Understanding training program effectiveness: A comprehensive framework

Learning and Active Employment Programs Project

Boris Palameta | Karen Myers | David Gyarmati | Jean-Pierre Voyer

SRDC SRSA

SOCIAL RESEARCH AND DEMONSTRATION CORPORATION | SOCIÉTÉ DE RECHERCHE SOCIALE APPLIQUÉE

The Social Research and Demonstration Corporation (SRDC) is a non-profit research organization, created specifically to develop, field test, and rigorously evaluate new programs. SRDC's two-part mission is to help policy-makers and practitioners identify policies and programs that improve the well-being of all Canadians, with a special concern for the effects on the disadvantaged, and to raise the standards of evidence that are used in assessing these policies.

Since its establishment in December 1991, SRDC has completed over 100 projects and studies for various federal and provincial departments, municipalities, as well as other public and non-profit organizations. SRDC has offices located in Ottawa, Toronto, and Vancouver.

For Human Resources and Skills Development Canada

The opinions expressed in this research document are those of the authors and do not represent official policies of Human Resources and Skills Development Canada or other agencies or organizations that may have provided support, financial or otherwise, for this project.

For information on SRDC publications, contact

Social Research and Demonstration Corporation
55 Murray Street, Suite 400
Ottawa, Ontario K1N 5M3
613-237-4311 | 1-866-896-7732
info@srdc.org | www.srdc.org

Published in 2011 by the Social Research and Demonstration Corporation

Table of contents

1. Introduction

1.1 Background and rationale

The past two decades presented significant economic challenges for Canadians without a post-secondary credential. Individuals with low education and skills are more likely to be unemployed than their more educated counterparts and when they are unemployed take longer to become re-employed (Hansen, 2007). In the context of the current global financial crisis, the importance of the education and skills gap is even more significant. Economic restructuring and associated large-scale permanent job losses in the manufacturing sector means that retraining will likely be required for large numbers of low-skilled and semi-skilled, long-tenured workers. In the past, some observers questioned whether training for low-skilled adults is an effective strategy (see Heckman, 2000). Now with mounting evidence of changing and rising skill requirements, the question has become not whether training works but which training works for which kinds of individuals under which kinds of circumstances. In other words, the effectiveness of training programs is likely to depend on the interaction between program design and delivery, individual needs and capabilities, and broader structural features of the policy and economic environment.

While there have been several large-scale rigorous studies of the effectiveness of public training programs internationally (Heckman, LaLonde, & Smith, 1999; Martin & Grub, 2001; Meager, 2009), few have focused on Canadian programs, raising the question of the extent to which lessons learned from these studies can be applied to the Canadian labour market, educational and social policy contexts. Perhaps even more importantly, the bulk of these international studies have focused primarily on hard-to-serve, long term social assistance recipients, a group which may have different participation patterns and outcomes than the low-skilled unemployed population, especially those who are eligible for employment insurance programs (Card, Klueve, & Weber, 2009).

A further issue is that in the past 10 years there has been considerable innovation in employment and training programs with several promising approaches emerging (Park, Ernst, & Kim, 2007). Program innovation, however, has outpaced research efforts to identify effective employment strategies. This has resulted in a range of new approaches and programs that are potentially effective but have not yet been formally evaluated. Not only is there little rigorous evidence about effectiveness, there is also little information even about the extent to which local delivery agencies in a given jurisdiction incorporate these approaches into their program delivery. The need to better understand what works for unemployed adults and how their participation in such training can be best supported is of paramount importance given the current economic climate.

The Learning and Active Employment Programs (LAEP) research project aims to address this gap by enhancing our knowledge base on the effectiveness of training programs for unemployed Canadians with low levels of initial education and/or skills.

1.2 Project objectives

This report is the first component of the LAEP research project. The broad goal of this project is to investigate the extent to which employment training programs are effectively meeting the needs of

unemployed Canadians, with particular attention to publically-funded programs, such as those available through Employment Insurance (EI) Part II.

The effectiveness of a given training program is likely to depend on the interactions and alignments between various forces, for example between the economic and policy environment, and between program design features and individual learner needs. Thus, an effective training program can be defined as one which, within the confines of the existing policy and economic environment, is designed and delivered in a way that is well aligned with the learning needs of its target population such that it enables participation and produces relevant skill gains that lead to beneficial labour market outcomes.

This broad conceptualization of effectiveness underscores the importance of not relying solely on such commonly used non-experimental indicators of training effectiveness such as participation or completion rates or on economic returns alone. For example, a program with high participation rates may be ineffective if participants are streamed into courses that are unlikely to meet their needs; similarly, a program that demonstrates high rates of return may be ineffective if there are large numbers of non-participants who are unlikely to benefit from it.

Thus, the overriding objectives of the LAEP project will be to:

1. Investigate the range of structural factors, individual characteristics, and program design and delivery factors that influence the effectiveness of training for unemployed low-skilled adults.
2. Draw on these lessons to develop options for experiments, which test new approaches that aim to improve the effectiveness of public training programs through alternative designs, information, or other supports.

These broader project objectives will be refined and developed into more nuanced research questions and hypotheses by drawing on the results of this report. A suitable research strategy will then be proposed that may include consultations with the target group and practitioners, to validate the existing evidence in the literature and further explore the issues in a Canadian context. The hypotheses and research design will be fully developed in the project design report.

1.3 Goals of this report

The goals of this specific report are: first, to use the findings from the literature to propose a comprehensive framework for understanding the factors that influence program effectiveness; and second, to identify gaps in our knowledge about how these factors interact to determine program effectiveness and to suggest promising areas for further investigation.

2. Scope and framework for the literature review

2.1 The target population

The target population for this study is *unemployed individuals with low education and/or low-skills* who are in need of training to assist them in obtaining a decent job. Focusing on this *less educated* subset of unemployed adults is important from a public policy standpoint because of the well-established link between education and employment outcomes. Not only are individuals with low education more likely to be unemployed, but when they are unemployed they are also more likely to have longer unemployment spells (Ferrer & Riddell, 2002; Hansen, 2006; Hansen, 2007). We distinguish between adults with low levels of initial education[1] and adults with low literacy and other essential skills because these foundational skills may be a particularly important predictor of employment and training outcomes.[2]

A further reason for distinguishing between low education and low literacy skills is that there is strong evidence that literacy skills play a role not only in successful outcomes of training but in the decision and ability to participate and complete training in the first place. Results from the International Adult Literacy and Life Skills Survey (IALLS) shows that while unemployed adults with low educational attainment and low literacy skills have a very low rate of participation in adult education and training, unemployed adults with low educational attainment but medium-to-high literacy have participation rates that are as high or higher than their more educated counterparts (Rubenson, Desjardins, & Yoon, 2007). Unemployed adults with both low education and low literacy skills appear to be a distinctly challenged group with nuanced training needs that require well aligned program design and delivery systems for effective outcomes.

