. The contribution of the education discourse block of indicators contributes more to the fit of the Informal Model than to the fit of the Formal model. I conclude that the discursive dimension of social capital influences strategies for lifelong learning, but in unanticipated directions.

Refer now to Block 3 of social capital indicators in Table 11. Network, as an overall indicator, is a significant predictor of participation in Formal learning but not for engagement in Informal learning. Network types are significant in different ways. People in networks comprised of all-family are 70% less likely than people in small networks to participate in Formal programs. Inversely, that same group is more than 3.5 times more likely than people in small networks to engage in Informal learning. Again, the opposite direction is significant in the Formal model, in which dense networks predict a 70 percent probability of nonparticipation. As mentioned in the discussion of the interaction effects, network combined with education discourse does not influence Informal learning strategies but makes significant changes in the pattern of the Formal model. The structure of networks, as an indicator of social capital, is a strong predictor of learning strategies.

This contrast carries over to the effect of knowing college-educated people. Having at least one person who went to college in one's personal community predicts a small but significant likelihood of nonparticipation in Formal learning. Those involved in civic participation appear to be less likely to engage in Informal learning. This is counterintuitive, and a closer look at the data explains this effect in the model. An analysis of variance of the standardized score for Informal learning on civic engagement, as illustrated in Figure 3, suggests that people who are involved in two or more civic activities (26% of the study population) are significantly more engaged in Informal learning strategies than the 74% who are involved in one or no activity (F= 6.98, df=3. p=.000). The distribution of civic engagement skews the predictive power of that indicator.

Figure 3: Civic Participation and Informal Learning Strategies



In summary, we can conclude that social capital, in the form of discourse, network structure, and civic engagement influences the strategies of engagement in lifelong learning in opposite directions for Formal and Informal learning. The H5 null hypothesis that strategies for lifelong learning are not influenced by social capital is rejected.

In addressing hypothesis 5 regarding different influences of social capital, I have compared the discourse and social capital parameters for Formal and Informal learning. It is also instructive to look at a few of the indicators of position across these models. Referring back to Table 11, Block 1 compares the parameters for social position across Formal and Informal strategies.

People in higher prestige occupations, who own their own business or have management or technical positions, are less likely to participate in ABE or GED preparation classes than people in low-skill occupations. On the other hand, higher occupational prestige predicts more engagement in Informal education. Women are twice as likely as men to participate in Formal learning but equally likely to engage in Informal learning strategies.

Ethnicity per se is significant for participation in Formal education and not significant for Informal learning. “Other” English speakers are just as likely as Anglos to participate in Formal education. Speakers of English as a second language and African Americans (at a confidence level of .04) are almost twice as likely as Anglos to participate in ABE/GED classes but are just as likely to engage in Informal learning. Social position—occupation, gender and ethnicity—and social

capital, influence the choice of strategies for lifelong learning. The control variable of having children in the household is the only strong predictor of all of the controls. Having children motivates people to participate in Formal programs but is an obstacle to engagement in Informal learning. Again, the pattern of opposite effects of Formal and Informal strategies is evident here.

The SCILL Model demonstrates the significance of position, discourse and social capital as predictors of engagement in lifelong learning. The overall predictive power of the model is not strong, but the validity of the model is demonstrated in the calibration of predicted to observed values (See Appendix F). The primary finding is that although social capital significantly predicts both Formal and Informal strategies for lifelong learning, the effects are in opposite directions. The interpretation of these findings and their implication for theory and practice are discussed next.

Discussion

The primary objective of this study is to investigate how dimensions of social capital influence the lifelong learning practices of adults who didn't finish high school. This objective poses the problem of understanding the mechanisms of social capital. The principal finding, that participation in Formal education and engagement in Informal learning are influenced in nearly opposite ways by the social capital available to learners, has implications for models of adult education participation and for modeling social capital. In the following discussion, I will explore in greater depth the insights from the SCILL model of how social capital influences lifelong learning. I will then suggest implications of this study for research on social capital and for research on participation in adult education. The limitations of this study and proposals for continued research will conclude this discussion.

How Does Social Capital Influence Lifelong Learning?

The relationship between social capital and learning is not as linear or as simple as the example Coleman (1988) used initially in "Social Capital in the Creation of Human Capital." This study both confirms and challenges some of Coleman's findings and the contributions of scholars over the last 15 years. The operative elements of social capital in this analysis are networks characterized by density and size, and indicators of shared discourses. Like Coleman's study of dropping out, social capital indicators are the most powerful predictors of engagement in learning for adults.

Constructing Networks

Initially, I looked for network patterns indicating social capital of support and social capital of leverage. Despite the intuitive appeal of support corresponding to horizontal networks and leverage to vertical networks, this schema is too simplistic a representation of personal community. Contrary to the expectation that networks could be characterized as either dense and homogenous or open and heterogeneous, most actors in the study population construct their personal communities to include both supportive social capital and elements that help them access resources. This configuration is actually more stable than single-purpose networks and suggests quantity and flexibility in the store of social capital (Wellman & Wortley, 1990). The observed patterns of heterogeneity regarding age, ethnicity, and education are also inconsistent with the expectations formed from the literature. In general, the LSAL population has more diverse networks than those reported from GSS data (Marsden, 1987). This may be a function of low education status minimizing social distance between ethnic groups, whereas family relationships may bridge to higher levels of educational attainment to diversify networks across levels of educational experience.

