



## **UCD GEARY INSTITUTE DISCUSSION PAPER SERIES**

### **Skills, Capabilities and Inequalities at School Entry in a Disadvantaged Community**

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## **Abstract**

Socioeconomic inequalities in children's skills and capabilities begin early in life and can have detrimental effects on future success in school. The present study examines the relationships between school readiness and sociodemographic inequalities using teacher reports of the Short Early Development Instrument in a disadvantaged urban area of Ireland. It specifically examines socioeconomic (SES) differences in skills within a low SES community in order to investigate the role of relative disadvantage on children's development. Differences across multiple domains of school readiness are examined using Monte-Carlo permutation tests. The results show that child, family and environmental factors have an impact on children's school readiness, with attendance in centre-based childcare having the most consistent relationship with readiness for school. In addition, the findings suggest that social class inequalities in children's skills still exist within a disadvantaged community. These results are discussed in relation to future intervention programmes.

## Introduction

Socioeconomic inequalities in children's school readiness skills begin early in life and can have detrimental effects on a child's development. Such skills include the child's physical well-being and motor development, social and emotional well-being, approaches to learning, language development and emerging literacy, as well as cognition and general knowledge (Kagan, 1992; Meisels, 1999). These inequalities increase as children get older and their effects become more difficult to extinguish (Najman et al., 2004). Specifically, poor school readiness is associated with difficulties in forming healthy relationships with peers (Kupersmidt & Coie, 1990), low academic achievement (Duncan et al., 2007; Raver, 2003), decreased likelihood of employment (Rouse, Brooks-Gunn, & McLanahan, 2005), increased rates of teenage pregnancy, and poor psychological well-being (Brooks-Gunn, 2003). School readiness has been described as the foundation on which all later learning is built as children who develop well early in life are in a position to elicit experiences and interactions that accelerate their subsequent development and thus facilitate later life achievement (Heckman, 2000).

This is particularly important in an Irish context as UNICEF, using a series of poverty indicators, found that the rate of child poverty in Ireland was one of the highest in Europe (Barnardos, 2008). Specifically, the rate of consistent child poverty<sup>1</sup> in Ireland is 11.1% (Barnardos, 2008), which is higher than the overall adult rate of 6.9% (Central Statistics Office, 2007). In addition, intergenerational mobility in education is low, with Ireland having the highest correlation between father and child educational attainment among 20 countries (Chevalier, Denny, & McMahon, 2009). Therefore examining the evolution of socioeconomic inequalities in children's skills at school entry, particularly within a disadvantaged cohort, is a particularly salient issue in Ireland. This study is the first

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<sup>1</sup> Consistent child poverty is the proportion of families with an income of less than 60% of the median who are deprived of two or more goods and services considered essential for a basic standard of living.

comprehensive assessment of school readiness among a disadvantaged urban group in Ireland. It assesses the skills and capabilities that children from a low socioeconomic status (SES) community have acquired by the time they enter school and explores group differences in these skills as a function of differential sociodemographic circumstances.

Given the importance of school readiness on later life outcomes it is important to determine factors that may influence a child's capabilities at school entry. Research shows that the path to school readiness begins in infancy and is affected by a range of SES factors. Growing up in poverty can have negative effects on a children's cognitive and non-cognitive skills, with children from low income families demonstrating greater vulnerability at school entry (Duncan & Brooks-Gunn, 1997) and having less developed social skills and approaches to learning (Janus & Duku, 2007), as well as more emotional and behavioural problems (McLoyd, 1998) than children from higher income families. Furthermore, children from disadvantaged backgrounds report more stress, and as such, are prone to exhibit higher rates of aggressive behaviours when compared to children's from higher SES groups (Eamon, 1994). Additionally, they are more likely to have poor nutrition and physical health (Brooks-Gunn, Britto, & Brady, 1999) and tend to score lower on tests of cognitive ability, including reading readiness, number skills, problem solving, creativity and memory (Stipek & Ryan, 1997).

Another key indicator of SES is parental education. Children of more highly educated parents tend to enter school with higher levels of academic skills and these children continue to outperform other children throughout education (Entwisle & Alexander, 1993; Lee & Burkham, 2002). Parental employment also has an effect on school readiness (Davis-Kean, 2005; Brooks-Gunn, Han, & Waldfogel, 2002), although there are mixed findings on the direction of the effect. Specifically, research has demonstrated that maternal employment when the child is nine months old is predictive of lower school readiness scores at three

years, with the effects more pronounced when mothers work 30 hours per week or more (Brooks-Gunn et al., 2002). However, positive effects of maternal employment on child skills after the child's first year of life have been found (Waldfogel, Han, & Brooks-Gunn, 2002; Vandell & Ramanan, 1992).

Although inequalities in child development based on SES are well-documented, few studies have examined whether SES inequalities have stronger impacts on some domains of school readiness than others. The few studies which have addressed this issue typically report that low SES has a larger effect on the development of cognitive skills than socioemotional skills (Dearing, McCartney, & Taylor, 2007; Duncan, Brooks-Gunn, & Klebanov, 1994). In addition, there is a lack of research examining relative skills inequality among a low SES groups. Specifically, although diversity in social groups exist within disadvantaged communities, the impact of living in such an environment on children's development for those at the higher end of the social gradient is rarely investigated. To address these issues, this study tests for differences in cognitive and non-cognitive skills based on a range of SES indicators including parental education, maternal employment and social welfare dependency.