In addition to skills barriers, there are other sub-groups of harder-to-serve individuals among the Canadian unemployed working age population that may have specific needs that should be considered in an evaluation of the effectiveness of employment training programs. Groups such as immigrants and refugees, aboriginals, single mothers, individuals with disabilities, and individuals with mental health or substance abuse problems may bring both particular assets and barriers as they participate in workforce programs. For example, women who have been out of the workforce for several years may need access to long-term support services, such as personal and career counselling, self-esteem training and ESL classes. Where possible our analysis will report findings by gender and other sub-groups of interest.

[1] Low initial education is typically defined either as *having only a high school diploma* or as *not having a post secondary* credential. This latter definition is slightly broader as it also includes individuals who have some post secondary experience. Either definition is probably appropriate for the LAEP project so in the interest of inclusiveness, we suggest the broader definition of individuals without a post secondary credential.

[2] For example, results from the Adult Literacy and Life Skills Survey shows that in several countries including Canada, individuals with document use skills at Levels 1 or 2 have only a 50 per cent chance of finding a job even after 52 weeks of unemployment. In contrast, individuals with Level 3 or higher document use skills have a 60 per cent chance of exiting unemployment within 16 weeks (Statistics Canada and OECD, 2005).[2]

2.2 What constitutes training?

A narrow definition of training might include only those programs that take place in an educational or training institution, with the goal of obtaining a certificate, diploma, or degree — this type of training is often referred to as credit or "formal learning." A broader definition could also include structured activities that are not part of a formal educational program and typically do not lead to a formal certification — this type of training is often referred to as non-credit or "non-formal learning," and may be offered by community organizations and employers. Self-directed, unstructured learning activities — usually called "informal learning" — are not usually considered to constitute training per se, but they may influence participation in the two more structured types of learning described above.

One can also categorize training according to the types of skills that are learned, a classification which does not always align directly with the distinction between formal and non-formal learning. For example, unemployed individuals seeking to acquire "hard-skills" technical skills, may usually do so in the context of a formal educational program at an accredited institution, but such programs may also be offered outside of educational institutions (for example, language or literacy training). Acquisition of "soft" transferable skills such as problem-solving, teamwork, and communication skills are often categorized as non-formal training; however courses that focus on such skills may also be part of a formal certification program offered by an educational institution, through an innovative practice often referred to as "embedding."

For the purposes of the LAEP project, a training program is defined as any program designed to help individuals with low levels of initial education/skills to gain additional skills with the aim of improving their labour market prospects. These skills may include either foundational skills and/or occupationally-specific skill sets. This broad definition includes all programs targeted at improving the labour market prospects of individuals with low education and/or skills rather than just those that are specifically designed for unemployed jobseekers.

3. Role of structural forces, individual factors, and program design features

3.1 The role of structural forces in training effectiveness

Macroeconomics and labour market dynamics

Structural forces, particularly those that effect labour market dynamics, may influence the impacts of training programs. For instance, one potential explanation for negative or non-significant effects of training in the short term is that a significant proportion of training participants may be switching from one occupation to another and this switching may add to the length of time it takes to become re-established in the labour market after an unemployment spell. Indeed, a recent study (Kambourov, Manovskii, & Plesca, 2009) that re-analyzes the results of a prototypical US government training program, the Job Training Partnership Act (JTPA), found that a large fraction of the participants in government sponsored training are occupational switchers. Not surprisingly, since switching of an occupation involves a substantial destruction of human capital (Kambourov & Manovskii, 2009), these researchers found that once the associated decline in wages is accounted for, returns to government sponsored training look similar to other types of training such as that sponsored by employers. These studies provide strong evidence that labour market dynamics — and factors that influence them such as, economic conditions or policy choices — may play an important role in shaping the outcomes of training.

Other structural factors can also influence the pattern of program effects through their role in shaping participation decisions and how these vary across different types of unemployed adults. For instance, there is a wide literature exploring the effect of macroeconomic dynamics on training decisions. Several studies suggest that enrolments in training programs may be countercyclical for some populations (Caponi, Kayahan, & Plesca, 2009; King & Sweetman, 2002; Betts & McFarland, 1995). Using U.S. data, Betts and McFarland found strong evidence that community college attendance is countercyclical — enrolments rise when unemployment rises, and fall when unemployment falls. In a paper examining the impact of the business cycle on enrolments and finances at individual community colleges between the late 1960's and the mid 1980's they find that the link between two-year public colleges and the business cycle are direct and immediate. They find that 1 percent increases in the unemployment rates are associated with rises in full-time attendance of about 4 percent. Part-time enrolment exhibits similar anti-cyclical patterns. Betts and McFarland conclude that recessions drive people into community colleges. In addition, macro-economic factors may also influence persistence in training and outcomes directly. For example individuals may leave a program before completion if he or she is offered a decent paying job. Conversely lack of attractive employment offers may increase the likelihood of persistence by lowering the opportunity costs associated with being out of the labour market. Similarly if an individual re-enters the labour market during a period of skills shortages, completion of a schooling spell may be associated with higher earnings returns than if he or she re-enters during an economic down turn.

Policies and institutions

The policy and institutional environment also plays a role in shaping training effectiveness. In their comprehensive international review of active labour market policies, Kluve et al. (2007) provide strong evidence to demonstrate the importance of the taking the policy and institutional environment into account when conducting outcome evaluations. Differences in policies across jurisdictions may also influence outcomes indirectly by influencing participation rates. Although there is little published Canadian evidence on this point, recent developments in Ontario suggest this is an important area for consideration. In 2008, the Government of Ontario made a major change to the Ontario Skills Development Program both in the program generosity and in how widely they communicated information about this program to the public. According to the Government of Ontario, its Skills Development Program saw an increase in applications of over 175 percent in one year. Other provincial initiatives such as regional economic development programs may also play a role both in influence participation and outcomes.

Institutional structures, such as that of the adult education system itself, may also play a role in explaining training effectiveness. In their study of the availability of learning opportunities for low-skilled adults in five Canadian provinces, Myers and de Broucker (2006) find that provincial adult learning 'systems' are complex, difficult to navigate, and pose numerous barriers for less-educated adults who would like to improve their skills. They propose a set of principles to guide the development of more coherent and accessible adult learning programs and note that for most jurisdictions this would require a major overhaul of the system. For example, they conclude that while in principle, learners should be able to enter the adult education system at any point, have their prior learning assessed and recognized, participate in the appropriate learning program(s), and proceed to the next step — whether further education or securing a decent job — in the shortest time possible, this scenario did not describe the institutional environment in any Canadian jurisdiction.