The strategy of categorizing networks by their configuration of the relationship of network size to density—isolated or small networks, all-family networks, open networks, dense networks, and big networks—proves to have construct validity. When modeling network types, we identified subjects with few or no people with whom they visit at least once a month as having an isolated or small network. This is the reference group for network comparison because members are assumed to have little social capital. A closer look at the characteristics of small networks clarifies the mechanisms of social capital. Isolated people are more likely to participate in ABE classes than people whose network is all-family. This suggests that family represents an obstacle to participation, an alternative life choice, or both. However, having children seems to create motivation for learning that overcomes the potential obstacles that the parental role might impose on participation in Formal learning. Other studies have shown that the burden of relationship obstacles and responsibilities tends to fall disproportionately on women (Lin, 1986; Horsman, 1990). But men and women in the LSAL population are equally likely to have networks that are all-family, and women are twice as likely than men to be participants in Formal education programs when controlling for children in the household. It is possible that isolated people or those with small networks may simply have more freedom to pursue their educational goals. That freedom may be the lack of reciprocity demands that relationships entail or it may be freedom from the influences of community discourses.

Network Type and Informal Learning

One might think an independent spirit would be freer to develop Informal learning strategies instead of institutionalized learning. Rather, the SCILL Model shows that people with all-family networks are three times more likely to engage in Informal learning than people with small networks, and all other network configurations follow that trend, when all else is held constant. This finding confirms the Schuller and Field (1998) finding that people with high social capital gravitate toward Informal learning strategies, building on established relationships rather than searching for educational institutions outside their normal context. The SCILL Model further supports this notion, in that the duration of the longest non-kin relationship predicts a higher probability of engagement in Informal learning but is not significant for Formal learning. The SCILL Model contributes to a body of evidence supporting the proposition that learning takes place through interpersonal engagement (Lave & Wenger, 1991; Reder, 1994; Vygotsky, 1996). Interacting with more people stimulates Informal learning, whether reading alone to learn something new or actively learning with another person.

Support v. Leverage or Density x Discourse?

There is little evidence that the study population benefits from the social capital of leverage. The potential measures of leverage—knowing someone who has been to college, parent's education, or occupation prestige—do not predict participation in adult education. In fact, knowing someone who went to college significantly predicts *non*-participation in ABE. This is the opposite direction from what would be expected if the leverage mechanism of social capital were at work. There are at least two possible explanations for this relationship. It is possible that community discourse changes with the influence of college-educated people. Another interpretation, suggested by Fingeret's (1983) work, is that social capital substitutes for human capital so that when one knows someone who went to college, one relies on that person's information and status instead of taking steps to develop one's own human capital.

Network configurations expected to operationalize support, characterized by density, horizontal ties, and homogeneity, are not evident in the data. An alternate way of investigating the mechanisms of support and leverage is through the interaction between density and discourse. The SCILL Model supports this approach empirically. All-family networks and dense networks are hypothesized to most influence behavior in the direction of the shared discourse. In the usual interpretation of "support," one would expect all-family networks to support participation, which is not the case. All-family networks predict nonparticipation and are less likely to discuss getting ahead with education. Dense networks, which are as likely to discuss getting ahead with education as not, are not significant predictors of participation or

nonparticipation. When dense networks also have the discourse of education as a way to get ahead, subjects are more than twice as likely to participate in Formal education than people in small networks that also discuss getting ahead through education.

This evidence supports the argument that social capital influences behavior through the function of community discourse, constructed and reinforced by relatively closed networks. The interpretative dimension of social capital gives insight into "support for what?" which allows prediction of the direction taken by the actors in the discourse community.

Social Capital as a Buffer for Low Human Capital

Based on findings from a study of formal and informal adult education in North Ireland, Sculler and Field (1998) suggest that social capital may be drawn on as a buffer for the lack of human capital certification (i.e., a high school diploma or GED). This interpretation helps clarify the SCILL Model finding that social capital predicts nonparticipation in Formal learning strategies. For example, if people can get jobs through personal connections—either relatives or friends—their educational attainment may not be as important a consideration. In fact, 42% of the study population in the workforce found their current or most recent job through a friend or relative, rather than from eight other possible sources listed in the survey instrument. Twenty-five percent of people in all-family networks found jobs through family, and 37% of those in dense networks found jobs through friends. Even the subjects in small networks most frequently got a job through a friend (27%). The LSAL data support use of social capital to buffer deficits in human capital.

Fingeret (1983) presents ethnographic evidence of the use of networks to buffer literacy limitations in which personal exchanges, based on complementary abilities, draw on and build social capital. The LSAL data support her findings. I ran a simple logistic regression on the probability of asking for help with literacy tasks predicted by network type, controlling for literacy ability ($\chi^2 = 64.52$, df=5, p=.000). Table 12 shows the betas and odds ratios for this equation. Network is a significant predictor of asking friends or family for help with literacy tasks. All-family and dense networks predict exchanges of help with literacy tasks at odds of more than 2.5 times that of small networks.

Table 12: Network Predictors of Help with Literacy Tasks

Variable	B	S.E.	df	Sig	R	Odds Ratio
TALS Score	-.011	.002	1	.00	-.180	.990
Network - isolated is ref. group			4	.00	.099	
Big	.473	.578	1	.41	.000	1.605
All-family	**.952**	**.389**	**1**	**.01**	**.056**	**2.591**
Open	.399	.346	1	.25	.000	1.491
Dense	**.991**	**.339**	**1**	**.00**	**.072**	**2.693**
Constant	1.937	.496	1	.00		

These most dense networks represent social capital of support through the Informal learning strategies of collaborative literacy practices rather than ABE program attendance.