In addition to SES, individual and family characteristics, such as child age and gender, the presence of siblings, and parental age, also may affect children's skills and capabilities at school entry. Children who start school later tend to score higher on standardised achievement tests throughout the school years (Bedard & Dhuey, 2006; Crawford, Dearden, & Meghir, 2007; Elder & Lubotsky, 2007; Fredrikson & Öckert, 2006; McEwan & Shapiro, 2008; Puhani & Weber, 2007; Strom, 2004). Gender differences in school readiness, particularly in regards non-cognitive skills, also exist with boys tending to be more aggressive (Hood, 1996; Zimmer-Gembeck, Geiger, & Crick, 2005; May & Kundert, 1997) and displaying fewer prosocial and helping behaviours (Romano, Tremblay, Boulerice,

& Swisher, 2005; Zimmer-Gembeck et al., 2005) than girls. Furthermore, the absence of siblings has been found to have a positive effect in a child's cognitive development (Falbo & Polit, 1986; Modry-Mandell, Gamble, & Taylor, 2007). Lastly, children born to younger parents, especially teen parents, have a greater risk of developmental problems (Whitman, Borkowski, Schellenbach, & Nath, 1997) and are likely to perform more poorly on cognitive tests (Moore, Morrison, & Greene, 1997) than children born to older parents. This analysis, therefore, tests for group differences in school readiness skills according to age, gender, siblings, and parental age at birth.

The final sociodemographic circumstance that may affect a child's school readiness is the quality of the child's early life environment which can be affected by participation in childcare. Recent studies show that high quality childcare, early in life, may compensate for a low resource home environment among low SES children (Cote et al., 2007; Cote, Borge, Geoffroy, Rutter, & Tremblay, 2008; Geoffroy et al., 2006). Furthermore, evidence indicates that childcare quality is an important determinant of child outcomes (Burchinal, Roberts, Nabors, & Bryant, 1996; Burchinal et al., 2000; Love et al., 2003; NICHD & Duncan, 2003). Specifically, high quality formal childcare has been found to have a positive impact on children's cognitive abilities and school readiness, in particular math and reading skills, as well as expressive vocabulary and language development (NICHD, 2000; 2002; 2008; NICHD & Duncan, 2003) and social and emotional development (Kagan & Neuman, 1997; Vandell & Pierce, 2003). This finding is perhaps more salient for children among low SES families as participation in high quality preschool programmes, such as High/Scope Perry Preschool and the Carolina Abecedarian Project, has been shown to have a strong long-term impact on school achievement and social adjustment on children from low income families (Barnett, 1995). This study therefore compares the skills of children who attended centre-based childcare prior to entering school to those that did not.

### *Hypotheses of the Present Study*

First, we hypothesize that children from relatively higher SES backgrounds, within the disadvantaged community, will be more prepared for school than children from relatively lower SES backgrounds. Second, we expect to observe school readiness differences according to the children's differential characteristics. Specifically, we hypothesize that older children will score higher across all the domains of school readiness, and that boys will score lower. We hypothesise that the presence of siblings in the household will have a negative effect on the development of school readiness skills and that the children of younger parents will have lower levels of school readiness on all domains. Finally, we hypothesise that children who are involved in centre based child care will receive higher ratings in all areas of school readiness.

## **Method**

### **Participants**

Parents and teachers of children either residing in or attending their first year of school in a disadvantaged urban area of Ireland were eligible for participation in the study. Parents were recruited via their child's teacher. Participating teachers gave a packet containing an information sheet, consent form, and parent questionnaire to the parents of every child in their class. There were a total of 123 eligible pupils across five schools. In total, 94 parent questionnaires were received resulting in a response rate of 76%, and 101 teacher questionnaires were completed, capturing data for 82% of eligible participants. Teacher questionnaires were completed for all pupils with parental consent, bar one, resulting in a teacher response rate of 99%.

## **Procedure**

The study was conducted between October and December of the 2008-2009 academic year. Teachers completed an online questionnaire regarding the school readiness of children in their class. The questionnaire took approximately 10 minutes to complete for each child. Participating parents completed a paper and pen questionnaire assessing family demographics.

## **Instruments**

### **Family Demographics**

Parents answered questions related to family composition, parent age, ethnicity, parent employment and education, family income, social welfare status and history of childcare. All questions were designed specifically for this survey. The majority (94%) of respondents were the child's biological mother, 4% were the adoptive father, 1% foster mother, and 1% of respondents were the child's biological father.

### **School Readiness**

The child's school readiness was assessed using the S-EDI (Janus, Duku, & Stat, 2005), a comprehensive measure of school readiness composed of 48 core items. This measure provides scores in five domains of school readiness as well as multiple subdomains. For more information on the reliability of the S-EDI please refer to Janus et al. (2005) and descriptions of domains and standardised Cronbach alpha coefficients (Cronbach, 1951) for this cohort are reported here.

The *physical health and well-being* ( $\alpha = .71$ ,  $n=79$ ) construct is composed of three three-item subscales including physical readiness for the school day ( $\alpha = .44$ ,  $n=94$ ), physical independence ( $\alpha = .41$ ,  $n=97$ ), and gross and fine motor skills ( $\alpha = .68$ ,  $n=85$ ). The *social*



*competence* ( $\alpha = .89$ ,  $n=100$ ) construct comprises four three-item subscales including respect and responsibility ( $\alpha = .82$ ,  $n=100$ ), approaches to learning ( $\alpha = .86$ ,  $n=101$ ), readiness to explore new things ( $\alpha = .72$ ,  $n=101$ ), and overall social competence with peers ( $\alpha = .84$ ,  $n=101$ ). The *emotional maturity* ( $\alpha = .85$ ,  $n=51$ ) construct consists of four three-item constructs including prosocial and helping behaviour ( $\alpha = .87$ ,  $n=65$ ), aggressive behaviour ( $\alpha = .87$ ,  $n=82$ ), anxious and fearful behaviour ( $\alpha = .87$ ,  $n=100$ ), and hyperactive and inattentive behaviour ( $\alpha = .87$ ,  $n=101$ ). The *language and cognitive development* ( $\alpha = .87$ ,  $n=65$ ) construct contains four three-item subscales related to basic literacy skills ( $\alpha = .73$ ,  $n=91$ ), advanced literacy skills ( $\alpha = .57$ ,  $n=86$ ), basic numeracy skills ( $\alpha = .80$ ,  $n=77$ ), and interest in literacy/numeracy and memory ( $\alpha = .80$ ,  $n=86$ ). The final construct *communication and general knowledge* ( $\alpha = .90$ ,  $n=101$ ) comprises three items and contains items such as ability to tell a story and ability to communicate in an understandable way.