3.2 Role of individual factors in training effectiveness – Learner needs and readiness is key

Competencies, abilities

There is also considerable evidence to suggest the importance of individual factors in shaping training effectiveness, for instance in the extent to which individuals are training ready and have the necessary supports to successfully complete programs. While the role of individual factors such as general cognitive ability has long been associated with training readiness and identified in the literature as a mediating factor in affecting training outcomes (see Heckman, 2000 for a review), more recent literature has focused specifically on the effect of literacy and foundational skills (such as prose, numeracy, and document use) on training readiness. There is also growing anecdotal evidence from adult educators and other experts in the field that a significant proportion of unemployed Canadians lack the necessary literacy and foundational skills necessary to gain access to and successfully complete occupational re-training programs. Several recent Canadian studies provide some support for the importance of foundational skills as critical success factors in further education and training. Kline (2009a) found that among a large cohort of apprenticeship students, an individual's level of literacy and

other essential skills at the beginning of the program was a strong predictor of successful program completion.

Other, more indirect evidence on the link between individual foundational skills and training readiness comes from the International Adult Literacy and Skills Survey (IALLS). Results show that, in general, circumstances arising from an individual's life course influence training — for instance, participation rates are particularly low among older adults, those with lower education, living in low income households, and those not in the labour force. However, even within these vulnerable groups, literacy makes a big difference. Those with higher literacy skills are substantially more likely to participate in adult education and training than adults in the same groups with low literacy (Rubenson, Desjardins, & Yoon, 2007).

At a fundamental level, basic competencies and literacy skills may also influence participation rates in training, quite directly, to the extent that individuals have difficulty identifying either their own learning needs, or the types of programs and supports that may be available to them. Indeed, recent research shows that while adults with the very lowest skill levels (at Level 1) are aware of the degree to which inadequate literacy is constraining their life chances, the majority of low skill workers (at Level 2) do not self-identify their own low literacy skills — nor do they understand the need and possible benefits of training (DataAngel, 2009).

Preferences

The emerging field of behavioural economics provides further insights into the psychological underpinnings of the participation decision and may help explain participation rates through the effects of low competencies on preferences. A variety of research (reviewed by DellaVigna, 2009) reveals that in a variety of contexts, both in the lab and in real-life, people tend to have nonstandard preferences with respect to time/patience (often discounting a larger, time-delayed reward in favour of immediate gratification) and risk (often preferring a safe option to a riskier option with higher expected payoff). For example, job seekers are often more sensitive to the immediate and direct costs of search than to its longer-term benefits, with the result that various measures of impatience tend to be negatively correlated with search effort and exit rate from unemployment (Paserman, 2008). In addition, risk aversion among job seekers is associated both with low reservation wage and a reduced tendency to increase reservation wage as a result of higher unemployment insurance benefits (Pannenberg, 2007). Thus, impatient and risk averse job seekers would be hypothesized to expend minimal efforts on job search and accept any job offer (no matter how low) upon expiration of their benefits.

There is a parallel literature showing that impatience and risk aversion tend to be linked to deficits in cognitive ability and basic literacy skills such as numeracy. For example, Frederick (2005) has shown that those who are more patient and less risk-averse do better in problems that require cognitive reflection to avoid giving impulsive, incorrect responses. Similarly, Parker and Fischoff (2005) found that scores on a vocabulary test taken at age 11 predicted tendency to prefer a large, later reward over a smaller, sooner one at age 18. Benjamin, Brown, and Shapiro (2006) found that nonstandard preferences (i.e., impatience and risk aversion) are less common among high-school students with higher standardized test scores. In general, low levels of foundational skills may be associated with greater impatience and high levels of risk aversion when it comes to investing in activities that involve

upfront costs and delayed benefits, such as training. Indeed, risk aversion is associated both with lower literacy and a reduced tendency to enrol in (participate) and complete (persistence) employment-related training (Dohmen, Falk, Huffman, & Sunde, 2007; Pfeifer, 2008). Furthermore, even if those with high levels of risk aversion and low skills participate in training, they are more likely than others to leave the program before completion (Burks, Carpenter, Götte, & Rustichini, 2008).

Literacy levels also play a role in determining expected returns to training to the extent that they influence estimates of opportunity costs of foregone wages (if training delays re-entry into the labour market). Similarly, decision-making and time-preferences vary, particularly, in the face of uncertainty (will skills upgrading even be rewarded by employers). Although it is often assumed that training would be beneficial for those with low skills, and that a decision not to participate would therefore be sub-optimal, it is important to note that in some cases, avoiding the risk of investing in training may be a rational decision — for example if available programs assume a higher level of literacy than potential learners possess.

One implication that arises from this literature is that some individuals may simply not be well-suited for some kinds of training and that individuals should have access to counselling and advice that considers a full range of active labour market options. The appropriateness of training should not be taken as given and other options may be more appropriate. The other implication is that training should be designed with these cognitive and non-cognitive considerations in mind. Individuals should have information about the full range of training options and be streamed to the training option that is the best match for their skill.

Life course dynamics

A wealth of existing research demonstrates some potentially important barriers to successful training outcomes, which often arise from individuals' life course circumstances, related to their age, area of residence, incomes, and family responsibilities (e.g., HRDC, 2000; Newton, Hurstfield, Miller, Akroyd, & Gifford, 2005). While much of this evidence is revealed through qualitative forms of inquiry, several important variables have been identified including situational factors, such as family commitments (child care, time constraints), distance, as both a physical and cultural barrier making access difficult (transportation, language barriers), and financial barriers (tuition, other non-market costs).

However, life course dynamics also give rise to resources that can act as enabling conditions rather than barriers, such as social networks, which can evolve over time. Networks give access to resources, which can support positive labour market outcomes (Policy Research Initiative, 2003; Woolcock, 2001; Granovetter, 1974) after training. Intergenerational effects are another example of factors that can produce either enabling conditions or barriers. Boudard and Rubenson (2003) show that parents' levels of education have a strong influence on children's participation in adult education and training, and whose direction depends on whether their education is higher or lower than that of their children. Indeed, whether many factors arising from one's life course act as constraints or resources is often theoretically unclear (Zhang & Palameta, 2006).For example, on one hand, having a spouse may provide additional financial and emotional resources that make it easier for individual to upgrade their skills.

On the other hand, the security of an additional income may make skills upgrading less important or even less feasible due to the demands of competing roles.[3] The empirical evidence on this issue is mixed and has not helped in sorting out this debate. But while literature does not suggest firm conclusions, it does suggest that life circumstances matter.