Civic Participation

Scholars of democratic participation from de'Tocqueville to Putnam theorize a learning process of "civic literacy" development in which people learn the skills of civic engagement through low-level social interaction that builds competencies for broader civic involvement. "Civic literacy" has been integrated into program curriculum through initiatives such as EFF. Civic participation is highly correlated with education and socioeconomic status (Verba et al., 1995), but the LSAL data give us a closer look at the civic engagement of those at the low end of the socioeconomic scale, as measured by educational attainment. In the study population, parents' education and subject's literacy proficiency are not correlated with civic involvement. The occupational prestige of the subject's job has a low correlation with civic engagement (r=.15, p=.000).

The SCILL Model offers a preliminary indication that people who are more involved in community are also more engaged in informal literacy practices, holding all else constant. As shown in Figure 3, there appears to be a nonlinear relationship between civic participation and engagement in Informal learning. People who report one civic activity (usually voting) are less likely to engage in Informal learning than those who report no civic involvement and people who do more than one activity. People involved in more than one civic activity are more likely to be engaged in more than one informal learning activity than people who are not involved in their communities. The dramatically lower informal learning score for the 32% of the population that engages in one activity suggests that civic engagement is a substitute for informal learning in the time budget for this segment of the population. Another possibility is that the respondent doesn't recognize informal learning strategies employed through civic engagement. Civic engagement may be a measure of social capital that is indirectly related to lifelong learning for the majority of the study

population. This does not mean that civic engagement, particularly in social movements, is not a vital and important community of practice for lifelong learning (Foley, 1999). It is, however, the fact that unlike in other places and at other times in history, the population of adults with low educational attainment in the Portland area is not socially organized.

Implications for Studying Social Capital

Problems of Measurement

This study contributes to the endeavor to measure social capital by illustrating the complexity of networks in the study population and proposing discourse as an interpretive dimension of social capital.

Initial attempts to scale social capital on a single dimension as a measure of quantity and on two dimensions of support and leverage were not fruitful. Indicators for the measurement model included social trust, network size, network density, the length of time knowing non-kin, civic participation, and a scale of reliance on oral information. The Wave 1 LSAL data does not have enough items to produce a reliable measure of social capital, as Onyx (2000) and others (see Lochner, Kawachi, and Kennedy, 1999, for a meta analysis) have done since. However, it is an interesting finding that social capital is *not* a latent variable that explains trust in conjunction with network size and density, civic participation, oral information, and duration of relationships in this data set.

Characterizing Networks

The limited pertinent information in the LSAL data prevents more detailed analysis that might separate out leverage and support niches within networks to determine the relative weight of each construct or the cross-matching of characteristics (e.g., how many of the relatives listed in the household are also included in the network). Lacking this level of data, I can only say that there are no underlying patterns of network heterogeneity or homogeneity that are hypothesized to reinforce social norms or introduce access to resources. Only a small segment of the population can be described as socially isolated or totally reliant on family. Generally, the LSAL population has stable social support and some means of accessing resources. This is an important finding because such social support is thought to mediate stresses or turbulence in one's life (Walker, Wasserman, & Wellman, 1993). The process of collecting the LSAL data revealed that turbulence may be an important variable in assessing the ability of the study population to engage in lifelong learning and such structured and scheduled tasks as participating in a GED preparation course. Follow-up analysis of social support and turbulence will be possible with analysis of longitudinal data.

Discourse as a Dimension of Social Capital

I argue that community discourse is a dimension of social capital because its construction, as with the construction of social capital itself, is a function of interpersonal interaction over time. The SCILL Model supports this argument empirically, showing that shared discourse concentrated in dense networks is one of the mechanisms of social capital influence on behavior.

There are several issues in social capital research that are addressed by introducing discourse into the theoretical mix. One is how individuals use the collective asset of social capital. Discourse congruence between the individual and a community (however it is defined) should predict individual access to social capital assets. Shared community discourse on "getting ahead with education" predicting individual participation in adult education is an example. By locating behavior in the context of community discourse, researchers can identify agency as the action of the individual despite the community discourse, or participation in collective action in the context of congruent discourse.

Bringing the notion of discourse into the measurement of social capital also begins to solve the problem of how social capital functions as a dimension of social position (Edwards & Foley, 1997). Discourse challenges the "value neutral" normative constructs of social capital. Uncovering the content of discourse can reveal the synchronistic ability for high cultural capital and high social capital to corral resources and legitimacy in the structuration of power. Discourses of resistance introduced to the social capital construct can also incorporate the notion of agency, the power to mobilize collective action, and the potential for social evolution as we reintroduce what we learn to the collective pot (Lappe, 1997; Foley, 1999). The ability of LSAL data to demonstrate this theoretical potential is limited, however.

I recommend that social capital researchers include measures of the community discourses specific to the outcomes studied, whether that is a discourse on social trust or on outcome variables such as health, education, or employment. The challenge in doing so is the problem of capturing discourse in survey methodology. This is no different, however, than capturing the phenomenon of social capital itself.

