

Three Essays on the Concept, Measurement, and Consequences of Social Capital

by

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## *Abstract*

Despite concerted research effort over the last thirty years, social capital remains a variably, and at times, ill-defined concept. A lack of a clear causal theory has made social capital difficult to explore in an empirical setting. In addition, limited understanding of the concept's operation has restricted its ability to provide valuable insight into policy development. The three papers that compose this thesis examine the concept, measurement, and consequences of social capital. The first provides a theoretical discussion of the conceptual origins of the term, its common criticisms, and suggests an alternative approach to its understanding. The second applies this alternative approach to an empirical model of child enrolment in post-secondary education. Finally, the third critically examines a recent federal policy research initiative related to social capital, identifying key policy development advantages to this thesis's alternative approach.

This thesis argues that antecedents to the modern social capital literature along with more recent criticisms suggest a dual approach to understanding social capital. This dual approach involves two distinct frameworks for understanding the concept – one literal and one figurative. These frameworks guide alternative approaches to empirical social capital work, demonstrated through the analysis of social capital's impact on child post-secondary enrolment. It further identifies how the two frameworks provide more relevant information on the operation of social capital, facilitating prospective policy development. Overall, the thesis concludes that the literal and figurative approaches represent a more useful way of understanding and applying the social capital concept.

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The opinions expressed in this document do not represent those of any individual named in these acknowledgements or in the dedication to follow. In addition, while part of the research and analysis in this thesis is based on data from Statistics Canada, the opinions expressed herein do not represent the views of Statistics Canada or the RDC.

*Dedication*

To my wife. Maybe you were right.

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### *Preliminary comments*

This thesis presents three papers on the concept, measurement, and consequences social capital. Since the 1980's the term has found increased use in the social sciences literature. Despite its prevalent application in a number of disciplines, authors continue to debate about fundamental aspects of the concept. Often these debates centre about the definition of the concept and its measurement. However, at the same time, less effort has been directed at understanding how the concept operates. This has limited its consistent applicability in both empirical and policy settings.

A thread of re-conceptualization ties together the three papers presented herein. Each explores social capital using two distinct frameworks developed from historical antecedents. Rooted in the argument that social capital as currently understood encompasses two concepts rather than one, the works attempt to clarify and then apply these. In doing so the papers help articulate not only a novel way of understanding social capital, but two causal pathways through which it operates, both of which apply economic principles, normally used in a very limited way throughout the broader social capital literature.

Specifically, the first paper re-examines social capital from an historical perspective developing two distinct micro-economic theories about its operation. Addressing many of the common criticisms in the literature, the approaches include causal theories that underpin social capital impacts, be they economic or otherwise. Here the key distinction is between what may be termed literal social capital where information transfer drives

outcomes, and figurative social capital where the redistribution of existing forms of capital is a central feature.

The second paper demonstrates the applicability of the two social capital frameworks, in an empirical setting. While doing so, it examines the effects of social capital on children and youth's decisions to attend post-secondary education. It demonstrates that social capital as understood under the literal and figurative frameworks may be readily applied to existing datasets.

Finally, the third paper demonstrates the advantages of the two social capital frameworks over existing approaches to the concept in the context of policy development. While doing so it examines many of the logical inconsistencies and shortcomings in Canadian approaches to incorporating social capital into policy development. It further demonstrates how one would apply the literal and figurative approaches in a policy setting.

*Developing a Literal and Figurative Approach to Social Capital – Two Approaches  
Based on Historical Antecedents and Contemporary Criticisms*

## *Introduction*

Unlike physical or human capital, the concept of social capital remains ill defined and subject to considerable interpretation. Fine sums up the feelings of many when he states that:

[a] major feature, then of social capital is that it is a totally chaotic concept, drawing meanings from the more or less abstract studies or tidal wave of case studies on which it depends. This, in turn, has led to a critical literature along a number of lines which essentially reflect the imprecision with which the dual notions of ‘social’ and ‘capital’ have been used and combined. (1999, p. 8)

Although the term social capital was represented in the literature well before the twentieth century, it was not until the 1980’s that it came into common modern use. At this time, there was an almost concurrent development of three distinct definitions of the concept. Each drew on separate theoretical traditions contributing to the confusion around the concept. Later, the often-casual use of the term maintained and perhaps accentuated this confusion.

However, progress in the literature now suggests a growing consensus on the term. The limited adoption of some early approaches to social capital has begun a process of definitional convergence. While many authors now use the term social capital in a more consistent way, a number of weaknesses remain with most definitions. These affect the ability to use the concept in theoretical, empirical, or policy settings.

This paper tracks the early development of the concept of social capital, contrasting the works of Bourdieu, Coleman, and Putnam. It discusses the movement of the mainstream literature away from Bourdieu's figurative definition of social capital to establish what may be termed a literal approach to the concept. It later highlights many of the theoretical and empirical criticisms of social capital and attempts to develop two, arguably more appropriate, frameworks for understanding the phenomenon. These literal and a figurative frameworks are rooted in the historical development of the concept.

### *Early social capital*

Farr notes that most current works on social capital ground discussions in the writing of Bourdieu, Coleman, and Putnam<sup>1</sup> (2004, p. 7). Many of these works argue that the development of social capital began with one or all of these authors. However, this recent perspective ignores much of the social capital literature prior to the 1980's. All too often, the current discussion misses explicit reference to the concept as far back as the late nineteenth century and displaces social capital from the conceptual precursors that underlie current definitions.

Ignoring these earlier works obscures the fundamental differences between the social capital definitions of Bourdieu, Coleman, and Putnam. Taken in the context of these earlier writings, the definitions articulated by each of these authors do not represent variations on a theme, or different attempts to communicate the same concept. Rather, they are attempts at outlining distinct ideas, first introduced into the literature well before their writing. While these works were mutually influential, the three early definitions of social capital had more in common terminologically than conceptually.

### *Bourdieu and social capital*

Farr provides an excellent starting point for examining the development of social capital theory prior to the 1980's. In particular, he notes a number of explicit references to the

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<sup>1</sup> Farr notes that Loury used the term social capital prior to Bourdieu, but states that Loury's reference was cursory and did not support conceptual development of the term. As such, most do not hold Loury among the modern founders of social capital theory (2004, p. 9).

term well before the twentieth century. Farr notes that the writings of Karl Marx refer to social capital as early as 1867. At this time, and in his subsequent works, Marx implied that social capital did not connote an intangible asset resulting from group membership, but rather collective capital. Farr describes the concept of social capital, incorporating references to Marx's work, as "an aggregate or 'quantitative grouping' of individual capitals that formed a fund for further production" (2004, p. 23). In this sense, social capital emphasized the collective nature of the production process.

A distinct yet strikingly similar view of the term social capital continued in the writing of later authors. Farr, like Woolcock, highlights the work of Alfred Marshall (Woolcock, 1998, p. 159 and Farr, 2004, p. 22). When examining the state, Marshall used the term to describe the aggregation of various forms of capitals useful for production – including physical capital. However, Farr stresses that Marshall also argued for the inclusion of other less tangible items of capital in his definition. These included not only individual ability – aligning closely to the concept of human capital – but also aspects of state organization (2004, p. 22).

Farr notes that even prior to Marshall's use, Henry Sidgwick and John Bates Clark had both used the term social capital in their writing. He notes that Sidgwick in particular, incorporated a broad scope of capitals in his discussion. As Farr states:

Beyond 'the wealth laid out in education,' Sidgwick added 'immaterial' elements like 'good-will' as 'a part of 'social capital'' because it was a cultural ingredient of the 'habit of purchasing.' (2004, p. 22)



Farr continues to trace the development of social capital's use through the early twentieth century, noting its use as late as the 1930's. He highlights, in particular, the writing of John Dewey and his development of his social centre movement near the turn of the century. In the context of the social centre movement, Dewey paid close attention to education. From this perspective, he stressed the benefits from a more socialized education process that attempted to capture and utilize the ability of all students. As quoted by Farr, Dewey writes:

a society that does not furnish the environment and education and the opportunity of all kinds which will bring out and make effective the superior ability wherever it is born, is not merely doing an injustice to that particular race and to those particular individuals, but it is doing an injustice to itself for it is depriving itself of just that much of social capital (2004, p. 18).

Farr argues that these discussions of social capital have a common thread – a reaction to what he terms an “unsocial perspective upon capital” (2004, p. 25). They are, on a fundamental level, attempts to incorporate aspects of social interaction and collective ownership into discussions of production. Importantly, however, in all cases, social capital does not represent a new or distinct form of capital. Farr himself states, that social capital is a “figurative term for a prospective and productive fund that is created by shared, public work” (2004, p. 26). This is a fundamental aspect of these discussions, making these views of social capital bear close resemblance to Bourdieu's.

As do many, Portes argues that Bourdieu's was the first well-developed theory of social capital in the late twentieth century (1998, p. 3). Bourdieu asserts that capital in all its forms is accumulated labour. He argues that the appropriation of this accumulated labour in the form of capital circumscribes what is possible and impossible for agents – be they individuals or groups (1986, p. 241). He states that:

The structure and the distribution of the different types and subtypes of capital at a given time represent the imminent structure of the world, i.e., the set of constraints, inscribed in the very reality of that world, which govern its functioning in a durable way, determining the chances of success for practices. (1986, p. 242)

In simpler terms, Bourdieu argues that capital forms a context based on historical accumulation that conditions agents' behaviour.

He argues at the outset that economic analysis of self-interested behaviour has historically excluded those forms of exchange and interaction not directly related to the maximization of profit (1986, p. 242). In his work, economic capital is limited to that which is “directly convertible into money and may be institutionalized in property rights” (1986, p. 243). He states that in order to incorporate all agents' activities, one must undertake what he defines as a non-economic analysis. Consideration of three types of capital supports his analysis: economic capital, cultural capital, and social capital (1986, p. 243).

Bourdieu looks first at cultural capital asserting that it exists in three forms. These include the embodied, objectified, and institutionalized forms. He further argues that cultural capital exists or is embedded in various individuals or objects. The first rests in the individual, in the form of what is commonly held as culture or cultivation. The second is found in material objects such books, music, and art. The third rests vaguely in forms of individual and group differentiation supported by an institutional structure (1986, pp. 244-248).

Regardless of its form, cultural capital serves what appear to be two fundamental purposes. First, it separates some agents from others based on their possession of cultural capital. Second, it allows agents in possession of cultural capital differential economic and social outcomes based on this possession. In Bourdieu's foundational example, he notes that returns to education are not simply the result of economic investments in schooling and individual talent, but the result of cultural capital possessed by students, resulting in a fundamentally different set of returns (1986, pp. 243-244). Interestingly, cultural capital may also benefit those associating with its possessors. In the example of academic credentials, the cultural capital associated with a degree provides others with an assurance of competence.

It is important to note that cultural capital in all forms remains distinct from other capitals, and is possessed by individuals. Although examples of cultural capital may remain intangible, they are none the less literal goods in the sense that they are distinct and not simply a collection of other existing goods. Where they differ from Bourdieu's economic capital, and most tangible goods, is that they require social interaction to

provide value. Unlike many goods, from which individuals may derive value independent of others, cultural capital requires recognition by others for individual value. Academic certification, for example, only holds value if others accept the certification as an indication of competence.

Bourdieu's definition of social capital differs in that it does not constitute a distinct good in the same sense as cultural capital. He states clearly that social capital is:

the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition – or in other words, to membership in a group – which provides each of its members with the backing of the collectively-owned capital, a “credential” which entitles them to credit, in the various senses of the word. (1986, pp. 248-249)

It is important to stress that when Bourdieu speaks of capital in this excerpt, it includes not only what he defines as economic capital – namely that which is used directly in the accumulation of profits – but also cultural capital. In this way, the definition of social capital links to the earlier definitions discussed above by forming an aggregate of capitals available to the group.

Bourdieu notes that social capital need not rest only in the practical state – that is, the exchanges that serve to maintain social networks – but also in the institutional states where established and ongoing social structures serve to maintain a level of social capital

among groups. In his estimation, these may include tribal, familial, and other social structures. In either state, he notes that the amount of social capital rests on the extent to which agents can mobilize other forms of capital to their advantage. As such, a broad network, with ready access to supplies of other forms of capital would embody a considerable amount of social capital (1986, p. 249).

Here, it is difficult to understate the importance of two key points. First, social capital in this context represents a collection of existing forms of capital. In no way does Bourdieu suggest that stocks of existing capital are greater because of social capital, or that social capital directly contributes to these stocks. Second, social interactions between individuals represent the means by which the aggregations of existing capital – constituting social capital – are defined. Taking one of the social groupings above helps illustrate this point. Family members each have capital at their disposal. However, their association makes this generally available to the group and helps identify what Bourdieu defines as social capital. This implies that while not social capital itself, these interactions are integral to the identification of social capital.

When examining social capital in more detail, Bourdieu notes that the profitability of group membership supports the continued existence of the group. Essentially, he argues that groups providing social capital remain cohesive due to the profits that accrue to agents because of membership. However, he also notes that the formation of groups embedded with social capital is not necessarily predicated on generating social capital or profit for their membership (1986, p. 249). Thus, although defining a rationale for ongoing group existence he does not define a motivation of initial formation.

Similarly, he notes that despite profitability supporting the ongoing existence of groups embedded with social capital, their existence is not guaranteed. He notes that repeated effort and economic expenditure is required to maintain groups, and by extension social capital. As a result, levels of social capital rest on investments that establish what Bourdieu calls “durable obligations subjectively felt” among agents (1986, p. 249). He notes that these include “feelings of gratitude, respect, [and] friendship” but also include “institutionally guaranteed rights” (1986, pp. 249-250). Here at least, despite lacking a theory of social capital formation, Bourdieu presents a motivation for the ongoing existence of social capital.

Throughout his discussion of cultural and social capital, Bourdieu stresses capital’s social nature. Profits, or more generally benefits, accrue from these forms of capital only in a social context. In the case of cultural capital, this results from the differentiation of agents from others, and in the case of social capital, it results from capital access by agents. However, these benefits accrue not to groups as a whole, but to individual members.

Overall, Bourdieu’s social capital captures both the less tangible and the physical resources available to the group in much the same way that earlier definitions of social capital attempted to incorporate a range of available resources. In this way, Bourdieu’s definition remains what Farr describes as a figurative definition of capital. Its figurative nature is the critical feature of the definition and establishes that social capital is not a distinct literal good in and of itself – tangible or otherwise. It is not distinct from other forms of capital, but represents a conceptual grouping of these capitals, on which group

members may draw. While not the social capital itself, interactions among group members serve to identify those aggregations that form social capital.

### *Coleman and social capital*

In Farr's opinion, the development of the concept of social capital in the late twentieth century embodied an implied reaction against a view of society that lacked a connection to capital. Works examining social capital stood in contrast to the increasingly economic perspective in the social sciences prevalent at the time (2004, p. 25). However, throughout the twentieth century, and well before the works of Bourdieu, Coleman, and Putnam, many authors had already taken a similar reactionary stance, attempting to integrate aspects of the social into economic analysis.

As a concrete example of this attempt to integrate the social into the economic, Fine cites Becker (1999, p. 3). Becker's work, *A Theory of Social Interactions*, attempts to incorporate various aspects of agents' social nature into the decision making process. In this theoretical setting, Becker does not jettison the individual decision making paradigm held in economic theory. Rather he attempts to incorporate characteristics of other individuals into agents' decision making processes. Here the characteristics of others, particularly those of family members, enter directly into an agent's utility function (Becker, 1974, p. 1063).

However he goes a step further arguing that not only do these other's characteristics enter an individual utility function, but that the individual can influence these characteristics, and by extension their own utility through personal effort. Essentially, it is a theory of

utility where individuals influence and attempt to change others to their own benefit. Aggregating individual utility functions then results in a range of predicted family and group behaviours that incorporate this interdependence. It is, by Becker's estimation, a movement away from the standard assumption that the behaviour and traits of others are taken for granted in individual decision making models (1974, p. 1066).

Ben-Porath also attempts to bridge the gap between individual decision making and the reality of social interaction. His F-connection theory attempts to illustrate that the identity of actors is relevant to real world economic exchange. What is more, it also shapes the nature of economic exchange and activity (1980, p. 1). Among other aspects of the discussion, Ben-Porath stresses that group pressure acts to facilitate economic transaction. In such situations, generalized group mentality and attitudes towards trust and social enforcement of contracts facilitate transactions among anonymous agents (1980, p. 13).

The key to the argument is that in situations where contract enforcement, dispute resolution, morality, and other social pressures are in place, the need for personal knowledge among buyers and sellers is reduced. The information gathering necessary to manage risk during exchange is reduced thereby reducing overall transaction costs. These "social institutions" as Ben-Porath suggests are substitutes for the personal information common among families and support exchange well beyond familial circles. He even goes on to note that money, in this sense represents a social institution in so far as "its liquidity and negotiability, rest on the fact that its value is independent of the identity of



the seller”, but rather on the collective understanding of these characteristics (1980, p. 13).

Similarly, Granovetter attempts to incorporate aspects of social interaction into his economic analysis. In his work, *The Strength of Weak Ties*, he attempts to illustrate how social connections can facilitate economic activity. He stresses the importance of such ties in the dissemination of information and knowledge (1973, pp. 1361-1362). He argues that it is the weak social ties between individuals, namely those that provide individuals access to other social networks, provide the most benefit. These connections provide new information otherwise unavailable in their close social networks (1973, p. 1369).

As an example, he cites his own work on job search in the United States. In his modelling of social interaction, he argues that tight and close social circles will generally re-circulate information repeatedly, not disseminating it beyond the group. By contrast, weak social ties disseminate information across social groups with disparate information. His empirical work with job seekers supported this notion, noting that the majority surveyed, who found work through a personal connection, did so through an individual that he saw only occasionally or rarely (Granovetter, 1973, p. 1371).

For some authors, the work of Granovetter marks a point of departure for modern economic attempts at integrating the social. As Jackson notes, while largely ignored at the time of its writing, Granovetter’s work on economic activity in a social setting has garnered far more interest in the last decade (2007, p.1). He goes on to identify examples of works that have used game theory to abstractly model cooperative behaviour among

individuals (Jackson, 2007, p.5-6). He later provides a number of examples where authors have modeled both the formation and maintenance of social networks based on individual incentives. In these, Jackson notes, “payoffs to each individual underlie the incentives to form or sever links” (2007, p.7). At the same time, he cautions that insight from this same literature suggests incentives for individuals to form networks may not necessarily improve broader social welfare. For example, positive externalities from the interaction of specific individuals may not materialize if these same individuals do not have sufficient incentive to maintain these relationships (Jackson, 2007, p.11).

It is also important to note that the modern economic literature has not simply examined the formation and maintenance of networks. It has in some cases, attempted to understand their effects. Again, Jackson notes examples of works that provide “some idea of what will occur once a network forms” (2007, p.16). For example, he cites the work of Ballester, Calvo-Armengol, and Zenou (2006) which looks specifically at the decision of individuals to engage in crime. Here, the decision is in part a function of the degree to which decision makers undertake the same activity as their networks. For example, Jackson suggests in his overview of the work that complimentary criminal pursuits and shared learning could serve as incentives to engage in crime. By contrast, potential competition could produce the opposite effect (2007, p.16).

Coleman’s motivation for developing his concept of social capital also comes, by his own admission, from a desire to combine the social and economic. Coleman argues that although sociology clearly recognizes the impact of social interaction on individual behaviour, it generally lacks any underlying assumption of individual motivation. By

contrast, he notes that economics though clearly defining an individual behavioural assumption – self-interested maximization – lacks sufficient consideration of context – at least in the neoclassical tradition (1988, pp. S95-S96).

Coleman clearly states that his concept of social capital is a tool to:

import the economists' principle of rational action for use in the analysis of social systems proper, including but not limited to economic systems, and to do so without discarding social organization in the process. (1988, p. S97)

As with Bourdieu, Coleman anchors his definition of social capital in the individual. The agent – actor, individual or corporate, as defined by Coleman – remains the benefactor in the use of social capital. Social capital for Coleman is a resource that agents may use to profitable or beneficial individual ends (1988, p. S98). Where Coleman differs from Bourdieu is in the finer points of his definition.

For Coleman, function defines social capital. He clearly states that social capital is not one article but rather a collection of articles that have two characteristics in common. He states that the first is their association with social structures and the second is their ability to facilitate actions among agents (1988, p. S98). This extremely broad definition begs elaboration.

Coleman continues to discuss social capital in contrast to the established concepts of physical or human capital. He states that social capital, unlike physical or human capital, “inheres in the structure of relations between actors and among actors” (1988, p. S98). However, moments later, Coleman argues that these relationships themselves constitute social capital. Rather than grounding his concept, this confusion moves one farther from precise understanding.

Examples of social capital – or relations in which social capital inhere – provided by Coleman bring one little closer to understanding his concept fully. He notes that social capital is or inheres in obligations, expectations, and the trustworthiness of social structures; information channels; or norms and effective sanctions (1988, pp. S102-S104). Yet in all cases, it seems the only common thread is the facilitation of agents’ actions. As such, even these examples do not provide an exhaustive list of social capital relations, as any social relationship that facilitates action may be termed or have inhere in it, social capital.

Overall, Coleman’s discussion does not provide a precise definition. Rather, it simply establishes that social relations of some sort beneficially affect individuals in a variety of ways. His discussion argues that social capital exists, that it relates to social interaction, and that it facilitates behaviour but does little more to establish the concept. More importantly, however, it distinguishes social capital from Bourdieu’s definition by establishing it as an independent literal form of capital. It is not an aggregation of existing capitals but rather is a distinct form of capital in and of itself.

Returning to the discussion of Bourdieu above, one is able to see the similarities between Coleman's treatment of social capital and that of Bourdieu's treatment of cultural capital. Bourdieu roots his discussion in class comparison and differential benefits that accrue to those in possession of this cultural capital. Coleman's discussion, by contrast, lacks a similar class based approach. None the less, similarities exist. Take for example Bourdieu's discussion of academic credentials above.

Bourdieu suggests that credentials are an important form of cultural capital. These credentials provide important information about their holders. However, this is logically only the case when characteristics about the granting institution, the associated academic program, and those who receive these credentials are known and elicit particular behaviours. In the spirit of Bourdieu's class based discussion, this may involve deferential treatment of graduates from preferred academic institutions. As Bourdieu suggests, cultural capital is only valuable in a social context. However, Coleman's definition of social capital has many of the same characteristics. From the examples above, Coleman's social capital inheres in or consists of social interactions and is capable of communicating information and eliciting behaviour in a similar way.

This parallel only strengthens the notion that Coleman's concept of social capital is distinct from that of Bourdieu's figurative social capital. The concept as articulated by Coleman casts social capital as a literal good, which consists of or inheres in social interactions. Despite the fact that these social interactions have a different role in Coleman's definition, they are equally important in identifying social capital. Much like

under Bourdieu's definition, it is impossible to identify social capital without first identifying social interactions.

### *Putnam and social capital*

Seemingly similar due to its literal character, Putnam's definition of social capital remains distinct from Coleman's. This distinction may be a result of very different conceptual origins. As Farr notes in his historical discussion of social capital, Putnam looks far into the past for his foundations of social capital theory. Putnam clearly sees the work of De Tocqueville as the root of modern social capital. In fact, he refers to De Tocqueville in his widely cited work *The Prosperous Community: Social Capital and Public Life*, noting that his own observations of Italian regional governments would not be a surprise to the historical figure (1993a, p. 2).

Broadly speaking, De Tocqueville's examination of *Democracy in America* does attempt to draw a link between social context, governance, and societal benefits. However, it is difficult to argue that the work presents a well-formed theory of the relationships. More accurately, it catalogues a series of observations about early America, and develops a number of comparisons with Europe. Despite his painstaking efforts to document American politics and society, his conclusions remain heavily assumption driven.

In particular, they rest on the assumption that democracy involves natural advantages that lead to positive outcomes, if its more negative aspects remain in check. As he states when discussing the situation in Europe:

We have gotten a democracy, but without the conditions which lessen its vices and render its natural advantages more prominent. (De Tocqueville, 1839, p. 6)

In his estimation, gaining the benefits from democracy is a matter of establishing an appropriate social, cultural, and perhaps most importantly, ownership context. When discussing the English settlers of America he notes that these individuals, having a single language to tie them together and being largely familiar with operating under the law, had the necessary social and cultural structure to operate a prosperous democracy. In addition, when comparing America to Europe he notes that:

All these European colonies contained the elements, if not the development, of a complete democracy. Two causes led to this result. It may safely be advanced, that on leaving the mother-country the emigrants had in general no notion of superiority over one another. The happy and the powerful do not go into exile, and there are surer guarantees of equality among men than poverty and misfortune. It happened, however, on several occasions that persons of rank were driven to America by political and religious quarrels. Laws were made to establish a gradation of ranks; but it was so found that the soil of America was entirely opposed to a territorial aristocracy. To bring that refractory land into cultivation, the constant and interested exertions of the owner himself was necessary; and when the ground was prepared, its produce was found to be insufficient to enrich a master and a farmer at the same time. The land was

then naturally broken up into small portions, which the proprietor cultivated for himself. (De Tocqueville, 1839, p. 26)

While De Tocqueville states that the equality among individuals and the absence of aristocracy supports democracy, he recognizes that this equality is not necessarily the result of group decision making. Rather it is the result of material circumstance, namely the state of the land. Although the American society as observed by De Tocqueville exhibited equality, this equality, by De Tocqueville's own estimation, resulted from this ownership structure.

Despite the clear importance of social structure in De Tocqueville's discussion, it is important to note that from the outset, De Tocqueville argued that the natural benefits accrued because of the democratic governance structure. The social, cultural, and economic context constrained the operation of this structure in order to gain the most benefit. It is this enhancement through social structure that one most readily sees in the writing of Putnam.

To begin, Putnam aligns his conceptualization of social capital with the concepts of physical and human capital. He argues that as with physical and human capital, social capital enhances the productive process.

Putnam first defines social capital as follows.



‘Social capital’ refers to features of social organization, such as networks, norms, and trust that facilitate coordination and cooperation for mutual benefit. Social capital enhances the benefits of investment in physical and human capital. (1993b, p. 35)

In some regards, this definition aligns with Coleman’s. For example, Putnam states that social capital results in beneficial productive outcomes. However, unlike Coleman, Putnam stresses that social capital results in benefits for groups rather than individual agents. As far as the benefits of social capital are concerned, Putnam clearly established a group rather than individual level dynamic.

Putnam also moves farther than Coleman in establishing how social capital augments the productive process. Rather than simply stating that social capital facilitates action, Putnam indicates the manner in which social capital acts as facilitator. He does so in two ways. First, he notes that social capital supports coordination and cooperation among individuals in a group. Second, he states that social capital enhances the production of other forms of capital.

In an important sense, Putnam’s conceptualization of social capital differs from physical and human capital. While human and physical capitals are involved directly in the productive process, social capital is not. It acts to establish a productive process with superior group benefits than in its absence.

The nature of Putnam's definition is such that it necessitates a macro-level analysis. As the benefits from social capital accrue to groups rather than individuals, individual-level microanalysis of social capital's effects becomes difficult. It is likely for this reason that Putnam's seminal works – *The Prosperous Community*, and *Bowling Alone* – both focus on the societal benefits of stocks of social capital. As Portes points out, this represented a fundamental change in the concept of social capital. While both Bourdieu and Coleman clearly associated the benefits of social capital with the individual, Putnam shifted these benefits to the group (Portes, 2000, pp. 2-3).

However, it is interesting to note that despite the inherently macro-level nature of Putnam's concept of social capital, in *The Prosperous Community* Putnam continues to rely on micro-level discussions of individual behaviour to justify social capital's outcomes. For example, he argues that regions of Italy with less civic involvement suffer lower levels of production but falls back on arguments of individual interest when attempting to justify these outcomes.

Despite these difficulties, one important feature of Putnam's social capital remains clear – it represents a good independent of other forms of capital. Thus, as articulated by Bourdieu, social capital remains fundamentally figurative, representing a conceptual aggregation of capitals and is deeply influenced by Marxist theory. This aggregation is only defined based on the interaction of individuals with each other. By contrast, Coleman and Putnam present distinctly literal definitions of social capital where interactions are the fundamental characteristic of social capital. These two literal definitions differ most clearly in terms of their levels of analysis.