Scores on each domain range from zero to ten with higher scores representing more frequent display of behaviours in that domain. The reliability of the scales were all acceptable except for two sub-domains of the physical health and well-being domain, physical independence and physical readiness for the school day. Therefore, these subdomains were excluded from further analysis.

## **Analysis**

As the data violate assumptions of normality based on the Skewness/Kurtosis tests and the Shapiro-Wilk test for normality, all statistical procedures used are based on non-parametric assumptions. In addition, given the relatively small sample size (<100 observations), classical hypothesis tests such as the t-test, f-test and chi-square tests may be unreliable. Therefore, Monte Carlo permutation based inference tests, based on 20,000 replications, are used to test for group differences in school readiness scores. Permutation tests give accurate p-values

even when the sampling distribution is skewed, therefore they can be used when sample sizes are small and simple statistics are unlikely to be normal (Heckman, Moon, Pinto, Savelyev, & Yavitz, 2009a). In testing for relationships between two continuous variables, the non-parametric Spearman's rho correlation is used instead of Pearson's correlation/OLS.<sup>2</sup>

## **Results:**

### *Comparisons of S-EDI Scores and Canadian low SES Scores*

Teacher ratings on each domain of the S-EDI for the present cohort with a mean age of 4.77 (SD = .039) were compared with teacher ratings of a low SES Canadian sample with a mean age of 5.8 years. In the Canadian cohort, low SES was defined as income below the LICO (low income cut-off) threshold. For details regarding this low SES Canadian cohort please see Janus & Duku (2007).

Several similarities in the patterns of mean scores in the Canadian and Irish samples were present. Specifically, both samples showed the same pattern in ratings of the physical health and well-being ( $M_{\text{Canada}} = 8.34$ ,  $SD_{\text{Canada}} = 1.35$ ;  $M_{\text{Ireland}} = 7.56$ ,  $SD_{\text{Ireland}} = 2.18$ ), social competence ( $M_{\text{Canada}} = 7.99$ ,  $SD_{\text{Canada}} = 1.86$ ;  $M_{\text{Ireland}} = 7.34$ ,  $SD_{\text{Ireland}} = 2.05$ ), emotional maturity ( $M_{\text{Canada}} = 7.72$ ,  $SD_{\text{Canada}} = 1.54$ ;  $M_{\text{Ireland}} = 6.51$ ,  $SD_{\text{Ireland}} = 2.03$ ) and language and cognitive development ( $M_{\text{Canada}} = 7.43$ ,  $SD_{\text{Canada}} = 2.28$ ;  $M_{\text{Ireland}} = 5.52$ ,  $SD_{\text{Ireland}} = 2.99$ ) domains, with scores decreasing across each one, and with the mean scores across both samples being highest in the physical health and well-being domain. Additionally, the communication and general knowledge ( $M_{\text{Canada}} = 7.07$ ,  $SD_{\text{Canada}} = 2.27$ ;  $M_{\text{Ireland}} = 5.12$ ,  $SD_{\text{Ireland}} = 3.47$ ) domain received the lowest rating by the Irish teacher report and the low SES teacher reported Canadian mean.

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<sup>2</sup> With one exception, where the data are compared with the Canadian low SES mean on S-EDI scores, a parametric test is used as only the mean and standard deviation of the norm sample was available, thus it was not possible to carry out the non-parametric equivalent.

An independent samples t-test (for unequal sample sizes) was used to compare the mean differences between teacher reported S-EDI scores and teacher reported Canadian means. Teachers consistently rated children in this cohort below the teacher reported Canadian mean on domains of physical health and well-being ( $t(712) = -4.87; p <.001$ ), social competence ( $t(712) = -3.20; p <.01$ ), emotional maturity ( $t(710) = -6.85; p <.001$ ), language and cognitive development ( $t(703) = -7.15; p <.001$ ), and communication and general knowledge ( $t(712) = -7.36; p <.001$ ).

### **Factors Associated with School Readiness Skills: SES**

#### **Parental Education**

The Irish education system is divided into three basic levels: Primary (8 years), Secondary (5 or 6 years) and Higher Education. Secondary education is further broken down into a junior cycle culminating in the Junior Certificate after 3 years and a senior cycle culminating in the Leaving Certificate after a further 2 years. The highest level of education attained by the highest percentage of respondents (28.09%,  $n=25$ ) in this cohort is the Junior Certificate. A further 28% have qualifications below this level (12.36% ( $n=11$ ) of respondents' attained a Primary Education, and 15.73% ( $n=14$ ) completed Lower Secondary), and 44% of respondents have a higher level of education, 14.61% ( $n=13$ ) have Upper Secondary education, 4.49% ( $n=4$ ) have the Applied Leaving Certificate, 8.99% ( $n=8$ ) have the Leaving Certificate, 13.48% ( $n=12$ ) have some form of non-degree qualification and 2.25% ( $n=2$ ) have a Primary degree). The average parent school leaving age within this cohort was 16.

The educational categories were collapsed in order to compare those with the lowest level of education and those with higher levels of education. The low education group contains respondents with a Lower Secondary education or below. These respondents did not have a Junior Certification and comprise 28.09% ( $n=25$ ) of the sample. The 'high' education

group includes all respondents who have reached their Junior Certification or higher. The 'high' education category in this sample represents 71.91% (n=64) of the total cohort. Means and standard deviations are presented in Table 1.