Implications for Studying Participation in Adult Education

The Difference Between Informal and Formal Learning

Informal, self-directed, and situated adult learning is beginning to get more attention in the adult education field (Engestrom, 1996; Field and Schuller, 1998; Foley, 1999). This study reinforces the need to understand strategies for learning other than those offered through educational organizations and institutions. The SCILL Model shows two distinctly different patterns of predictors for Formal and Informal learning. Some of the differences may be attributable to differences in available resources and expected benefits. Those with higher prestige jobs may not have the necessary time to invest in participating in a GED class, but they may have more intellectual and material resources for independent learning. People with children may not have the personal circumstances conducive to self-directed learning but are motivated to get formal certification from programs to meet their goals. Some populations, such as speakers of English as a second language, may have established relationships with educational institutions but may confront language or cultural barriers when attempting self-directed learning.

The most dramatic difference between Formal and Informal learning is in how networks predict participation. Social capital theory led me to expect more social connections to predict more Formal participation, the assumption being that social capital represents available information, encouragement, and resources to support schooling. This expectation proved inaccurate.

Why are more socially connected people less likely than isolated people to participate in Formal learning? Why are they much more likely to engage in Informal learning than isolated people? More inquiry into the social nature of Formal and Informal learning strategies would be fruitful. Participating in Formal education is a much more public endeavor than reading alone to learn about something or practicing on one's own to get a GED. As a public endeavor, it is more vulnerable to the approval or sanctions of community. This is demonstrated in the SCILL Model by the interaction effect.

Students and Social Capital

Most of the social capital and education literature focuses on the kindergarten through high school experience. In adult education, there are some intriguing studies of interactive learning that develops social connections and shared discourses that then encourage continued learning (Fingeret & Drennon, 1997; Foley, 1999). More explicit inquiry into the mechanisms of social support and community discourse related to participation in adult education is warranted. Quigley (1994) identifies "disposition" as being an issue with retention of students. To what degree is

disposition constructed as part of community discourse? In her chain of response model of program participation, Cross (1981) identifies information as a critical component of the interaction between the learner and his or her environment in coming to adult education. Information is only one form of social capital. Social capital is implicit in the "information," "opportunities and barriers," and "attitudes about education" boxes of the chain of response model. Community discourse and social capital theory helps to open these boxes to deeper inquiry.

Social Capital Among Nonparticipants in Adult Education

Quigley (1994) calls for more research on the 92% of the potential adult education population that does not participate in programs. The LSAL is a contribution to this needed research. Are there implicit or explicit discourses of resistance in the personal communities of nonparticipants? Not discussing education as a way to get ahead cannot be deemed an oppositional discourse in the SCILL Model, and the LSAL data set does not operationalize resistance. As I mentioned previously, discourse is difficult to capture in this kind of research. Quigley and others note that oppositional discourses, particularly if they are not articulated, are even more difficult to capture. One approach, as Ogbu (1995) and community studies ethnographers have done, may be to identify whether the history and social organization of communities support discourses of resistance.

One question the SCILL Model raises is whether social capital works differently for women than for men, an explanation for women's higher probability of participation. It is possible that women use their social networks as support to participate, whereas shared discourse among men reinforces individualistic strategies that may or may not include formal learning. For now, this is a hypothesis for future consideration.

Limitations of the Study

The greatest limitation of this analysis is the low reliability of measures of social capital. This study does not solve this problem, which has engaged the field for a decade. Advances since the inception of this study have emphasized community-level measures and methods, such as combining aggregate administrative data with survey research to intersect levels of analysis. These are promising and exciting developments. However, they are not targeted at the level of personal and discourse community important to this study.

This study has the same limitations as any survey and is vulnerable to my own criticisms of using survey methodology to study social capital. All the data is filtered through the survey instrument and the perception of the subject. Social context is better studied ethnographically or through discourse analysis, particularly

when trying to understand interpretive subtleties such as community discourses. The strength of the survey, however, is that it presents a slice through 937 personal communities. Some survey instruments entail detailed descriptions of each person in the network; for instance, the GSS has 15 items for each of the first five people mentioned in the network. More detailed measures of network characteristics such as these would have facilitated examining the mechanisms through which networks work in the LSAL study population. However, space in the GSS instrument for inquiry about social capital was limited. The LSAL also lacked an adequate number of items in the instrument to develop scales or measurement models of the social capital construct. As a result, measurement error in the model is large. Insufficient data also restricted use of structural equation modeling, which in principle would have separated measurement from specification errors. Logistic regression was chosen as the analytical tool when it was discovered that data would not converge into scalable measurement models, and testing of binary and categorical data became necessary. Although the model has a large unexplained variance (-2LL), its validity is sufficient to test the theoretical hypotheses set forward.

Future Research

The LSAL offers the opportunity to apply what was learned through this study to future data collection. In this longitudinal study, future analysis might yield insights into the iterative cycle of social capital development and its relationship to human capital. Do subjects' stock or characteristics of social capital change when they get GED credentials? Does the social capital that supports Informal learning bring about literacy development? Do gains in socioeconomic status brought about by literacy development change perceptions of social trust or civic engagement? Waves 4 and 5 of the LSAL will include measures designed to answer some of these questions.

The SCILL Model also has the potential to explain interactions between social position—especially poverty, gender, and ethnicity—and the structural and discursive dimensions of social capital. Informed by this study, ethnographic research into discourse interaction with networks and social capital can be conducted to further understanding of participation in adult learning and to develop social capital theory. The interdisciplinary intersection of social capital, critical literacy studies, and adult learning theory is a rich field of inquiry.