### *Convergence on a literal approach and criticisms*

Works since the seminal writings of Bourdieu, Coleman, and Putnam, have begun to recognize many of the differences among definitions and empirical uses of social capital. In their work *Social Capital: Recent Debates and Research Trends*, Adam and Rončević', for example, state that the difficulty with social capital is not with the inability to develop consensus, but with the failure to recognize that it is not a single concept at all. Referencing the work of Adler and Kwon (2000, p. 90) they question the value in attempting to establish a single definition.

Is the whole discussion about social capital about a vague and inaccurately defined concept, or does it concern a variety of concepts? (Adam & Rončević', 2003, p. 160)

They also argue that developing a single definition, even if it were desirable, is simply not a possibility. In their opinions there are number of reasons for this impossibility. First, there is no strong consensus on the concept and increased use of the term social capital in analysis is moving the field farther from a single definition (Adam & Rončević', 2003, p. 160). In light of the historical discussion above, this divergence may more accurately be an adherence to different conceptual origins.

Second, areas of research are increasingly developing tailor-made definition of social capital (Adam & Rončević', 2003, p. 160). Although the original conceptual differences may contribute to this phenomenon, it is likely that weak definitions have left authors to seek their own approaches that are more precise. Evidence of this is clear from the

previous discussion where authors such as Coleman and Putnam provide examples of social capital – yet no definite criteria exist to distinguish social capital from other social relations or benefits thereof.

Finally, Adam and Rončević note that there are issues regarding the concept that remain unresolved. They identify, in particular, difficulties in making the concept operational, difficulties in measurement, and problems with establishing social capital's role in regression and quantitative analysis (2003, p. 160). However, one may argue that many of these unresolved issues result from the underlying assumption that social capital is a single concept. Contradictory empirical practices suggested by what are in reality a number of distinct concepts may drive these empirical problems.

To deal with what they consider the impossibility of establishing a unified concept of social capital, Adam and Rončević argue for viewing social capital as a type of “genotype” of common characteristics that underlie a range of related discussions. Each of these discussions then represents a type of “phenotypic expression” of social capital (2003, p. 160). Thus, each set of common approaches represents conceptually distinct aspects of a broader phenomenon.

Although other authors do not necessarily align their discussions with Adam and Rončević's genotype-phenotype approach, many have developed distinctions, and context dependent definitions of social capital that align closely with their genotype-phenotype division. For example, Woolcock once argued for a distinction between embedded and autonomous interaction under the umbrella of social capital. Here,

embedded social ties refer to intra-group relationships while autonomous ties operate on an inter-group level (1998, pp. 163-164). He has since gone on to formalize this distinction, now referring to intra-group social ties as bonding social capital and inter-group social ties as bridging social capital. Here, the two forms of social capital involve similar interactions and are distinguished by whom they involve. This social capital distinction is now one of the most commonly used in the literature.

Another phenotypic expression of social capital has also recently emerged. Much like bridging social capital, linking social capital also purportedly exists between groups. The distinction comes from the incorporation of power structures into the discussion. Unlike bridging social capital, which some argue implies interaction between groups of equal power, linking social capital results from the interaction of groups of unequal power. Often couched in a discussion of hierarchical structures, many institutions, including the World Bank, have taken up this type of social capital as a conceptual tool for understanding development (2000, p. 128).

However, bonding, bridging, and linking social capital have a common feature in their literal nature as distinct forms of capital. Unlike definitions building on the work of Bourdieu, these now popular forms of social capital are not simply different ways of aggregating existing forms of capital based on their accessibility to members of groups. Their popularization and adoption in most mainstream work represents a movement toward consensus on one key aspect of social capital. With some comparatively rare exceptions, social capital is now generally seen as a distinct form of literal capital unto itself.

### *Problems of measurement*

Despite this consensus, criticisms of the concept are common in the literature. Two related criticisms are regularly cited to highlight the weakness of social capital in theoretical and empirical work. The first involves the often-assumed positive nature of social capital. In many cases, authors presuppose that social capital necessarily results in benefits to individuals or groups. The second involves the very general measures of social capital suggested in the literature. In this case, authors argue that measures such as generalized trust, group membership, and abstract concepts such as “civicness” are insufficient to appropriately characterise the phenomenon and make it operational in analysis.

Take for example studies using broad measures of social capital such as group or club membership, which also rely on a definition implying exclusively beneficial results. This would include many studies that have built on the work of both Putnam and Coleman, who in their seminal writing stressed the beneficial nature of the concept. In virtually all cases, group or club membership encompasses a sufficiently broad set of interactions that it is impossible to assume specific benefits will always result. Further, as van Staveren and Knorringa (2007, p. 110) point out while citing the work of Field (2003), this approach obscures inequalities and differential benefits to individuals associated with group membership. Within groups and across groups, members may benefit to varying degrees or even suffer from membership or exclusion.

Studies that measure social capital with generalized levels of trust also suffer from the same difficulty. Many of these regularly equate any form of generalized trust or commonly held norm with the presence of social capital. To illustrate this point van Staveren and Knorringa note that measures of trust in social capital studies almost exclusively use the World Values Studies trust questions stating:

‘Generally speaking, would you say that most people can be trusted, or that you can’t be too careful in your dealing with people?’ (2007, p. 109)

However, as Durlauf argues, norms and trust among groups can promote both positive and negative outcomes. While referencing the work of a variety of authors, he notes many cases of social norms and patterns of trust that include some individuals and exclude others – this results in differential effects (1999, p. 3). One example that Durlauf highlights involves racial segregation. Here, certain groups of individuals may benefit while others have clearly negative outcomes (1999, pp. 2-3). It is as other authors, like Foley and Edwards state, whenever differing interests exist among groups and individuals, social relations will be exploited to the benefit of one group or another (1997, pp. 556-557).

These general approaches to measuring norms and trust also ignore much of the conflict inherent within society or smaller networks (Foley & Edwards, 1997, p. 551). This conflict within smaller networks often results in differential social effects among members of groups. Many of these differential effects result in zero sum gains or negative effects for groups as a whole. For example, in his work *Two Meanings of Social*

*Capital*, Portes suggests that social connections that provide access to beneficial business contracts may be individually beneficial but do not necessarily result in community level benefits (2000, p. 3). As the number of contracts is fixed, each individual that secures access necessarily limits that access of all others. Overall, there is no marginal effect on the group, and as a result, the social benefits accruing to the individual group members would not constitute social capital.

At the heart of these criticisms is idea that these common measures of social capital are too broad. Group membership encompasses a complex set of interactions some of which may be beneficial and some of which may not. It is plausible that there may be consistent relationships between the underlying social interactions and specific benefits. However, the diversity of relationships within even similar groups suggests that group membership itself represents an inconsistent measure of social interaction. Similarly, generalized trust implies expectations in only the vaguest sense and may be associated with a complex set of behaviours, benefits, and costs. In either case, these criticisms point to the need for more precision in social capital measurement.

However, some authors have also argued that the association of social capital with only beneficial results is itself inherently flawed. Assuming this connection suggests the dubious corollary that resultant benefits may identify social capital (Durlauf, 2002a, p. 1). Identifying social capital through the presence of its benefits makes it impossible to differentiate the effects of social capital from the effects of any other unmeasured beneficial phenomena. Portes, for example, argues that even in Putnam's seminal example of generalized civicness and its effect on good governance, the positive effects



of social capital could have been the result of any number of unmeasured factors (2000, pp. 4-5).

Similarly, Joel Sobel applies the same critical approach directly to Putnam's work *Bowling Alone*. Although there is an assumed link between social capital and positive community outcomes, there is little in Putnam's work to clearly document or articulate the connection (2002, p. 140). Sobel notes *Bowling Alone*:

treating decreases in trust (as measured by survey responses) as direct evidence for decreases in social capital comes close to equating social capital with good outcomes. There is no analytical framework in which to evaluate the claim that the apparent trends are related. (2002, p. 141)

Repeating the sentiments of previous authors, he argues that a range of additional factors could be at work, and in the absence of the previously mentioned causal framework, there is no way to distinguish the effects.

This line of criticism also point to a need for more specific measures of social capital. They further suggest there is merit in abandoning the assumption that social capital necessarily results in individual or group benefits. This would imply that social capital analyses would leave open the possibility of both positive and negative outcomes. However, as the discussion above notes, this approach requires some idea about how social capital functions beyond the intuitively appealing notion that social capital provides benefits.

### *Questions about capital*

Other fundamental questions about the nature of social capital also exist in the literature. Social capital, under most definitions, is beneficial not for the direct utility that it provides, but for its ability to contribute to outcomes that in turn have utility. This is consistent among all of the seminal definition of social capital discussed above. However, as van Staveren and Knorringa highlight, some take issue with this approach that reduces social capital to only a functional level. They argue that this approach ignores the possibility that social relations themselves may provide direct benefit to individuals in the form of pleasure while also augmenting other economic activity (2007, p. 109).

This line of criticism misses an important point about the concept. For it to remain capital in any sense, social capital must support other outcomes that lead to utility, rather than provide utility directly. This is analogous to the distinction between capital and consumption goods, and examining social capital in this context is illustrative. Take the example of an output (Y) of a simple production process involving capital (K) and labour (L).

$$Y = f(K,L) \qquad \dots(1)$$

Here, the output is undefined in terms of purpose. Were it consumed, *ex post* it would be defined as a consumption good. However, if used in a future production process it would be capital. While some goods clearly fall into one category or the other, some are more ambiguous, used variably as capital and for consumption. Social interactions generally constitute a similarly ambiguous good. They are at times used for personal consumption

to provide direct utility, and under the umbrella of social capital may facilitate other outcomes.

With the idea that social interactions require resources and effort to produce in the same way as other productive outputs, defining the output Y in equation 1 as two types of social interactions would imply the following.

$$C_{\text{social}} + K_{\text{social}} = f(K,L) \quad \dots(2)$$

Here there are two social outputs – one analogous to a consumption good (C) and the other involving social capital (K) in the literal sense.

Yet many authors rightly point out that social capital differs in many ways from other forms of capital. In particular, Arrow argues that in most cases social networks from which individuals derive benefits do not form with the expressed intent of accruing benefits to members. Rather, social interactions take place largely to satisfy individuals' immediate need for interaction with others. The interaction provides them with pleasure or utility. This is unlike human or physical capital that require a conscious sacrifice for accumulation (2000, p. 4).

Although this line of argument does identify a considerable difference between social capital and other forms of capital, it is not sufficient to dismiss the capital nature of social capital entirely. In many circumstances, individuals do engage in social interaction with the expressed intent of securing benefits. Business clubs and study groups are but two

examples where individuals interact primarily for the benefits that may accrue. To assess social capital's capital nature, it is more important to ask if it can serve a more fundamental role common to other forms of capital – namely, can it enter directly into the production process?

Perhaps the best way to answer this question is to examine the benefits of social capital noted throughout the literature. Examples of social capital's effects are present in many works and at first glance, there appears to be little in common. However, from Durlauf and Fafchamps' discussion in their work *Social Capital* one common characteristic appears clear. The benefits from social capital result not from social capital's inclusion in the productive process but from its effect on individuals that engage in economic activity (2004, pp. 17-24). It appears that the benefits from social capital are the result of changes in economic agents' behaviour resulting in some cases in more efficient outcomes or, as Putnam may have originally put it, through improvements in coordination and cooperation.

Looking at Coleman's original examples of social capital at work can provide some indication of its influence on individual behaviour. He discusses "obligations, expectations, and trustworthiness" (1988, p. S102) noting that:

If A does something for B and trusts B to reciprocate in the future this establishes an expectation in A and an obligation on the part of B. (1988, p. S102)

The key to understanding this statement comes from Coleman's follow-up discussion where he notes that social capital depends on two elements: trustworthiness and the social environment (1988, p. S102). More accurately, however, it is the social environment or the social interactions in which A and B engage that condition their expectations and behaviour. A trusts B to reciprocate because of A's understanding that B's failure will carry social consequences. In the absence of this social environment, there would be no trust or desire to reciprocate. This is an important distinction as it separates the social interaction from the norms and trust that they engender. While related, they are not the same.

Similarly, when Coleman discusses "norms and effective sanctions" (1988, p. S104) he implies that the social capital in question serves to influence behaviour. He states:

When a norm exists and is effective, it constitutes a powerful, though sometimes fragile, form of social capital. Effective norms that inhibit crime make it possible to walk freely outside at night in a city and enable old persons to leave houses without fear for their safety. (1988, p. S104)

In this case, the social capital affects two sets of behaviours. First, it alters the behaviour of would-be criminals by identifying to them additional consequences – intrinsic or extrinsic – for their actions. Second, it alters the expectations of other individuals by providing information about the outcomes of criminal behaviour, making previously unavailable activities possible.

Coleman's third example of social capital at work involves "information channels" (1988, p. S104). As with many authors that followed him, Coleman indicates that social capital is useful in the dissemination of information. He states that:

An important form of social capital is the potential for information that inheres in social relations. Information is important in providing a basis for action. But acquisition of information is costly. At a minimum, it requires attention, which is always in scarce supply. One means by which information can be acquired is by use of social relations. (1988, p. S104)

There is an important effect of this social interaction. The information provided through the interaction allows individuals a number of additional behavioural options. For example, in a job search situation, information about potential openings gathered during social interactions may provide individuals with a number of employment options not otherwise available.

In all cases, the social capital however described, does not enter into the productive process. The social relations result in behavioural change through the provision of information to individual actors. This information may be about the expected actions of other individuals, the expected repercussions of actions, or about potential actions available to individuals. In this context, it is difficult to consider social capital perfectly akin to human or physical capital. However, it does share an important characteristic in that it does not provide directly utility, but rather supports further action. In this important sense, it remains capital and is distinct from other social interactions.

This observation implies something critical for the measurement of social capital. In order to maintain the capital nature of any literally defined social capital, it is necessary to differentiate those social interactions that constitute social capital from others. Again, broad measures such as group membership conflate these two forms of interaction obscuring what is rightly defined as social capital. Further, distinctions such as the bridging, bonding, and linking categorization only provide detailed information on who is involved in these interactions rather than more relevant information on their nature.

### *Suggesting a level of analysis*

In addition to the conceptual criticisms of social capital, there are a number of technical issues related to its empirical application. Given that most studies use some form of regression analysis to assess social capital's impacts, most criticisms relate to these regression techniques and their underlying assumptions. Durlauf summarizes the main difficulties in his work *The Empirics of Social Capital: Some Skeptical Thoughts*. In the work, three main criticisms of social capital empirical work emerge, namely, failure to distinguish the effects of social capital from other influences, failure to control for the endogeneity of proxy measures of social capital, and the use of inappropriate comparability assumptions (2002a, pp. 2-3).

Durlauf notes that many:

social capital studies fail to distinguish between social capital effects and any other influence of group characteristics or behaviours on individuals.

There is no shortage of reasons why group memberships influence

individuals. For example, in recent models of income inequality, primary emphasis has been given to peer group and role model effects as influencing educational outcomes in youths. The problem is when one claims that there is a social capital effect and uses a group level variable to measure it, this claim will not be credible unless one is able to argue that the group-level variable is measuring social capital versus some other group level effect. (2002a, p. 2)

Durlauf later stresses that the regression variables used to measure the presence of social capital do not sufficiently differentiate social capital from other influences of group membership (2002a, p. 2). This relates directly to the previous point about clear definitions of the constituent elements of social capital. Without a clear definition, and by extension measure, empirical studies will continue to measure social capital using regression variables that likely capture other group level effects.

Durlauf next notes, when discussing regression analysis of social capital's effects, that:

social capital proxies are typically endogenous and the use of instrumental variables to account for this is based on ad hoc exogeneity assumptions. In some cases, this is obvious; when one talks about membership in organizations, it is obvious one must account for the fact that these memberships are choice variables. In other cases, the endogeneity problem is more subtle. (2002a, p. 2)



He goes on to note that even studies that use generalized trust suffer from this same endogeneity. His argument is that trust relates in part to the trustworthiness of individuals. That is, the behaviour of individuals conditions the generalized trust in a given community. Since this behaviour is a choice variable it is potentially influenced by the outcome measured in the regression model. Solving this endogeneity problem would require a theory that identified the exogenous determinants of trustworthy behaviour. Nevertheless, as he notes, few studies of social capital involve this type of theoretical development (Durlauf, 2002a, pp. 2-3).

Finally, Durlauf notes that many:

social capital regressions rely on untenable comparability assumptions about observations. (2002a, p. 3)

To illustrate this point he discusses the work of Helliwell and Putnam (2000). In their work, the authors use a very simple regression of output growth against an initial level of output and three proposed measures of social capital to account for differences in regional growth. They conclude that these three measures do account for the differences, and that as a result social capital influences growth (Durlauf, 2002a, p. 3).

Durlauf notes that in order for the regression estimates to unbiased, the error terms must have an expected value of zero across all regional observations. All of the errors in the regression must therefore be indistinguishable in terms of their distribution. In principle, this means that each region must have a common growth process. He notes that there is

little evidence to support this conclusion and by extension the assumption that the regression error terms are comparable (2002a, p. 3).

The identification of these major empirical difficulties leads Durlauf to suggest an improved approach to empirical study. He argues that rather than undertaking large-scale analyses of social capital, effort should be placed on examining smaller scale social interactions. In essence, he argues for shifting empirical work towards the analysis of social interaction and its influence on behaviour (2002a, p. 3). This provides a better indication of the component social interactions of social capital, suggesting measures that are more accurate. It also provides a great chance of dealing with the inherent endogeneity and limits the degree of comparability difficulties.

### ***Addressing the criticisms of social capital***

Addressing the difficulties identified in the section above requires four major changes to the understanding of the dominant view of social capital. These include; abandoning the notion that social capital results exclusively in benefits; identifying measures of social capital that differentiate the capital aspects of social interactions from others; establishing a micro level operation for social capital; defining a mechanism through which social capital plausibly affects outcomes.

Taking a literal perspective on social capital – rooted in the work of Coleman and Putnam – it is possible to develop a framework that incorporates each. This literal social capital framework defines a mechanism through which specific social interactions influence individual decision making and eventually outcomes. These outcomes may take a variety of forms.

### ***Defining the literal social capital framework***

As noted above, early work defined social capital in only a very general sense. Most authors principally noted that social capital was closely associated with social interaction and that it resulted in some individual or group benefits. Social interactions themselves, something inhering in these interactions, the norms and trust resulting from these interactions, or the resources available because of these interactions, were all variously defined as social capital.

That said, in an historical context, the principal distinction between definitions of social capital related to fundamental characteristics of the concept. On one hand, some authors defined social capital in what might be termed a figurative sense – stating that social capital was simply an aggregation of existing capitals based on social groupings. On the other hand, some argued that social capital was literally capital, distinct from other forms but consisting of social interactions.<sup>2</sup>

Increased use of the term eventually limited the prevalence of figurative definitions. Attempts at defining various distinct forms of social capital resulted in increased interest around the concept. None the less, clarity about the mechanism through which this distinct form of capital influenced outcomes remained vague. In addition, despite an increased social capital typology including bridging, bonding, and linking social capital, the specific social interactions that constituted social capital also remained vague. One could illustrate this understanding of the concept as follows.

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<sup>2</sup> Although Coleman variably states that social capital consists of social interactions and inheres in social interactions, the discussion that follows assumes the former. Arguably, in this context there is no functional difference.



Figure 1: Basic social interaction – improved outcome relationship

With such limited information about the nature of social capital, it is difficult to represent it using a mathematical relationship typical of economic analysis. This is in part because there is little in the literature that explicitly indicates how the phenomenon operates.

Given its capital nature, one might assume that it would contribute to the production of a variety of outcomes as represented below. Here, the outcome (Y) remains undefined, K is physical capital, H is human capital, S is literal social capital, and L is labour defined in this case simply as labour effort.

$$Y = f(L, K, H, S_{\text{literal}}) \quad \dots(3)$$

However, the examples of social capital at work discussed above suggest that the phenomenon contributes to outcomes through the provision of information. Specifically, two effects of information provision are highlighted in these examples. One involves the identification of alternative decision making options and the other involves the provision of information about the payoffs to decision making.

Take for example an individual seeking employment. While the individual may identify three potential job options, social interactions may provide information about a number of additional openings. In principle, this may provide a better employee-employer skill match and promote a more efficient use of resources. Repeated over a broader population, this could have considerable aggregate benefits. Similarly, altering expectations may result in aggregate efficiency change. Individuals may choose not to engage in undesirable activities to avoid facing the resultant social pressure.

Here again it is important to return to the criticisms of the broad measures of social capital often used in the literature. As noted above, these do not distinguish between interactions oriented towards relevant information transfer and those that provide direct utility. This distinction is critical to maintain social capital's capital nature. Thus, incorporating two distinct forms of social interaction and information transfer as a means of producing outcomes, an individual level social capital mechanism may operate as follows.

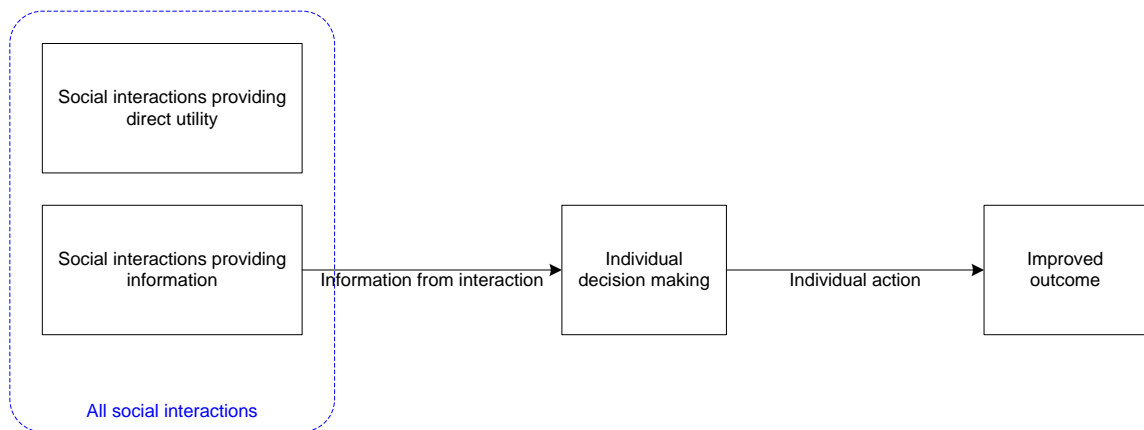


Figure 2: Basic literal social capital mechanism

This framework suggests eliminating norms and trust as aspects of social capital. In a decision making context, norms and trust are expressions of individual expectations based on information about others. Individuals in a group trust one another because they anticipate specific behaviours from group members. Similarly, norms suggest group wide understanding of behaviours, against which social pressure will be levied, to avoid. However, social interaction generates this information and forms the norms and trust implying the following relationship:

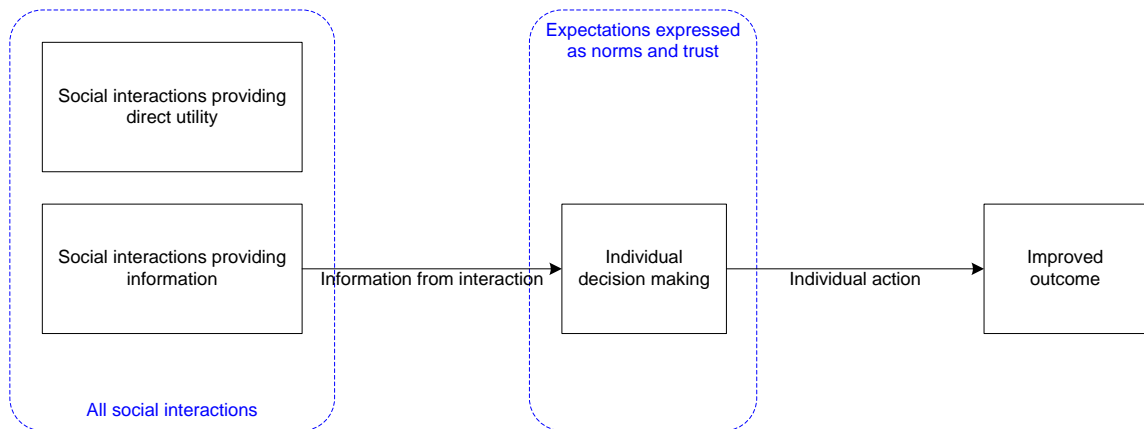


Figure 3: Elaborated literal social capital mechanism

Even with these aspects clarified, criticisms about the beneficial nature of social capital remain. The main criteria for establishing an interaction or some interactions as social capital remain their ability to provide benefits to individuals or groups. This makes identifying social capital in the absence of its benefits or, more importantly, distinguishing its effects from those of other influences, impossible. A more fruitful approach involves identifying those interactions that provide relevant information for decision making, and examining the effects of this information provision. This eliminates

the need for pre-supposed positive outcomes, as benefits are no longer needed to establish the presence of social capital.

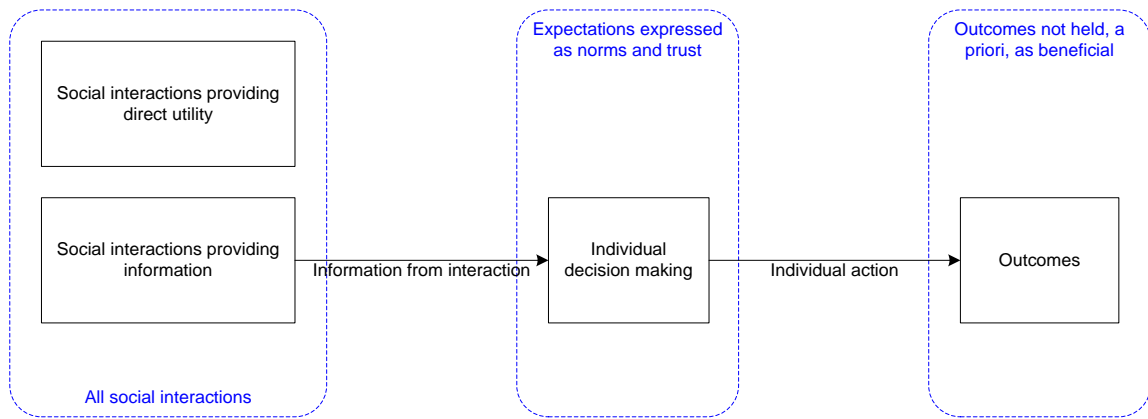


Figure 4: Final literal social capital mechanism

Overall, the social capital mechanism outlined directly above unfolds in a number of stages. The first involves the production of social interactions for two purposes: personal consumption or enjoyment, and the provision of information. To simplify, the first production function below subsumes a variety of types of capital under K for the production of social interactions meant for consumption ( $C_{social}$ ) and for information transfer ( $S_{literal}$ ) – i.e. literal social capital.

$$C_{social} + S_{literal} = f(K,L) \quad \dots(4)$$

As articulated above, the distinguishing feature of social capital ( $S_{literal}$ ) is its provision of information. This information would reasonably feature among all available information for individual decision making. In addition, in a real world situation, decision making is not costless and would also depend on the availability of other resources in the form



traditional types of capital. These may include, for example, financial capital to support investment decisions. This implies the following relationships where information (I) and these resources (R) are a function of a number of elements including social capital, and these then influence decision making outcomes (Y).

$$I = f(S_{\text{literal}}, \dots) \quad \dots(5)$$

$$R = f(K_{\text{financial}}, \dots) \quad \dots(6)$$

$$Y = f(L, R, I) \quad \dots(7)$$

As mentioned above, based on the examples of social capital identified in the literature it appears that this information affects decision making in one of two ways. It is possible to illustrate these two effects using alternative decision trees<sup>3</sup> with and without the information provided through social interactions.<sup>4</sup> In all cases, decision making is assumed to be costless to highlight the effects of social capital.

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<sup>3</sup> These trees, and those that follow, use non-unit outcomes that capture both the extrinsic (monetary) and intrinsic payoffs from decisions.