Children of parents in the low education group were rated by teachers as displaying significantly less social competence as measured by the S-EDI. Specifically, they were significantly less socially competent in their interactions with peers ( $t(86)=-.99$ ;  $p<.05$ ), with trends showing that they also displayed lower levels of respect and responsibility ( $t(86)=-1.13$ ;  $p<.10$ ). Additionally, teacher reports demonstrated that children of parents with low education display significantly less emotional maturity ( $t(85)=-1.41$ ;  $p<.01$ ), particularly in terms of higher levels of aggression ( $t(77)=-2.25$ ;  $p<.01$ ) and anxious and fearful behaviour ( $t(86)=-2.50$ ;  $p<.01$ ), compared to children of parents with higher education. Trend level data shows that children of low educated parents also displayed lower levels of language and cognitive development ( $t(78)=-1.38$ ;  $p<.10$ ), specifically they scored lower on the basic literacy subdomain ( $t(84)=-1.48$ ;  $p<.10$ ). There were no statistical differences on the remaining domains.

### **Maternal Employment Status**

Thirty-four percent (n=40) of respondents reported looking after home or family as their employment status, 24% (n=21) are in paid work, 5% (n=4) are on leave from paid work, 18% (n=16) are unemployed, 10% (n=9) are in paid national training and employment agency, and 2% (n=2) are in unpaid national training and employment agency. Five percent categorised themselves as "other." Employment status was divided into two categories for further analyses.<sup>3</sup> The categorisation was based on those in paid work, at least part time

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<sup>3</sup> As 94% of respondents were biological mothers and employment status of mothers and fathers can be quite different, non maternal observations were excluded from this analysis, resulting in five excluded observations.

(including paid training courses), and those not in paid work. Means and standard deviations are presented in Table 1.

Children of employed mothers were rated by teachers as showing significantly higher levels of social competence ( $t(83)=1.11$ ;  $p<.05$ ). The subdomains indicate that these children were rated higher in regards to respect and responsibility ( $t(83)=1.39$ ;  $p<.05$ ) and approaches to learning ( $t(83)=1.25$ ;  $p<.05$ ). Trends in the data suggest that children of employed mothers display higher levels of emotional maturity ( $t(82)=.83$ ;  $p<.10$ ), a finding that is driven by the significant subdomain finding that these children are rated as displaying lower levels of aggression ( $t(75)=1.33$ ;  $p<.05$ ). There were no statistical differences on the remaining domains.

### **Social Welfare Dependency**

Over two-thirds of the sample (69%,  $n=55$ ) reported receiving social welfare payments such as job seekers benefit, job seekers allowance, rent allowance, or single parent allowance. Social welfare is a good proxy for socio-economic status as there is often a high correlation between welfare dependency and SES indicators of low education, income and social class (Danziger et al., 1999). Means and standard deviations are presented in Table 1.

Differences in teacher reported S-EDI domains based on social welfare dependency reached significance for the social competence and emotional maturity domains, such that children in families receiving social welfare payments were rated as displaying less social competence ( $t(78)=-.91$ ;  $p<.05$ ) and lower levels of emotional maturity ( $t(77)=-1.06$ ;  $p<.05$ ). In relation to social competence, significant differences emerged in the subdomain of approaches to learning ( $t(78)=-1.13$ ;  $p<.05$ ) and trends show a similar effect for respect and responsibility ( $t(78)=-1.19$ ;  $p<.10$ ). Finally, children of families in receipt of social welfare

were rated significantly higher in terms of aggression ( $t(70)=-1.39$ ;  $p<.10$ ) and anxious/fearful behaviour ( $t(78)=-2.12$ ;  $p<.05$ ).

<INSERT TABLE 1 ABOUT HERE>

## **Factors Associated with School Readiness Skills: Individual and Family Characteristics**

### **Child age**

Results indicate a positive correlation between child age and scores on the physical health and well-being domain ( $r=0.23$ ;  $p<.05$ ), suggesting that older children display higher levels of physical development, particularly in terms of gross and fine motor skills ( $r=0.27$ ;  $p<.05$ ). Older children are also rated by teachers as displaying higher levels of social competence ( $r=.022$ ;  $p<.05$ ), particularly, approaches to learning ( $r=0.28$ ;  $p<.01$ ). The results also show that older children perform better on the language and cognitive development domain ( $r=0.24$ ;  $p<.05$ ), with a trend suggesting this relationship is driven by higher levels of basic literacy ( $r=0.19$ ;  $p<.10$ ).

### **Gender**

More than half of the children (58.51%,  $n=55$ ) in the sample are male. Means and standard deviations based on child gender are presented in Table 2.

Significant gender differences emerged for the S-EDI construct of emotional maturity, such that males are rated as displaying lower levels of emotional maturity than females ( $t(98)=.87$ ;  $p<.05$ ). Specifically, trends indicate that males display lower levels of prosocial and helping behaviour than their female classmates ( $t(77)=1.14$ ;  $p<.10$ ).

## **Siblings**

Information on whether the child lived in the same household as any siblings was available for 89% (n=90) of the children. Of these, 18% (n=17) were only children, while the remaining 82% were living with one or more siblings. Means and standard deviations based on presence of siblings in the household are presented in Table 2.

Children with no siblings living in the household were rated by teachers as displaying significantly higher levels of social competence compared to children with siblings ( $t(89)=1.13$ ;  $p<.05$ ). Specifically, pupils with no siblings display significantly more respect and responsibility behaviours than pupils who have at least one sibling ( $t(89)=7.25$ ;  $p<0.5$ ). Additionally, trends in the data show that pupils with no siblings display higher levels of social competence with peers ( $t(89)=1.52$ ;  $p<.10$ ), higher levels of emotional maturity ( $t(87)=1.10$ ;  $p<.10$ ) and significantly lower levels of aggression ( $t(80)=7.92$ ;  $p<.05$ ) than their classmates with siblings.