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Appendix A:
Longitudinal Study of Adult Literacy Study Design

Between October 1998 and July 1999 data were gathered through Computer Assisted Personal Interviewing and administration of literacy assessment instruments from adults age 18-44 who did not graduate from high school and have yet to get a GED. The realized sample of 940 was drawn from two frames. People who had attended at least one ABE or GED preparation class at one of the Portland area community colleges were over-sampled by recruiting permission to be called during their program intake process. The second frame was selected through random digit dialing of telephone prefixes that falls within the geographic range of the Portland area that includes the three community colleges. The analytic categories of student and non-student are determined by their responses to questions regarding participation, not by the sample frames. The total sample is weighted to generalize to all adults meeting the above criteria, who live in the Portland area, and are proficient English speakers. These subjects comprise a panel that will be followed yearly for five waves of data collection for the LSAL. The realized sample of 940 is of very high quality. Demographic data match census and other literacy surveys. The two sample frames are demographically similar.

Data Collection Procedure

Randomized telephone numbers and the numbers of households with students were called and screened for the study criteria and willingness to participate in the survey. An appointment was set up for an interviewer to go to the subject's home to conduct the data collection. The survey instrument was administered through Computer Assisted Personal Interview (CAPI). The interviewer read the questions with automated skip sequences from a laptop computer and entered data directly from the subject's answers. Previous studies have shown that this protocol greatly improves inter-rater reliability and reduces coding or data entry errors (de Leeuw & Nicholls, 1998). The interview lasted about one hour. After the interview, the subject took the Test of Applied Literacy Skills assessment according to the protocol standardized by Educational Testing Service.

Instrument Development

The most important criteria for items in the LSAL instrument were that they were relevant to the primary research questions of the main project. Many items were selected from previous Department of Education Surveys such at the National Adult Literacy Survey so that the data would be comparable to other studies for greater analytical value. Questions regarding social capital were borrowed from the General Social Survey and the Civic Participation Survey. Some of these items were

modified to be applicable to our sample population. I wrote other items informed by the literature. These were tested through iterative cognitive interviewing of pilot subjects. The entire instrument was reviewed by researchers in the field of adult literacy, then revised and re-piloted before being finalized.

Appendix B:
Instrument Items from LSAL Wave 1

1) Lifelong Learning Items

Formal learning

GEDCLASS - Number of classes taken to improve basic skills or prepare for the GED. Derived from:
GEDCRNT:
Are you currently in a class or program to improve your reading, writing or math skills or study for a GED?

GEDMANY:
From how many different teachers did you take those courses? (refers to courses taken in 12 months previous to interview)

GEDB4MNY:
From how many different teachers did you take those courses? (refers to years before the 12 months prior to the interview).

GEDTESTS - Number of GED tests taken toward certification. Maximum of 5. Derived from:
GED: Have you ever taken any of the GED tests?

GEDPASS: Which ones did you take?

VOCED:
How many courses have you taken to learn vocational skills, not including on the job training?

Informal learning

SELFED0:
Number of months of self directed study to improve basic skills or prepare for the GED test during the last 12 months. Recoded from SELFED12 for missing values to equal zero. Derived from:

SELFED:
Not including any classes you may have taken, how many months have you ever studied or practiced on your own to improve your reading, writing or math skills or studying for a GED? (this variable not used because confounded by age)

SELFED12:

How many of those were in the past 12 months? (asked if SELFED was greater than zero, recoded if SELFED = 0 then SELFED12 =0).

BOOKED:

In the past 12 months, have you set out to learn something on your own by reading books, magazines or manuals?

TVED:

In the last 12 months, have you set out to learn something by watching educational TV, a video, by computer, the internet, or a correspondence course?

TUTORED:

In the last 12 months, have you set out to learn something with a tutor or with a friend or family member?

GENED01-GENED08: *(Mark all that apply)*

Considering all the ways of learning we have just discussed, how do you generally go about learning new things?

1 Ask someone I know
2 "Hands on" learn by doing
3 Ask an expert
4 Read about it
5 Take a class
6 TV
7 Look it up in the library or computer
8 Just know how to do things
9 DK

2) Social Position

PAREDCAT: Derived from mothers and fathers education, highest of two.

MOED: How many years of education did your mother/female guardian complete?

FAED: How many years of education did your father/male guardian complete?

POVERTY2:

Derived from household income and household size using Federal guidelines for poverty by household size.

PRESTIGE:

JOBTYPNW: What kind of job do you now have?
Re-coded for occupational category using GSS codes.

GENDER:

Interviewer note gender:
1 Female
2 Male
Recoded 0 = Male, 1 = Female.

ETHNICITY: Derived from

RACE01-RACE06: *(Mark all that apply)*
I am going to read six categories of race or ethnicity. Please pick one or more that applies to you.
What is your race or ethnicity, are you?
1 White
2 American Indian or Alaska Native
3 Asian
4 Black or African American
5 Native Hawaiian or Other Pacific Islander
6 Hispanic or Latino

FIRSTLAN:

What was the first language you learned to speak?
1 English
2 Spanish
3 Other (specify)

3) Discourses Regarding Education

Network Attitudes

SCHLVLU:

Thinking of those \: PPLNUM people, Do they mostly believe that:
1 Going to school is a waste of time for adults
2 Going to school is a good opportunity no matter how old you are.