<sup>4</sup> Previous works have attempted to examine the operation of social capital using similar micro economic tools. The work of Jeff Dayton-Johnson, for example, posited a game theoretic approach to understanding the concept. That said, the information-based literal approach developed in this thesis arguably represents the conceptual origins of the concept more closely than Dayton-Johnson's view of social capital as "a claim to returns on mutual cooperation" (Dayton-Johnson, 2003, p.44)

The first way involves the identification of additional decision making alternatives. In the case illustrated below, an individual faces three possible jobs because of information provided through social interaction as opposed to two. The third decision making option, associated with the newly identified job, has a higher expected value than the other two.

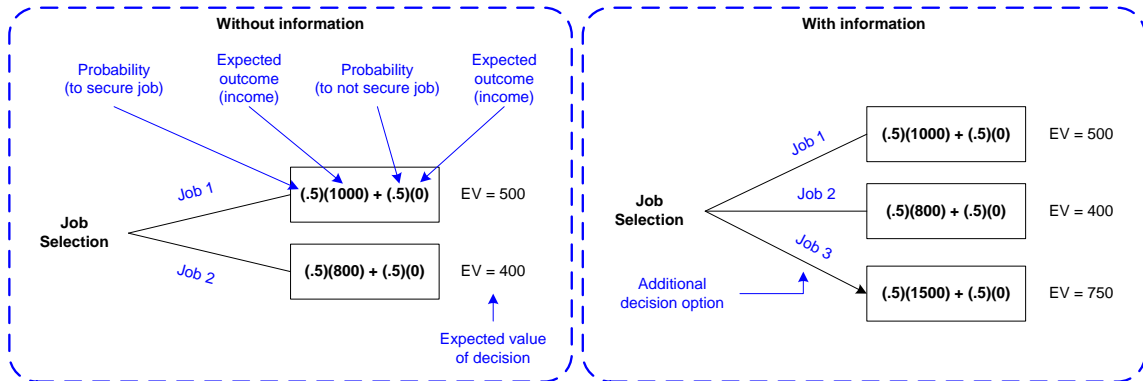


Figure 5: Additional decision making options

The second way involves altering expected payoffs. The following decision tree example notes hypothetical probabilities and payoffs with and without the threat of social sanctions or pressure. When faced with the option of paid employment and criminal activity, the social sanctions established and identified through social interaction can alter the expected value of either decision.

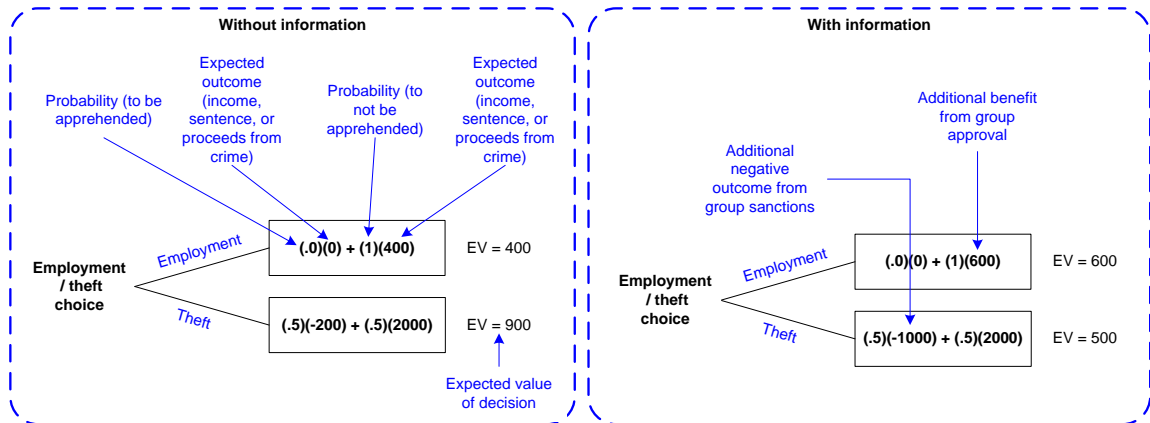


Figure 6: Altered expected outcomes

This type of revaluation of expected outcomes may also be at play in other situations, such as those involving employment related gender bias. Here, social interactions may help establish certain jobs as more appropriate for men or women. Specific peer and parent interactions, from an early age, may communicate information about the social sanctions associated with deviating from these established roles. Under the approach outlined above, this would alter the expected payoffs from various lines of work, among both men and women. The realization of these sanctions would only validate these expectations and reinforce the established interaction and bias over time.

This type of differential outcome is by no means limited to the paid labour market and seems plausible in other contexts. The decision to engage in volunteer or household activity, as examples, may be influenced by the information communicated through various forms of literal social capital. As Lowndes highlights citing the work of Vincent and Martin (2000, p.476), women across diverse social classes have consistently identified being a “good mother” as their motivation for participating in school-based parent groups (Lowndes, 2004, p.60). It is certainly reasonable to suggest that various

forms of interaction will help communicate information about both the need to be a good mother and the possible social sanctions associated with failing to undertake this role. Further, the fact that the discussion highlights being a good *mother*, rather than a good *parent*, suggests that these interactions do not serve to communicate the same expectations for men. In these situations, one would expect systematic differences in non-market activity among men and women.

In all situations discussed above, group outcomes associated with altered decision making processes are simply the aggregation of the individual outcomes of group members. In addition, to the extent that decision making outcomes involve the production of capital – social or otherwise – they may feed into subsequent rounds of production and decision making. This provides a mechanism for the reproduction of specific form of social interaction, as implied in the gender related examples above.

For work in the area of social capital, the mechanism discussed above implies two important steps. The first involves clearly identifying the social interactions thought to transfer information relevant to decision making. These must be distinguished from other social interactions that provide direct utility. The second involves establishing the effect of these social interactions on information, expectations, and eventually decision making. In most cases, this would involve empirically testing a relationship between the social interactions constituting social capital, their information transfer, and eventual outcomes.

### *Defining an alternative – the figurative social capital framework*

Recall that much of the literature approaches social capital from a literal perspective. According to this approach, social capital represents a distinct form of capital consisting of social interactions. The alternative approach involves the figurative perspective first outlined by Bourdieu, which argues that social capital does not constitute a distinct form of capital at all. Rather, social capital represents an aggregation of existing capitals available to individuals in a group.

The figurative approach suggests a much simpler mechanism through which social capital affects outcomes. Since figurative social capital consists of other traditional forms of capital, it is reasonable to assume that it may be used in traditional ways. For example, individuals may access this group capital to invest and receive returns. For the individual, social capital resulting from group association provides greater capital access and potentially commensurate benefits. On an aggregate level, group members may distribute social capital for more efficient use. Using the relationships introduced in equations 5, 6, and 7 above, figurative social capital could feature as a determinant of individual resources by providing, for example, a pool of financial capital that would be otherwise unavailable to an individual facing a number of decision making options.

$$R = f(K_{\text{financial}}, S_{\text{figurative}}, \dots) \quad \dots(8)$$

This would further suggest the literal form of social capital discussed above and figurative social capital could both operate simultaneously to influence outcomes.

The key to examining the possible effects of figurative social capital involves identifying appropriate aggregations of existing capital. Social interactions may be used for this purpose. The degree to which individuals interact with others helps define those individuals who would reasonably contribute to and draw on the social capital pool. The nature of these interactions would also help suggest the degree to which individuals in these groups would relinquish their capital for use by others. Once both the individuals involved in social interaction and the amount of capital they are willing to relinquish are known, it is possible to define a pool of figurative social capital.

Using this figurative approach therefore implies two distinct steps of its own. The first involves identifying the social interactions between individuals, establishing the amount of capital held by these individuals, and then qualitatively establishing how much of this capital may be reasonably relinquished for use by all. The second involves testing the degree to which this improved capital access affects outcomes.

## *Conclusion*

The concept of social capital has its roots in early economics and political economy. These early works helped to establish two broad approaches to the concept. The first sees social capital as a literal good that functions as a distinct form of capital. Here, social capital takes the form of social interactions transmitting information among individuals, which in turn affect decision making. The second sees social capital as a figurative conceptual grouping of existing capitals, available to individuals based on their social connections with others. Since the 1980's, progress in the literature has established the former as the dominant view.

Despite general acceptance, various literal definitions of social capital have faced considerable criticism. These criticisms have suggested the need for a literal approach to social capital that; abandons the notion that social capital results exclusively in benefits; identifies measures of social capital that differentiate the capital aspects of social interactions from others; establishes a micro level operation for social capital; defines a mechanism through which social capital plausibly affects outcomes.

This paper has provided just that through its literal social capital framework. In addition, it has established an alternative approach based on the figurative conceptualization – the figurative social capital framework. Both propose distinct microeconomic mechanism through which social interactions affect outcomes.

It is these microeconomic mechanisms that arguably demonstrate the potential contribution of economics to a broader discussion of social activity. Although only

recently becoming an area of considerable economic research interest, some studies now provide examples of the insight that may come from the application of various microeconomic theories to social research. The discussion of literal and figurative social capital is another such example, demonstrating the contributions of economics to these areas of “non-economic” analysis. In addition, it demonstrates the broadening of scope possible for economic analysis when attention is paid to work outside the field.



*A Test of the Literal and Figurative Approaches to Social Capital – An Analysis of the National Longitudinal Survey of Children and Youth*

## *Introduction*

In the 1980's three prominent authors – Bourdieu, Coleman, and Putnam – reintroduced the concept of social capital into modern social sciences research. Although novel in the context of contemporary academic research, their works built on seminal writing dating to the nineteenth century. A close examination suggests that, as originally presented, the writing of the three authors detailed two distinct perspectives on the concept. The first, developing out of the work of Coleman and Putnam, viewed social capital as a literal phenomenon. Here social interactions represent a distinct form of capital, which facilitates individual or group outcomes. The second, a figurative view of social capital presented by Bourdieu, saw social capital as an aggregation of existing capitals available to individuals because of their social interactions. Under either perspective, outcomes vary including such things as employment, income, production, and other economic factors.

While some authors now acknowledge that social capital represents an umbrella term encompassing a number of distinct concepts, none has extensively explored the literal-figurative distinction discussed above. More commonly, authors have implicitly attempted to identify expressions of social capital within one of these two perspectives. For example, the bonding, bridging, and linking approach common to discussions by the World Bank operates exclusively under the assumption that social capital is, in and of itself, a distinct form of capital. It is implicitly a literal approach to the concept – even if it not acknowledged explicitly when used.

Yet, the explicit acknowledgement of perspective is critical to social capital's effective use in both theoretical and empirical work. This is because this allows a clear notion of *how* the concept operates. In the first of these three thesis papers, the *literal social capital framework*, taken in the context of many modern criticisms, identified a causal process based on the provision of information. Social interactions provided information that then affected individual decision making leading to outcomes. The *figurative social capital framework* by contrast hypothesized that the redistribution of existing forms of capital within groups is the main driver of outcomes. In either case, individual actors were of primary interest and group outcomes were affected only to the extent that aggregations of individuals altered behaviour or resources use.

This paper builds on the work of the first thesis paper by attempting to find evidence in support of one or both of the two social capital frameworks. It examines data from the National Longitudinal Survey of Children and Youth (NLSCY) and attempts to model the process through which examples of either literal or figurative social capital may affect child decision making.

### ***Literal and figurative social capital***

Modeling the literal-figurative social capital distinction may begin with a brief review of the fundamental concepts of the three authors mentioned above. It is important to understand that in Coleman's original 1988 work he posits a type of capital that is separate from other forms and is a distinct good. He states clearly in his work that social

capital “exists in the relations among people” (Coleman, 1988, pp. S100-101). This fundamentally establishes it, in the context of his discussion, as a literal phenomenon.

At the same time, his discussion leaves a number questions about social capital unanswered. He does not provide a precise definition of the concept but rather relies on a number of examples to explore it. Nor does he define a consistent mechanism through which social capital operates, but rather is suggestive in his discussion of norms, information, sanctions, and other social phenomena (Coleman, 1988, pp. S101-S104). Overall, his discussion ignores a number of issues that directly influence the use of the concept in empirical work. In particular, he provides few generally applicable rules about the operation of the concept.

The work of Putnam takes a similarly literal perspective on social capital. As with Coleman, Putnam defines social capital as a distinct phenomenon that acts to augment the productive process. At one point, Putnam notes that social capital, in the form of trust, norms, and networks, helps to reinforce reciprocity, helps coordination and communication, and perpetuates these activities over time (Putnam, 1993a, p. 3). However, as with Coleman’s definition, room for criticism exists. It is precisely this criticism that has helped define a more empirically applicable perspective on the concept.

The first thesis paper argued that in the context of the literal perspective, and given the insights from these criticisms, social capital should be seen in terms of social interactions that influence individual behaviour. This perspective remains literal in the sense that the social interactions in question, the factor influencing behaviour, remain distinct from

other forms of capital. However, it allows a number of important innovations that support more accurate and insightful empirical work.

First, it roots the discussion of social capital in an individual decision making framework. While groups or other conceptual aggregations of individuals may benefit from social capital, they do not represent independent actors or decision makers. It is inaccurate to say that social capital may influence the actions of a group. Rather, group action is inferred from the predominant behaviour of individual members. Meaningful behavioural analysis requires this individual perspective even when examining aggregate outcomes.

Second, it does not presuppose exclusively positive impacts of social capital. Many of the conceptual difficulties with its past application reflect this often-implied assumption. If social capital necessarily results in positive outcomes, all else being equal, the presence of these outcomes necessitates the existence of social capital. Social capital does not then exist in the absence of its outcome and understanding causality becomes a moot point as it is assumed rather than proven.

From this literal perspective, social capital influences individual behaviour through the provision of information. This information may take two important forms. The first relates to presenting alternative options for decision making. Here, individuals are provided information on possible courses of action not otherwise considered or known to them. This may increase the range of individual behaviour, and in aggregate, have group level effects. The second form relates to the payoff from decision making. Social interaction provides information on both the extrinsic and intrinsic rewards from various

decisions. In particular, this may include negative payoffs associated with social sanctions.

The figurative perspective on social capital discussed in the first thesis paper suggests a very different causal mechanism. Based on the work of Bourdieu, this alternative perspective argues that social capital is not, in and of itself, a distinct good. Rather, it is a term used to describe the aggregation of capital available to individuals because of their social interactions. It is the redistribution of capital among individuals in groups, however defined, that drives changes in outcomes. Individuals may access capital not otherwise available to them and by extension pursue similarly unavailable activities. To the extent that these new activities influence aggregate outcomes, groups benefit or lose out.

### *Validating the perspectives*

Empirical testing to validate the literal and figurative perspectives on social capital requires examining the plausibility of the causal relationships implied above. In his work on longitudinal data analysis, Taris discusses a minimum of three criteria required of an empirical study to suggest a causal relationship. First, covariation must exist. Second, the relationship must be non-spurious. Third, cause must precede effect (Taris, 2000, p. 3).

The first suggests that empirically testing the two perspectives requires identifying appropriate measures of social capital under each, and then associating these with possible outcomes. The literal perspective requires measures of social interactions. The figurative perspective, by contrast, requires measures that use these interactions to define various aggregations of existing capital. In either case, these must clearly distinguish

what is meant by social capital from other possible phenomena when establishing the association. As Taris notes, if there is no associational relationship, then by necessity, there is no causation (Taris, 2000, p. 3).

The requirement of non-spuriousness has important implications for the chosen measures. Non-spuriousness requires that no additional measured and unmeasured phenomena affect both the social capital and the selected outcomes, driving their covariation. This would give the impression of a positive or negative relationship where one does not exist. In many works, measures and proxies for social capital are sufficiently broad that various plausible unmeasured phenomena could result in their association with outcomes.

Results from the failure to consider the selection of social capital measures, the presence of non-spuriousness, as well as other empirical concerns are well documented by Durlauf in his critiques of social capital. For example, when discussing the varied social capital measures used by Furstenberg and Hughes, he suggests that:

it seems fair to argue that Furstenberg and Hughes (1995) results cannot really be interpreted as providing evidence of social capital versus the claim that group variables help predict individual outcomes. The reason for this is their failure to distinguish between social capital and other individual and contextual effects. A number of the variables used by the authors can be argued to have causal influences on individual behaviour that are independent of what is meant by social capital. It is easy to imagine that the presence of a father in a household matters for

childrearing in any number of ways that affect child outcomes. Similarly, school quality can affect individuals without any social influences at work. Hence, one cannot argue that the instruments employed for social capital do not lie in the space spanned by individual and contextual effects. (Durlauf, 2002b, p. F471)

He later elaborates, noting that empirical difficulties are acute when a clear definition of social capital does not exist.

[The] failure of Furstenburg and Hughes reflects the general problem that they do not provide or employ a consistent definition of social capital. As suggested earlier, social capital has been used as a rubric for very different phenomena; this definitional ambiguity is quite apparent in Furstenberg and Hughes' social capital measures. Does regular church attendance denote a rich social network to rely on in times of crisis? Or does it mean acceptance of strong ethical constraints on behaviour, which Putnam (2000) evidently denies is a form of social capital (cf. the quotation in the Introduction)? Do neighbours' educational expectations constitute an imitative influence or a community norm? Definitional ambiguity makes identification impossible. (Durlauf, 2002b, p. F471)

In the example above, the inability to identify how church attendance affects individuals stems in part from not knowing what types of interactions come with this attendance. As the quotation above suggests, it is certainly possible that attendees provide support in



times of crisis. One might expect this support to affect – beneficially – those in receipt. However, simply measuring church attendance provides no detailed information about the interaction among individual attendees.

It may be that individuals who attend religious services congregate together but have little meaningful social contact other than being in the same place once a week. In this case, attendance does not necessarily imply a considerable quantity of social interaction. However, at the same time it is possible that frequent social exchange exists in a structured religious setting, but that it has little to do with support. Here, even if the degree of social interaction is quantified in some way – say through the frequency of discussions among attendees or the number of attendees who have contact – little is known about the nature of these interactions. The ambiguity noted above is equally possible within smaller groups, such as families.<sup>5</sup>

This difficulty is also evident when examining other common measures of social capital. In Canada, for example, authors such as Bonnie Erickson and Sandra Franke have suggested the use of social capital measures based on, for example, a position generator (Erickson, 2004, p.1 and Franke, 2005, p.23). Here, the position generator reflects an individual's access to occupational positions through social networks (Erickson, 2004, p.1). As Erickson notes in her discussion:

A person's occupation is a good indicator of much about that person's social roles and resources, and hence the kinds of help that a person might

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<sup>5</sup> See, for example, the measures suggested in Phipps, 2003, p.91.

be able to provide. People who know others in high status occupations have access to resources found among the more powerful, such as information about and referrals to good job opportunities. (Erickson, 2004, p.2)

A variety of other approaches that similarly attempt to broadly situate an individual in a social context also exist. These include, for example, the name generator and resource generator approaches (Franke, 2005, pp.22-24).

While the quotation above and discussions of similar approaches connect networks with resource provision and information transfer, the measures themselves often do not *directly* identify the information transfer or resource access taking place. Just as group membership does not necessarily imply consistent interaction among all members, so too does association with specific occupational groups not necessarily imply similar information provision or resource access among all. To establish the effects of specific forms of information transfer and resource access implied by the quotation above, a qualitative distinction among interactions that reflects the nature of this transfer and access is necessary.

This type of qualitative difference is reminiscent of the distinction between consumption and capital goods. While superficially similar, the use of capital goods for production separates them from their consumption good counterparts. Most are familiar with this distinction making either type of good easily identifiable and quantifiable for empirical

analysis. However, the same may not be said of social interactions, which more often run the risk of being seen in a generic way during quantitative work.

In qualitative and anecdotal discussions of group association authors regularly, if only implicitly, suggest that social interactions may be used for a variety of purposes. In fact, Coleman himself provides the example of Korean study circles that, while formed as a result of association for other purposes, serve to support activist movements. Quoting the 1986 *International Herald Tribune*, he indicates that:

radical thought is passed on in clandestine ‘study circles,’ groups of students who may come from the same high school or hometown or church. These study circles...serve as the basic organizational unit for demonstrations and other protests. (Coleman, 1988, p.S99)

Here, social interaction between the same individuals continues but is qualitatively different when oriented towards another purpose. This distinction is equally important in quantitative empirical work. It may be possible to associate the breadth of interaction with a specific outcome. It may also be possible to associate the intensity of that interaction with the same outcome. However, a clearer understanding of the relationship is possible when the extent to which these interactions serve a specific purpose is known.

Together, what does this imply for the measurement of social capital under the two proposed perspectives? To begin it suggests that interactions thought to constitute social capital must be quantifiable. This should go beyond broad measures of association

including group membership or club attendance, as these do not provide sufficient information on specific constituent interactions. Do these interactions provide information, as suggested under the literal framework, or do they facilitate access to group capital, as suggested under the figurative perspective? Further, distinguishing these interactions based on intent provides more information on the social capital-outcome relationship. This therefore suggests additional measures of the nature of the quantified interactions.

However, even with these precise measures, it is important to recall Taris' third requirement. This relates to the temporal ordering of events. In the simplest of terms, cause must precede effect. In the context of validating either approach to social capital, its existence and thus influence must precede its outcomes. Measurement of either form of social capital and outcomes should, therefore correspond to similarly ordered periods.

While establishing the temporally ordered association suggested above, it is also important to control for competing influences. It is likely that resources, individual characteristics, and additional factors also influence the outcomes thought to be driven by social capital. Any empirical analysis meant to substantiate either of the perspectives identified above, will need to control for these factors.

Finally, in his discussion, Taris suggests an additional overarching requirement for any empirical analysis. He notes that the analysis must have a testable hypothesis or hypotheses. Although the literal and figurative approaches to social capital represent a general framework for understanding the relationship between social interaction and

decision making, they must be applied in a specific way to test hypotheses specific to the two perspectives. To test the validity of the two approaches, this paper examines post-secondary education (PSE) enrolment. It attempts to identify evidence of a causal relationship between the measures of social capital under both approaches and how these measures affect children's eventual decisions about PSE. Specifically, it attempts to test null hypothesis that these forms of social capital have no effect on the propensity to participant in PSE. To do so, it examines longitudinal data from Statistics Canada's NLSCY to meet three causal conditions presented by Taris.

To be clear, the outcome examined in this work is only one of many possible outcomes associated with the specific forms of literal and figurative social capital examined. It is certainly reasonable to assume that the forms of social capital discussed below could also influence the type of PSE enrolled in, the length of PSE undertaken, and the time between high school completion and enrolment. Each of these relationships could, in theory, be examined in detail. In fact, as the discussion below will imply, any number of outcomes – economic, social, educational, or otherwise – many be plausibly examined under the literal and figurative frameworks. That said, the data available for the current analysis limits both the type of social capital measurable and the associated outcomes that may be explored.

## *The NLSCY*

The NLSCY is a cyclical survey first conducted by Statistics Canada in 1994.<sup>6</sup> It gathers information about a selection of Canadian children, the person most knowledgeable<sup>7</sup> (PMK) of these children, and where applicable, the PMK's legal spouse. Referred to as cycle 1, the first issue of the NLSCY examined children ages 0 to 11 at the time of surveying. Every second year since then, the survey followed-up with this original cohort creating a longitudinal dataset tracking various aspects of child development and individual activity (Statistics Canada, 2008, p. 17).

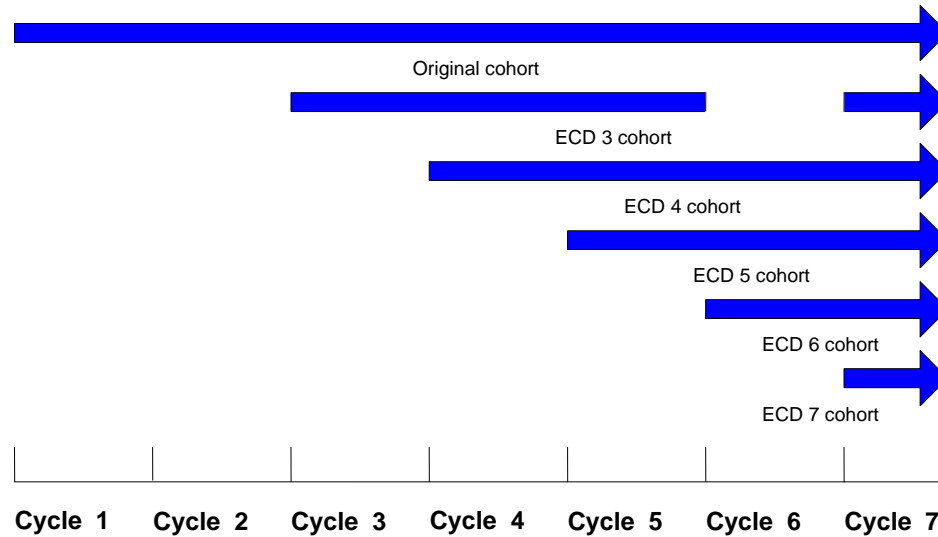
In cycles 3 through 7 of the NLSCY, Statistics Canada began developing supplementary longitudinal datasets. They did so by selecting successive cohorts of children ages 0 to 1 at each cycle and tracking these children over time. The NLSCY documentation generally refers to these as the Early Childhood Development (ECD) cohorts since the questionnaires used had increased focus on ECD information during their surveying (Statistics Canada, 2008, p. 25). Since these ECD cohorts were introduced into survey later than the original, the information available on each is limited.

Figure 7 illustrates the cycles during which the original and ECD cohorts were surveyed. As the figure notes, the survey did not gather information from ECD cohort 3 during cycle 6.

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<sup>6</sup> The NLSCY includes both a cross-section and longitudinal component. Only the longitudinal component is used in this research study and discussed in detail.

<sup>7</sup> This is typically a parent.



Source: Adapted from Statistics Canada, 2008, p.18

Figure 7: Cohort surveying chart

The NLSCY drew its original cohort from a sample of families identified in two sources. The first was Statistics Canada’s monthly Labour Force Survey (LFS) and the second was its National Population Health Survey (NPHS). Although the original cohort included 22,831 children at the time of sampling, subsequent cycles saw this number fall. In many cycles, repeated non-response resulted in the removal of children and their families from the survey. Throughout the life of the survey, many respondents also moved out of the NLSCY’s cross-sectional scope making them ineligible. This included those who died, did not meet the survey age requirements, permanently moved from Canada, or moved to live on reserve.

In a number of cycles, decisions affected the number of children retained in the original cohort. One of the most important was the cycle 2 decision to remove all children sampled from the NPHS to reduce survey costs. Another included a decision to gather only information on at most two children per household (Statistics Canada, 2008, pp. 23-24). This latter decision is important to the current analysis. Given the approach to the modelling discussed below, it is highly unlikely that any child examined in the analysis will also have a sibling included in the dataset. This point is taken up later in this paper.

Sampling for the cycle 3 through 7 ECD cohorts differed from that of the original cohort. Although an ECD cohort was developed in cycle 2, Statistics Canada subsequently dropped this group from the longitudinal component. For cycles 3 through 7, Statistics Canada identified some families with children for the survey through the LFS. However, they identified others from the Statistics Canada Birth Registry. This was in part due to the inability to identify a sufficient number of 0 to 1 year olds from the LFS (Statistics Canada, 2008, pp. 22-25). Non-response and movement out of the NLSCY's cross-sectional scope have since reduced the number of children in each ECD cohort with each subsequent survey cycle.

Despite losing children from both the original and ECD cohorts, survey response among these longitudinal groups remains high in the NLSCY. Table 1 shows the sample size associated with each of these cohorts in each of the NLSCY cycle years. These sample sizes are important as they bear on the approach to the empirical analysis discussed below.