## **Parent Age**

The mean age of the parents in the sample is 30.48 years (SD = 5.53), with ages ranging from 22 to 45 years. Parents were divided into two groups based on the age they were when the child was born. The first group consisted of those who were 20 years old or younger when the child was born and the second group consisted of those who were older than 20 years. In the sample, 15.96% (n=15) are classified as being a young parent. Means and standard deviations based on parental age are presented in Table 2.

Although no significant differences emerged based on this categorisation, trends in the data suggest differences in the communication and general knowledge ( $t(83)=-0.20$ ;  $p<0.10$ ) category, such that children of parents who were 20 years or older when they were born perform higher in this domain.

<INSERT TABLE 2 ABOUT HERE>

## **Factors Associated with School Readiness Skills: Childcare**

### **Centre-Based Childcare**

The majority of children in the cohort, 85% (n=80) experienced some form of childcare prior to school entry, with 82% attending centre-based care. Those children who received childcare in a home setting (either being looked after by grandparents, other relatives or nannies) were in this type of care for, on average, 27.5 months (SD = 14.44). Children who received centre-based childcare either in a nursery or Montessori school spent 18 months (SD = 10.52), on average, in this type of childcare. Means and standard deviations based on participation in childcare are presented in Table 3.

Differences based on participation in centre-based childcare emerged on all five domains of the S-EDI, in addition to multiple subdomains. Specifically, children who attended any form of centre-based care, for any period prior to entering primary school, were rated by teachers as displaying significantly higher levels of physical health and well-being ( $t(91)=1.93$ ;  $p<.01$ ), gross and fine motor skills ( $t(76)=4.17$ ;  $p<.01$ ), social competence ( $t(91)=1.86$ ;  $p<.001$ ), respect and responsibility ( $t(91)=1.50$ ;  $p<.05$ ), approaches to learning ( $t(91)=5.31$ ;  $p<.001$ ), readiness to explore new things ( $t(91)=2.03$ ;  $p<.001$ ), emotional maturity ( $t(89)=5.58$ ;  $p<.10$ ), and less anxious and fearful behaviour ( $t(91)=1.96$ ;  $p<.05$ ). They also were rated significantly higher than children who did not attend centre-based care in terms of levels of language and cognitive development ( $t(83)=2.79$ ;  $p<.001$ ), basic literacy ( $t(89)=3.36$ ;  $p<.001$ ), interest in literacy, numeracy, and memory ( $t(88)=5.33$ ;  $p<.001$ ), as well as higher levels of communication and general knowledge ( $t(91)=2.49$ ;  $p<.05$ ).

<INSERT TABLE 3 ABOUT HERE>



## **Discussion**

This paper examines differences in school readiness skills among a disadvantaged group in Ireland. It identifies inequalities in children's abilities, particularly in non-cognitive skills, even within a disadvantaged sample, with children from relatively lower SES backgrounds displaying lower levels of social and emotional development than children from higher SES backgrounds in a disadvantaged cohort.

As this is the first comprehensive school readiness study in Ireland there are no Irish norms to serve as a comparative, therefore the data were compared to a Canadian low SES mean. The study found that children in the disadvantaged Irish sample scored significantly lower than the Canadian low SES mean across all domains. This may be a result of the relative ages of the two samples, with the Irish cohort being approximately 1 year younger, on average, than the Canadian cohort. Yet the results show that there is some overlap in the patterns of results, with children in both cohorts scoring the lowest on the communication and general knowledge domain and highest on the physical health and well being domain.

### *SES and School Readiness*

Within the Irish sample there were differences in children's scores across most school readiness domains depending on SES characteristics, familial factors, and participation in centre based childcare. As expected, children of the lowest educated parents i.e. those that left education before age 16, were rated by teachers as having significantly lower social competence and emotional maturity than children of higher educated parents. In line with previous studies (e.g., Davis-Kean, 2005; Klebanov, Brooks-Gunn, & Duncan, 1994), children of lower educated parents were also rated as displaying higher levels of aggression and anxious and fearful behaviour. This could be due to a mix of biological, economic, and social factors. Specifically, parental education may have an impact on factors such as

structure of the home environment (Linver, Brooks-Gunn, & Kohen, 2002), or the type of parenting (Conger et al., 2002), which in turn can affect child outcomes and ultimately a child's school readiness.

Children of employed mothers were rated as displaying higher levels of social competence and lower levels of aggression than children of unemployed mothers. Previous research shows that maternal employment in the first year of life is predictive of poorer school readiness (Brooks-Gunn et al., 2002), but after the first year maternal employment may actually have beneficial impacts on school readiness (Waldfogel et al., 2002). This positive relationship between maternal employment and child social skills may be driven by childcare practices in that children of working mothers may be enrolled in childcare, which has been shown to be particularly beneficial for children from disadvantaged backgrounds (Lee, Brooks-Gunn, Schnur, & Liaw, 1991). Another SES indicator examined in this study is social welfare dependency. The results show that children whose parents are in receipt of social welfare were rated as displaying less social competence and lower emotional maturity. This is to be expected as social welfare dependency is a very good proxy for SES and this is line with other studies showing the effect of low SES on school readiness and child outcomes.

Somewhat surprisingly, and contrary to previous findings, the children's cognitive skills were not a function of their socioeconomic status. This may be due to a number of explanations. Studies have shown that growing up in a disadvantaged community can have detrimental effects of the development of cognitive skills (Klebanov, Brooks-Gunn, McCarton, & McCormick, 1998; McCulloch & Joshi, 2001); therefore it is possible that being from a family with a relatively higher SES, within a low SES community, may not compensate for growing up in a disadvantaged area. Therefore, peer effects and contagion, within this relatively small community, may operate, such that children within the community

regularly engage, play and learn from one another, therefore eliminating any major variations in cognitive skills. As this is a small area and a large proportion of the children attend the same set of preschools, all children are exposed to the same quality of preschool care, thus contributing to the relatively homogenous cognitive skills among the children despite family SES differences.