SCHTRST:

Still thinking of those \:PPLNUM people, would you say generally that those people mostly think :
1 Schools don't help people like themselves
2 Think that schools help everyone equally?

Respondent Attitudes

EDJOB:

In general, would you say that
1 Education is important for getting a job
2 That you can get a good job and make good money without an education.

SCHTRSTR:

Would you say generally that:
1 Schools don't help people like yourself
2 Schools help everyone equally?

GETAH01-GETAH09: *(Mark all that apply)*

When the people you spend time with and work with talk about ways to get ahead economically, what ways do they mention?
1 Don't talk about it
2 Working harder/overtime
3 Getting a better job
4 Going back to school
5 Being own boss
6 Marrying rich person
7 Investing
8 Gambling or lottery
9 Other

ANYED:

If you had the opportunity, would you like to get more education?
0 NO (SKIP TO DEMOS)
1 YES
2 DK

ANYED01-ANYED06: (*Mark all that apply)*
1 High school diploma or equivalency
2 Vocational, trade or business
3 Two year college degree (AA)
4 Four year college degree
5 Graduate school
6 Professional certification/license

HHSPPT:

If/when you told your family, how do/did you think he/she/they would respond?

1 Supportive
2 Help you with childcare, transportation, money or homework
3 Don't care
4 Un-supportive - making it hard personally
5 Other

4) Social Capital Items

Network Characteristics

PPLNUM:

Think about the people you have contact at least once a month, by visiting each other for a chat or doing some activity together like going to a restaurant or a movie. How many people is that?
Have R think of the specific people and then tell you the number of people. Enter that number. Can include family.
0, 99

Referring to the people in PPLNUM, the respondent is asked:

PPLHS:
About how many of these people got a high school diploma or GED?

PPLCLGE:
And of those \:PPLHS how many went to college?

PPLFAM:
How many of these people are family?

PPLTTLYR: Derived from
Not including family members, what is the longest time you have known someone of those you are thinking of?

PPLDENSE:
Again, thinking of these \:PPLNUM people that you socialize with, how many of them would know others in the group if they didn't know you?
Probe: Do these people know each other from work or church or someplace else other than through you?

0 Not applicable (0 or 1 in network)
1 Most of them
2 About half
3 A few
4 None

5) Civic Participation

PARTIC:

Mark all that apply. Do you participate in any of the following:

1 Religious activities beyond attending services
2 Social or sports groups
3 Neighborhood activities
4 Volunteering
5 None?

EXOPIN:

How often have you written a letter to a public figure, company or agency to express your opinion?

0 Never
1 Once or twice
2 Regularly

VOTLAST:

Did you vote in the last presidential election 1996 Clinton vs. Dole?

0 No (SKIPTO VOTREG)
1 Yes
2 DK

6) Social Trust

Subject's Perception of Network's Attitudes

"I am going to read a series of two statements. Please pick the one that you think is most true of what the people you know think."

SOCTRST:

Thinking of those \: PPLNUM people, do they mostly believe that

1 People can be trusted,
2 You can't be too careful in dealing with people?

Subject's Attitudes

"Now, thinking about your own opinion of people in general"

SOCHELP:

In general, would you say that most of the time:

1 People try to help others
2 People mostly just look out for themselves?

SOCTRSTR:

Would you say that most people:

1 Can be trusted
2 That you can't be too careful in dealing with people?

7) Controls

AGE at wave 1 - Derived from Interview date and

DOB: What is your date of birth

Weeks worked in last 12 months - Re-coded into 3 categories. Derived from

WK12MO:

Now I'd like to ask you some questions about your work during the past 12 months. Including weeks of paid leave, such as vacation and sick leave, how many weeks did you work for pay or profit during the past 12 months?

0 None did not work at all in past 12 months (SKIPTO WKUN01)
1 52 weeks worked every week of past 12 months (SKIP TO WKAVWAGE)
2 Less than 52 weeks

WKMANY:

Interviewer: Specify number of weeks not working.

TALS SCORE

Score from standardized literacy assessment ranges from 100-500.