Table 1: NLSCY child sample distribution												
NLSCY cycle	Original cohort (1994)		Cycle 3 ECD cohort (1998)		Cycle 4 ECD cohort (2000)		Cycle 5 ECD cohort (2002)		Cycle 6 ECD cohort (2004)		Cycle 7 ECD cohort (2006)	
	count	% <sup>1</sup>	count	% <sup>1</sup>	count	% <sup>1</sup>	count	% <sup>1</sup>	count	% <sup>1</sup>	count	% <sup>1</sup>
Cycle 1	16,903	86.7	-	-	-	-	-	-	-	-	-	-
Cycle 2	15,403	79.1	-	-	-	-	-	-	-	-	-	-
Cycle 3	14,796	76.0	8,126	85.0	-	-	-	-	-	-	-	-
Cycle 4	13,168	67.8	6,946	74.4	3,841	77.1	-	-	-	-	-	-
Cycle 5	12,300	63.1	6,189	66.3	3,322	66.7	3,252	74.0	-	-	-	-
Cycle 6	11,210	57.6	-	-	2,965	59.5	2,867	65.3	3,521	81.1	-	-
Cycle 7	11,016	56.6	5,325	58.3	2,885	58.7	2,741	62.4	3,463	79.7	4,015	80.7

Source: Adapted from Statistics Canada, 2008, p.28  
<sup>1</sup> % refers to response rate percentage.

Each of the cohorts identified above includes children originally sampled from within a specific age range. The original cohort includes children who were ages 0 to 11 when originally sampled. By contrast, the ECD cohorts were limited to children that were ages 0 to 1 when originally sampled. Clearly, with each successive cycle of the NLSCY, the age range covered by these cohorts increased. Table 2 notes the age range of the children in each cohort during each cycle of the NLCY.

Table 2: NLSCY child age distribution						
NLSCY cycle	Original cohort (1994)	Cycle 3 ECD cohort (1998)	Cycle 4 ECD cohort (2000)	Cycle 5 ECD cohort (2002)	Cycle 6 ECD cohort (2004)	Cycle 7 ECD cohort (2006)
	age in years	age in years	age in years	age in years	age in years	age in years
Cycle 1	0-11	-	-	-	-	-
Cycle 2	2-13	-	-	-	-	-
Cycle 3	4-15	0-1	-	-	-	-
Cycle 4	6-17	2-3	0-1	-	-	-
Cycle 5	8-19	4-5	2-3	0-1	-	-
Cycle 6	10-21	-	4-5	2-3	0-1	-
Cycle 7	12-23	8-9	6-7	4-5	2-3	0-1

Source: Adapted from Statistics Canada, 2008, p.28

Again, the age range spanned by each cohort in each cycle has important implications for the analysis discussed below.

In each of the NLSCY cycles, the survey included a number of different questionnaires or components along with a basic introductory module. Each was meant to gather specific information about children, their PMK's, and where applicable their PMK's spouse. In addition, as the sample of children examined in the survey aged, so too did the nature of the questionnaires change. This change was meant to tailor the survey to the general circumstance of the children participating. For example, in later years, the survey included a youth component gathering information from children as they matured into adulthood.

Cycle 7 provides a good example of the most recent composition of survey instruments. This cycle included; a household component; an adult component; a child component; a youth component; various self-complete questionnaires; various direct assessment tools (Statistics Canada, 2008, p. 53).

The household component is the first part of the NLSCY and is administered to the PMK. Following the survey's basic contact respondent confirmation section, the component gathers general demographic information about the child's household and its members. It also supports the construction of a relationship grid, describing the relationship of each member of the household to all others (Statistics Canada, 2008, pp. 53-54).

The adult component gathers information about the PMK, where possible, his or her legal spouse or common-law partner and in some cases the child (Statistics Canada, 2008, p. 53). As with many of the NLSCY components, not all questions in the adult component are asked of each respondent. In addition, not all questions are asked during each cycle of

the survey. This occurs for two reasons. First, some questions gather static information that does not change from one cycle to the next, and as such need only be asked once. Second, many questions are age dependent and may be asked only when children fall within a particular range. These types of questions may be asked as infrequently as once during the repeated surveying process.

Table 3 details the ten sections of the adult component. It outlines the type of questions included in each section, notes the respondent type, and indicates the general child age range on which each type of question is dependent. That is, it indicates whether questions are asked based on the age of the child. All ranges corresponded to the ages of children in cycle 7. Thus, possible age ranges include 0 to 9, 12 to 23, as well as subsets and combinations thereof. Questions in the adult and other components of the NLSCY are not dependent on the age of the PMKs and their spouses.

The adult component is not administered if children are 16 or 17 years old and living independently of their PMK. Information on PMKs and their spouses is not gathered for these children. Rather, children provide information about their own school, work, and household experiences through the youth component. In addition, the adult component is not administered if children are 18 year of age or older. Those who are 18 years of age and older remain in the survey, but provide information directly through the youth component. The survey does not gather information on the PMK and their spouse for these children (Statistics Canada, 2008, p. 53).

Table 3: NLSCY questionnaire sections – Adult component		
Section	Topic	Child age <sup>1,2</sup>
Education	Adult educational attainment, completion, and current activity.	all
Labour Force	Adult employment status including nature and stability of employment.	all
Income	Household income and perceptions of finances.	all
Adult Health	Adult health status including chronic conditions and limitations.	all
Maternal History	Pregnancy history collected once per child.	all
Depression Scale	Clinical depression assessment of the PMK.	all
Family Functioning	Family functioning and interactions.	0 to 15
Neighbourhood Safety	Satisfaction with neighbourhood characteristics by PMK.	all
Social Support	Type and level of social support available to PMKs.	0 to 15
Socio-demographics	Social, cultural, and religious affiliation of household members.	all
Source: Adapted from Statistics Canada, 2008, pp.54-56		
<sup>1</sup> Excludes those who are not eligible for the component.		
<sup>2</sup> Age refers to effective age in years as defined in Statistics Canada, 2008, p.56 unless otherwise noted.		

The child component asks questions about children in the NLSCY. It is administered to the PMKs and not the children themselves (Statistics Canada, 2008, p. 53). Due to the available children during cycle 7 and the focus of the child component on those under the age of 18, questions relate to children who are 0 to 9 and 12 to 17 years old. Table 4 details the twenty one sections of the child component. As with Table 3 above, it outlines the type of questions included in each section, notes the respondent type, and indicates the child age range on which each type of question is dependent.

Table 4: NLSCY questionnaire sections – Child component		
Section	Topic	Child age <sup>1,2</sup>
Education	Child education and educational history.	all
Direct Measures <sup>3</sup>	Information necessary for direct measures.	4 to 5 <sup>4</sup>
Health	General health of child in some cases used to construct a Health Status Index.	all
Medical / Biological	Pre and post natal information as well as other medical information.	0 to 5
Work After Birth	Labour force participation of the mother following the birth of the child.	all
Ages and Stages Questionnaires	Clinical questionnaires about developmental milestones among children.	4 to 60 months
Milestones	Early developmental milestones for children.	all
Temperament	Child temperament and difficulties.	all
Literacy	Age appropriate questions about child literacy.	0 to 9
Communication	Child's ability to understand and communicate orally.	all
Activities	Child's non-school activities and household responsibility.	4 to 9 and 12 to 13
Behaviour	Child's behaviour and for the very young feeding behaviour.	1 and older
Positive Behaviour	Positive behaviour of the child.	3 to 5
Sleep	Sleep patterns of the child.	all
Motor and Social Development	Motor and social development of the child that form the basis for three clinical scores.	0 to 3
Relationships	Child's relationships with others.	all
Parenting	Parenting behaviour of the PMK that form the basis for clinical parenting scores.	all
Custody	Child's family arrangements.	all
Child Care	Child care arrangements made by the PMK for the child.	all
Expectations and Aspirations	Parental expectations for the child and about plans for the child's education.	16 to 17
Socio-demographics	The social, cultural, and religious affiliation of the child.	all
Source: Adapted from Statistics Canada, 2008, pp.56-60 <sup>1</sup> Excludes those who are not eligible for the component. <sup>2</sup> Age refers to effective age in years as defined in Statistics Canada, 2008, p.56 unless otherwise noted. <sup>3</sup> Direct Measures for 4 to 5 year olds include the Peabody Picture Vocabulary Test – Revised, the Who Am I? questionnaire, and the Number Knowledge test. <sup>4</sup> Questions not asked of those unable to complete direct measures.		

The youth component of the NLSCY is administered directly to older children (Statistics Canada, 2008, p. 53). During cycle 7 this included those 16 to 23 years old. There are 15 sections that gather information similar to that collected through the adult and child components of the survey. As above, Table 5 outlines the type of questions included in

each section, notes the respondent type, and indicates the child age range on which each type of question is dependent.

Table 5: NLSCY questionnaire sections – Youth component		
Section	Topic	Child age <sup>1,2</sup>
Moving out of the parental home	Child's transition from the parental home to other permanent or temporary living arrangements.	18 to 23
Youth education	Current and historical educational activity of the child.	16 to 23
Youth labour force	Labour force activity of the child.	16 to 23
Youth career aspirations	Child's decisions regarding career paths.	18 to 21
Youth income	Child's sources of income, debt, and savings.	16 to 23
Youth Health	General health and other health conditions of the child.	16 to 23
Feelings and behaviours	Suicide and other potentially risky behaviour by the child and peers.	18 to 19 and 22 to 23
Youth activities	Various activities unrelated to the child's school.	16 to 17 and 22 to 23
Relationships	Pregnancy, relationships, and sexual activity of the child that are conditioned by the type of relationship reported by the child.	18 to 23
About me	Child's self-esteem and difficult events of recent years.	18 to 19 and 22 to 23
Emotional quotient	Emotional quotient of the child.	20 to 21
Youth social support	Social, cultural, and religious affiliation of the child.	18 to 23
Source: Adapted from Statistics Canada, 2008, pp.60-63		
<sup>1</sup> Excludes those who are not eligible for the component.		
<sup>2</sup> Age refers to effective age in years as defined in Statistics Canada, 2008, p.56 unless otherwise noted.		

Self-complete questionnaires are administered to children who are 12 to 17 years old.

Much of the information collected in these questionnaires may only be reliably collected from the children themselves. The information is also sufficiently sensitive that they may not feel comfortable providing the information during an in-person or telephone interview (Statistics Canada, 2008, p. 64). Overall, the self-report questionnaires include up to thirteen sections. Table 6 outlines the type of questions included in each section, notes the respondent type, and indicates the child age range on which each type of question is dependent.

Table 6: NLSCY questionnaire sections – Self-complete questionnaires		
Section	Topic	Child age <sup>1,2</sup>
Friends and family	Child’s social network.	12 to 17
School	Child’s attitudes towards and activities in school.	12 to 15
About me	Self-esteem assessment for the child.	12 to 17
Feelings and behaviour	Suicide, depression, risky, and other behaviours by the child and their peers.	12 to 17
My parents	Child’s relationship with parents.	12 to 17
My parents and me	Information to support three scaled measures of parental activity.	12 to 15
Conflict resolution scale	Mother and father’s actions to resolve conflict.	16 to 17
Smoking, drinking, and drugs	Smoking, drinking, and drug use by the child.	12 to 17
Activities	Child’s non-school activities.	12 to 15
Literacy activities	Frequency of literacy activity by the child.	14 to 15
Health	Assorted health related questions.	12 to 17
Work and money	Work during the school year.	12 to 15
Dating	Child’s relationships and sexual activity.	12 to 17
Source: Adapted from Statistics Canada, 2008, pp.64-67 <sup>1</sup> Excludes those who are not eligible for the component. <sup>2</sup> Age referees to effective age in years as defined in Statistics Canada, 2008, p.56 unless otherwise noted.		

The information gathered by the self-complete questionnaires has particular advantage in the current work. As the discussion below will show, this information is critical to measuring literal social capital. This is because the questions on these questionnaires provide detailed information about both the range and nature of children’s social interactions. More importantly, however, these questions focus on specific interactions rather than providing general information about children’s networks. When combined with the other information gathered in the NLSCY, this provides the necessary features to explore the literal social capital framework – as the section below will show.

The information found in the NLSCY is in sharp contrast to that found in many other existing datasets. Even in Canada, the focus during data collection is often on general measures of networking and individual perceptions of community, rather than on specific details of individual interactions. Even when specific details of individual interactions are measured, little other information exists to help understand the relationship of these interactions to various outcomes. Cindy-Ann Bryant and Doug Norris, for example, outline many Canadian surveys and data sources that ostensibly have a social capital component. Some of their examples highlight just these points.

In their discussion of the General Social Survey on Victimization they suggest that “fear of crime, perceived levels of safety and trust in others and institutions such as prisons and justice system were the focus” (Bryant & Norris, 2002, p.6). They also note when discussing the measurement of social capital in the General Social Survey on Access to and Use of Information Communication Technology that “of particular interest from a social capital point of view is the measurement of contacts using the Internet. Also included were questions related to voting behaviour, local participation and level of involvement, social support and networks, and trust in others” (Bryant & Norris, 2002, p.6). Both of these examples provide general information on networking.

The focus of the General Social Survey on Social and Community Support, their discussion suggests, is on direct assistance to and from individuals. As they suggest, “the survey provides detailed information on care networks, as well as the amounts and types of care given and received. Sections included in the survey are Help Received by respondent (source, type, amount, and unmet needs) and Help Given by respondent (to



whom, type, amount, and unmet needs)” (Bryant & Norris, 2002, p.6). While this provides detailed information on a number of individual interactions, the limited additional information makes linking these interactions to various outcomes difficult if not impossible.

Returning to the NLSCY, it is also important to finally note that some individual questions from each of the survey components also support the creation of clinical scales. Based on previous academic and research work, these scales attempt to provide summary information about the PMK, spouse, child, or their relationships.

### *Data development*

A number of barriers prevent a simple use of the NLSCY in the analysis of social capital. First, the NLSCY is collected and maintained as a series of cross-sections. These identify children as well as PMKs and their spouses across cycles, using unique identifier codes. The inclusion of some children in multiple cycles makes it possible to construct a longitudinal dataset from these cross-sections. However, no single dataset including observations for all cycles exists and thus needed to be developed.

As the discussion below will show, the current analysis of social capital examines PSE enrolment at two points in a child’s life – when they are either 18 or 19 years old and when they are either 20 or 21 years old. As the discussion will also show, independent variables used in the modeling are associated with two earlier periods – when the children were 16 or 17 years old and when they were 14 or 15 years old. To gather all of this information, data from minimally four cycles was required.

The earliest cycle in which any portion of the original NLSCY longitudinal cohort was 14 or 15 years olds was cycle 3. Gathering full information on these children required merging data from four separate cycles – 3, 4, 5, and 6. This data development involved identifying all children for whom PSE enrolment information was available in both cycles 5 and 6. This outcome information was merged into a single data set and all necessary independent variable data from cycles 3 and 4 were then appended.

In cycle 4 a new group of children from the original longitudinal cohort entered the 14 to 15 year old age group. Appending information on these children to the previously developed dataset helped increase the sample size available for the analysis improving the accuracy of the model estimates. This aspect of the data development involved identifying children with PSE enrolment information in cycles 6 and 7, merging this information to corresponding independent variable data from cycles 4 and 5, and then appending this data to the previously developed dataset. The following table presents the data coverage between the two groups of children from the original cohort included in the dataset for the current analysis.

Table 7: Merging of NLSCY dependent, independent, and census variables					
Groups	Data Extraction – Cycle 7	Data Extraction – Cycle 6	Data Extraction – Cycle 5	Data Extraction – Cycle 4	Data Extraction – Cycle 3
Group 1	20-21 year old PSE outcomes	18-19 year old PSE outcomes	16-17 year old ind. variables	14-15 year old ind. variables	-
Group 2	-	20-21 year old PSE outcomes	18-19 year old PSE outcomes	16-17 year old ind. variables	14-15 year old ind. variables

The second challenge to using the NLSCY involved a lack of measures needed to quantify figurative social capital. Although the NLSCY collects information on PMK's perceptions of their communities and the length of time that they have lived in a particular area, the dataset is missing a critical element – a measure of average neighbourhood income. As the discussion that follows will show, this measure is an important proxy for the financial capital available in PMKs' neighbourhoods.

The best available source for this information was the census. The census gathers information on the average household income for various geographic groupings in Canada. The smallest of these is the dissemination area – or prior to the 2001 census, the enumeration area. Since the census takes place only once every five years, it is impossible to align its data perfectly with the cycles of the NLSCY. At best, information may be aligned with the periods during which the NLSCY cycles 3 and 4 fielded. As discussed later, these are the cycles most relevant to the modelling of figurative social capital. Recall that cycle 1 of the NLSCY first began fielding in 1994. It is therefore typically associated with the 1994 to 1995 period. Subsequent cycles follow a similar associational pattern, and as such, cycles 3 and 4 are associated with the 1998 to 1999 and 2000 to 2001 periods respectively.

It is clear that the most proximate census to cycle 4 took place in 2001. Cycle 3 appears to have taken place precisely between the 1996 and 2001 census, making it difficult to determine which would be most appropriate to use. However, it is important to note that the information collected during the census reflects the previous year. Thus, the average household income figures collected during the 2001 census reflect incomes in 2000, and

those collected during the 1996 census reflect 1995. This makes the 2001 census the clear choice as a source for this income information.

The census profile data from which the average household income information was extracted included dissemination area codes for each community. Unfortunately, cycles 3 and 4 of the NLSCY fielded prior to the 2001 census and so their associated datasets only included the previously used enumeration area codes. To reconcile this difference, a conversion file was used to translate each dissemination area code into a geographically proximate enumeration code. Once this was complete, it was a simple matter to merge this census data to overall NLSCY dataset.

### *Modelling literal social capital*

The developed NLSCY data provide the basis for empirically examining literal social capital in the context of PSE enrolment. However, one difficulty facing the analysis involved the use of the literal social capital framework itself. Since it is not commonly articulated or used in the literature, previous work provides limited guidance on an appropriate quantitative model structure to test its underlying assumptions. The analysis in this paper therefore developed its own.

The modelling developed for this analysis attempted to quantify and analyze the basic causal relationships involved in the literal social capital framework. Recall that this thesis argues that literal social capital involves social interactions that provide information, and that this information in turn influences individual decision making. The logic of the causal relationship implies that social interactions – which constitute literal social capital

– and their associated provision of information must operate prior to decision making. By extension, social capital must also operate prior to the realization of its associated outcomes, which represent payoffs from this decision making. The following figure presents this simple causal logic.

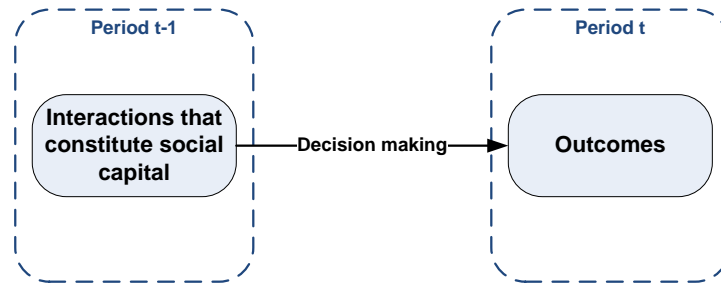


Figure 8: Literal social capital – simple causal logic

However, it is certainly the case that the provision of information through various forms of social capital may influence behaviour over a long period. Information gained well before decision making is not lost to individuals, and although perhaps less relevant as time goes on, it may continue to affect behaviour. This would alter the diagram from above as shown below.

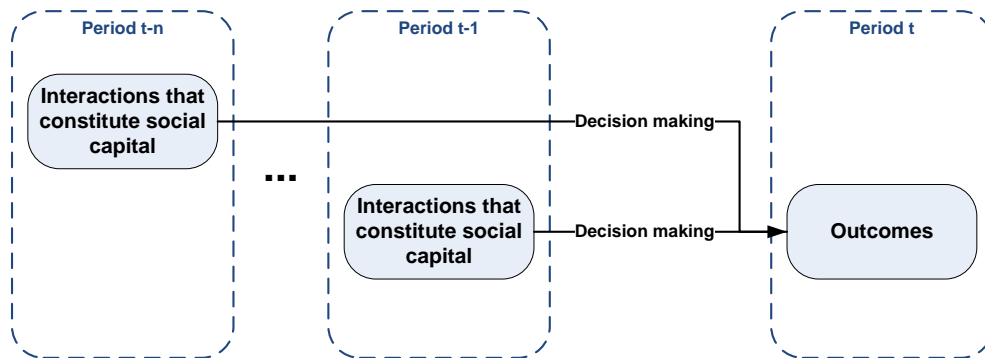


Figure 9: Literal social capital – lagged simple causal logic

In addition, at the same time that social capital may influence decision making, other factors can also affect outcomes through a variety of mechanisms. These too may have long lasting effects. These additional factors may be represented in the developing causal diagram as seen below.

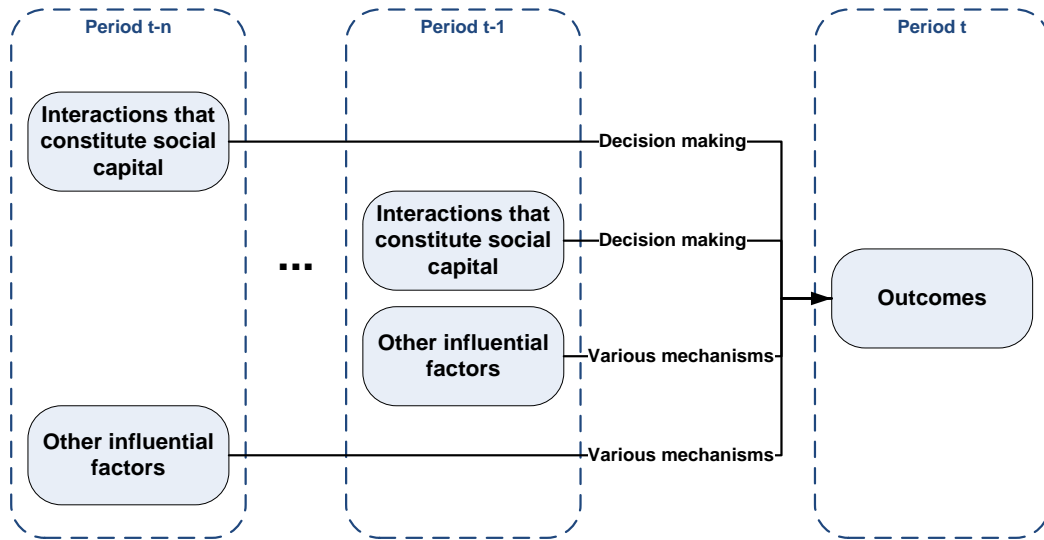


Figure 10: Literal social capital – elaborated lagged causal logic

Although literal social capital clearly operates prior to the realization of its associated outcomes, the information provision and resultant decision making that drive social capital’s effects may require very little time. In empirical situations where measures of social capital, its possible outcomes, and other influential factors are collected infrequently, there is the possibility of seemingly contemporaneous relationships. For example, it may appear that social capital contemporaneously influences outcomes when both are measured on an annual basis. This would suggest the following.

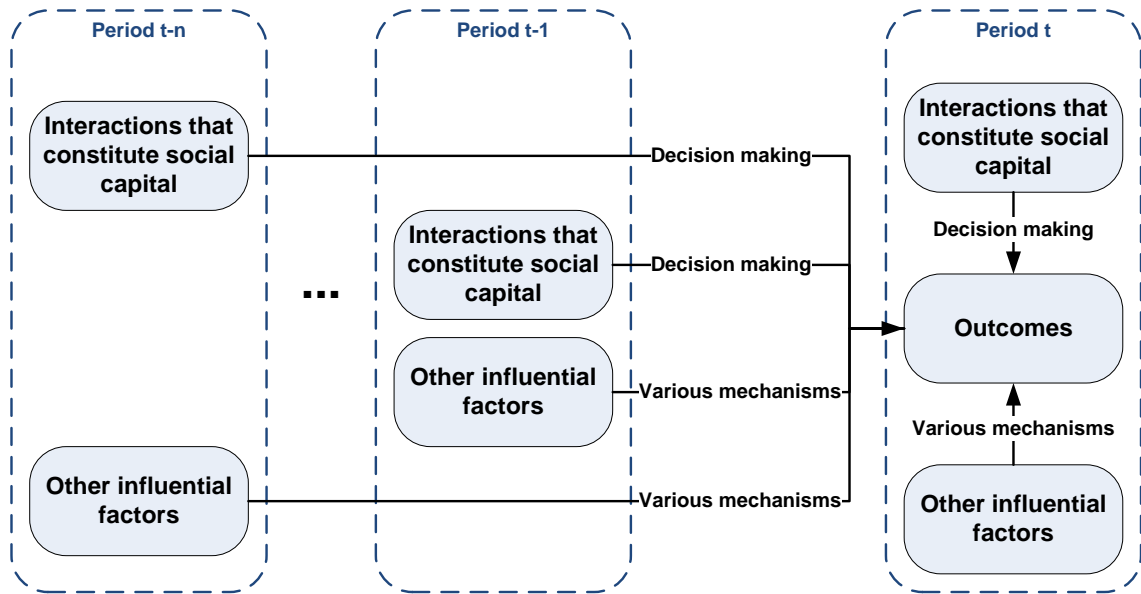


Figure 11: Literal social capital – elaborated contemporaneous causal logic

Ideally, all of the items in Figure 11 would feature when modelling literal social capital's effects. This would imply the following linear regression model structure with  $Y$  representing the outcome, the  $X$ s representing vectors of social capital measures, the  $Z$ s representing vectors of other measured influential factors.<sup>8</sup>

$$Y_{it} = b_0 + \mathbf{X}_i \mathbf{b}_1 + \dots + \mathbf{X}_{i,t-n} \mathbf{b}_{1+n} + \mathbf{Z}_{i,t} \mathbf{a}_1 + \dots + \mathbf{Z}_{i,t-n} \mathbf{a}_{1+n} + e_{it} \quad \dots(9)$$

However, the NLSCY does not include sufficient information to quantify each of these items. In the context of the planned PSE enrolment analysis, relevant data occur in a small number of survey cycles, limiting the number of periods from which independent variables are available. In particular, the self-completed questionnaires used to develop relevant measures of literal social capital are not administered to children when they are

<sup>8</sup> All terms in bold in the equations that follow are vectors.

typically eligible for PSE enrolment. In addition, these self-reported social capital measures are not collected for the entirety of each child's lifetime.

These features of the data mean that lagged social capital and other lagged effects are examined, while contemporaneous effects can not be modelled explicitly. This modelling still aligns with the basic causal structure suggested above. Further, it still provides an opportunity to examine the extent to which measures of literal social capital, or specific forms of literal social capital, affect PSE enrolment. The limited model structure would appear as follows.

$$Y_{it} = b_0 + X_{i \ t-1} \mathbf{b}_1 + Z_{i \ t-1} \mathbf{a}_1 + e_{it} \quad \dots(10)$$

Making this model operational requires defining each of the measures constituting Y, X, and Z. The current analysis explored two different measures for the dependent variable Y. While identical in terms of structure, these variables differed in terms of their associated periods – the first based on information collected when children were 18 to 19 years old and the second when children were 20 to 21 years old. The first corresponds to the time when many children in the survey, assuming typical high school progression, would have initially been eligible for PSE enrolment. The second represents the first point when all children would have been eligible for PSE enrolment, assuming typical high school progression.

The measures used a binary variable to capture PSE enrolment. A value of one was associated with enrolment in any type of post-secondary institution at the time of



surveying or during the previous two years, provided the child has completed high school. A value of zero was associated with no enrolment at the time of surveying or during the previous two years. The following summarizes these dependent variables.

Table 8: Dependent variables – PSE enrolment			
Variable description	Age when measured	Time period	Coding or variable type
Indicator that the child enrolled in PSE after high school	18-19	t	0 – No 1 – Yes
Indicator that the child enrolled in PSE after high school	20-21	t+1	0 – No 1 – Yes

The two dependent variables discussed above imply the need for two regression models for the analysis. One is identical to that of equation 10, and the other substitutes  $Y_t$  for the PSE enrolment measure in the subsequent year.

$$Y_{it} = b_0 + X_{i\ t-l}b_1 + Z_{i\ t-l}a_1 + e_{it} \quad \dots(11)$$

and

$$Y_{it+1} = b_0 + X_{i\ t-l}b_1 + Z_{i\ t-l}a_1 + e_{it} \quad \dots(12)$$

Equally important to the modelling are measures of social capital. Recall that the equations above subsume these measures under the vector X. This thesis argues that direct measures of the social interactions that constitute literal social capital are most appropriate for empirical purposes. However, it also argues that these interactions are qualitatively different from those that provide direct utility to individuals. This qualitative difference requires defining interactions along a number of dimensions.