The fact that SES differences were observed on the socio-emotional domains may result from such skills being more developed and learned early in the home environment, compared to cognitive and general knowledge skills.

#### *Familial Factors and School Readiness*

The study also identified a number of other aspects of a child's early life that had an affect on their later capabilities. There have been mixed results on the effect of child's age when starting school and school readiness skills. Some studies find that delaying school entry for one year can have detrimental effects on school readiness (Gullo & Burton, 1992; May & Kundert, 1997). However, more recent studies conducted across many countries find that children who start school later tend to score higher on school tests at many different ages (Bedard & Dhuey, 2006; Fredrikson & Öckert, 2006; Puhani & Weber, 2007; Strom, 2004; Crawford et al., 2007; McEwan & Shapiro, 2008; Elder & Lubotsky, 2007). The results of this study support the latter hypothesis that older children perform better at school. Specifically, children who started school at a later age were rated higher on physical health and well being, social competence and approaches to learning, and language and cognitive development.

Gender differences in children's skills and capabilities are often evident at school entry (Bulotsky-Shearer, Fantuzzo, & McDermott, 2008), particularly in regards socioemotional development. Several studies have identified gender differences in aggression

(Hood, 1996; Zimmer-Gembeck et al., 2005), with boys being more aggressive than girls, and prosocial behaviour (Romano et al., 2005; Zimmer-Gembeck et al., 2005), with girls displaying more prosocial behaviours than boys. This study supports these hypotheses such that boys were rated as having lower levels of emotional maturity and lower levels of prosocial and helping behaviours than girls. This result may be driven by the different socialisation experiences between boys and girls, as research shows that parents are more likely to encourage girls to engage in acceptable emotional behaviours than boys (Chaplin, Cole, & Zahn-Waxler, 2005).

Siblings also play an important role in a child's development. Research has shown that children without siblings tend to perform better than children with siblings in terms of academic achievement (Falbo & Polit, 1986), but that there is no difference in terms of social or emotional development (Kitzmann, Cohen, & Lockwood, 2002). However, this study found that children with no siblings scored higher in the social competence and emotional maturity domains and there were no differences in terms of cognitive development. From a young age, siblings spend a large portion of their time with each other so it is likely that the quality of those interactions play a central role in shaping the development of the child (Brody, Stoneman, & McCoy, 1992; Dunn, Slomkowski, & Beardsall, 1994). Links also have been established between the quality of sibling interactions and externalising and internalising behaviours (Brody, Stoneman, McCoy, & Forehand, 1992; Ostrov, Crick, & Stauffacher, 2006), with negative relationships increasing the likelihood of these behaviours (Bryant & Crockenberg, 1980). On the other hand, positive relationships between siblings may decrease the incidence of externalising and internalising behaviours (Floyd, Purcell, Richardson, & Kupersmidt, 2009). Therefore, one possible explanation as to why children without siblings score higher in social and emotional development could be that children in this cohort experience negative sibling relationships. A second plausible explanation may be

due to the fact that children living in disadvantaged areas tend to display more behavioural problems (Duncan et al., 1994; Chase-Lansdale, Gordon, Brooks-Gunn, & Klebanov, 1997). Therefore, children in this cohort may be learning these socially unacceptable behaviours through interactions with their siblings.

Trends in the data suggest that children of parents who were 20 years old or older when the child was born have higher communication and general knowledge scores. Previous studies report that children born to teen parents begin kindergarten with lower levels of school readiness across a number of domains (Terry-Human, Manlove, & Moore, 2005). The strength of this result may be due to the small sample size, however, it might also be due to demographic factors. While some of the mothers may have been older when they gave birth to the child in this sample, they may have had other children at younger ages, thus they may have the same risk factors typically attributed to young parents.

#### *Childcare and School Readiness*

As hypothesized, the results show that children who were enrolled in centre based childcare scored higher across all domains of school readiness compared to those not in childcare. Childcare has been shown to have an important impact on child development and it may even compensate for a low resource home environment (Cote et al., 2008). The quality of the childcare is a strong predictor of school readiness with high quality formal childcare having the strongest impact on school readiness (NICHD, 2000; 2002; 2008; NICHD & Duncan, 2003), specifically being associated with higher cognitive test scores, better school achievement, fewer special education placements, and higher school completion rates (Barnett, 1995). In addition, the literacy environment and activities within a childcare setting also can make important contributions to emergent literacy (National Research Council, 1998).

Additionally, participation in high quality programmes, such as High/Scope Perry Preschool and the Carolina Abecedarian Project, has been shown to have a strong impact on children from low income families (Barnett, 1995). Well designed early education programmes serving disadvantaged children in the year prior to the first year of school have been shown to generate benefits for government, society, and for the participants themselves, across a wide range of measures. These associated benefits have been shown to outweigh the costs of the programmes (Karoly & Bigelow, 2005).

### *Strengths and Limitations of the Study*

There are a number of limitations to this study. First, due to the absence of previous studies of school readiness in Ireland, the study relied on average school readiness scores from a Canadian sample. Therefore, there may be significant social and cultural differences inherent in this type of comparison. In addition, the Canadian values may not be the optimal comparison as it is a mean score based on children from low income families, while the Irish sample is based on children from a designated disadvantaged area. While there is probably a high correlation between these low income families and families living in disadvantaged backgrounds, the two samples were not drawn using the same criteria. Also, there was, on average, a one year age difference between the children in the Canadian and Irish sample which may have affected the results. The final limitation of this study is that due to the relatively small sample size, it was not possible to control for potentially confounding factors through multiple regression analysis. Therefore, all the analysis conducted to test for differences in school readiness represent correlations or associations in the data. All results are indicative of underlying relationships that may exist between two factors; however, they are not necessarily causal relationships and should not be interpreted as such.