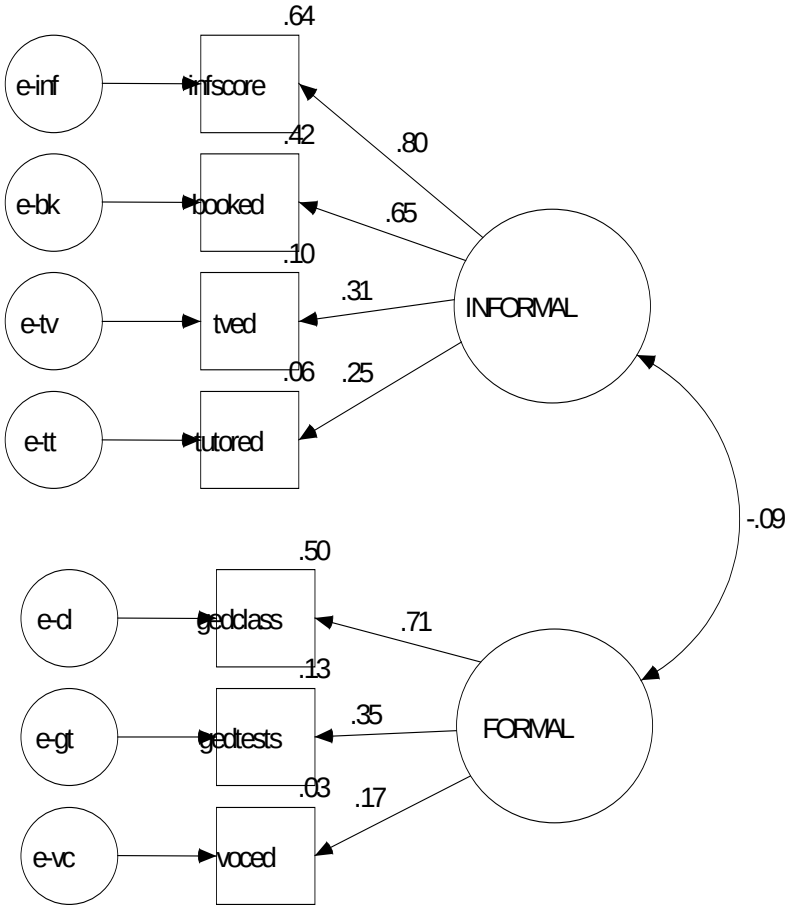
Children in household - Derived from

HHCOMP: Who do you live with now?

- Children

Appendix C: Confirmatory Factor Analysis of Lifelong Learning

Calculated in Amos 4.0 using Maximum Likelihood estimation.
N = 937 Chi Sq = 34.19, df= 13,p=.001, IFI = .958, SRMR=.036
Standardized loadings.
Correlation between endogenous variables not significant.



Appendix D: Tables of Descriptive Statistics and Univariate Analyses of Indicators

Table D1: Distribution and Univariate Effect of Control Variables

Variable	Descriptive statistics			Formal learning	Informal learning
	Values	Count	%		
Literacy proficiency	Minimum	103		B = -.0009 Se = .0014 P = .53	B = .0041 Se = .0014 P = .004
	Maximum	381			
	Mean	279			
	std	47.19			
Age at wave one	Minimum	18		B = -.0316 Se = .0083 P = .000	B = -.0033 Se = .0084 P = .69
	Maximum	44			
	mean	27.5			
	std	8.03			
Weeks worked in last 52 -recoded to 3 categories	0-4	306	33	B = .0263 Se = .0792 P = .74	B = .1314 Se = .0812 P = .106
	5-47	226	24		
	48-52	405	43		
Children in household	No	505	56	B = .416 Se = .132 P = .002	B = -.659 Se = .136 P = .000
	Yes	432	46		

Table D2: Distribution and Univariate Effect of Indicators of Social Position

Variable	Descriptive statistics			Formal learning	Informal learning
	Values		Count %		
Highest parental education	Minimum		2	B = .018 Se = .018 P = .32	B = .032 Se = .018 P = .078
	Max (top coded as post graduate degree)		17		
	Mean		11.36		
	STD		3.62		
Household Federal poverty	No	638	68	B = .1683 Se = .1404 P = .23	B = -.4790 Se = .1426 P = .001
	Yes	299	32		
Occupational prestige - proxy for work demands on literacy.	Minimum		9	B = -.033 Se = .0078 P = .000	B = .0398 Se = .0083 P = .000
	Maximum		51		
	mean		26		
	std		8.3		
Ethnicity Categorical	ESL	89	9.5	P= .037	P= .031
	Am. Am.	80	8.5		
	Other English	172	18		
	Anglo (0)	594	63		
Gender	Male (0)	466	50	B = .5221 Se = .1319 P = .000	B = .1965 Se = .1346 P = .14
	Female (1)	469	50		

Table D3: Distribution and Univariate Effect of Education Discourse Indicators

Variable	Descriptive statistics			Formal learning	Informal learning
	Values	Count	%		
School trust	1	97	10.5	B = .1468 Se = .0836 P = .08	B = - .243 Se = .0899 P = .01
	2	179	19.5		
	3	633	67		
	missing	2			
Education as a way to get ahead	No	472	50	B = .4443 Se = .1316 P = .001	B = .5037 Se = .1355 P = .002
	Yes	466	50		
Aspiration for highest certification	none	94	10	B = .0628 Se = .066 P = .34	B = .1609 Se = .0665 P = .016
	HS equiv	78	8		
	2 year post sec	180	19		
	4 or more post secondary	585	63		

Table D4: Distribution and Univariate Effect of Social Capital Indicators

Variable	Descriptive statistics			Formal learning	Informal learning
	Values	Count	%		
Network characteristics	Small	47	5	P = .002	P = .0025
	All Family	87	9.4		
	Open	283	30.2		
	Dense	495	53		
	Over 20	22	2.4		
Social trust	0	110	12	B = .0116 SE = .0771 P = .19	B = .093 SE = .0794 P = .25
	1	266	29		
	2	172	27		
	3	129	18		
	4	129	14		
Years known non family member	Minimum	0		B = -.0136 SE = .0081 P = .09	B = .0177 SE = .0085 P = .04
	Maximum	43			
	Mean	9.9			
	std	8.1			
Civic engagement	0	384	41	B = -.1431 SE = .055 P = .009	B = -.0781 SE = .0553 P = .16
	1	298	32		
	2	126	13.5		
	3 or more	128	13.5		
Knowing someone who went to college	No	303	32	B = -.2776 SE = .1405 P = .05	B = .2272 SE = .1425 P = .111
	Yes	634	68		

Appendix E: Item Parameters in Final Models

Table E1: Parameter Estimates for SCILL Model Predicting Participation in Formal Education