3.3 The role of program design in training effectiveness — Not all training is created equal

Indeed training design has emerged as a major issue. There is now mounting evidence that not all government training programs are created equally. As Martin and Grubb (2001) conclude, there is considerable evidence suggesting that public training programs can be made more effective by improving their design. They identify several crucial design features that are associated with more positive results including keeping programs small in scale, including a strong work experience component to establish links with employers, and having programs that produce a certification recognized in the labour market. This conclusion is echoed more recently in reviews of the literature by Ferrer and Riddell (2008) and Meager (2009). Similarly, in their re-analysis of the evaluation findings from the US Job Training Partnership Act, Plesca and Smith (2007) find that results varied significantly depending both on the program site and the type of intervention delivered. In addition, there is some emerging Canadian evidence to suggest that even seemingly small details such as the choice of instructional material can make a difference. For example, in an evaluation of a Canadian literacy and essential skills upgrading program, Kline (2009b) found that sites using primarily "authentic" workplace materials were associated with an a significantly higher skills gain than those using more traditional academic approaches.[4]

Finally, as many observers have noted, the evidence on a very specific type of training — government-sponsored programs — should not be generalized to other forms of adult education such as formal education or employer-sponsored training that may be qualitatively different on many counts including target audience (Ahlstrand, Bassi, & McMurrer, 2003; Giloth, 2004). While government programs tend to be narrowly targeted towards the long-term unemployed, formal academic institutions target their adult education programs to learners with a wide range of labour market experience. As discussed above, in Card, Klueve, and Weber's (2009) comprehensive review of the international evidence, only a small fraction of the studies included in their review (about 15%) evaluate programs whose participants are drawn from employment insurance programs. For the most part, government programs are targeted at long term disadvantaged individuals who are enrolled via community outreach or the welfare system.

[3] Similarly, while on one hand the pressures associated with having a young child may make it more difficult to upgrade ones skills, on the other hand, the need to support a young child may provide a strong incentive to do so. Moreover, women who become mothers at a young age may have experienced an unplanned interruption to their initial schooling and may be especially motivated to return.

[4] In this context, "authentic" means that learning activities are based on documents and other materials actually used in jobs or occupations that are relevant to the learner.

4. Knowledge gaps and areas for future research

4.1 A refined framework and typology of learning conditions

Our review of the literature identified a host of individual characteristics and structural factors that influence participation in and outcomes associated with employment training programs. Given that research on these factors arises from a number of different fields such as program evaluation, economics, education studies, sociology and industrial relations, it is not surprising that these literatures often do not dialogue. Most accounts tend to emphasize one set of factors as determinates of participation or training outcomes without much consideration of others. In reality, these complex set of variables interact and jointly determine the conditions that learners face, in ways that impede or support participation, successful completion of training, and positive labour market outcomes. There have been few attempts to integrate these factors into a comprehensive and coherent framework for understanding training effectiveness.

A comprehensive and integrated understanding of these factors is important, not only in terms of interpreting existing research but also in shaping the design of future research. In this section we use the findings from our review of the literature to propose a comprehensive and integrated framework for understanding factors that can influence program effectiveness, through its effects on participation, persistence, and outcomes of training. From this framework we identify a typology of learning opportunities based on the degree of structural and individual factors that learners may face. This typology provides a useful way for thinking about the types of training interventions and supports that learners may require. Similarly, it facilitates the identification of gaps in our knowledge base about what works for these different learner conditions and suggests promising areas for further investigation, which is the subject of the final section of this paper.

A framework for understanding training participation, persistence, and outcomes

Our framework builds on that set out by Rubenson and Desjardins (2009) in a recent issue of Adult Education Quarterly. In this article, Rubenson and Desjardins present an ambitious framework that represents the only attempt that we are aware of to articulate the interaction between structurally and individually based factors in the context of adult education and training. The framework makes a major contribution by conceptualizing the decision to participate as a product of both a person's internal state of readiness (or disposition) as well as broader structural features. The framework shows how structural conditions play a substantial role in shaping the circumstances faced by individuals, putting boundaries on the choices they can make and also acting as enabling agents. While Rubenson and Desjardins focus only on the participation decision, we build on this effort to create a framework that considers not only participation, but also persistence in training, and ultimately its effects on educational and labour market outcomes. Figure 3 provides an overview of this framework.

In this integrated framework, training enrolment, successful completion, and outcomes all develop from a dynamic interplay between individual and structural forces. Each of the critical factors revealed in the literature are highlighted in this framework and organized in way that illustrates how the dynamics give rise to barriers and enabling conditions that either impede or support training

participation, persistence, and outcomes. These factors include individual **competencies** (such as general cognitive abilities and foundational skills), **preferences** (such as patience and risk aversion) and **personal circumstances** (such as those arising from life course and family dynamics). The structural factors revealed in the literature are organized around **economic** influences (such as business cycles, and occupational skills demand), the **policy environment** (such as employment insurance, financial aid), and the **institutional factors** (such as the program structures, delivery partnerships, governance and communication systems).

The individual and structural factors are not static and do not exist in isolation. Following Rubenson and Desjardins (2009), under our framework, the training decisions and subsequent outcomes develop from a dynamic interplay between individual and structural factors. The product of this interaction is a set of barriers and enabling conditions, which effect both participation and the likelihood of successful outcomes of training. Some mediating influences are most relevant to the participation decision, such as the formation of **expectations** (e.g., estimated opportunity costs, and expected returns from training) and can arise from interactions between individual preferences (e.g., patience, risk aversion) and economic or labour market factors (e.g., occupational skill demand and future wages). Other mediating influences may also affect persistence and successful completion of training, such as **situational** factors (e.g., accessibility, ability to pay) and arise from the interaction of individual life course factors (e.g., need for child care) and policy variables (e.g., availability of financial aid). Yet other conditions may influence the outcomes of training, quite directly, such as **design and delivery practices** (e.g., the extent of match to learner needs, alignment with labour market needs) and arise from more complex interactions of several individual factors (e.g., preferences giving rise to training demand, literacy skills and training readiness influencing design) and structural factors (e.g., the systems and resources in place to support program delivery). Similarly, other kinds of **policy interactions** (e.g., alignments between federal and provincial initiatives and regulations) may support or hinder program access and effectiveness, themselves arising from a complex interaction of individual circumstances and policy rules (e.g., eligibility and entitlement conditions).

As an example, consider one's decision to participate in training. If government priorities turn to the promotion of up-skilling (for example, as they did in Ontario in 2008), this may lead to increases in individuals' awareness and perceived need for training. Individuals would then weigh their personal circumstances, arising from their life course, such as family responsibilities. The policy environment interacts with these individual circumstances through programs such as financial aid or child-care supports in ways that create enabling conditions or barriers to the accessibility of training and one's ability to pay. The economic environment and labour market demand (as well as the availability of labour market information about such demands), in conjunction with individual preferences, lead to expectations about the value of training, the opportunity costs, and the expected returns to training — which, leads to participation decisions.