The present study also has several strengths. First, the survey received a high response rate from both teachers and parents which is higher than commonly found in studies involving low SES families. Second, to the authors' knowledge, this is the first comprehensive study of school readiness in Ireland. Third, non-standard statistical methods were used which were specifically tailored to accommodate the small sample size used in the analysis. This allows for robust conclusions about the results to be obtained. Finally, the present study took a holistic approach to the study of school readiness, incorporating both cognitive and non cognitive skills into the survey design.

### *Conclusion*

The results of this study show a clear disparity in school readiness scores between a low SES Irish sample and a low SES Canadian sample. It is clear that the children in this disadvantaged cohort are not performing to the level of other children at school entry, a finding that provides quantitative evidence of the need for an early intervention in the community. Additionally, studies of early interventions in the US have shown that such early intervention programmes are both cost effective and efficient. Heckman, Moon, Pinto, Saveljev & Yavitz (2009b) reported an estimated rate of return in the Perry Preschool Programme of between 7 and 10 percent. This suggests that providing early intervention in disadvantaged areas in Ireland may be an effective way of improving the overall level of school readiness in these areas and thus improve later outcomes for disadvantaged children.

A socioecological perspective posits that development is based on the interaction of contexts and people within each of these contexts, such as the family, the school, and the community. Additionally, all contexts of development have both direct and indirect effects on child development and school readiness (Bronfenbrenner, 1986). The poorer outcomes shown by children with siblings and by boys, in addition to the large effect that centre based

childcare has across all domains, provide solid evidence that any intervention aiming to improve levels of school readiness in the area must integrate several contexts of development rather than simply focusing on one context. Therefore, an effective intervention should focus on the multiple contexts in which the child is developing in order to effectively intervene and promote adaptive functioning and development throughout childhood. Intervening at the family level and operating through an ecological approach by providing opportunities for schools and the larger community to work together may allow for greater opportunities to improve school readiness of children in the area.



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Table 1  
Means (and Standard Deviations) of School Readiness Skills based on SES Characteristics

	Parental education		Parental employment		Social Welfare	
	Low N=25	High N=62	Employed N=35	Unemployed N=49	In receipt N=54	Not in receipt N=25
<b>Physical Health and Well being</b>	7.14 (1.97)	7.61 (2.36)	7.87 (2.15)	7.37 (2.25)	7.48 (2.11)	7.86 (2.29)
<i>Gross and fine motor skills</i>	6.11 (3.10)	6.42 (3.44)	6.53 (3.27)	6.58 (3.25)	6.57 (3.28)	7.02 (3.20)
<b>Overall Social Competence</b>	6.60 (1.73)	7.60 (2.12)	8.13 (1.78)	7.02 (1.99)	7.28 (2.00)	8.20 (1.59)
<i>Responsibility and respect</i>	6.67 (2.85)	7.80 (2.48)	8.43 (2.17)	7.04 (2.81)	7.35 (2.83)	8.53 (2.11)
<i>Approaches to learning</i>	7.20 (2.19)	7.61 (2.74)	8.43 (2.25)	7.18 (2.48)	7.41 (2.46)	8.53 (2.00)
<i>Social competence with peers</i>	4.20 (2.68)	6.26 (3.00)	6.57 (2.91)	5.34 (3.10)	5.56 (3.16)	6.53 (3.08)
<i>Readiness to explore new things</i>	8.33 (1.67)	8.74 (2.19)	9.10 (1.95)	8.35 (1.60)	8.83 (1.57)	9.20 (1.19)
<b>Overall Emotional Maturity</b>	5.42 (2.23)	6.83 (1.87)	7.02 (1.74)	6.19 (2.33)	6.16 (1.67)	7.23 (1.71)
<i>Prosocial and helping behaviour</i>	4.96 (2.85)	6.07 (3.12)	6.19 (2.88)	5.56 (3.15)	5.63 (3.06)	6.25 (2.78)
<i>Hyperactivity and inattention</i>	7.40 (2.73)	6.94 (2.82)	6.81 (2.84)	7.28 (2.82)	2.96 (2.72)	2.93 (2.82)
<i>Anxious and fearful behaviour</i>	3.20 (3.00)	5.70 (3.45)	5.90 (3.29)	4.66 (3.62)	5.53 (3.48)	3.40 (3.35)
<i>Aggressive behaviour</i>	6.51 (3.44)	8.76 (2.17)	8.98 (1.81)	7.65 (3.17)	2.36 (3.14)	0.97 (1.83)
<b>Language and Cognitive Development</b>	4.76 (2.48)	6.14 (3.03)	6.27 (2.93)	5.71 (2.77)	5.93 (2.62)	6.55 (2.75)
<i>Interest in literacy/numeracy and memory</i>	7.39 (3.74)	8.52 (2.95)	8.67 (3.05)	8.26 (3.04)	8.59 (2.75)	9.17 (2.46)
<i>Basic numeracy skills</i>	4.73 (3.11)	5.50 (4.52)	5.75 (4.33)	5.14 (3.93)	2.69 (3.03)	3.61 (3.25)
<i>Basic literacy skills</i>	5.94 (3.72)	7.42 (3.44)	7.29 (3.53)	7.06 (3.46)	7.26 (3.18)	7.67 (3.33)
<i>Advanced literacy skills</i>	1.53 (1.96)	3.28 (3.44)	3.43 (3.58)	2.64 (2.83)	5.44 (3.86)	5.55 (4.36)
<b>Communication and General Knowledge</b>	4.40 (3.00)	5.59 (3.60)	6.00 (3.57)	5.07 (3.50)	5.00 (3.36)	6.07 (4.08)