Three dimensions support this quantification and distinction. The first involves the quantification of associations meant to measure the breadth of ones social interactions (NUM). Cast in terms of the number of social contacts, a direct measure may involve, for example, a count of an individual's friends. The second dimension involves the intensity of social interaction (INT). This may include, for example, the frequency with which individuals interact with their friends. A third dimension helps distinguish these interactions based on purpose (PUR). This may involve, for example, identifying the degree to which interactions serve a specific intent.

Ideally, the modelling for the current analysis would include direct measures of each of these dimensions and use an interaction term, representing social capital, as an independent variable in the analysis. In the context of PSE enrolment, number and intensity measures are easily quantifiable and could in theory involve children's interaction with friends, family, teachers or others. Measures of purpose would need to identify the degree to which the interactions are oriented toward the goal of PSE enrolment. Using the model structure discussed above, these variables would be measured when children were either 16 or 17 years old, in the survey cycle directly preceding their 18 to 19 year old outcome collection. This would imply the following model structures based on equations 11 and 12 above.

$$Y_{it} = b_0 + NUM*INT*PUR_{i\ t-1}b_1 + Z_{i\ t-1}a_1 + e_{it} \quad \dots(13)$$

and

$$Y_{it+1} = b_0 + NUM*INT*PUR_{i\ t-1}b_1 + Z_{i\ t-1}a_1 + e_{it} \quad \dots(14)$$

Here the interaction terms in the vector NUM\*INT\*PUR represent the measures of literal social capital as discussed above.

Unfortunately, the NLSCY does not include all of the independent measures of the literal social capital dimensions for any social interactions that are plausibly related to PSE enrolment. That is it does not simultaneously include a direct measure of children's interactions with specific individuals, a direct measure of the intensity of these interactions, and a qualitative assessment of their use in transmitting information about post-secondary enrolment. As a result, the current analysis used measures that are functions of some or all of these dimensions. Two of these relate to child-friend interactions and two relate child-PMK<sup>9</sup> interactions. The table below lists these measures.

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<sup>9</sup> Person most knowledgeable

Table 9: Independent variables – literal social capital indicators			
Variable description	Age when measured	Time period	Coding or variable type
Number of days per week that the child spends with their friends	16-17	t-1	1 – Never 2 – Less than once a week 3 – 1 day a week 4 – 2-3 days a week 5 – 4-5 days a week 6 – 6-7 days a week
Measure of how often child’s friends push them to succeed and try new things	16-17	t-1	1 – Rarely or never 2 – Some of the time 3 – Most of the time 4 – All of the time
Indicator that the PMK expects the child to go on to PSE	16-17	t-1	0 – No 1 – Yes
Measure of how often the PMK talks to the child about school	16-17	t-1	1 – Rarely 2 – Less than once a month 3 – Once a month 4 – A few times a month 5 – Once a week 6 – A few times a week 7 – Daily

The number of days that a child spends with their friends in a week is a function of the number friends that a child has, and the intensity of their interaction with these friends. All else being equal, the more friends that a child has the more time that they will typically spend with these friends. A child might interact with their friends on an infrequent or frequent basis. More intense interactions, all else being equal, would result in a child who spends more time with others. This single variable therefore combines aspects of the first two dimensions of social capital in one measure.

By contrast, how often a child’s friends push them to succeed incorporates all three dimensions. The frequency of this measure is a function of the number friends with which a child interacts and the intensity of these interactions. Again, all else being equal, a child with more friends will indicate that their friends push them to succeed more often.

Similarly, all else being equal, those who interact with their friends more intensely will indicate the same. The main difference with the success measure is the characterization of the type interaction. Unlike the *time with friends* variable, the success variable suggests that the interaction is oriented towards promoting success. To the extent that post-secondary enrolment is considered a marker of success, the variable can stand in for the three dimensions of social capital identified in equation 13.

Similar logic holds for the PMK's expectation for PSE enrolment, and the frequency child-PMK school related talk. Clearly, in both cases, there are only two individuals involved in the social interaction – the child and the PMK – eliminating the need to define the number of social actors. In addition, the measures clearly speak to the nature of the interaction between the child and the PMK. In the first case, the interaction communicates the need for PSE enrolment, and links closely to decision making about PSE. In the second case, interactions are more generally related to school but could conceivably affect the decision making process. Although the PSE expectation variable provides limited information about the intensity of interactions between the child and the PMK, the school related talk measure provides a more accurate picture of the intensity of interaction called for in the literal social capital framework.

Each of the four measures discussed above combine some or all of the literal social capital dimensions identified in the earlier sections. They represent proxies that stand in for direct measures of each of the literal social capital dimensions. Incorporating them into equations 13 and 14 using the names  $LSC_1$ ,  $LSC_2$ ,  $LSC_3$ , and  $LSC_4$  in place of the interaction term  $NUM*INT*PUR$  results in the following model structures. Importantly,

the LSC terms no longer represent vectors of independent variables in these models but interaction terms corresponding to the four variables presented in Table 9.

$$Y_{it} = b_0 + b_1LSC_{1i\ t-1} + b_2LSC_{2i\ t-1} + b_3LSC_{3i\ t-1} + b_4LSC_{4i\ t-1} + \mathbf{Z}_{i\ t-1}\mathbf{a}_1 + e_{it} \quad \dots(15)$$

and

$$Y_{it+1} = b_0 + b_1LSC_{1i\ t-1} + b_2LSC_{2i\ t-1} + b_3LSC_{3i\ t-1} + b_4LSC_{4i\ t-1} + \mathbf{Z}_{i\ t-1}\mathbf{a}_1 + e_{it} \quad \dots(16)$$

The educational literature includes many studies examining the effects of various factors on educational attainment. In their examination of the school enrolment, Alderman, Behrman, Lavy, and Menon examine in particular the influence of child health. Although important for its focus on the impacts of health, their regression analysis also identifies a methodological issue that has bearing on the current analysis (2001, pp. 189-190).

Using an economic model of human resource investment, the authors suggest that child health is in part determined by additional child and household characteristics. This is because it is partially an investment decision driven by the expected return to education, which is itself a function of child health. The decision is then constrained by household and child endowments. The authors rightly point out that when these additional child and household characteristics are unobserved and subsumed in the error term, their correlation with child health will necessarily bias model estimates (Alderman et al., 2001, p. 191).

A similar observation may be made about the social capital measures discussed above. It is plausible that these too may be driven by household and child characteristics. That said the social capital literature includes few strong statements about the determinants of social interactions. While it is likely that family resources, composition, and activities will influence the ability of children to socialize, numerous factors may underpin children's interactions. In the absence a strong theory of social capital formation, the current analysis attempts to include many measures of plausible and possibly influential factors in the vector  $Z$  to avoid these biases.

However, prior to discussing the details of these measures it is important to highlight one additional constraint of the NLSCY data used in the analysis. Equations 15 and 16 suggest that all independent variables should come from the period preceding the 18-19 year old outcome period. This would imply data collection when children were either 16 or 17 years old. Unfortunately, not all relevant independent variables are collected at this time. Many are only collected when children are either 14 or 15 years old.

To deal with this issue, the analysis used double lagged independent variables where single lagged independent variables did not exist. As suggested above, these double lagged variables were based on survey information collected when children were either 14 or 15 years old. While use of this double lag represents a further compromise in modelling, it was the only means of gathering the necessary information to implement the model structure described in equations 15 and 16. At the same time, it was reasonable to expect that this adjustment to the model would have a limited impact on the results.

Although it was not possible to test the premise formally, one might expect many of the

variables developed using the double lagged information to be highly correlated with those developed from single lagged information – were it collected. This is largely because of the nature of the variables, many of which one would expect to change slowly over time.

Use of these double lagged variables implies that equations 15 and 16 must now appear as follows.

$$Y_{it} = b_0 + b_1LSC_{1i\ t-1} + b_2LSC_{2i\ t-1} + b_3LSC_{3i\ t-1} + b_4LSC_{4i\ t-1} + Z_{1i\ t-1}a_1 + Z_{2i\ t-2}a_2 + e_{it} \quad \dots(17)$$

and

$$Y_{it+1} = b_0 + b_1LSC_{1i\ t-1} + b_2LSC_{2i\ t-1} + b_3LSC_{3i\ t-1} + b_4LSC_{4i\ t-1} + Z_{1i\ t-1}a_1 + Z_{2i\ t-2}a_2 + e_{it} \quad \dots(18)$$

It is now possible to return to the discussion of the additional independent variables subsumed under the terms  $Z_1$  and  $Z_2$ . One may divide the types of variables subsumed under these terms into four groups. The first involves characteristics of the child's home environment and are meant to capture how these environmental factors may affect or constrain the decision to enter PSE. The second involves characteristics of the child, which clearly should have an influence on the child's decision making. The third involves



characteristics of the child's parents. Finally, a fourth type of variable is meant to control for a variety of structural issues resulting from the use of the NLSCY.

There are a variety of examples in the housing literature of how children's home environments affect diverse educational outcomes. In these works, one of the main considerations typically involves the definition of housing. Few would argue that housing involves the physical structure in which the child lives. Certainly, it is plausible that the level of crowding, repair, or physical design can influence their academic pursuits. However, some authors have emphasized that a full understanding of housing involves more than just a characterization of the physical environment. Other physical considerations outside of the home and well as the social or psychological dimension of housing may all come into play.

Fuller-Thomson, Hulchanski, and Hwang argue for understanding housing within four dimensions. These include the house, home, neighbourhood, and community. The first two deal with the physical and social/psychological aspects of one's residence. The latter two deal with the physical and social/psychological aspects of the area surrounding one's residence. Characterizing housing along each of these dimensions provides a fuller understanding of a child's living environment and by extension the possible effects of PSE enrolment (Fuller-Thomson, Hulchanski, & Hwang, 2000, p. 113).

The developed NLSCY dataset included information to measure aspects of each of these dimensions. Physical measures of both the home and neighbourhood are perhaps the most readily available. Provincial indicators, indicators of community population size,

measures of average area income, and specific details of the child’s home were all available. The table below includes each of the physical measured used in the analysis.<sup>10</sup>

Table 10: Independent variables – house and neighbourhood indicators			
Variable description	Age when measured	Time period	Coding or scale
Indicator that the child lives in an Atlantic province	16-17	t-1	0 – No 1 – Yes
Indicator that the child lives in Quebec	16-17	t-1	0 – No 1 – Yes
Indicator that the child lives in Ontario	16-17	t-1	0 – No 1 – Yes
Indicator that the child lives in a Manitoba, Saskatchewan, Alberta, or BC	16-17	t-1	0 – No 1 – Yes
Indicator that the child lives in another region	16-17	t-1	0 – No 1 – Yes
Indicator that the child lives in a rural area	16-17	t-1	0 – No 1 – Yes
Indicator that the child lives in a city with less than 30,000 people	16-17	t-1	0 – No 1 – Yes
Indicator that the child lives in a city with 30,000 to 99,999 people	16-17	t-1	0 – No 1 – Yes
Indicator that the child lives in a city with 100,000 to 499,999	16-17	t-1	0 – No 1 – Yes
Indicator that the child lives in a city with 500,000 or more people	16-17	t-1	0 – No 1 – Yes
Number of people living in the child’s home	16-17	t-1	Count
Indicator noting that someone in the child’s family owns their home	16-17	t-1	0 – No 1 – Yes
Count of the number of bedrooms in the child’s home	16-17	t-1	Count
Ratio of the number people in the child’s home to the number of bedrooms	16-17	t-1	Ratio
Child’s annual household income level	16-17	t-1	Dollars
Child’s associated household Low Income Cut Off (LICO) level	16-17	t-1	Dollars
Number of dollars below the associated LICO level that the child’s household income falls	16-17	t-1	Dollars
Average household income in child’s dissemination area	14-15*	t-2*	Dollars

\* Approximate, see discussion below.

<sup>10</sup> Readers will note that average household income in the child’s dissemination area is included among these measures. This average income is also used to construct the measure of figurative social capital in the current analysis. Both are included in many of the regressions to follow in order to independently capture outcome variation associated with this average income and figurative social capital.

Measures of the home and community that involve less tangible social and psychological aspects of the child’s living environment are less readily available. However, some did exist. The NLSCY includes a composite scaled measure of family functioning that can help characterize the general interaction between family members in the child’s home. It also includes an assessment of the child’s neighbourhood as an area to raise children, touching on the community aspect of housing. At the same time, the length of time that a child has lived in their community may also help characterize this final dimension. The table below outlines these variables in more detail.<sup>11, 12</sup>

Table 11: Independent variables – home and community indicators			
Variable description	Age when measured	Time period	Coding or scale
Child’s assessed family functioning score	14-15	t-2	X-X value
PMK’s assessment of the child’s neighbourhood as a place to raise children	14-15	t-2	1 – Very poor 2 – Poor 3 – Average 4 – Good 5 – Excellent
Number of years that the PMK has lived in their neighbourhood	14-15*	t-2*	Years
* Approximate, see discussion below.			

At this junction, it is important to highlight an issue related to some of the neighbourhood and community independent variables included in the tables above. While these are

<sup>11</sup> Although the family functioning score is based on a variety of parental perceptions and family interactions, the breadth of this interaction is such that it does not lend itself to the social capital measurement advocated in this thesis. It is, rather, included as a general measure of each child’s home life situation.

<sup>12</sup> As with average household income in the child’s dissemination area, the number of years that the PMK has lived in their area is a component of the measure of figurative social capital used in this paper. Again, both the number of years that the PMK has lived in their area variable and the figurative measure of social capital feature in many of the regression models.

technically ecological variables, the composition of the NLSCY dataset used for the current analysis meant that there is little duplication for some of these variables across individuals. For example, few children in the dataset will live in similar dissemination areas or communities as defined within the context of the NLSCY interview process. This means that measures of aggregate income and community assessment will vary at the individual rather than group level. That is, no individual will be associated with the same aggregate measures. As the discussion below will note, these variables are not of most interest to the current analysis. While it is certainly possible that some biased estimation may result for the true group measures (Moulton, 1990, p. 334), these variables are of secondary importance to the analysis of social capital and may remain without undermining the main results discussed below.

The work of Alderman et al. above stresses the importance of child characteristics generally, and measures of health specifically when examining educational outcomes. Examples such as gender, aboriginal status, and immigrant status may be potentially associated with PSE decision making. Arguably, differences among these groups may provide systematic incentives or disincentives to PSE. For example, recent male high school graduates may have more ready access to employment involving low skilled physical work. Forgoing these opportunities for PSE may come at a considerable opportunity cost. That said, a number of other economic or social forces may be at play.

In addition, other important characteristics also exist. Cameron and Heckman, in their examination of educational attainment make particular note of child ability or motivational characteristics, which in their dataset were not represented (Cameron &

Heckman, 1998, p. 270). Although the authors were able to address this issue in their approach to regression modelling, the breadth of the NLSCY dataset again eliminates the need for a similar correction. There are a variety of direct measures of child ability in the dataset. One such measure as well the other direct measures of child characteristics used in the analysis are noted in the table below.

Table 12: Independent variables – child characteristic indicators			
Variable description	Age when measured	Time period	Coding or variable type
Indicator that the child is male	16-17	t-1	0 – No 1 – Yes
Indicator that the child is aboriginal	16-17	t-1	0 – No 1 – Yes
Age of the child at immigration	16-17	t-1	Years
Count of the child’s absences from school during the year	14-15	t-2	1 – 0 days 2 – 1 to 3 days 3 – 4 to 6 days 4 – 7 to 10 days 5 – 11 to 20 days 6 – More than 20 days
Assessment of the child’s performance at school	14-15	t-2	1 – Very poorly 2 – Poorly 3 – Average 4 – Well 5 – Very well
Assessment of the child’s health	14-15	t-2	1 – Poor 2 – Fair 3 – Good 4 – Very Good 5 – Excellent
Measure of how frequently the child gets into trouble	14-15	t-2	1 – Never 2 – Seldom 3 – Sometimes 4 – Often

While independent variables measuring aspects of the child’s living environment and personal characteristics are important, parental characteristics must also feature prominently among the independent variables subsumed in  $Z_1$  and  $Z_2$  from equations 17 and 18 above. A recent work by Jæger and Holm suggests the importance of parental characteristics in this type of multivariate modelling. In their work, the authors attempt to examine the “extent to which social class inequalities in educational attainment may be decomposed into economic and non-economic forms of stratification” (2007, p. 721). They use longitudinal Danish youth data to directly examine, in particular, the relationship between measures of parental class inequality and a number of educational outcomes (Jæger & Holm, 2007, p. 725).

As with the other works discussed above, their model suggests the need for control variables for both child and household characteristics. They include, for example, measures of child age and gender, as well as the number of siblings that the child has – each of which are included implicitly or explicitly in the current analysis. However, they also include composite measures of parental capital based on the work of Bourdieu. For example, they use binary measures to identify the presence of relationships that could provide children relevant assistance in seeking an education. Although the authors do not include a detailed discussion of the mechanisms through which these forms of capital operate, this approach is quite similar to that taken in the current work in that it characterizes specific relationships in terms of their perceived relevance to the outcome under study – a three point ordinal measure of educational attainment (Jæger & Holm, 2007, pp. 726-727). However, unlike the current study it does not attempt to characterize the intensity or number of such relationships, both of which could have considerable effects on the educational outcome and are considered below.

Jæger and Holm also caution about possible biases resulting from omitted independent variables in their regression. In the case of their work, information on levels of parental capital is only available for one parent of each child in their dataset. Unless these levels of capital are completely uncorrelated with those of the unobserved parent, some bias in their associated regression estimates will result (Jæger & Holm, 2007, p. 728). This type of omitted variables bias is certainly a concern for the current analysis as well.

Jæger and Holm attempt to deal with this issue by specifying a random effects model (Jæger & Holm, 2007, p. 728). However, the NLSCY data discussed above provide a

more direct and superior means of dealing with this problem since it supports the three requirements for causal analysis posed by Taris. As the data include corresponding measures of characteristics for both parents – where two parent families exist – both may be included in the analysis's regression structure under terms  $Z_1$  and  $Z_2$  in equations 17 and 18 above. The following table notes all such measures used in the current analysis.



Table 13: Independent variables – PMK and spousal characteristics			
Variable description	Age when measured	Time period	Coding or variable type
Indicator that the PMK is male	16-17	t-1	0 – No 1 – Yes
Age of the PMK	16-17	t-1	Years
Indicator that the PMK has a postsecondary degree	16-17	t-1	0 – No 1 – Yes
Count of the number of weeks that the PMK works in a year	16-17	t-1	Weeks
Measures of the number of hours that the PMK works in a week	16-17	t-1	1 – Less than 10 hours 2 – Between 10 and 19 hours 3 – Between 20 and 29 hours 4 – Between 30 and 39 hours 5 – Between 40 and 49 hours 6 – 50 hours or more
PMK's age at immigration to Canada	16-17	t-1	Years
Measure of the PMK's health	14-15	t-2	1 – Poor 2 – Fair 3 – Good 4 – Very Good 5 – Excellent
Indicator that the PMK has a disability that inhibits caring for children	14-15	t-2	0 – No 1 – Yes
Indicator that the PMK has a spouse	16-17	t-1	0 – No 1 – Yes
Measure of how important good grades are to the PMK	14-15	t-2	1 – Not at all important 2 – Somewhat important 3 – Important 4 – Very Important
Indicator that the spouse is male	16-17	t-1	0 – No 1 – Yes
Age of the spouse	16-17	t-1	Years
Indicator that the spouse has a postsecondary degree	16-17	t-1	0 – No 1 – Yes
Count of the number of weeks that the spouse works in a year	16-17	t-1	Weeks
Measures of the number of hours that the spouse works in a week	16-17	t-1	1 – Less than 10 hours 2 – Between 10 and 19 hours 3 – Between 20 and 29 hours 4 – Between 30 and 39 hours 5 – Between 40 and 49 hours 6 – 50 hours or more
Spouse's age at immigration to Canada	16-17	t-1	Years
Measure of the spouse's health	14-15	t-2	1 – Poor 2 – Fair 3 – Good 4 – Very Good 5 – Excellent
Indicator that the spouse has a disability that inhibits caring for children	14-15	t-2	0 – No 1 – Yes

The fourth type of independent variable included in equations 17 and 18 are meant to deal with two structural issues in the NLSCY dataset. As noted in the sections above, the NLSCY is administered every two years. The survey therefore collects children into two-year long age groups. For example, the discussion of outcomes for the current analysis identifies an 18 to 19 year old outcome and a 20 to 21 year old outcome. It is plausible that being the latter half of this age group will improve a child’s chances of being in PSE at the time of outcome surveying. Thus, an independent binary variable identifying the younger half of this age group was included in equations 17 and 18.

Also, and as the section below will discuss in more detail, multiple cycles of the NLSCY were used to build up a dataset of sufficient size to support the current analysis. This meant including children who were in the various NLSCY age groups in different years. For example, a portion of the sample was 18 or 19 years old at a time when the other portion was 16 or 17 years old. As such, equations 17 and 18 included a binary variable to capture any variation associated with being the younger of these groups. The following table describes these variables in more detail.

Table 14: Independent variables – data correction indicators			
Variable description	Age when measured	Time period	Coding or variable type
Indicator that the child was in cycle 4 when they were 16 or 17	16-17	t-1	0 – No 1 – Yes
Indicator that the child was 16 years old in their t-1 cycle	16-17	t-1	0 – No 1 – Yes

***Modeling figurative social capital***

As with literal social capital, the analysis of figurative social capital must attempt to quantify and analyze the basic causal relationships involved in the framework. Recall that

this thesis argues that figurative social capital involves aggregations of other forms of capital that an individual may access because of their social interactions. Capital is redirected from others in the group to the individual in question to achieve specific ends. For example, in the context of the current analysis, financial capital from among parental peers may be redirected to those with children entering PSE to facilitate enrolment.

The logic of this relationship suggests that the operation of figurative social capital and its associated redirection of capital must take place before its realized outcomes. The following figure presents the causal logic related to the operation of figurative social capital.

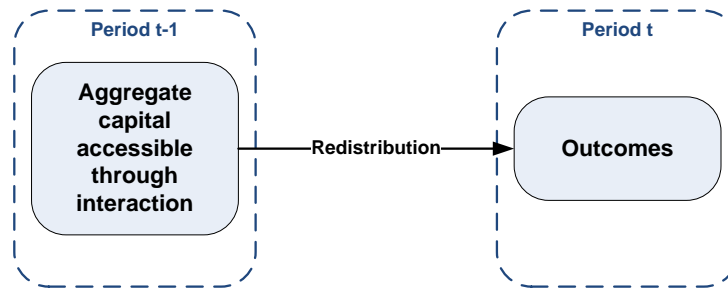


Figure 12: Figurative social capital – simple causal logic

Figurative social capital may operate over time, just like literal social capital, affecting outcomes over a number of periods. The same non-social capital factors from the discussion of literal social capital must also feature in a figurative analysis. In addition, the same measurement timing challenges exist when examining figurative social capital, as did when examining literal social capital. All this being the case, one would expect a more elaborate causal model for figurative social capital analogous to Figure 11 as seen below.

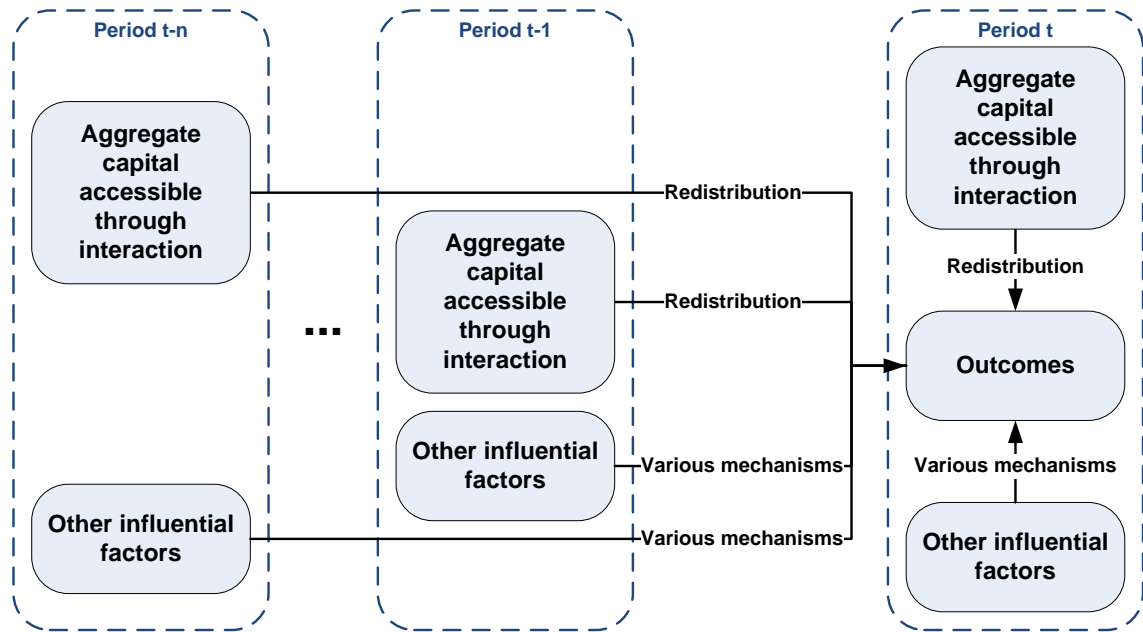


Figure 13: Figurative social capital – elaborated contemporaneous causal logic

Again, it is not possible to model all aspects of the causal model above and the modelling of figurative social capital requires a more limited approach. Recall from above that under this limited approach, lagged social capital and other effects are examined while contemporaneous effects are not modelled explicitly. The limited model structure for figurative social capital would therefore appear as follows.

$$Y_{it} = b_0 + X_{i,t-1}b_1 + Z_{i,t-1}a_1 + e_{it} \quad \dots(19)$$

Here, Y represents outcomes from social capital, and for the purposes of modelling figurative social capital in the current paper, the same measures of PSE enrolment discussed above are used. The Z term includes measures of other influential factors, and again, these include all those discussed above. The main factor that distinguishes

equation 19 from those equations discussed above is the inclusion of figurative rather than literal measures of social capital under the term X.

Figurative social capital is more difficult to quantify and include in equation 19 than literal social capital. This is because any measure used must quantify both the social interactions implied by the figurative social capital definition and the aggregate capital to which the interactions provide access. While the number, intensity, and purpose dimensions discussed under literal social capital are valuable when defining the interactions, these direct measures must be interacted with some measure of aggregate capital to fully articulate the concept. As with literal social capital, no direct measures exist in the NLSCY and so a proxy or proxies must be used. This is by no means ideal for the current analysis but represents the best possible approach to measurement given the data.

In the context of PSE enrolment, it is likely that parental figurative social capital is most important. It is unlikely that groups of children will have large accumulations of financial or other capital, which their friends will access in support of PSE enrolment. However, for parents this type of access to group capital is certainly a possibility. What is more, access to this capital may considerably change the possibilities for PSE enrolment among children. It is therefore figurative social capital related to PMKs' interactions with their peers, rather than those of their children, which is most important in the current analysis of figurative social capital.

Two of the independent variables included in the discussion of the literal social capital may be used to create a proxy for this PMK social capital. First, the length of time that a PMK has lived in their neighbourhood may serve as a proxy for that PMK's figurative social capital community social interactions. While this measure is not ideal in that it does not clearly define the number, intensity, and purpose of community interactions, it is plausible that longer periods in a community would positively correlate with the number and intensity of community interactions that provide access to aggregate capital. Second, mean household income may then proxy for aggregate financial capital in the PMK's community under the assumption that greater income is correlated with greater available financial capital among community members. Interacting these two terms provides the best possible measures of figurative social capital, related to PSE enrolment, which is available for the current analysis.<sup>13</sup> That said, others such as those that would directly measure the additional financial capital available to individuals because of their social interactions, would be valuable additions to the analysis, had they been available.