Another example highlights the interaction of the policy environment and available programs with individual factors in ways that influence participant outcomes of training. As discussed above, there is growing anecdotal evidence that an individual's level of literacy and other foundational skills may affect training outcomes and that a significant proportion of unemployed individuals need foundational skills training to be successful in further education and training. Furthermore, there is also evidence to suggest that training programs that integrate foundational skills training into occupational training are

associated with better results than more traditional programs. Thus while low foundational skills may be associated with poor outcomes, this relationship may be substantially mitigated by well-designed programs. The potentially large and positive effect of program design on the outcomes of a vulnerable sub-set of unemployed individuals (adults with low skills) suggested in the US literature (Martin & Grubb, 2001; Smith & Plesca, 2000) is an important area for further investigation.

Broadly speaking, adjustments and realignments of structural and individual factors and priorities may continue at all stages from the initial decision to participate, to subsequent persistence and post-completion employment outcomes. If the decision is to participate, factors such as course content may lead to a dispositional adjustment — for example, if a program is poorly designed or not well-matched to learner needs, the perceived value of training may decrease. If significant numbers of learners exit prematurely, this may motivate program modifications. If on the other hand completing training leads to favourable employment outcomes, this may increase both its expected value and the learner's expected ability to succeed, and thus motivate further training. The opposite may occur if unfavourable employment outcomes result, with potential learners being less motivated for future training opportunities and designers looking for better alignment of content with learner needs and employer demands.

A typology of learning conditions

Thus under this integrated framework it is possible that depending on a number of complex factors, unemployed Canadians may face either, or both, individual and structural barriers. Possessing both kinds of barriers is likely to give rise to the most challenging conditions for participation and successful completion of training while making positive labour market outcomes unlikely. However, within a given jurisdiction, some individuals may face primarily structural constraints while being largely training-ready with few individual barriers. In contrast, some jurisdictions may have more robust labour markets, targeted policies, and strengthened institutions and capacities for training delivery, such that potential learners face primarily individual barriers.

A stylized typology of these “learning conditions” that an unemployed individual may face is presented in Box 1.

Box 1 Typology of learning conditions

1. **Structural enabling factors, with INDIVIDUAL BARRIERS** – Structural factors are favourable, such that the policy environment supports training, institutions design and deliver programs that are well aligned with learner and labour market needs, and economic conditions make a positive outcome of training likely. However, individual factors make the potential learner unaware or resistant to the idea of training and poor outcomes more likely. For instance, barriers may stem from **(a) preferences** (e.g., risk averse or impatient thereby reducing expected value of training), **(b) a lack of key competencies** (e.g., poor literacy or foundational skills that make persistence and skill gains unlikely), or **(c) life course** circumstances that give rise to situational barriers (e.g., time or financial constraints), which hinder participation, persistence, or employment transitions after training.
2. **Individual enabling factors, with STRUCTURAL BARRIERS** – The potential learner has preferences that are well aligned with training and they possess the key competencies that make them training-ready. Their life course circumstances enable participation (no financial barriers or time constraints) but there is a lack of alignment between their needs and various structural factors. These may include **(a) the policy environment** or mix doesn't facilitate training and positive outcomes (e.g., restrictive eligibility conditions, poor streaming); **(b) other institutional or program constraints** make skill gains less likely, such as a lack of program availability, or design and delivery that doesn't meet their needs; or **(c) poor economic conditions** in their industry/occupation may make re-employment after training unlikely. If learners are aware of this, their estimate of expected returns may suggest they are too low and forego participation. If participation does proceed, unfavourable outcomes (e.g., exiting program before completion, or poor employment outcomes due to lack of relevant skill gains or employer demand for new skills, etc.) may result.
3. **BOTH INDIVIDUAL AND STRUCTURAL BARRIERS** – The potential learner has individual barriers **(1. a, b, or c)** which makes them unaware or resistant to the need for training and/or makes persistence and successful completion of training a challenge. However, even for those who overcome these barriers, they ALSO face significant structural barriers **(2. a, b, or c)** that make training participation more difficult and positive re-employment outcomes more unlikely. Ultimately, the expected returns from training may be too low.
4. **Individual and structural enabling factors, NO BARRIERS** – The potential learner is training-ready. Their preferences are aligned with available options, there are no barriers to participation in their personal circumstances, and they have the requisite foundational skills to be successful in training. They make choices and take actions to initiate participation and the structural factors facilitate a favourable outcome. The policy environment facilitates training and institutions design and delivery programs that are well aligned to both learner and labour market needs. Learners persist, training is successfully completed, further education may occur, skills gains are achieved, and the economic conditions facilitate positive labour market outcomes.

4.2 Further research on learning conditions and training effectiveness

This framework and typology of learning conditions provides a useful way to characterize the kinds of needs that low-skilled learners may have in order to facilitate training and positive outcomes based on the mix of barriers or enabling factors they face and how pervasive they are. Similarly, it will help facilitate the identification of knowledge gaps in literature and practice about the nature of these barriers and the kinds of improvements in program design and delivery that would make training interventions more effective in meeting these needs.

For instance, the type of interventions that would support learning under the first condition — where largely individual barriers exist — would be very different from the second or third condition, and itself would depend on the mix of factors arising from preferences, competencies, and life course circumstances. Similarly, the mix of structural factors arising from economic, policy, or institutional constraints would give rise to very different learning conditions. Each of these is considered in more detail below.

1A – The role of preferences

Our review of literature on risk aversion (DellaVigna, 2009) suggests that individuals will vary their valuation of training in the face of uncertainty, in this case, arising from uncertain re-employment prospects after training. So while individuals may be training-ready, possessing sufficient basic competencies and personal circumstances that facilitate learning, their preferences could still be misaligned with the available options, in such a way that they are either, unaware or resistant to the need for training. For these individuals, training may simply be under-valued (implicitly or explicitly) given their particular pattern of economic preferences. Training programs may be improved through the provision of better information and communication with learners, such as labour market information that reduces this uncertainty.

A number of studies we reviewed also suggest that low levels of foundational skills may be associated with greater impatience and high levels of risk aversion (Dohmen, Falk, Huffman, & Sunde, 2007; Pfeifer, 2008). As such, individuals with low literacy and numeracy skills may be more likely to discount a larger, time-delayed reward in favour of immediate gratification, and may be unlikely to persist in skills upgrading that is time consuming, requires multiple transitions and where a payoff is not readily apparent. On the other hand, these individuals may be more likely to persist in well-designed programs that accelerate learning and provide opportunities for concrete work experience sooner rather than later. This area, however, has not been well-studied. Our review did not find any studies that addressed this relationship.