Variable	*B	S.E.	df	Sig	R	Odds Ratio
TALS score	.002	.002	1	.48	.000	1.002
Age at Wave 1	-.028	.011	1	.01	-.060	*.973
Number of weeks worked	.197	.097	1	.04	.043	*1.202
Children in household	.451	.159	1	.00	.072	1.569
Parent's education	.052	.023	1	.03	.050	*1.053
Poverty	.0148	.171	1	.93	.000	1.014
Prestige	-.043	.098	1	.00	-.124	.958
Gender	.670	.159	1	.00	.116	2.071
Ethnicity -Anglos are reference group			3	.01	.073	
ESL	795	.287	1	.01	.070	1.815
African American	.574	.283	1	.04	.042	1.840
Other English speakers	-.103	.200	1	.61	.000	.850
Get ahead with ed	.004	.268	1	1.0	.000	.213
School trust	.197	.099	1	.05	.043	*1.223
Educational goals	-.019	.080	1	.81	.000	1.003
Network -Small is reference group			4	.00	.137	
Big networks	1.309	.727	1	.07	.033	5.983
All-family networks	-1.168	.485	1	.02	-.057	*.290
Open networks	-.153	.445	1	.73	.000	.627
Dense networks	-1.067	.412	1	.01	-.064	.282
Social trust	.138	.091	1	.13	.015	1.169
Duration of relationship	-.003	.011	1	.81	.000	.995
Civic participation	-.078	.066	1	.24	.000	.969
College educated people	-.569	.176	1	.01	-.085	.927
Network x get ahead with ed -Small is reference group			4	.01	.087	
Big networks	-1.121	1.114	1	.31	.000	.417
All-family networks	-1.106	.789	1	.16	.000	.298
Open networks	-.387	.551	1	.48	.000	.556
Dense networks	.880	.332	1	.01	.066	2.386
Constant	.521	.776	1	.50		

* unstandardized

Table E2: Parameter Estimates for SCILL Model Predicting Engagement in Informal Learning

Variable	*B	S.E.	df	Sig	R	Odds Ratio
TALS score	.002	.002	1	.27	.000	1.002
Age at Wave 1	.016	.011	1	.16	.002	1.016
Number of weeks worked	.021	.098	1	.83	.000	1.021
Children in household	-.610	.159		.00	-.105	.543
Parent's education	-.010	.023	1	.66	.000	.887
Poverty	-.197	.169	1	.24	.000	.735
Prestige	.027	.010	1	.01	.071	1.032
Gender	.249	.161	1	.13	.017	1.042
Ethnicity -Anglos are reference group			3	.12	.000	
ESL	-.219	.277	1	.43	.000	.804
African American	.292	.278	1	.29	.000	1.339
Other English speakers	-.375	.198	1	.06	-.037	.687
Get ahead with ed	.541	.270	1	.05	.042	*1.718
School trust	-.314	.102	1	.00	-.081	.731
Educational goals	.179	.079	1	.02	.053	*1.197
Network -Small is reference group			4	.11	.000	
Big networks	1.126	.745	1	.13	.016	3.084
All-family networks	1.281	.486	1	.01	.067	3.601
Open networks	.690	.443	1	.12	.020	1.994
Dense networks	.657	.409	1	.11	.023	1.930
Social trust	.080	.091	1	.38	.000	1.083
Duration of relationship	.028	.011	1	.01	.060	1.028
Civic participation	-.165	.067	1	.01	-.060	.848
College educated people	.063	.173	1	.71	.000	1.065
Network x get ahead with ed -Small is ref. group			4	.83	.000	
Big networks	-.345	1.114	1	.76	.000	.709
All-family networks	-.785	.813	1	.33	.000	.456
Open networks	.300	.584	1	.61	.000	1.349
Dense networks	.029	.334	1	.93	.000	1.029
Constant	-1.999	.781	1	.04		

* unstandardized

Appendix F: Model Calibration

Model validity is usually tested by its fit to the data through a Hosmer- Lemeshow test (Hosmer & Lemeshow, 1989). This tests breaks the data into ten replicates and performs a Chi Square between the predicted and actual values of the log of the dependant variable. An insignificant Goodness of Fit statistic indicates that the model is not significantly different from the data and is, therefore, valid.

The Goodness of Fit statistic shows significant difference between the model and the data in both the Formal and Informal models. This, along with the large unexplained –2LL verifies that the SCILL model does not have strong enough validity to predict participation and non-participation. However, the intent of this analysis is to test theoretical explanations of the likelihood of engagement in lifelong learning. The important fit statistics for this purpose are the Chi Square changes for each step of the nested model. As discussed above, the data show significant improvement of the model for social capital over the control model.

Examining the pattern of correct predictions made by the model compared to the observed data increases my confidence in the utility of the model for testing theory. Both models show a pattern of better fit at the extremes than in the center, which is expected in well calibrated models.

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National Center for the Study of Adult Learning and Literacy

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NCSALL is a partnership of the Harvard Graduate School of Education, World Education, Rutgers University, Portland State University in Oregon, and the Center for Literacy Studies at the University of Tennessee in Knoxville. NCSALL receives funding from the U.S. Department of Education's Office of Educational Research and Improvement, National Institute for Postsecondary Education, Libraries, and Lifelong Learning; the Wallace-Reader's Digest Funds; the National Institute for Literacy; and the Office of Vocational and Adult Education.

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