Defining this interaction term as FSC and recognizing that two outcome variables are examined, equation 19 becomes the following two equations.

$$Y_{it} = b_0 + b_1 \text{FSC}_{1i\ t-1} + \mathbf{Z}_{1i\ t-1} \mathbf{a}_1 + \mathbf{Z}_{2i\ t-2} \mathbf{a}_2 + e_{it} \quad \dots(20)$$

and

$$Y_{it+1} = b_0 + b_1 \text{FSC}_{1i\ t-1} + \mathbf{Z}_{1i\ t-1} \mathbf{a}_1 + \mathbf{Z}_{2i\ t-2} \mathbf{a}_2 + e_{it} \quad \dots(21)$$

---

<sup>13</sup> Unlike the measures of literal social capital discussed above, the figurative social capital proxy measure used in the analysis is geographically based.

*A note on nesting*

It is certainly possible that literal and figurative social capital may operate at the same time, concurrently influencing PSE enrolment. Given that equations 17 and 18, and equations 20 and 21 differ only in terms of their social capital measures, nesting these equations provides an efficient means of examining the effects of both forms of social capital using only two equations. These equations would appear as follows.

$$Y_{it} = b_0 + b_1LSC_{1i\ t-1} + b_2LSC_{2i\ t-1} + b_3LSC_{3i\ t-1} + b_4LSC_{4i\ t-1} + b_5FSC_{1i\ t-1} + \mathbf{Z}_{1i\ t-1}\mathbf{a}_1 + \mathbf{Z}_{2i\ t-1}\mathbf{a}_2 + e_{it} \quad \dots(22)$$

and

$$Y_{it+1} = b_0 + b_1LSC_{1i\ t-1} + b_2LSC_{2i\ t-1} + b_3LSC_{3i\ t-1} + b_4LSC_{4i\ t-1} + b_5FSC_{1i\ t-1} + \mathbf{Z}_{1i\ t-1}\mathbf{a}_1 + \mathbf{Z}_{2i\ t-1}\mathbf{a}_2 + e_{it} \quad \dots(23)$$

To explore the impact of this nesting, this paper presents regression results from the models that include the literal and then figurative social capital measures separately. It then presents results from models of the form outlined in equations 22 and 23. This allows an examination of the robustness of the social capital effects to this change.

## ***Results***

Table 15 presents regression results from the application of the equation 17 model structure. Independent variables in the regression included all those discussed above. The table presents the variable type and mean value for each.<sup>14</sup> As the outcome variable under study was binary, probit regression modelling was used. Marginal effects and associated standard error are reported for each independent variable. Statistically significant estimates at the .95 level are noted with a “\*\*” and those at the .90 level are noted with a “\*”.

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<sup>14</sup> Readers will note in this table and those that follow, not all mean values will align with those expected for the general Canadian population. This is due to sample attrition and the use of un-weighted data in the analysis.



Table 15: Literal social capital regression results – 18-19 year old PSE enrolment				
Variable	Type	Mean	Marginal effect	Standard error
Constant	Constant	n/a	n/a	n/a
Measures of Literal Social Capital				
LSC <sub>1</sub> – How often child sees friends	Scale	4.32	<b>-0.06**</b>	0.02
LSC <sub>2</sub> – How often friends push child to succeed	Scale	2.32	<b>0.08**</b>	0.03
LSC <sub>3</sub> – PMK expects child to go on to PSE	Binary	0.91	0.14	0.09
LSC <sub>4</sub> – How often PMK talks to child about school	Scale	6.24	0.00	0.02
Other Independent Variables				
(Child lives in an Atlantic province)	Binary	-	-	-
Child lives in Québec	Binary	0.19	<b>0.21**</b>	0.07
Child lives in Ontario	Binary	0.31	<b>-0.19**</b>	0.07
Child lives in MB, SK, AB, BC	Binary	0.26	<b>-0.16**</b>	0.07
(Child lives in another region)	Binary	-	-	-
(Child lives in a rural area)	Binary	-	-	-
Child lives in a city <30,000	Binary	0.31	-0.15	0.14
Child lives in a city 30,000 to 99,999	Binary	0.07	-0.27	0.21
Child lives in a city 100,000 to 499,999	Binary	0.25	-0.23	0.21
Child lives in a city 500,000	Binary	0.15	-0.30	0.35
Number of people in child's house	Count	4.27	-0.07	0.14
Child's house owned	Binary	0.94	0.12	0.12
Number of beds in child's house	Count	3.66	-0.07	0.11
Crowding ratio for child's house	Interaction	1.20	-0.18	0.32
Child's annual household income	Dollars	87304.90	<b>0.000001*</b>	0.000000
Child's household LICO level	Dollars	29780.00	0.000030	0.000030
Child's household income below LICO	Dollars	403.53	-0.000020	0.000010
Average annual household income from census	Dollars	59301.70	-0.000001	0.000000
Child's family functioning score	Scale	8.93	0.00	0.01
PMK's neighbourhood assessment	Scale	4.53	0.03	0.04
Number of years PMK has lived in neighbourhood	Years	11.60	0.00	0.00
Child is male	Binary	0.46	<b>-0.12**</b>	0.05
Child is aboriginal	Binary	0.00	0.23	0.31
Child's age at immigration	Years	0.12	-0.03	0.04
Child's number of absences from school	Count	2.35	<b>-0.06**</b>	0.02
Child's school performance	Scale	4.20	<b>0.20**</b>	0.03
Child's health	Scale	4.41	0.02	0.03
Child's frequency of getting into trouble	Scale	1.44	0.00	0.03
PMK is male	Binary	0.05	<b>-0.23*</b>	0.12
PMK's age	Years	44.24	<b>0.02**</b>	0.01
PMK has a PSE degree	Binary	0.39	<b>0.12**</b>	0.05
Number of weeks the PMK works per year	Weeks	40.60	0.00	0.00
Number of hours the PMK works per week	Scale	3.53	0.03	0.02
PMK's age at immigration	Years	1.62	<b>0.02**</b>	0.01
PMK's health	Scale	3.91	0.04	0.03
PMK has a disability	Binary	0.03	0.01	0.16
Indicator that the PMK has a spouse	Binary	-	-	-
PMK impression about the importance of grades	Scale	3.59	-0.01	0.04
(Spouse is male)	Binary	-	-	-
Spouse's age	Years	46.44	<b>-0.02**</b>	0.01
Spouse has a PSE degree	Binary	0.42	0.05	0.06
Number of weeks the spouse works per year	Weeks	47.31	0.00	0.00
Number of hours the spouse works per week	Scale	4.90	0.04	0.03
Spouse is Aboriginal	Binary	-	-	-
Spouse's age at immigration	Years	1.94	-0.01	0.01
Spouse's health	Scale	3.84	0.01	0.03
Spouse has a disability	Binary	0.02	<b>0.35**</b>	0.08
Child was in cycle 4 when 16 or 17	Binary	0.47	0.00	0.07
Child was 16 when in their t-1 cycle	Binary	0.55	<b>-0.30**</b>	0.04
			<b>Sample:</b>	Not released
			<b>Pseudo R<sup>2</sup>:</b>	0.2914

Table 16 presents regression results from the application of the equation 18 model structure. Independent variables in the regression included all those discussed above. The table presents the variable type and mean value for each. As the outcome variable under study was binary, probit regression modelling was used. Marginal effects and associated standard error are reported for each independent variable. Statistically significant estimates at the .95 level are noted with a “\*\*” and those at the .90 level are noted with a “\*”.

Table 16: Literal social capital regression results – 20-21 year old PSE enrolment				
Variable	Type	Mean	Marginal effect	Standard error
Constant	Constant	n/a	n/a	n/a
Measures of Literal Social Capital				
LSC <sub>1</sub> – How often child sees friends	Scale	4.32	<b>-0.03*</b>	0.02
LSC <sub>2</sub> – How often friends push child to succeed	Scale	2.32	<b>0.06**</b>	0.02
LSC <sub>3</sub> – PMK expects child to go on to PSE	Binary	0.91	<b>0.16*</b>	0.09
LSC <sub>4</sub> – How often PMK talks to child about school	Scale	6.24	0.01	0.02
Other Independent Variables				
(Child lives in an Atlantic province)	Binary	-	-	-
Child lives in Québec	Binary	0.19	0.02	0.06
Child lives in Ontario	Binary	0.31	<b>-0.14**</b>	0.07
Child lives in MB, SK, AB, BC	Binary	0.26	<b>-0.24**</b>	0.07
(Child lives in another region)	Binary	-	-	-
(Child lives in a rural area)	Binary	-	-	-
Child lives in a city <30,000	Binary	0.31	0.10	0.10
Child lives in a city 30,000 to 99,999	Binary	0.07	<b>0.16*</b>	0.09
Child lives in a city 100,000 to 499,999	Binary	0.25	0.07	0.16
Child lives in a city 500,000	Binary	0.15	0.12	0.23
Number of people in child's house	Count	4.27	0.00	0.11
Child's house owned	Binary	0.94	<b>0.27**</b>	0.11
Number of beds in child's house	Count	3.66	0.01	0.07
Crowding ratio for child's house	Interaction	1.20	0.12	0.19
Child's annual household income	Dollars	87304.90	<b>0.000001*</b>	0.000000
Child's household LICO level	Dollars	29780.00	-0.000011	0.000030
Child's household income below LICO	Dollars	403.53	-0.000014	0.000010
Average annual household income from census	Dollars	59301.70	0.000000	0.000000
Child's family functioning score	Scale	8.93	0.01	0.00
PMK's neighbourhood assessment	Scale	4.53	0.03	0.03
Number of years PMK has lived in neighbourhood	Years	11.60	0.00	0.00
Child is male	Binary	0.46	-0.02	0.04
Child is aboriginal	Binary	0.00	-0.19	0.42
Child's age at immigration	Years	0.12	0.02	0.03
Child's number of absences from school	Count	2.35	-0.03	0.02
Child's school performance	Scale	4.20	<b>0.14**</b>	0.02
Child's health	Scale	4.41	0.00	0.03
Child's frequency of getting into trouble	Scale	1.44	-0.03	0.03
PMK is male	Binary	0.05	0.06	0.09
PMK's age	Years	44.24	0.00	0.01
PMK has a PSE degree	Binary	0.39	<b>0.16**</b>	0.04
Number of weeks the PMK works per year	Weeks	40.60	0.00	0.00
Number of hours the PMK works per week	Scale	3.53	-0.02	0.02
PMK's age at immigration	Years	1.62	0.00	0.00
PMK's health	Scale	3.91	-0.01	0.02
PMK has a disability	Binary	0.03	0.01	0.13
Indicator that the PMK has a spouse	Binary	-	-	-
PMK impression about the importance of grades	Scale	3.59	0.04	0.03
(Spouse is male)	Binary	-	-	-
Spouse's age	Years	46.44	-0.01	0.00
Spouse has a PSE degree	Binary	0.42	0.01	0.05
Number of weeks the spouse works per year	Weeks	47.31	0.00	0.00
Number of hours the spouse works per week	Scale	4.90	0.02	0.02
Spouse is Aboriginal	Binary	-	-	-
Spouse's age at immigration	Years	1.94	0.00	0.00
Spouse's health	Scale	3.84	-0.01	0.02
Spouse has a disability	Binary	0.02	0.08	0.13
Child was in cycle 4 when 16 or 17	Binary	0.47	-0.07	0.05
Child was 16 when in their t-1 cycle	Binary	0.55	<b>-0.10**</b>	0.04
			<b>Sample:</b>	Not released
			<b>Pseudo R<sup>2</sup>:</b>	0.2614

Table 17 presents regression results from the application of the equation 20 model structure. Independent variables in the regression included all those discussed above. The table presents the variable type and mean value for each. As the outcome variable under study was binary, probit regression modelling was used. Marginal effects and associated standard error are reported for each independent variable. Statistically significant estimates at the .95 level are noted with a “\*\*” and those at the .90 level are noted with a “\*”.

Table 17: Figurative social capital regression results – 18-19 year old PSE enrolment				
Variable	Type	Mean	Marginal effect	Standard error
Constant	Constant	n/a	n/a	n/a
Measures of figurative Social Capital				
FSC <sub>1</sub> – Interaction of years in neighbourhood and avg. census income	Interaction	679242.00	<b>0.0000003**</b>	0.0000000
Other Independent Variables				
(Child lives in an Atlantic province)	Binary	-	-	-
Child lives in Québec	Binary	0.19	<b>0.24**</b>	0.06
Child lives in Ontario	Binary	0.31	<b>-0.16**</b>	0.07
Child lives in MB, SK, AB, BC	Binary	0.27	<b>-0.11*</b>	0.07
(Child lives in another region)	Binary	-	-	-
(Child lives in a rural area)	Binary	-	-	-
Child lives in a city <30,000	Binary	0.30	-0.16	0.13
Child lives in a city 30,000 to 99,999	Binary	0.07	-0.24	0.20
Child lives in a city 100,000 to 499,999	Binary	0.25	-0.19	0.20
Child lives in a city 500,000	Binary	0.16	-0.30	0.33
Number of people in child's house	Count	4.27	-0.02	0.13
Child's house owned	Binary	0.94	0.11	0.11
Number of beds in child's house	Count	3.66	-0.13	0.12
Crowding ratio for child's house	Interaction	1.20	-0.39	0.36
Child's annual household income	Dollars	87281.10	<b>0.000001**</b>	0.0000000
Child's household LICO level	Dollars	29845.30	0.000027	0.000030
Child's household income below LICO	Dollars	385.89	-0.000020	0.000010
Average annual household income from census	Dollars	60313.10	<b>-0.000004**</b>	0.0000000
Child's family functioning score	Scale	8.98	0.00	0.01
PMK's neighbourhood assessment	Scale	4.53	0.04	0.04
Number of years PMK has lived in neighbourhood	Years	11.60	<b>-0.01*</b>	0.01
Child is male	Binary	0.47	<b>-0.13**</b>	0.04
Child is aboriginal	Binary	0.00	0.21	0.33
Child's age at immigration	Years	0.11	-0.03	0.03
Child's number of absences from school	Count	2.35	<b>-0.05**</b>	0.02
Child's school performance	Scale	4.18	<b>0.19**</b>	0.03
Child's health	Scale	4.41	0.02	0.03
Child's frequency of getting into trouble	Scale	1.44	-0.03	0.03
PMK is male	Binary	0.05	<b>-0.22**</b>	0.11
PMK's age	Years	44.34	<b>0.02**</b>	0.01
PMK has a PSE degree	Binary	0.39	<b>0.11**</b>	0.05
Number of weeks the PMK works per year	Weeks	40.56	0.00	0.00
Number of hours the PMK works per week	Scale	3.51	<b>0.03*</b>	0.02
PMK's age at immigration	Years	1.65	<b>0.01**</b>	0.01
PMK's health	Scale	3.92	0.04	0.03
PMK has a disability	Binary	0.02	0.04	0.15
Indicator that the PMK has a spouse	Binary	-	-	-
PMK impression about the importance of grades	Scale	3.60	-0.02	0.04
(Spouse is male)	Binary	-	-	-
Spouse's age	Years	46.60	<b>-0.02**</b>	0.01
Spouse has a PSE degree	Binary	0.42	0.08	0.05
Number of weeks the spouse works per year	Weeks	47.13	0.00	0.00
Number of hours the spouse works per week	Scale	4.88	0.04	0.03
Spouse is Aboriginal	Binary	-	-	-
Spouse's age at immigration	Years	2.00	0.00	0.00
Spouse's health	Scale	3.86	0.01	0.03
Spouse has a disability	Binary	0.01	<b>0.32**</b>	0.09
Child was in cycle 4 when 16 or 17	Binary	0.48	-0.01	0.06
Child was 16 when in their t-1 cycle	Binary	0.56	<b>-0.30**</b>	0.04
			<b>Sample:</b>	Not released
			<b>Pseudo R<sup>2</sup>:</b>	0.2687

Table 18 presents regression results from the application of the equation 21 model structure. Independent variables in the regression included all those discussed above. The table presents the variable type and mean value for each. As the outcome variable under study was binary, probit regression modelling was used. Marginal effects and associated standard error are reported for each independent variable. Statistically significant estimates at the .95 level are noted with a “\*\*” and those at the .90 level are noted with a “\*”.

Table 18: Figurative social regression results – 20-21 year old PSE enrolment				
Variable	Type	Mean	Marginal effect	Standard error
Constant	Constant	n/a	n/a	n/a
Measures of figurative Social Capital				
FSC <sub>1</sub> – Interaction of years in neighbourhood and avg. census income	Interaction	678540.00	0.0000001	0.0000000
Other Independent Variables				
(Child lives in an Atlantic province)	Binary	-	-	-
Child lives in Québec	Binary	0.19	0.05	0.06
Child lives in Ontario	Binary	0.31	<b>-0.10*</b>	0.06
Child lives in MB, SK, AB, BC	Binary	0.27	<b>-0.22**</b>	0.06
(Child lives in another region)	Binary	-	-	-
(Child lives in a rural area)	Binary	-	-	-
Child lives in a city <30,000	Binary	0.30	0.07	0.10
Child lives in a city 30,000 to 99,999	Bina2ry	0.07	0.14	0.10
Child lives in a city 100,000 to 499,999	Binary	0.25	0.05	0.15
Child lives in a city 500,000	Binary	0.16	0.07	0.25
Number of people in child's house	Count	4.27	<b>0.00**</b>	0.10
Child's house owned	Binary	0.94	0.20	0.10
Number of beds in child's house	Count	3.66	-0.01	0.07
Crowding ratio for child's house	Interaction	1.20	0.04	0.18
Child's annual household income	Dollars	87238.60	<b>0.000001*</b>	0.0000000
Child's household LICO level	Dollars	29858.00	-0.000007	0.000020
Child's household income below LICO	Dollars	384.79	<b>-0.000016*</b>	0.000010
Average annual household income from census	Dollars	60252.40	-0.000001	0.0000000
Child's family functioning score	Scale	8.99	0.00	0.00
PMK's neighbourhood assessment	Scale	4.53	0.03	0.03
Number of years PMK has lived in neighbourhood	Years	11.59	0.00	0.01
Child is male	Binary	0.47	-0.04	0.04
Child is aboriginal	Binary	0.01	-0.26	0.40
Child's age at immigration	Years	0.11	0.00	0.02
Child's number of absences from school	Count	2.35	-0.03	0.02
Child's school performance	Scale	4.18	0.16	0.02
Child's health	Scale	4.41	<b>0.00**</b>	0.02
Child's frequency of getting into trouble	Scale	1.44	-0.04	0.03
PMK is male	Binary	0.05	<b>0.00*</b>	0.09
PMK's age	Years	44.34	0.00	0.01
PMK has a PSE degree	Binary	0.39	<b>0.17**</b>	0.04
Number of weeks the PMK works per year	Weeks	40.55	0.00	0.00
Number of hours the PMK works per week	Scale	3.51	-0.02	0.01
PMK's age at immigration	Years	1.64	0.00	0.00
PMK's health	Scale	3.92	0.00	0.02
PMK has a disability	Binary	0.02	0.07	0.10
Indicator that the PMK has a spouse	Binary	-	-	-
PMK impression about the importance of grades	Scale	3.60	0.03	0.03
(Spouse is male)	Binary	-	-	-
Spouse's age	Years	46.60	-0.01	0.00
Spouse has a PSE degree	Binary	0.42	0.02	0.04
Number of weeks the spouse works per year	Weeks	47.14	0.00	0.00
Number of hours the spouse works per week	Scale	4.88	0.01	0.02
Spouse is Aboriginal	Binary	0.00	<b>0.20**</b>	0.06
Spouse's age at immigration	Years	2.00	0.00	0.00
Spouse's health	Scale	3.86	-0.01	0.02
Spouse has a disability	Binary	0.01	0.06	0.14
Child was in cycle 4 when 16 or 17	Binary	0.48	-0.03	0.05
Child was 16 when in their t-1 cycle	Binary	0.56	<b>-0.09**</b>	0.03
			<b>Sample:</b>	Not released
			<b>Pseudo R<sup>2</sup>:</b>	0.2441

Table 19 presents regression results from the application of the equation 22 model structure. Independent variables in the regression included all those discussed above. The table presents the variable type and mean value for each. As the outcome variable under study was binary, probit regression modelling was used. Marginal effects and associated standard error are reported for each independent variable. Statistically significant estimates at the .95 level are noted with a “\*\*” and those at the .90 level are noted with a “\*”.



Table 19: Nested social capital regression results – 18-19 year old PSE enrolment				
Variable	Type	Mean	Marginal effect	Standard error
Constant	Constant	n/a	n/a	n/a
<b>Measures of Literal Social Capital</b>				
LSC <sub>1</sub> – How often child sees friends	Scale	4.32	<b>-0.06**</b>	0.02
LSC <sub>2</sub> – How often friends push child to succeed	Scale	2.32	<b>0.08**</b>	0.03
LSC <sub>3</sub> – PMK expects child to go on to PSE	Binary	0.91	0.14	0.09
LSC <sub>4</sub> – How often PMK talks to child about school	Scale	6.24	0.00	0.02
<b>Measures of figurative Social Capital</b>				
FSC <sub>1</sub> – Interaction of years in neighbourhood and avg. census income	Interaction	665566.00	<b>0.0000003**</b>	0.0000000
<b>Other Independent Variables</b>				
(Child lives in an Atlantic province)	Binary	-	-	-
Child lives in Québec	Binary	0.19	<b>0.22**</b>	0.07
Child lives in Ontario	Binary	0.31	<b>-0.21**</b>	0.07
Child lives in MB, SK, AB, BC	Binary	0.26	<b>-0.18**</b>	0.07
(Child lives in another region)	Binary	-	-	-
(Child lives in a rural area)	Binary	-	-	-
Child lives in a city <30,000	Binary	0.31	-0.16	0.14
Child lives in a city 30,000 to 99,999	Binary	0.07	-0.27	0.21
Child lives in a city 100,000 to 499,999	Binary	0.25	-0.22	0.21
Child lives in a city 500,000	Binary	0.15	-0.28	0.36
Number of people in child's house	Count	4.27	-0.07	0.14
Child's house owned	Binary	0.94	0.16	0.12
Number of beds in child's house	Count	3.66	-0.05	0.11
Crowding ratio for child's house	Interaction	1.20	-0.16	0.31
Child's annual household income	Dollars	87304.90	0.0000009	0.0000000
Child's household LICO level	Dollars	29780.00	0.0000280	0.0000300
Child's household income below LICO	Dollars	403.53	-0.0000187	0.0000100
Average annual household income from census	Dollars	59301.70	<b>0.00**</b>	0.00
Child's family functioning score	Scale	8.93	0.00	0.01
PMK's neighbourhood assessment	Scale	4.53	0.02	0.04
Number of years PMK has lived in neighbourhood	Years	11.60	<b>-0.01*</b>	0.01
Child is male	Binary	0.46	<b>-0.12**</b>	0.05
Child is aboriginal	Binary	0.00	0.26	0.27
Child's age at immigration	Years	0.12	-0.02	0.04
Child's number of absences from school	Count	2.35	<b>-0.05**</b>	0.02
Child's school performance	Scale	4.20	<b>0.20**</b>	0.03
Child's health	Scale	4.41	0.02	0.03
Child's frequency of getting into trouble	Scale	1.44	0.00	0.04
PMK is male	Binary	0.05	<b>-0.22*</b>	0.12
PMK's age	Years	44.24	<b>0.02**</b>	0.01
PMK has a PSE degree	Binary	0.39	<b>0.12**</b>	0.05
Number of weeks the PMK works per year	Weeks	40.60	0.00	0.00
Number of hours the PMK works per week	Scale	3.53	<b>0.03*</b>	0.02
PMK's age at immigration	Years	1.62	<b>0.02**</b>	0.01
PMK's health	Scale	3.91	0.04	0.03
PMK has a disability	Binary	0.03	-0.01	0.16
Indicator that the PMK has a spouse	Binary	-	-	-
PMK impression about the importance of grades	Scale	3.59	-0.02	0.04
(Spouse is male)	Binary	-	-	-
Spouse's age	Years	46.44	<b>-0.02**</b>	0.01
Spouse has a PSE degree	Binary	0.42	0.06	0.06
Number of weeks the spouse works per year	Weeks	47.31	0.00	0.00
Number of hours the spouse works per week	Scale	4.90	0.04	0.03
Spouse's age at immigration	Years	1.94	-0.01	0.01
Spouse's health	Scale	3.84	0.01	0.03
Spouse has a disability	Binary	0.02	<b>0.35**</b>	0.08
Child was in cycle 4 when 16 or 17	Binary	0.47	0.00	0.07
Child was 16 when in their t-1 cycle	Binary	0.55	<b>-0.31**</b>	0.04
<b>Sample:</b>				<b>634</b>
<b>Pseudo R<sup>2</sup>:</b>				<b>0.2989</b>

Table 20 presents regression results from the application of the equation 23 model structure. Independent variables in the regression included all those discussed above. The table presents the variable type and mean value for each. As the outcome variable under study was binary, probit regression modelling was used. Marginal effects and associated standard error are reported for each independent variable. Statistically significant estimates at the .95 level are noted with a “\*\*” and those at the .90 level are noted with a “\*”.

Table 20: Nested social capital regression results – 20-21 year old PSE enrolment				
Variable	Type	Mean	Marginal effect	Standard error
Constant	Constant	n/a	n/a	n/a
<b>Measures of Literal Social Capital</b>				
LSC <sub>1</sub> – How often child sees friends	Scale	4.32	<b>-0.03*</b>	0.02
LSC <sub>2</sub> – How often friends push child to succeed	Scale	2.32	<b>0.06**</b>	0.02
LSC <sub>3</sub> – PMK expects child to go on to PSE	Binary	0.91	<b>0.16*</b>	0.09
LSC <sub>4</sub> – How often PMK talks to child about school	Scale	6.24	0.01	0.02
<b>Measures of figurative Social Capital</b>				
FSC <sub>1</sub> – Interaction of years in neighbourhood and avg. census income	Interaction	665566.00	0.00000001	0.00000000
<b>Other Independent Variables</b>				
(Child lives in an Atlantic province)	Binary	-	-	-
Child lives in Québec	Binary	0.19	0.02	0.06
Child lives in Ontario	Binary	0.31	<b>-0.14**</b>	0.07
Child lives in MB, SK, AB, BC	Binary	0.26	<b>-0.24**</b>	0.07
(Child lives in another region)	Binary	-	-	-
(Child lives in a rural area)	Binary	-	-	-
Child lives in a city <30,000	Binary	0.31	0.10	0.10
Child lives in a city 30,000 to 99,999	Binary	0.07	<b>0.16*</b>	0.09
Child lives in a city 100,000 to 499,999	Binary	0.25	0.07	0.16
Child lives in a city 500,000	Binary	0.15	0.12	0.23
Number of people in child's house	Count	4.27	0.00	0.11
Child's house owned	Binary	0.94	<b>0.27**</b>	0.11
Number of beds in child's house	Count	3.66	0.01	0.07
Crowding ratio for child's house	Interaction	1.20	0.12	0.19
Child's annual household income	Dollars	87304.90	<b>0.0000007*</b>	0.00000000
Child's household LICO level	Dollars	29780.00	-0.0000110	0.0000300
Child's household income below LICO	Dollars	403.53	-0.0000135	0.0000100
Average annual household income from census	Dollars	59301.70	0.00	0.00
Child's family functioning score	Scale	8.93	0.01	0.00
PMK's neighbourhood assessment	Scale	4.53	0.03	0.03
Number of years PMK has lived in neighbourhood	Years	11.60	0.00	0.01
Child is male	Binary	0.46	-0.02	0.04
Child is aboriginal	Binary	0.00	-0.19	0.42
Child's age at immigration	Years	0.12	0.02	0.03
Child's number of absences from school	Count	2.35	-0.03	0.02
Child's school performance	Scale	4.20	<b>0.14**</b>	0.02
Child's health	Scale	4.41	0.00	0.03
Child's frequency of getting into trouble	Scale	1.44	-0.03	0.03
PMK is male	Binary	0.05	0.06	0.09
PMK's age	Years	44.24	0.00	0.01
PMK has a PSE degree	Binary	0.39	<b>0.16**</b>	0.04
Number of weeks the PMK works per year	Weeks	40.60	0.00	0.00
Number of hours the PMK works per week	Scale	3.53	-0.02	0.02
PMK's age at immigration	Years	1.62	0.00	0.00
PMK's health	Scale	3.91	-0.01	0.02
PMK has a disability	Binary	0.03	0.01	0.13
(Indicator that the PMK has a spouse)	Binary	-	-	-
PMK impression about the importance of grades	Scale	3.59	0.04	0.03
Spouse is male	Binary	-	-	-
Spouse's age	Years	46.44	-0.01	0.00
Spouse has a PSE degree	Binary	0.42	0.01	0.05
Number of weeks the spouse works per year	Weeks	47.31	0.00	0.00
Number of hours the spouse works per week	Scale	4.90	0.02	0.02
Spouse's age at immigration	Years	1.94	0.00	0.00
Spouse's health	Scale	3.84	-0.01	0.02
Spouse has a disability	Binary	0.02	0.08	0.13
Child was in cycle 4 when 16 or 17	Binary	0.47	-0.07	0.05
Child was 16 when in their t-1 cycle	Binary	0.55	<b>-0.10**</b>	0.04
			<b>Sample:</b>	<b>634</b>
			<b>Pseudo R<sup>2</sup>:</b>	<b>0.2614</b>

As the results show, nesting the literal and figurative measures in a single equation structure has little effect on their associated estimate values or their significance. Thus, the discussion that follows examines the results from these nested regressions only.