Knowledge gaps — While the literature presents some evidence on the importance of economic preferences to decision-making, such as risk aversion and time preference, there is little evidence on the role of these preferences specific to the training decisions of unemployed low-skilled adults. Similarly there is little knowledge on the interaction of these preferences with other characteristics and competencies and how they determine participation and persistence in skills upgrading over time.

Research questions — What role do preferences/expectations play in the decision to pursue and persist in training, notably, risk aversion and time preference, among unemployed low-skilled Canadian adults? How do these preferences vary and interact with other characteristics such as literacy and foundational skills? What kinds of information, supports, or other program design features would better facilitate decision-making among individuals who are exploring their training options in order to reduce uncertainty and support participation, persistence, and successful completion of training?

1B – The role of competencies and skills

In addition to the traditional role of cognitive ability in explaining training outcomes (Heckman, 2000) our review of the literature also identified emerging evidence on the importance of literacy and

foundational skills to both participation decisions and successful outcomes of training (Kline, 2009; Zhang & Palameta, 2006; Myers & Myles, 2005). However, evidence also suggests that many Canadians have literacy skill deficits that may compromise their ability to successfully complete occupational re-training programs (Myers, Gyarmati, & Voyer, 2009), and more generally, to compete in a knowledge-based economy (Statistics Canada & OECD, 2005).

The apparent relationship between foundational skills and successful completion of training — along with the deficits that exist for many working-aged Canadians — naturally raises the question of how well the currently available regime of training programs actually addresses foundational learning needs. Some evidence suggests that only a small proportion of unemployed Canadians take foundational skills training. A recent Canadian survey of those who participated in training while unemployed found that less than 2 per cent took basic reading, writing, or math courses (HRDC, 2003). If foundational skills training is being under-utilized due to the available options, or the design and delivery system, improvements may come from better assessment, streaming, and alignment of course content and delivery methods with learner needs.

Knowledge gaps — While there is some evidence to suggest that literacy and foundational skills are important to success in re-training, the nuances of this relationship are not well understood. In particular, there is little study on the extent to which currently available training options and delivery systems, such as those funded under Skills Development, are well aligned with the learning needs of lower-skilled unemployed Canadians.

Research questions — To what extent are the literacy and foundational skills of unemployed Canadian adults assessed when they are considering retraining through program such as Skills Development? Are individuals appropriately streamed into programs that match their learning needs? Are they given the necessary information and supports to choose well aligned training options? Are the training content and delivery methods also well aligned with their needs?

1C – The role of life course circumstances

Our review revealed several program evaluations and studies that explored the importance of situational barriers to training participation and outcomes including financial constraints and family commitments that affect the degree of access. In the absence of sufficient supports for these barriers, individuals may be unable to access training or have difficulties complying with the commitment that learning requires, such that they fail to complete training and/or compromise the skills gains that would be achieved. However, while the broader adult education literature also places considerable emphasis on factors such as life course, gender and family dynamics in the explaining the outcomes of training (Elman & O'Rand, 2006), our review suggests that the direction of effect is often ambiguous and remains theoretical unclear.

One possible explanation for this is that whether life circumstances act as constraints or resources depends on additional factors such as social context. For example, supporting the "constraints" hypothesis, Elman and O'Rand (2006) find that competing adult roles such as a current marriage and having young children decrease the probability of skills upgrading. However, a few studies have found that women are more likely than men to return to school; in part because they are more likely to

interrupt their education for family related life course events (Bradburn et al., 1995; Jacobs & King, 2002).

Knowledge gaps — While evidence strongly suggests that life course circumstances matter greatly to participation and outcomes of training, further research is needed on the nature of these situational factors, particularly, among low-skilled unemployed adults, and the role that social context plays in determining their influence on program effectiveness.

Research questions — Which life course factors are most important as determinants of participation and persistence in training among low-skilled unemployed Canadian adults? How does social context influence whether these factors become barriers or enabling conditions? Do existing Skills Development programs include sufficient wrap-around supports to mediate these barriers — and are they targeted to those who need them based on this social context?

2A – The role of economic and labour market factors

While potential learners may be training-ready, have preferences that are well aligned with available options, and life course circumstances that enable participation, impediments to participation and positive outcomes of training may arise from various structural factors. One prominent factor we reviewed was the role of economic and labour market dynamics.

A wide literature suggests that macroeconomic conditions matter to both training decisions and training outcomes. Several studies showed that enrolments in training programs may be countercyclical for some populations (see Caponi, Kayahan, & Plesca, 2009; King & Sweetman, 2002; Betts & McFarland, 1995). The role of labour market dynamics in determining the returns to training was also emphasized (see Kambourov & Manovskii, 2009). Notably, the extent to which occupational-switching occurs following training affects the nominal estimates of returns to training (e.g., displaced workers who re-train for a career change, as opposed to individuals who pursue skills upgrading within a given occupation or industry).

However, less research has been dedicated to exploring the design of training programs and how labour market demands are addressed in delivery. We reviewed some evidence on promising approaches that included sectoral and pathways models, which both emphasize a strong role for industry and employers in shaping the design and delivery of training. The goal is to align training with the needs of the labour market to ensure that skills obtained are for in-demand occupations.

Knowledge gaps — This raises the natural question about the extent to which the available training options in programs such as Skills Development are currently designed and delivered with input from industry and employers. There is little information on the design process and little evidence on whether available options are meeting the needs of the labour market.

Research questions — Does the mix of available training programs for low-skilled unemployed adults actually support the needs of the labour market? Do the available programs provide a direct link, or a pathway, to in demand occupations? Are these options developed in consultation or collaboration with industry and employers? Are employers engaged in workforce development at the beginning of the process and viewed as collaborators in that process? Do they identify jobs, desired skills, help design training curricula?

2B – The role of the policy environment

We reviewed evidence on cross-national variation in participation rates in training among low-skilled adults that suggests — public policy matters — in shaping training decisions, such as financial aid policy, regional economic development, and labour market adjustment (Rubenson & Desjardins, 2009). Beyond participation, a range of literature also demonstrates the importance of taking the policy environment into account when conducting outcome evaluations (Kluve et al., 2007).

However, we found little evidence — specific to a Canadian context — on policy interactions and how they relate to the effective design and delivery of training programs such as Skills Development. Anecdotal evidence from several US jurisdictions does suggest that integration of workforce and education policies is crucial. A lack of connection between basic skills programs, more advanced remedial programs and college level skills upgrading programs, have been argued to make transitions difficult.