Table 2  
*Means (and Standard Deviations) of School Readiness Skills based on Child and Family Characteristics*

	Gender		Siblings		Parent Age	
	Male N=59	Female N=42	No Siblings N=16	Siblings N=74	Younger N=15	Older N=69
<b>Physical Health and Well Being</b>	7.39 (2.34)	7.80 (1.92)	8.27 (2.10)	7.36 (2.20)	7.33 (2.30)	7.53 (2.28)
<i>Gross and Fine Motor Skills</i>	5.92 (3.66)	6.92 (2.60)	7.14 (3.65)	6.23 (3.31)	5.83 (3.66)	6.52 (3.29)
<b>Overall Social Competence</b>	7.22 (2.22)	7.50 (1.79)	8.33 (1.94)	7.20 (2.03)	7.52 (1.79)	7.42 (2.09)
<i>Responsibility and Respect</i>	7.34 (2.63)	7.70 (2.60)	8.96 (2.01)	7.25 (2.65)	8.00 (2.46)	7.49 (2.72)
<i>Approaches to Learning</i>	7.09 (2.66)	8.02 (2.34)	8.33 (2.92)	7.36 (2.51)	7.33 (2.58)	7.66 (2.59)
<i>Social Competence with Peers</i>	5.99 (3.10)	5.60 (3.12)	7.08 (2.24)	5.56 (3.11)	5.44 (3.36)	5.99 (2.97)
<i>Readiness to explore new things</i>	8.47 (2.26)	8.69 (1.45)	8.96 (2.18)	8.60 (1.99)	9.33 (1.23)	8.53 (2.03)
<b>Overall Emotional Maturity</b>	6.14 (2.11)	7.02 (1.84)	7.42 (1.42)	6.32 (2.17)	6.56 (1.78)	6.54 (2.16)
<i>Prosocial and Helping Behaviour</i>	5.17 (3.00)	6.31 (2.79)	6.53 (2.53)	5.65 (3.07)	5.49 (2.74)	5.90 (3.18)
<i>Hyperactivity and Inattention</i>	2.97 (2.80)	2.18 (2.67)	3.23 (2.15)	2.82 (2.91)	6.67 (2.60)	7.27 (2.77)
<i>Anxious and Fearful Behaviour</i>	5.59 (3.48)	4.49 (3.56)	3.86 (3.69)	5.27 (3.49)	5.00 (3.62)	5.07 (3.51)
<i>Aggressive Behaviour</i>	2.04 (2.84)	1.44 (2.30)	0.54 (1.11)	2.08 (2.86)	8.89 (2.02)	8.11 (2.86)
<b>Language and Cognitive Development</b>	5.68 (3.24)	5.27 (2.60)	5.70 (3.11)	5.83 (2.84)	5.02 (3.01)	6.07 (2.78)
<i>Interest in Literacy/Numeracy and Memory</i>	7.76 (3.66)	8.25 (3.37)	8.98 (2.91)	8.22 (3.18)	8.89 (3.00)	8.21 (3.14)
<i>Basic Numeracy Skills</i>	2.76 (3.37)	2.33 (2.64)	2.92 (4.01)	2.82 (2.96)	4.52 (4.00)	5.44 (4.07)
<i>Basic Literacy Skills</i>	6.75 (3.73)	6.54 (3.70)	6.04 (4.08)	7.22 (3.35)	5.38 (4.42)	7.44 (3.13)
<i>Advanced Literacy Skills</i>	5.48 (4.16)	4.49 (3.96)	6.19 (4.50)	4.98 (4.00)	2.00 (2.76)	3.13 (3.25)
<b>Communication and General Knowledge</b>	5.20 (3.73)	5.00 (3.12)	5.52 (4.20)	5.25 (3.39)	3.78 (3.42)	5.70 (3.53)

Table 3  
*Means (and Standard Deviations) of School Readiness Skills based on Participation in Centre Based Childcare*

	Childcare	
	Centre based care N= 76	No centre based care N=16
<b>Physical Health and Well Being</b>	7.80 (2.10)	5.87 (2.32)
<i>Gross and Fine Motor Skills</i>	6.88 (3.24)	4.17 (3.28)
<i>Physical Readiness for the School Day</i>	7.81 (2.95)	6.56 (4.06)
<i>Physical Independence</i>	8.60 (2.25)	6.56 (3.25)
<b>Overall Social Competence</b>	7.72 (1.76)	5.86 (2.69)
<i>Responsibility and Respect</i>	7.86 (2.51)	6.35 (0.04)
<i>Approaches to Learning</i>	8.00 (2.18)	5.31 (3.29)
<i>Social Competence with Peers</i>	6.03 (3.07)	4.79 (3.04)
<i>Readiness to explore new things</i>	9.01 (1.37)	6.98 (3.40)
<b>Overall Emotional Maturity</b>	6.71 (2.03)	5.58 (2.13)
<i>Prosocial and Helping Behaviour</i>	5.98 (2.90)	4.58 (3.47)
<i>Hyperactivity and Inattention</i>	2.85 (2.77)	3.13 (2.78)
<i>Anxious and Fearful Behaviour</i>	4.61 (3.51)	6.56 (3.36)
<i>Aggressive Behaviour</i>	1.78 (2.73)	1.73 (2.54)
<b>Language and Cognitive Development</b>	6.28 (2.58)	3.50 (3.13)
<i>Interest in Literacy/Numeracy and Memory</i>	8.92 (2.53)	5.33 (4.14)
<i>Basic Numeracy Skills</i>	3.01 (3.05)	1.88 (3.44)
<i>Basic Literacy Skills</i>	7.52 (3.21)	4.17 (3.75)
<i>Advanced Literacy Skills</i>	5.71 (3.96)	2.55 (3.72)
<b>Communication and General Knowledge</b>	5.61 (3.56)	3.13 (2.91)