### *Non-social capital estimates*

The regression results presented in Table 19 and Table 20 identify a number of factors associated with children's enrolment in PSE. For the purposes of the current analysis, one may divide these into social capital and non-social capital influences – with the possible social capital influences highlighted above. The application of the regression structure using two different outcome periods further identified changes or consistency in these influences over time.

From both Table 19 and Table 20 it is evident that being 16 years old in the t-1 time period negatively affects the possibility of enrolling in PSE. This impact largely reflects the nature of the data available for the analysis. Since the NLSCY implements a survey cycle every two years, children are aggregated into age groups which also span two year. This 16 year old variable identifies children in the younger half of these cohorts. In each cycle of the survey, these children will be at an earlier stage of their educational development. For this reason alone, one would expect them to enrol in PSE less frequently than their older counterparts would. In fact, at age 18, a portion of these children will not have completed high school, making enrolment in PSE impossible.

Examining the estimates from the 20-21 outcome regressions, it is clear that some remnants of this structural difference remains, even years after high school completion.

The regression results also point to associations between enrolment and the child's area of residence. Regional variables suggest a higher probability of enrolling in PSE among children who live in Quebec, relative to those who live in the Atlantic Provinces. Nearly identical and opposite influences relate to living in either Ontario or any other Canadian province. An estimate of 0.16 in Table 20 further suggests that residence in medium to smaller sized communities is associated with improved PSE enrolment over time. Despite the statistical significance of these results, interpretation is difficult. It is likely that a number of unmeasured factors underpin these relationships. Provincial educational policy, the age at which children in various provinces apply for PSE, and the limited representation of children in cities of 30,000 to 99,999 individuals may all drive these results. Unfortunately, detailed analysis of these relationships is outside the scope of this work.

The statistically significant estimate for male gender highlights clear differences in PSE enrolment among boys and girls. The -0.12 marginal effect estimate represents a considerable reduction in the probability of entering PSE in the 18 to 19 year old age range, simply because of the child being a boy. This finding aligns well with the now commonly held notion that boys often fare worse than girls do in an academic setting. At the same time, the male gender indicator is not statistically significant in the 20 to 21 year old age range, suggesting that perhaps these enrolment differences are reduced over time.

Both attendance and school performance have intuitively appealing associations with PSE enrolment. As one might expect, increased school absence is associated with a reduction in the probability of entering PSE while 18 or 19 years old. The opposite holds true for school performance in both the 18 to 19 year old and the 20 to 21 year old age ranges. The fact that absences have a statistically significant estimate value in only the first of the two regression models may suggest one of two things. First, that the affect of these absences is only short lived. Alternatively, the behaviour that drove these absences many years prior to PSE eligibility may have changed over time. The same may not be said of school performance where the association with PSE enrolment remains quite strong over time.

The nature of the child-PMK relationship provides context for many of the PMK variable estimate values. Recall that PMKs are the people most knowledgeable about the children in the NLSCY. Their knowledge, arguably, implies a closer relationship with the child. This suggests that variation in the PMK characteristics and behaviour will more heavily influence children's PSE enrolment than will variation in those of their spouse. The results bear out this contention with many of the PMK estimates being statistically significant and of considerable magnitude. For example, in the 18 to 19 year old range, the presence of a PMK with a PSE degree is associated with a 0.12 marginal effect on the probability of PSE enrolment. Similarly, PMK age also increases the chance of children enrolling. However, as with some of the variables discussed above, these associations do not hold in the 20 to 21 year old outcome regression.

The two final and statistically significant impacts in Table 19 are arguably the most difficult to interpret. Admittedly, the length of time that a child has lived in their neighbourhood and the average household income in that neighbourhood – measured independently – may proxy for a number of household and neighbourhood characteristics. It is difficult to clearly understand or hypothesize about the underlying influences that drive these associations.

### *Social capital estimates*

In the context of the current analysis, regression estimates for the first five independent variables are most relevant. Evidence of an association between these measures of literal and figurative social capital provides support for the literal and figurative perspectives on social capital as operable frameworks. Each of these variables and their estimates are discussed in order.

As noted above, two variables look at literal social capital related to children's interactions with friends. The first – measuring how often children spend time with their friends – is the more problematic of the two. Unlike the second, this measure of child interaction is not a function of intent. While both regressions show statistically significant and negative estimates, it is more difficult to assert that these are driven primarily by literal social capital. It is plausible that time with friends limits the availability of children to pursue PSE. Thus the negative impacts, while interesting in a general sense, do not necessarily speak strongly to the possible impacts of social capital or the plausibility of the literal framework.

The success measure, by contrast, provides a more compelling case for literal social capital. Here, intent is established, allowing the measure to incorporate each of the hypothesized conceptual dimensions. The positive estimate of 0.08 in the first regression and 0.06 in the second are statistically significant, and while smaller than those associated with other independent variables, show consistency across the two time periods. This suggests that this type of child-friend relationship is closely related to the PSE enrolment, supporting the literal social capital approach developed in this work and this thesis.

In much the same way, PMK expectations about PSE enrolment – which characterize child PMK interactions – appear closely associated with PSE enrolment in the 20 to 21 year range. Recall that while intensity of interaction between child and PMK is not well understood using this variable, the expectation about enrolment links this literal social capital measure most closely to PSE decision making. The delayed association observed in the two regressions may be a result of an increasing influence of these expectations as children transition out of high school. Other explanations are also a possibility.

Regardless of the reason, the regression results point to a strong parental influence through the child-PMK relationship, which again aligns with the hypothesized approach to literal social capital.

As mentioned above, the variable measuring the frequency with which the PMK discusses school with the child does not provide sufficient detail on the intent of the child PMK interaction. It is possible that when discussing school PMKs communicate the need for PSE. It is also possible that discussions, for example, centre about the need for



completing high school and moving on to paid employment. Since the measure does not allow this distinction, it is perhaps unsurprising that the variable is not associated with a statistically significant coefficient estimate.

Finally, Table 19 provides some support for the figurative social capital approach. Recall that that the interaction term is meant to proxy for a direct measure of figurative social capital. Here, the interaction term is composed of separate proxies for PMK's social interactions with their neighbours as well as aggregate capital in the PMK's neighbourhood. The hypothesis being that the existence of figurative social may provide the resources necessary for children to more easily access PSE. The statistically significant estimate in the 18 to 19 year old outcome regression yet not in the 20 to 21 year old outcome regression provides some support for this notion. It is plausible that PMKs most actively access resources when children are making their decisions about PSE in their high school year, driving a significant association only in the earlier outcome period.

### ***Conclusion***

The regression analysis undertaken in the current paper represents a first step in applying the literal and figurative approaches to social capital in an empirical setting. The analysis identified a number of distinct dimensions upon which to characterize both forms of capital. In the literal case, social interactions themselves drive outcomes and the number of social actors, the intensity of their interaction, and the nature of their interactions all help define social capital. In the figurative case, where social capital represents a

conceptual grouping of other existing capitals, identifying breadth, intensity, and purpose of interactions as well as the amount of capital these interactions provide access to is critical.

The results of the analysis suggest that while significant, the estimated impacts of social capital must be taken in the context of other influential factors. For example, in the 20-21 year old PSE enrolment regressions, the binary indicator of the PMK's expectation for the child to go on to PSE had an equal estimated impact as a one point change in the child's assessed high school achievement. By the same token, a one point increase in the scale of frequency with which a child's friends push them to succeed produces slightly more than one third of the impact. Similarly, the estimate value on the proxy interaction term for figurative social capital in the 18-19 year old PSE enrolment regressions would suggest a positive influence even greater than both the literal measure estimates above, when assessed at the interaction term's mean. In this context, these social capital impacts remain important to decision making.

However, the primary intent of the analysis was to substantiate one or both of the approaches to understanding social capital. The regression results show that when specified appropriately, forms of both literal and figurative social capital may influence outcomes. Overall, the analysis provides support for both the literal and figurative approaches to understanding social capital. This, by extension, suggests their feasible application in other contexts.

Despite the promising results of the analysis, limitations to the work exist. The first stems from the data available for the analysis. The NLSCY, while one of the best data sources to support the work did not include ideal direct measures of social capital – either under the literal or figurative approach. Although considerable effort was taken to align existing measures with the intent of work, future research would benefit from primary data collection meant to more confidently support either approach.

This is particularly true of figurative social capital, which during the current analysis was only roughly proxied with available variables. Ideally, in the case of the current analysis, the identification of figurative social capital would involve a more precise itemization of PMK social interaction with peers and an assessment of the amount of financial capital these interactions provide access to. It is likely that finding measures that are more appropriate in other existing datasets will be equally difficult. This is largely a product of the limited use of the figurative perspective on social capital in the literature. Without the qualitative measures needed to recognize those social interactions that identify figurative social capital, the use of proxy measures will likely continue until additional more appropriate data collection may take place.

Future work taking a similar approach should carefully consider those measures of social capital used, to ensure that they accurately reflect the aspects of both the literal and figurative concepts outlined above. In particular, literal measures must identify the individuals involved in social interaction, the intensity of these interactions, and some notion of their intent. By contrast, figurative social capital measures require a clear understanding on the full extent of aggregate capital access afforded to individuals

through their interactions with others. This measurement is the critical piece in accurately isolating the effects of various forms of social capital.

In addition, the operation of both approaches to social capital as outlined in the first thesis paper rest on plausible yet general individual behavioural assumptions. Future work would benefit from first substantiating this underlying behaviour in context. In the case of PSE enrolment for example, it would be useful to test the impact of specific forms of peer group interaction experimentally. For example, programming oriented toward peer group socialization around PSE enrolment could be administered using a treatment and control group approach.

This would also address the difficulty with asserting a causal relationship in the current work. While each of the criteria necessary for a causal relationship identified above were met in the current analysis, they are necessary rather than sufficient conditions for causality. The regression analysis developed above fails to reject either approach to social capital and thereby only provides indirect evidence of either approach. An experimental analysis would provide stronger evidence of both literal and figurative social capital at work.

Finally, the effects of social capital were independently examined in the current analysis. It is certainly possible that social capital, as measured, interacts with a number of additional factors to influence post-secondary enrolment. Examining these types of relationship would require considerable exploratory analysis and model experimentation.



*Social Capital and its Policy Relevance – A Discussion of Literal and Figurative Social Capital in the Context of Canadian Social Policy*

## ***Introduction***

Effective use of social capital in a policy setting rests, in large part, on a clarified understanding of the concept. Two theoretical features are important to this understanding. The first is a precise definition of the concept that provides for its measurement. The second is a theory about the operation of the concept allowing one to predict how it will affect policy outcomes. Both of these are critical in the prospective world of policy development, where predictable program outcomes are necessary.

Recent Canadian research work has endeavoured to provide just such clarification. For example, the 2005 Canadian Federal Policy Research Initiative (PRI) on social capital examined the concept in detail. It developed a general definition where social capital involved networks that provided access to resources and supports (Policy Research Initiative, 2005, p. 6). While going a long way in reconciling many of the divergent views of the concept, the PRI continued to leave critical questions unanswered. In particular, it failed to articulate a consistent mechanism through which social capital affected outcomes for individuals or groups.

It is possible that this failure has contributed to the limited use of social capital in Canadian policy development since the completion of the PRI. Despite the resurgence of social capital since the 1980s and the concerted effort to develop a functional approach to its use through the PRI, explicit use of the concept in policy development remains comparatively rare. This suggests the need for continued work towards a policy relevant approach to social capital.

This paper builds on the work of the previous two papers by extending the application of the literal and figurative social capital frameworks. The paper examines the 2005 PRI project, *Social Capital as a Public Policy Tool*, critically assessing the project's conceptualization of social capital and its application to policy development. In particular, it notes problematic aspects of the project's definition and highlights the absence of an underlying causal mechanism for social capital. The paper then suggests that literal and figurative frameworks provide sufficiently detailed definitions to address these concerns, while simultaneously suggesting underlying causal theories to support policy development. The paper ends with an example of the use of the literal and figurative frameworks. This example builds on the discussion found in one of the PRI thematic studies.



### *Reviewing the figurative and literal distinction*

Much of this thesis attempts to develop and test the validity of two distinct frameworks for understanding social capital. While these were identified in part from a review of the current social capital literature, the first of the three thesis papers recalls that the modern concept of social capital did not develop out of a single theoretical tradition. Although re-introduced into the literature almost simultaneously by three authors – Bourdieu, Coleman, and Putnam – each used the terms social capital in a different way. The historical works from which these author's conceptualizations developed date back to the 1800's (Farr, 2004, p. 23), and help demonstrate a clear conceptual division among them.

A careful review of Bourdieu's initial writing suggests that as described, social capital in and of itself does not constitute a distinct form of capital. Rather it represents an aggregation of existing capitals, which individuals may access due to their association with others (Bourdieu, 1986, pp. 248-249). In this sense, social capital is a figurative rather than literal phenomenon (Farr, 2004, p. 26). This approach served as the foundation for the figurative social capital framework used in this thesis.

Although some may see similarities between the work of Bourdieu and that of Coleman or Putnam, these authors' understandings of social capital as represented in their seminal works are quite different. Coleman and Putnam's approaches have more in common with earlier attempts to integrate social interactions into microeconomic analysis. Here, social interactions themselves are the objects of study and represent something tangible – at least in a conceptual sense. In fact, Coleman goes so far as to state that his use of social

capital is an explicit attempt to integrate social interaction into an economic understanding of decision making (Coleman, 1988, p. S97).

Just as the work of Bourdieu helped establish the figurative social capital framework, the work of Coleman and Putnam helped establish the literal social capital framework. Here, the distinguishing feature is the literal nature of the concept. Rather than other forms of capital, aggregated based on social interactions, social interactions themselves form the capital under study. This represents a fundamental difference that influences not only the way that one thinks about the concept, but also its practical application as discussed in this thesis.

It is important to understand that making a distinction between types of social capital is not unheard of in the literature. In fact, as the first thesis paper notes, recent works have explicitly examined the idea. For example, authors have seen various types of social capital as differing attempts at understanding a diversity of social phenomena (Adam & Rončević, 2003, p. 160). Further, examples such as the bonding, bridging, and linking social capital distinction have attempted to define social capital along specific lines – in the case of bonding, bridging, and linking distinction in terms of those involved. However, this thesis argues that the literal and figurative social capital frameworks provide a more historically accurate and functional distinction.

### *The two causal mechanisms*

Criticisms of social capital and its use are common in the literature. In fact, the first thesis paper provides a detailed look at many major criticisms. A reiteration of each of these is

beyond the scope of this discussion. However, a few points bear mention and are relevant to understanding the operation of both the literal and figurative social capital frameworks.

First, while the idea of social capital encompasses interactions, maintaining some notion of its capital nature requires distinguishing interactions based on purpose. In the same way that one distinguishes between consumption and capital goods based on their use in consumption or production, so too is a distinction between various social interactions required. Interactions that provide direct utility more closely align with the notion of consumption goods. Therefore, analyses of social capital must attempt to identify those interactions that, by contrast, support other ends.

Making this type of distinction requires measures of social capital that move well beyond those commonly examined in the literature. Aggregate proxy measures such as group affiliation and notions of trust do not provide sufficient detail for empirical analysis and policy use. The complete nature and extent of the interactions that constitute these affiliations and result in trust are unknown using these measures. Yet the nature of these interactions is critical to the identification of social capital if it is to remain capital in any sense. This supports a case for measures that carefully define specific aspects of interactions and their purpose.

Second, although one may expect aggregate benefits from social capital, maintaining an individually centred, microeconomic approach to analysis is important. Related difficulties with aggregate proxy measures of social capital have led other authors to suggest the importance of focusing on smaller scale interactions and their effects on

behaviour (Durlauf, 2002a, p. 3). Adopting a microeconomic approach to analysis oriented toward individual decision making is one such approach.

Under this approach, each individual is identified in terms of their associations with others, and may be linked to decisions and eventual outcomes. This has the advantage of showing in more detail *how* social capital operates while addressing a fundamental criticism in the social capital literature – namely, that individuals are decision making agents, while groups are not. The first thesis paper takes advantage of this approach to articulate how social capital under either the literal or the figurative perspective can operate.

It suggests that literal social capital affects individual outcomes by providing information through social interaction. This information then affects individual decision making. Two types of information are important. The first helps identify courses of action that would otherwise remain unknown to individuals. The second helps alter the expected payoffs from decision making. An example of literal social capital in action could involve post-secondary enrolment as shown in the second thesis paper. A child's decision to enrol could be affected, for example, by interacting with parents who communicate the benefits of this type of education. Here the child's expectations about the benefits from education are affected by the information provided by their parents. That said, parents might communicate this information in a variety of ways.

The first thesis paper also suggests a mechanism through which figurative social capital affects outcomes. Recall that figurative social capital involves aggregations of existing

capital, defined by the social interactions that provide individual's access. For example, a parent may have access to pools of financial capital because of their interactions with friends and family. The papers argue that figurative social capital allows greater capital access allowing additional decision making options. In the context of post-secondary enrolment, this figurative social capital may, for example, allow a parent to afford tuition where they would have otherwise not been able. Under either the literal or figurative approaches, group outcomes result from the aggregation of individual decisions and associated payoffs.

### ***Making social capital operational***

The second thesis paper attempts to test the validity of the literal and figurative social capital frameworks. The paper recognizes that while postulating a general causal relationship between interactions and outcomes, neither approach identifies specific interactions that facilitate specific outcomes. Rather, the frameworks provide guidance on what types of interactions constitute social capital, and how these interactions operate to affect outcomes. In this way, they represent conceptual frameworks rather than clearly defined hypotheses.

This raises an important point. To make either framework operational, a clearly defined hypothesis about which aspects of social capital affect which outcomes is required.

Taking the example discussed above, it is insufficient to state that literal social capital generally, improves post-secondary enrolment. Rather, literal social capital in the form of parent-child interactions serves to communicate information about post-secondary

enrolment. This information then affects the decision making of children about this enrolment. This identifies the form of literal social capital thought to relate to the enrolment decision and provides a clearly testable hypothesis about social capital.

Examining this decision making process in detail, the second thesis paper explores a number of such hypotheses under both frameworks. To do so, it develops social capital measures drawing heavily on the common criticisms outlined in the first thesis paper. Under the literal framework, the measures attempt to characterize social interactions along three dimensions including the number of actors, the intensity of interaction, and their nature with regard to information provision. In the case of figurative social capital, the number of actors, the intensity of interaction, and the nature with regard to accessing aggregate capital are critical in identifying groupings of figurative social capital.

The results from the empirical analysis provide support for both the literal and figure frameworks as operational concepts. However, they raised an important point related to policy development. Although both provide some insight into the general operation of social capital, the literal and figurative approaches are simply frameworks. Without additional information on the specific relationships to which they are applied, they are of little use.

### *A critique of a federal policy approach to social capital*

Initiated in 2003, the PRI project, *Social Capital as a Public Policy Tool*, examined the use of social capital in a Canadian policy setting. The following quotation from the final project report demonstrates how those involved saw social capital figuring as part of Canadian policy development.

After two years of consultation and research, we have concluded that there is a benefit to be gained for public policy by incorporating a social capital component into relevant government programs and initiatives. This does not mean, however, that governments should pursue a grand strategy to develop Canadian social capital simply to have more social capital. Governments should instead consider social capital as a means or instrument that, in complement with other resources, can facilitate the achievement of specific policy and program objectives, and target any social capital-related interventions accordingly. (Policy Research Initiative, 2005, p. 1)

The statement begs a number of questions. First, and arguably foremost: what is meant by social capital? Without a clear definition, it is impossible to identify social capital and integrate it into policy. Second, and equally important, how does social capital operate? While it may be possible to identify social capital, without some expectation about its operation in a variety of contexts, fostering social capital through policy initiatives will amount to little more than blind attempts at effecting change. Policy development is by

its nature prospective and an understanding of social capital's operation is required for its use.

Additional questions also follow from the statement above. Among these, it is reasonable to expect social capital to be facilitative in a policy setting? That is, should the conscious development of social capital be seen as an appropriate, general policy goal? In addition, is it reasonable to expect the type of targeting implied in the statement above? The PRI project report provides answers to some of these questions. However, as subsections that follow will note, the project's failure to address others results in little progress towards understanding, in any detail, of how social capital may be put to effective policy use.

*A failure to differentiate networks and define a causal theory*

The PRI social capital project began with a clearly articulated goal. As the project report notes:

the PRI social capital project was therefore launched at a meeting of assistant deputy ministers in January 2003 to assess the potential role and contribution of social capital in the achievement of federal policy objectives, with the hope that a clearer awareness and understanding of the phenomenon could help to better tune public policies and programs and broaden future policy options. Three objectives were set. Develop an operational definition and rigorous framework for the analysis and measurement of social capital. Identify key policy and program areas where social capital may play an important role in attaining policy



objectives. Incorporate the project findings into a strategic set of recommendations for testing new approaches, improved measurement, and policy action. (Policy Research Initiative, 2005, p. 4)

The second and third of these objectives relate to the implementation of policy in strategic areas. In the case of the second, the project needed to align the possibilities for social capital with those areas of social and economic development defined as priorities by government. In the case of the third, the project needed to identify areas of theoretical development related to social capital, as they relate to Canadian policy.

These two objectives are clearly oriented toward producing a usable conceptual product for those involved in policy development. Yet, their success depends heavily on the achievement of the first. An “operational definition” of social capital and a “rigorous framework” for measurement and analysis are necessary conditions for the achievement of the second and third objectives. From the information in the project report, it appears that the PRI project succeeded, in part, in providing a definition but fell short in terms of making it operational and defining the previously mentioned rigorous framework.

The project report states that:

Social capital refers to the networks of social relations that may provide individuals and groups with access to resources and supports. (Policy Research Initiative, 2005, p. 6)

A few critical observations on this definition are possible. It clearly notes that social capital consists of networks of social relations. This aspect of the definition is quite helpful in that it identifies a measurable item that constitutes social capital, which is independent of its outcomes. This goes a long way in addressing the circular logic around social capital's effects, common in much of the literature. That is, the definition does not require that positive outcomes of social capital exist in order to define social capital. This is essential for its use in policy development or any empirical application.

The definition of social capital also suggests two levels of analysis. The first being the level of the individual and the second being the level of the group. While it is reasonable to define two such levels within a definition of social capital, it is important to understand what these two levels reflect. Do the individual and the group reflect the levels of aggregation at which the benefits of social capital accrue, or are they the levels at which the phenomenon operates? This distinction dictates whether the definition may be made operational or not, without the need for further assumptions or interpretation.

It appears from the definition above, and the discussion that follows in the project report, that the PRI sees the individual and group as the levels at which the benefits from social capital accrue. In fact, the definition simply notes that social capital "may provide individuals and groups with access to resources and supports." (Policy Research Initiative, 2005, p. 6) The missing information here relates to how, and at what level social capital operates.

If the networks that constitute social capital in the PRI definition directly provide utility to individuals, then they no longer have a capital nature. The social relations simply act as a consumption good for individuals – perhaps making them feel good thereby providing utility directly. On the other hand, if social capital is to remain capital in any sense, it needs to contribute to the production of some other outcome. It is not necessary to think of this simply in terms of producing a tangible good – in a typical production sense – but may also apply to the achievement of specific ends – for example, enrolment in post-secondary education as discussed in the second thesis paper. In either case, production is contingent on some action, requiring the consideration of behaviour and decision making when understanding how social capital works.

This insight suggests an important corollary. If the operation of social capital rests on behaviour and decision making, it must operate at the individual level. Although some may argue that groups act in a particular way, even under situations of perfect consensus, the action of the group remains the aggregation of the actions of its constituent individuals. Further, even in highly coercive group dynamics, the final decision making agent remains the individual. Group behaviour, in this sense, is therefore some form of aggregation of individual acts. This firmly establishes the level at which social capital should operate – the individual.

The discussion in the project report that follows the definition helps support the idea that there is no clear notion about the operation of social capital in the work. The project report hypothesizes about possible outcomes and their relationship to social capital with little unifying the discussion. These outcomes include:

Material goods and services: Social networks often constitute an essential source of informal services such as child care, informal health care, language training or, in distressed situations, food, clothing, and housing.

Information: Job hunters can draw on their contacts to get a scoop on new employment opportunities. Collaboration between community groups can help provide coordinated information for newly arrived immigrants.

Reduced transaction costs: Organizations or groups may spend less time finding the right employee or new business contacts if social ties can act as intermediaries.

Emotional support: In stressful situations, support networks may help to find a solution to the problem, reduce the perceived importance of the problem, or provide a distraction from the problem.

Indeed, simply knowing you have a potential support network may increase your sense of self-efficacy and control. Reinforcement of positive

behaviours: Friends or family may influence whether individuals exercise, eat healthy diets, or quit smoking.

Service Brokerage: Network contacts may help broker effective access to health, employment, or training

services for those who would be unable or unwilling to access these

services by themselves. (Policy Research Initiative, 2005, pp. 9-10)

It later reiterates the common bonding, bridging, and linking social capital distinction, to understand the phenomenon better. However, the distinction reflects differences in terms of who is involved in networks rather than differences in the concept's operation. This brings the reader no closer to understanding how social capital functions, beyond providing a list of possible outcomes.

### *Limits on the identification of policy implications*

When examining social capital's implications for policy, the PRI report asks a critical question.

If social capital is an important resource for individuals and groups, and if governments already inevitably affect the creation and development of social capital, would there be a public benefit from a more explicit and deliberate focus on social capital within government policies and programs? (Policy Research Initiative, 2005, p. 13)

One might assume that the natural response is yes. Given that governments are affecting the creation and development of social capital, it would only make sense that they should do so in a purposeful and informed way. However, the tentative response to this question coming out of the PRI betrays some of the difficulty inherent with its treatment of the concept. When discussing the responses of those involved with the PRI work, the report states that:

The overall conclusion from experts consulted was “yes”, but with a healthy dose of caution. There were repeated warnings that public policy makers should be very careful in choosing to target explicitly social capital investment for policy purposes. (Policy Research Initiative, 2005, p. 13)

The report goes on to note a variety of specific concerns. Some scholars involved with the PRI cautioned that social capital development could easily become a substitute for more tangible government development initiatives. In addition, the report suggests that little evidence exists as to the efficacy of those few policies developed specifically to foster social capital growth. Finally, the report suggests that developing social capital may have a variety of unintended consequences by undermining other forms of social interaction (Policy Research Initiative, 2005, p. 13). While the first of these concerns relates to limited government resources and preferences towards areas of policy development, the second two suggest uncertainty about the concept itself.