The difficulty arises because a large proportion of adult learners do not have college level writing, and math skills, and so first have to take remedial courses, where progress is slow and attrition rates are high. In other words, the adult education system is a "leaky pipeline" with fewer and fewer students making it through each transition point along the way. A major reason for this "leaky pipeline" is that while colleges provide training at many levels few courses are specifically designed to be part of a career pathway for low-skilled workers or jobseekers. Literacy and developmental education is not typically integrated with workforce training. Instead it operates on parallel tracks and is based on a patchwork of credit and non-credit courses.

Knowledge gaps — In general, more evidence is needed on policy variation within Canada and the extent to which policy interactions are considered in program design and delivery. Specifically, further investigation is needed on the extent to which workforce training for low-skilled adults and broader education and development policies can be better aligned with one another.

Research questions — To what extent are workforce training programs designed and delivered to account for, and support or impede, related policies and programs? Are offerings integrated and flexible, in ways that complement other programs? For instance, in terms of the availability of comprehensive wrap-around supports? In terms of integrated programming that provides pathways to further learning?

2C – The role of the institutional factors

Beyond the broader policy environment we identify a role for institutional factors and capacities in shaping training outcomes, namely — the structures, systems, and resources — that are essential to operationalizing different training regimes. These include such macro-level considerations as the regional governance structures, or the management roles and communication systems. It would also include such micro-level influences on program design delivery, as the expertise and capacities of the delivery partners, and the procedures, processes, and information systems that facilitate operations (Myers, Gyarmati, & Voyer, 2009).

While little Canadian research exists on the nuanced role of these institutional features in training effectiveness, broader studies of the adult education system provide support for the notion that structures and delivery systems matter. Myers and de Broucker (2006) investigate the availability of learning opportunities for low-skilled adults in five Canadian provinces. They find that provincial adult learning 'systems' are complex, difficult to navigate, and pose numerous barriers for less-educated adults who would like to improve their skills. Complexity of training delivery can be complicated by poor communication systems, a lack of integration of key support services — or worse, a gap in the capacity to deliver such services — as assessments, or counselling. Bottlenecks in capacities, similar to poorly designed programs, can introduce barriers in ways that affect not only access to training but also outcomes, including a failure to complete training, a lack of skills gains due to poorly aligned content — and ultimately, poor re-employment prospects.

Indeed, some evidence we reviewed from Canadian program evaluations suggest that the most accessed forms of training may be the least effective in terms of labour market outcomes. For example, almost two-thirds of EBSM participants in British Columbia took employment assistance services as their only training, a short-term program which did not result in significant improvements in employment; more effective programs such as skills development and wage subsidies were accessed by only 26% and 4% of participants respectively (HRSDC, 2004).

These results suggest that there may be some disconnect between training needs and the types of training programs that are accessed. Clients whose low levels of literacy may prevent them from undertaking college-level skills upgrading may have been funnelled into job search and return-to-work programs, and from there into low-skill, short-duration jobs.[5] This scenario is consistent with evidence that training in basic skills is either not widely available, or is not being accessed to a significant degree; in a survey of those who participated in training while unemployed, less than 2% took basic reading, writing, or math courses (HRDC, 2003).

Finally, as Martin and Grubb (2001) conclude, there is considerable evidence suggesting that public training programs can be made more effective by improving their design and delivery. This conclusion is echoed more recently in reviews of the literature by Ferrer and Riddell (2008) and Meager (2009). A range of anecdotal evidence on effective design and delivery practices has also been presented in this literature review. However, there is little study to date on the extent to which Canadian programs such as Skills Development incorporate these kinds of emerging practices, or the extent to which their design and delivery systems have the capacity to support such approaches.

Knowledge gaps — While some data suggests there may be challenges with the design and delivery of training programs such as Skills Development, for instance, in the process of streaming clients into training options, further study is needed. The extent to which the current design and delivery systems have the capacity to meet the learning needs of low-skilled Canadians needs to be explored.

[5] It is also possible that in some cases job search programs may have reduced time to find work, but that the impact was not observed because similar non-participants were eventually able to find similar jobs without training.

Research questions — Do employment resource centres and training delivery partners have the capacity and processes in place to meet the learning needs of low-skilled unemployed Canadians? Specifically, is the current intake, assessment and support services designed and delivered in a way that best matches learner needs? Are current program offerings communicated in a way that best facilitates training decisions?

References

Ahlstrand, A. L., Bassi, L. J., and McMurrer, D. P. (2003). Workplace Education for Low-Wage Workers. Michigan: W.E. Upjohn Institute for Employment Research.

Betts, J. R. and McFarland, L. L. (1995). "Safe port in a storm. The impact of labour market conditions on community college enrolment," *The Journal of Human Resources*, Vol. 30, No. 4, p. 741-65.

Benjamin, D. J., Brown, S. A., and Shapiro. J. M. (2006). Who is 'behavioral'? Cognitive ability and anomalous preferences. Available at SSRN: http://ssrn.com/abstract=675264.

Boudard, E. and Rubenson, K. (2003). Revisiting major determinants of participation in adult education with a direct measure of literacy skills. *International Journal of Educational Research*, 39: 265–281.

Bradburn, E., Moen, M. P., and Dempster-McClain, D. (1995). "Women's Return to School Following the Transition to Motherhood." Social Forces 73: 1517-1551.

Burks, S. V., Carpenter, J. P., Gotte, L., and Rustichini, A. (2008). "Cognitive Skills Explain Economic Preferences, Strategic Behavior, and Job Attachment," IZA Discussion Paper No. 3609, Institute for the Study of Labor (IZA).

Caponi, V., Kayahan, C. B., and Plesca, M. (2009). "The Impact of Aggregate and Sectoral Fluctuations on Training Decisions." Mimeo, University of Guelph.

Card, D., Kluve, J., & Weber, A. (2009). "Active Labor Market Policy Evaluations: A Meta-Analysis," IZA Discussion Paper No. 4002, Institute for the Study of Labor (IZA).

DataAngel. (2009). Addressing Canada's Literacy Challenge: A Cost/Benefit Analysis. Data Angel: Ottawa.

DellaVigna, S. (2009). Psychology and economics: Evidence from the field. *Journal of Economic Literature*, 47(2): 315-372.

Dohmen, T., Falk, A., Huffman, D., and Sunde, U. (2007). "Are Risk Aversion and Impatience Related to Cognitive Ability?", IZA Discussion Paper No. 2735, Institute for the Study of Labor (IZA).

Elman, C. and O'Rand, A. M. (2004). "The race is to the swift: Socioeconomic origins, adult education, and wage attainment." *American Journal of Sociology* 110: 123-161.

Ferrer, A. M. and Riddell, W. C. (2002). "The role of credentials in the Canadian labour market," *Canadian Journal of Economics*, Canadian Economics Association, vol. 35(4), p. 879-905, November.

Frederick, S. (2005). Cognitive reflection and decision making. *Journal of Economic Perspectives*, 19(4): 25-42.

Giloth, R. P. (2004). "Comparative Local Workforce Politics in Six Cities" in Workforce Development Politics: Civic Capacity and Performance, edited by R. P. Giloth. Philadelphia.

Granovetter, M. (1974). Getting a Job: A Study of Contacts and Careers. Chicago: University of Chicago Press.

Hansen, J. (2006). "Returns to university level education: Variations within disciplines, occupations and employment sectors." Report prepared for Human Resources and Social Development Canada (HRSDC).

Hansen, J. (2007). "Education and Early Labour Market Outcomes in Canada," Human Resources and Social Development Canada, Gatineau.

Heckman, J. J. (2000). "Policies to Foster Human Capital." *Research in Economics* 54: 3-56.

Heckman, J., LaLonde, R., and Smith, J. (1999). The Economics and Econometrics of Active Labor Market Programs. Handbook of Labor Economics, North-Holland.

Human Resources Development Canada. (2000). Formative Evaluation of the Canada/Manitoba Labour Market Development Agreement. Ottawa: Human Resources Development Canada, Strategic Policy, Evaluation and Data Development.

Human Resources Development Canada. (2003). Training While Unemployed: Final Report. Ottawa: Human Resources Development Canada, Strategic Policy, Evaluation and Data Development.

Human Resources and Skills Development Canada. (2004). Summative Evaluation of Employment Benefits and Support Measures under the Terms of the Canada/British Columbia Labour Market Development Agreement. Ottawa: Human Resources and Skills Development Canada, Strategic Policy and Planning, Program Evaluation.

Jacobs, J. and King, R. (2002). "Age and College Completion: A Life History Analysis of Women Aged 15 through 44," *Sociology of Education* 75: 211-230.

King, I. and Sweetman, A. (2002). "Procyclical Skill Retooling and Equilibrium Search," *Review of Economic Dynamics*, 5(3): 704-717.

Kline, T. (2009). Learning Materials in Instruction: Summary Report. SkillPlan: British Columbia.

Kambourov, G., Manovskii, I., and Plesca, M. (2009). "Returns to Government Sponsored Training," mimeo, February 2009.

Kambourov, G. & Manovskii, I. (2009). "Occupational Mobility and Wage Inequality," *Review of Economic Studies*, Blackwell Publishing, vol. 76(2), p. 731-759, 04.

Kline. (2009). "Essential Skills in instruction, final report," SkillPlan: Vancouver.

Kluve, J. and Schmidt, C. M. (2002). Can Training and Employment Subsidies Combat European Unemployment? *Economic Policy*, 35: 409-443.

Kluve, J., Card, D., Fertig, M., Gora, M., Jacobi, L., Jensen, P., Leetmaa, R., Nima, L., Patacchini, E., Schaffner, S., Schmidt, C. M., van der Klaauw, B., & Weber, A. (2007). "Active Labor Market Policy in Europe: Performance and Perspectives," Springer: Berlin.

Martin, J. P. and Grubb, D. (2001). What Works and for Whom: A Review of OECD Countries' Experiences with Active Labour Market Policies (Paris: Organisation for Economic Co-operation and Development).

Meager, N. (2009). "The Role of Training and Skills Development in Active Labour Market Policies," *International Journal of Training and Development* 13:1.

Myers, K. and de Broucker, P. (2006). "Too Many Left Behind: Canada's Adult Education and Training System." Canadian Policy Research Networks, Ottawa.

Myers, K. and Myles. J. (2005). "Self-Assessed Returns to Adult Education Life-long Learning and the Educationally Disadvantaged," CPRN Research Report.

Myers, K., Gyarmati, D., and Voyer, J.-P. (2009). Skills Upgrading for Ontario Working Age Adults: An Environmental Scan of Programs, Gaps, and Opportunities. Social Research and Demonstration Corporation, Ottawa. October 2009.

Newton, B., Hurstfield, J., Miller, L., Akroyd, K., and Gifford, J. (2005). Training Participation by Age amongst Unemployed and Inactive People. Department for Work and Pensions Research Report No. 291.

Parker, A. M. and Fischoff, B. (2005). Decision-making competence: External validation through an individual-differences approach. *Journal of Behavioral Decision Making*, 18-1-27.

Park, R., Ernst, S., & Kim, E. (2007). Moving beyond the GED: Low-skilled adult transition to occupational pathways at community colleges leading to family-supporting careers research synthesis. St. Paul: University of Minnesota, National Research Center for Career and Technical Education.

Pannenberg, M. (2007). "Risk Aversion and Reservation Wages," IZA Discussion Paper No. 2806, Institute for the Study of Labor (IZA).

Paserman, D. M. (2008). Job search and hyperbolic discounting: Structural estimation and policy evaluation. *Economic Journal*, 118: 1418-1452.

Pfeifer, C. (2008). "A Note on Risk Aversion and Labour Market Outcomes: Further Evidence from German Survey Data," IZA Discussion Paper No. 3523, Institute for the Study of Labor (IZA).

Plesca, M. and Smith, J. (2007). "Evaluating Multi-Treatment Programs: Theory and Evidence from the U.S. Job Training Partnership Act Experiment." This version: August 21, 2006. Empirical Economics, 32(2-3): 491-528.

Policy Research Initiative. (2003). "Social Capital: Building on a Network-Based Approach." Ottawa: Policy Research Initiative.

Rubenson, K., Desjardins, R., and Yoon, E.-S. (2007). Adult Learning in Canada: A Comparative Perspective. Results from the Adult Literacy and Life Skills Survey. Ottawa: Statistics Canada. Catalogue No. 89-552-XIE, No. 17.

Rubenson, K. and Desjardins, R. (2009). The impact of welfare state regimes on barriers to participation in adult education: A bounded agency model. *Adult Education Quarterly*, 59 (3): 187-207.

Smith, J. and Plesca, M. "Improving Public Employment and Training Programs," in Bruce Meyer and Gregg Duncan (eds.), "The Incentives of Government Programs and the Well Being of Families," The Joint Center for Poverty Research, December 2000.

Statistics Canada and OECD. (2005). "Learning a Living: First results of the Adult Literacy and Life Skills Survey," Ottawa and Paris.

Woolcock, M. (2001). The place of social capital in understanding social and economic outcomes. *Isuma*, 2(1).

Zhang, X. and Palameta, B. (2006). "Participation in Adult Schooling and its Earnings Impact in Canada." Ottawa: Statistics Canada.