While the success of previous policy interventions does provide some comfort when adopting new initiatives, contextual and other factors may differ and affect program success. Further, complex programs may drive outcomes through a variety of mechanisms, making it difficult to conclude from an analysis of programming as a whole, that social capital was the main cause. It is therefore imperative that the operation of fundamental aspects of new policy, including that towards social capital, be well understood and tested. This may in turn address concerns about unintended consequences.

Building on an example from the PRI, one may establish that a mentoring program helped reduce youth crime and be tempted to conclude that since social capital development was part of the program, its development is appropriate in other contexts. By contrast, one may independently establish how mentoring affects the social interactions that constitute social capital and then determine how these changes in

interactions affect crime. The former tests if the program was a success and then assumes – perhaps erroneously – that one aspect of the program, social capital development, may be applied in other settings. The latter shows that specific forms of social capital are the cause of changes in criminal activity, allowing greater understanding of how they may be applied in other contexts. In the latter case, the program is not a causal black box but operates based on clearly established principles.

The lack of a clear causal mechanism underpinning the operation of social capital may be at the heart of the limited guidance on its application in a policy setting. The PRI suggests a number of areas for social capital policy development, including:

helping populations at risk of social exclusion; supporting key life-course transitions; and promoting community development efforts. (Policy Research Initiative, 2005, p. 15)

However, the discussion that follows provides only general suggestions about how social capital may be applied in these areas. For example, the report suggests that:

Depending on the issue at hand, one or more of these approaches may be warranted. Build and support networks where relevant for specific program objectives. Tap into existing social networks to deliver programs. Establish favourable conditions. Increase program sensitivity to existing patterns of social capital. (Policy Research Initiative, 2005, p. 17)

Yet still, there is little guidance on how specific aspects of social capital will result in desirable programming results.

*A lack of specific guidance on measurement*

Although the PRI provides limited concrete guidance on the application of social capital in policy development, it does provide useful insight into the measurement of the phenomenon. Although falling under the heading of “Measuring the Intangible”, the report rightly points out that there are tangible and measurable items that can help establish the presence of social capital – namely aspects of social networks. As the report notes:

Networks of social relations constitute a tangible object of investigation that saves the analyst from having to use arbitrary combinations of diverse variables as weak indicators of more intangible understandings of social capital, such as “the glue that holds society together.” Relational networks are the empirical counterpart to social ties; they are the material we can use systematically to document the resources and support that circulate, or not, among individuals and groups. (Policy Research Initiative, 2005, p. 24)

In addition, when discussing these tangible measures, the report goes on to raise a critical point. It notes that one of the keys to measuring and applying social capital involves establishing an appropriate unit of analysis (Policy Research Initiative, 2005, p. 24).

Here, it is important to understand what is analysed during most social capital works. In



most cases, the effects of social capital are of primary concern. These effects are associated with either individuals or groups. Less common are examples of works – policy or otherwise – that examine how other phenomena influence manifestations of social capital.

Although the PRI states that under its approach, social capital is the unit of analysis, the discussion surrounding this statement implies something else. Momentarily shifting away from its initial definition of social capital as networks, the report states that:

While interrelated, it is important to distinguish between individual social capital and collective social capital, which constitute two separate research subjects. At the individual level, social capital refers to the benefits that individuals derive from their networks of social relations. Collective social capital refers to the benefits that the community derives from associational dynamics connecting groups and associations. The unit of analysis, namely the relationship, is measured the same way regardless of the type of network in question. (Policy Research Initiative, 2005, p. 25)

This distinction between research subjects at the individual and collective levels may be more readily interpreted as the identification of two units of analysis. It is among these groups and individuals that social capital's affects are examined. There is nothing in the statement to imply that changes in the relationships themselves are under study.

Thus, according to the PRI, social capital may be measured in some way using social relations as a tangible object of investigation. However, there are few specifics about what aspects of these relationships are relevant to analysis. In fact, the following quotation suggests only the number of relationships bears on the measurement of social capital, noting that:

the size of an individual's network (the number of relationships the individual has with various people) is of as much analytical importance as the size of the network of a community group (in this instance, the number of other organizations with which this group interacts). (Policy Research Initiative, 2005, p. 25)

This lack of specificity is understandable. Again, without an understanding how social capital operates it is difficult to define clearly measurable aspects of social relations that constitute the phenomenon.

### ***Revisiting policy with alternative approaches***

The discussion in the previous section identified four main shortcomings in the PRI's treatment of social capital. These include; a lack of differentiation between social capital and networks generally; a lack of a causal theory guiding social capital's operation; limited guidance on how social capital should be integrated into policy; limited guidance on how social capital should be measured.

While each of these is important, the third and fourth shortcomings are in large part a product of the first and second. That is, the PRI's failure to differentiate social capital conceptually from among all networks and its lack of guidance on the phenomenon's operation make implications for policy difficult to assess and its measurement problematic. This is where the literal and figurative frameworks may be helpful.

However, before discussing the benefits of the two frameworks, and for the sake of clarity, it is important to establish the orientation of the policy development discussion to follow. The literature provides examples of varying perspective on the analysis of social policy, and in many ways, these perspectives govern how one sees the act of policy development. An example exists in Thacher's review of *Deliberative Policy Analysis: Understanding Governance in the Network Society*.

Here the reviewer implicitly acknowledges the broad view of policy development taken in the work. The discussion of policy development focuses on a general approach to policy making among government, rather than on the specifics of particular interventions. For example, when commenting on the work, Thacher notes that:

In this form of governance, policy makers do not need to design and manage independent government policies so much as they need to convene dialogues and generate agreement among relevant actors. (2005, p. 455)

This is a decidedly different perspective than that taken in the PRI. Many of the thematic studies undertaken as part of the research examine specific government initiatives and policies. These studies often explore how social capital may be integrated or considered to achieve specific ends. For example, the thematic study by Kunz examining the integration of immigrants to Canada, considers three programs operated by the Government of Canada at the time of its writing (2005, p. 56). This focus on the development of specific interventions means closer consideration of the operation of social capital rather than its overall impact on the progress of policymaking.

When taking this perspective, as the discussion below does, it is important to identify fundamental aspects of policymaking for the initiatives examined. Some of these fundamental aspects rest on the overall approach taken to policymaking. Many authors have argued for a strength-based approach which emphasizes available resources and how they may be used to achieve beneficial ends (Chapin, 1995). However, it has, and arguably remains, more common to pursue policymaking from a problem-centred approach (Chapin, 1995, p. 507). Here the fundamental aspect and starting point for policy development remains the identification of a problem, however defined, that must be addressed (Chapin, 1995, p. 507).

In fact, examining the thematic studies undertaken during the PRI provides support for the notion that this perspective permeates the work. The thematic study by Kunz discussed above, for example, provides evidence that the exclusion of immigrant populations is among the problems that government policies should address. He notes that:

Language competency is a determining factor in access to employment [Environics Research Group, 2004] and helps newcomers participate in their receiving communities. A welcoming community implies that the receiving society needs to do its part to appreciate the value of immigration. Otherwise, immigrants would remain outsiders in spite of their language. (2005, p. 56)

As with the specific policy orientation discussed above, so too does the discussion that follows adopt a problem centred approach to policy development. This approach has a distinct advantage in that it implies a natural extension, which itself facilitates a comparison between the PRI's approach to social capital and that of the literal or figurative frameworks. The natural extension of the identification of a problem is the development of a solution. To the extent that social capital is to operate entirely or as part of this solution, its operation must be well understood. Without this understanding, policy development remains speculative at best.

### *Identifying social capital and its operation*

Recall in the discussion above that the PRI attempts to provide a concrete definition of social capital. The initiative examines the concept in terms of networks noting that these may provide support and access to resources. The literal and figurative social capital frameworks are quite similar in their focus on identifying the aspects of social activity related to social capital. However, there is a clear difference. The literal and figurative frameworks focus explicitly on concrete and measureable individual interactions rather than the more abstract concept of networks found in the PRI. This distinction is important to the functioning of social capital and is taken up in more detail below.

Beyond the distinction noted above, the PRI definition and the two frameworks proposed in this thesis differ in terms of emphasis on the capital nature of social capital. Although the PRI definition states initially that social capital involves those networks that provide support and resources, little more exists about how to distinguish some types of networks from others along these lines. The report often falls back on the bonding and bridging distinction, common in the literature, which distinguishes networks most accurately according to network constituents rather than intent. By contrast, both the literal and figurative perspectives on social capital place considerable emphasis on distinguishing those interactions meant to support various individual outcomes from those that provide direct utility. This important distinction relates to not only the measurement of social capital – discussed in more detail below – but also the operation of the concept under either proposed framework.

It is true that the network definition does assert that social capital provides support and access to resources. However, it fails to answer a key question needed to make the concept consistently applicable in a number of contexts – namely, how does it operate to provide this support and these resources? Both the literal and figurative perspectives respond to this question. Recall that in the case of the literal framework, social capital in the form of specific social interactions provides information to individuals. This information then affects decision making, by either altering payoffs from decisions or identifying other decision making options. In the case of figurative social capital, individual interactions allow access to other forms of capital otherwise unavailable. This capital may then be used to achieve specific ends.

Not only does it identify how social capital is expected to operate, it also allows one to predict, or minimally hypothesize about, expected impacts of the phenomenon. Further, it provides guidance on the level at which the concept operates. Few would deny that benefits from social capital could accrue at both the individual and group levels.

However, the level of operation of the concept – that is, whether it provides benefits by altering individual or group behaviour – requires some expectation about its causal relationship with various outcomes. The literal and figurative frameworks, with their emphasis on individual decision making, clearly identify the individual actor as central to the operation of social capital. This provides critical guidance on where social capital development should focus in a policy development setting.

### *Applying social capital to policy*

The ability of the two approaches to social capital outlined in this thesis to provide insight into the policymaking process stems from the clearly articulated mechanism through which either operates. Recall that in the case of the literal perspective, information transfer affects decision making, which then results in possible individual and by extension group outcomes. The key questions during the use of the concept are: what social interactions are important, what do they communicate, and how is this relevant to the policy at hand? Taking an example from the PRI may help illustrate this point.

The PRI suggests that social capital may be instrumental in supporting life transitions. One such transition involves the movement of high school students to post-secondary education. As the discussion in the sections above demonstrates, the literal social capital framework immediately suggests hypotheses about the possible effects of social capital based on its orientation towards information transfer. For example, it is plausible to explore whether interactions between parents and their children serve to transfer information about the importance of post-secondary education. This is precisely the hypothesis explored in the second thesis paper.

Establishing the validity of this hypothesis provides far more policy relevant information than the general notion that networks somehow affect these transitions in a given setting. In fact, its flexibility provides for a range of additional ideas that may be explored within the framework. For example, social interaction between parents and representatives from



educational institutions may transfer relevant information about class and status. This may affect children's enrolment success by altering the decision making of those involved in student selection. This demonstrates how the perpetuation of power structures and inequality may be explored.

Under the figurative perspective, the ability to redistribute existing forms of capital within groups drives outcomes. Individuals are able to access capital that would otherwise be unavailable to them. For these individuals, capital provides additional productive possibilities that would otherwise not exist. To the extent that this redistribution results in a more efficient use of capital, groups benefit. Again, key questions for policy development require answers to make the concept operational. Here, this might include: what social interactions are important, do they provide access to capital, how does this access affect individual's opportunities?

Taking up the life transitions example above helps illustrate this. To the extent that enrolment in post-secondary education requires some form of investment, individuals may be limited in their access. For example, students and their parents may have insufficient finances to pay for tuition and related expenses. Specific social interactions may facilitate the transfer of financial capital from one individual to another to facilitate these investments. This redistribution may represent a generally more efficient use of this capital and drive systematic differences between groups. The basic principle behind this example is easily expanded to a broader setting, providing greater insight than what may be gained over a general network approach.

### *Proposing specific measurements*

Much like the PRI definition of social capital, both the literal and figurative perspectives argue that tangible aspects of the phenomenon may be measured to support policy and analysis work. The PRI definition simply suggests that networks are these tangible aspects. The literal and figurative perspectives, by contrast, take a different approach. Rather than examining any or all social interactions, as implied by the general measurement of networks, both approaches suggest that specific social interactions should be quantified and qualitatively differentiated from others. It is this differentiation, as suggested above, that helps separate social capital from other social phenomena.

Recall that in the case of literal social capital, the number of social actors, the intensity of their interactions, and the purpose of these interactions are used to quantify aspects of social capital. In a similar way, figurative social capital uses similar measures – emphasizing access to group capital in its qualitative assessment of the interactions – and then associates these with the quantity of this available capital. Both are able to use these specific measures due to the clearly defined process through which social capital operates.

This measurement distinction is critical for policy analysis. Recall again from the discussion above that policy development, as explored in this paper, is oriented toward problem solving. Policy makers identify what is defined as a problem and then attempt to develop initiatives that address it. Only in the rarest of situations are these problems sufficiently broad that the development of any type of network will support a solution.

What is required is an understanding of which social interactions are most relevant to the policy development context and to what extent these potentially affect the problem.

### *A thematic application*

Although it is possible to reiterate the benefits of the literal and figurative perspectives on social capital, and continue to argue for their use in policy development, it is perhaps more useful to provide an example to illustrate this point. To do so, this section examines one of the thematic policy studies developed as part of the PRI. The study in question discusses social capital in the context of Aboriginal educational attainment and as such aligns thematically with the empirical analysis undertaken in the second thesis paper.

#### *Impacts of Social Capital on Educational Attainment in Aboriginal Communities:*

*Lessons from Australia, Canada, and New Zealand* (White, Spence, & Maxim, 2005)

provides an opportunity to demonstrate some of the policy strengths of the social capital frameworks developed as part of this thesis. The application of social capital in the previously mentioned work draws heavily on the definition developed for the PRI.

However, there is limited consideration of the details of this definition or the operation of the concept. As a result, rather than indicating how social capital itself affects outcomes for individuals or groups, the work focuses on examples of elements that seemingly influence social capital's success.

The difficulty with this approach rests on the limited understanding of social capital's operation. Even if one were able to identify elements that enhance the positive effects of social capital in the past, there should be little confidence that these elements will function in the same way in other settings given that one does not know how social capital itself functions. The literal and figurative approaches to social capital provide the

causal frameworks necessary to understand the operation of social capital, allowing generally applicable insight to be used in a variety of contexts.

### *The approach taken to social capital*

After a short introduction and digression on the need for improved Aboriginal educational attainment in Canada, White et al. briefly touch on a definition of social capital. Despite their insistence on leaving discussions of the correct approach to social capital for another forum, the authors note that the approach to the concept taken in their paper aligns with that of the PRI. They suggest that their work adopts a:

structural approach to the concept, which emphasizes social networks as the focal point of investigation. Social capital can be defined as the networks of social relations within the milieu, characterized by specific norms and attitudes that *potentially* enable individuals or groups to access a pool of resources and supports. (White et al., 2005, p. 67)

In addition, they add that within this approach they adopt the bonding, bridging, linking distinction attributed to Woolcock (White et al., 2005, p. 67).

A number of points about this definition are important. First, by defining social capital as networks of social relations, the authors do indeed appear to align their definition with that of the PRI. However, the White et al. definition includes an important feature that is absent from that of the previous definition discussed above. Namely, it suggests that social capital is somehow characterized by the norms and attitudes with a given milieu.

This characterization distinguishes some forms of networks from others when identifying social capital.

This is an important and valuable feature of the definition. It provides the necessary precision to avoid what would otherwise be a perfect equivalence between the ideas of networks and social capital. Their use of the bonding, bridging, linking distinction, results in a conceptual problem. Recall that bonding social capital, in its typical use, involves within-group interactions characterized by strong social ties, often involving shared norms and values. This appears to coincide well with the White et al. definition quoted above.

Bridging and linking social capital, as normally articulated, involve weaker ties between groups. In the case of the former, it involves relations between *equal* groups. In the case of the latter, it involves relations between *unequal* groups such as those with different amounts of power, of different class, or of different status. In either case, it is difficult to argue for a shared set of “specific norms and attitudes” that White et al, state are important to the characterization of social capital.

This represents an important logical inconsistency in their definition. It is impossible to suggest that the identification of social capital should generally rest on the specific norms and attitudes while simultaneously arguing that two forms of social capital do not require the presence of these same norms and attitudes. This presents problems for the application of the concept making what initially appeared to be a point of clarity a source of confusion in their follow-up discussion of social capital and its application.

The approach to social capital taken in this thesis, by contrast, does not suffer from this same inconsistency. This is the result of the treatment of the previously mentioned norms and attitudes. Under the two frameworks, norms and attitudes most closely align with the idea of literal social capital. However, under the literal framework these represent the product of social capital rather than one of its components or distinguishing features. Norms and attitudes represent individuals' understanding of generally acceptable behaviour along with the sanctions for contrary acts. Social capital is not defined by these norms, but rather, the social interactions that constitute literal social capital serve to circulate information, helping establish these norms and attitudes.

The main advantage of the approach outlined in this thesis is that it allows one to examine social capital in the context interactions within and across different groups in the same way. For example, the social interactions within tightly knit cultural groups seem to be likely information pathways for establishing and communicating the importance of social norms. In the same way, interactions between members of these groups and others appear to be valuable channels for the communication of information known only outside individual communities. In either case, the critical feature of literal social capital is the information transfer, with use of the framework resting on establishing what is communicated and to whom.

### *Elements affecting social capital*

When White et al. begin to discuss the effects of social capital, their limited articulation of social capital's functioning becomes a major problem. Near the beginning of their

discussion of possible effects, they suggest little more than the following before moving on to a discussion of those factors that augment social capital effects.

Social capital functions as an independent variable that explains some variance in population and individual level outcomes. However, understanding what seems to impact on the effectiveness of social capital provides interesting insights into the potential strengths and weaknesses of social capital generally. (White et al., 2005, p. 67)

It is certainly true that in a variety of contexts measures of social capital – regardless of what they are – will correlate with some measures of individual and group outcomes. However, this is simply a statistical relationship between two measures and does not imply any type of causality – more is needed. In particular, there is a need for some understanding about how social capital is thought to *cause* changes in these outcomes, which may be tested and then applied in other contexts. The literal and figurative frameworks provide this type of causal theory suggesting two separate mechanisms through which social capital operates.

That said, the quotation above also suggests that examining those things influential to social capital's effectiveness may provide insight into its use as well. Following this logic, the authors examine the literature on Aboriginal educational attainment to identify what they consider four elements affecting social capital. These include; levels of social capital; norm effects; building relationships based on cultural context; community capacity.



In terms of levels, White et al. state that social capital has much more influence on outcomes at set levels. Prior to the achievement of these thresholds, social capital's effects may be limited or negligible. To illustrate their point they discuss the relocation of the Port Harrison community. The example suggests a comparison between a community with high levels of what the authors would consider social capital and one that had none (White et al., 2005, p. 68).

The authors argue that movement to a new community location, devoid of traditional hunting activities, limited the normal interaction between youth and elders. This interaction, when it existed, supported traditional skills and cultural development during the hunting seasons, and mainstream study in the off-seasons. The authors argued that prior to the move, education levels were high, but after the move, a number of social indicators suffered including educational attainment (White et al., 2005, p. 68).

While all of these observations may be true, the authors fail to provide a clear indication of *how* the complete break up of these relationships led to lower educational attainment. The closest they come to an explanation is found in their statement about the high levels of educational attainment before the move. They argue that off-season study allowed for educational attainment in the community (White et al., 2005, p. 68). However, following this logic, the separation of youth from traditional hunting would provide even more time for study. Clearly, something more is at work. However, without an understanding of the operation of social capital, its role in this process remains unknown. Either approach to social capital developed in this thesis provides the advantage of a clear causal theory which may be explored in the context of this change.

A similar problem is obvious when White et al. discuss norm effects in the context of social capital. They make the following statement about these norm effects.

Increasing levels of social capital are not necessarily related with increasing educational attainment. (White et al., 2005, p. 68)

They suggest from a variety of examples that in the presence of considerable bonding social capital and norms regarding high levels of education, children are more likely to have high level of educational attainment. In the presence of norms regarding low levels of education, children are more likely to have low level of educational attainment. The key here is that these insights do not come from an understanding of how social capital operates, but rather from the observation that both social capital and community norms are commonly found in the presence of specific educational outcomes.

In fact, the literal social capital framework would predict both of these relationships. Under the framework, social interactions between children and their parents or other community members would serve to communicate information about the importance of, and possibilities for education. This may be as simple as suggesting that lifetime income will be higher with an education to something as complex as demonstrating by example that certain educational possibilities are available to youth.

However, in this case the literal framework provides a more useful tool due to its underlying causal theory about social capital. Rather than relying on the presence of generally held norms, the literal framework allows the flexibility to explore the influence

of any type of information transfer. In the context of educational attainment, this may be between the child and individuals holding a common set of educational norms or between the child and those with very divergent views. This is precisely the approach taken in the second thesis paper where the association between widely varying parental views of education was associated with child post-secondary enrolment decisions.

When examining building relationship in a cultural context, White et al. rest their discussion on the observation that educational attainment is higher in communities that are more integrated with the wider society. They then suggest that this integration is important and that it should proceed in a way that is consistent with Aboriginal values. They provide compelling examples of situations where this integration did and did not take place noting that the incorporation of Aboriginal values often resulted in more successful integration (White et al., 2005, pp. 68-70).

However, the relevance of their discussion again skirts the critical theoretical issue. It provides no explicit indication of *how* the bridging or linking social capital that they discuss drives educational outcomes. This fundamental problem is also evident in their discussion of community capacity. This understanding of how social capital operates is a key advantage to the literal and figurative frameworks, not only helping to explain the operation of the concept but also explaining how other factor may influence its effects.

### ***Canadian national policies***

White et al. spend some time discussing Aboriginal educational programming in Canada. This section of their work provides the clearest set of examples of social capital at work.

They begin with a general discussion of two types of programs operated at the federal level. These include elementary and secondary school programs, along with programs for individuals seeking post-secondary educations. Their conclusions regarding social capital and these programs betray some of the difficulties with applying their approach in this context. As they state when discussing this programming:

many of these initiatives parallel those that have been successful in other countries. The key here will be to see how open the communities are to these initiatives and how the bridging activities work out in relation to improving educational success. (White et al., 2005, p. 73)

The statement implies that while bridging and linking social capital are thought to improve educational outcomes, the approach to the concept provides little indication of the results to expect. Since there is no indication of *how* these connections are meant to support education, it is difficult to expect specific results from policies that generally support their development.

The literal and figurative frameworks have a greater potential for understanding the possible impacts of programming. This is a result of their clear causal theories and emphasis on specific types of interactions. For example, under the literal perspective one may argue that supporting interactions between Aboriginal community members and those involved in educational program delivery will create pathways for communicating a broader range of educational possibilities. Similarly, the figurative perspective may help identify the degree to which financial capital is available to members of the community

attempting to pursue educational opportunities – suggesting areas where programming may address deficiencies.

In fact, in their subsequent discussion of provincial programming, White et al. seem to be getting at some of these same issues. However, in the absence of a social capital theory, with specific underlying causal principals, much of their discussion becomes dependent on assumptions that are neither explicitly stated nor explored. Further, there is no simple way of systematically understanding the social capital aspects of the programming.

For example, in their examination of *The Cowichan Valley Aboriginal Education Improvement Agreement*, they state that:

The promotion of Aboriginal language, culture, and history strengthens the ties within the community, which builds bonding social capital. This process increases social participation and communication between students and the greater community, which increases the networks and resources available to students. (White et al., 2005, p. 74)

Under the definition used in the work, social capital is defined by networks. Thus building social capital implies an increase in these networks. However, the promotion of Aboriginal language, culture, and history does not *necessarily* require this increase to proceed. White et al. assume that this promotion will lead to network development. They then assume that once developed, these will lead to increased resource access among

students despite little indication about the nature of these new networks. It is in making these assumptions explicit that the literal and figurative frameworks have value.

Take, for example, the same aboriginal language, culture, and history promotion. Under the literal framework the language, culture, and history would constitute the information transmitted through social interaction. Unless this information itself substantively changes the way in which information is transmitted during social interaction, under the literal framework, this type of promotion would only affect decision making and by extension outcomes were individuals to adopt the values and behaviours implied therein. In this case, this would simply constitute a change in the information transmitted by literal social capital rather than a change in the social capital itself.

Development of additional social interactions to transmit this information more readily – that is, the development of literal social capital – would require different policy activity. It is certainly conceivable that the type of program delivery established to promote aboriginal language, culture, and history could achieve this end. For example, this might involve increasing the interaction between youth and elders to communicate these ideas. However here, the key issue is that interactions are substantively changed rather than the information transmitted.

A similar use is possible for the figurative framework. It is conceivable that the promotion of Aboriginal language, culture, and history will affect figurative social capital if these promote a collective approach to ownership. While this would not necessarily change the number of interactions or their frequency in a community, it would

substantively change the nature of these interactions by promoting broader access to community capital. This would effectively increase the level of figurative social capital in the community without changing the amount of the existing forms of capital. That said, policies directly providing the community with capital would also increase figurative social capital without a change in interaction.

The example demonstrates the flexibility of the literal and figurative approaches to social capital. The explicit articulation of causal theories underpinning both frameworks along with a clear definition of what is in fact social capital, allows one to more clearly understand the role of social capital in policy development. It allows one to argue for the promotion of greater social capital, or simply changes to those items related to social capital. In either case, the frameworks are valuable tools for more directive policy making.

## *Conclusion*

As with the two previous thesis papers, this third paper argues for the use of a literal and figurative framework for understanding social capital. Rather than arguing for their use from a theoretical, historical, or empirical perspective, this paper suggests that policy development would benefit from their use. As the discussion suggests, recent Canadian policy work continues to rely on an approach to the concept that lacks a clear understanding of the fundamental causal relationships that drive its effects. Although neither the literal nor the figurative approaches to social capital are without criticism, and both require far more validation, the two perspectives involve causal theories that allow for much more directive policy prescriptions.

This allows one to move beyond general statements about social interactions' possible effects or the accumulation of examples of associations between networks and various outcomes. Rather than concentrating on developing networks in the cautious hope that they will beneficially affect those involved, policies may more actively support specific interactions oriented toward particular ends. Alternatively, the framework may indicate when the growth of social capital is not necessary but rather when a change in the type of transmitted information is required.

That said, much of the discussion above has focused on the operation of social capital at the individual level. To the extent that individual decision making outcomes have accompanying externalities, broader social welfare impacts may result. While not



examined in detail here, these effects certainly require consideration when social capital is used for the purpose of policy development.

## *Discussion*

The three preceding papers have developed, and demonstrated the value of using distinct literal and figurative approaches to social capital. The papers explored the roots of the concept to demonstrate that rather than a single proposition developed concurrently by multiple authors, social capital represents two fundamentally different ideas that operate in quite dissimilar ways. This distinction is absent from much of the modern social capital literature, where the effects of information transfer and resources redistribution are often conflated.

Placing literal and figurative social capital on secure microeconomic foundations adds conceptual clarity to both approaches. The use of existing and proven theoretical tools helped define the processes through which social capital operates. In the literal case, this is through the provision of information and changes in behaviour, and in the figurative case, through the redistribution of existing capital. These two clearly articulated causal mechanisms move the discussion of social capital beyond general observations about associations with networks of various types, to explicit and testable theories about how specific forms of interaction can affect individuals.

The empirical work undertaken as part of this thesis has demonstrated that both the literal and figurative approaches to social capital are empirically tractable concepts, providing insight into relevant research questions. What is more, it has done so through the extensive development of existing data. This demonstrates that these new frameworks

support empirical work atypical of many other studies in this area, and that this work is none the less possible with existing data.

Finally, the three papers show the importance of a clear understanding of social capital's operation prior to its use in policy development. This must go beyond the often vague articulation of the notion that social capital results in groups benefits, to an understanding of how these benefits accrue. This is arguably where recent Canadian policy work has failed in its use of the concept. Unlike the literal and figurative frameworks that define social capital's operation, the sometimes shifting approach taken in the current Canadian policy context makes meaningful prospective work nearly impossible. This makes policy development among the most valuable uses of the two frameworks developed and applied in these papers.

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