University of Southampton

Doctoral Programme in Educational Psychology

Title: What constitutes being developmentally ready to begin school, and how can we support this process?

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Abstract

Readiness for school is an issue that has occupied numerous researchers, with evidence suggesting that a child's initial readiness predicts lifelong academic and social outcomes (Duncan et al., 2007). Despite the fact that it can thus be viewed as one of the key issues in Educational Psychology, there remains a lack of clarity regarding what readiness is. This essay seeks to provide a definition that is both interactionist and systemic, incorporating pre-natal factors and consideration of curricular purpose alongside more commonly recognised environmental and developmental determinants. Readiness in this sense is seen as the result of biological and cognitive development, parental and broader social relationships, access to both social and material resources, and curricular expectations. This is framed in terms of a social constructivist and systemic ontology, which sees the child's development as necessarily scaffolded by parent, carer and peer relationships within a complex social system. Consideration is given to the various means by which Educational Psychology can support the process at individual child, community and policy levels. Attention is drawn to gaps in the current evidence base and potential avenues for research, particularly with regard to cognitive development. Finally, the goodness-of-fit between this reading of developmental readiness and the Early Years Foundation Stage curriculum is considered.

Even from brief consideration of the literature, it is obvious that the importance of being developmentally ready to begin school can hardly be over-emphasised. Research indicates connections between readiness and subsequent outcomes including academic success (Duncan et al., 2007), socioeconomic progress (Chase & Diaz, 2011) and emotional wellbeing (NICE, 2012), suggesting potentially lifelong implications. Factors claimed to predict readiness vary, with sometimes contradictory claims arguing for the involvement of health (Janus & Duku, 2007), birth date (Kinard & Reihnerz, 1986), level of pre-school numeracy and literacy (Kurdek & Sinclair, 2001), socio-economic status (Regalado, Goldenberg & Appel, 2001), and cognitive development (Kolnik, 2010). Despite this, numerous commentators point to a lack of clear definition regarding what it means to suggest that a child is developmentally ready for school (Ackerman & Barnett, 2005), a point which has to be addressed in order to subsequently consider methods of supporting the process.

Hence, the purpose of this essay is to address the issue of definition, and to examine strategies through which Educational Psychologists (EPs) might support developmental readiness. In order to structure the debate, an initial definition of what we are expecting a child to be ready for will be provided. This will be followed by consideration of readiness as a biological process, focusing on chronological age before paying attention to pre-natal development, and then (reflecting the amount of recent research) moving on to more detailed consideration of the importance of Executive Function (EF) in enabling a child to operate effectively in the school

environment. Taking account of the extent to which EF is influenced by social as well as biological processes (Lewis & Carpendale, 2009) attention will then shift to readiness in terms of general social and environmental factors, considering the impact of varied interactions, social opportunities and access to resources as catalysts for readiness. Consideration will be given to readiness as a cultural norm, paying attention to the goodness-of-fit between the definition presented here and the structure of the Early Years Foundation Stage (EYFS). Finally, an approach to readiness will be proposed that seeks to extend existing interactionist models (which emphasise interplay between developmental and environmental factors - Miesels, 1999), through more explicit incorporation of pre-natal influences and consideration of curricular purpose. Methods through which educational psychologists can support readiness will be considered throughout.

Firstly, before it is possible to define developmentally ready, it is necessary to consider what a child needs to be ready for, and when. At its simplest, school involves engagement with peers in a range of social and curricular activities primarily led or supported by adults. These require some degree of emotional and behavioural regulation, and will be undertaken without support from the child's usual primary carer(s), statements which broadly accord with notions of readiness set out within the EYFS (DFE, 2012[1]). In terms of *who* this is expected of, although it is a requirement for children to start school in the term following their fifth birthday, the majority now enter at Reception level, with 98% of four-year-olds in England being taught through the medium of the EYFS (DFE, 2012[1])[1]. Further, the growing

[1] Despite searching the ONS and DFE websites, accurate population wide figures for the percentage of children entering year R are difficult to obtain – the figure given includes *all* four-year-olds receiving EYFS provision during 2011, and although the vast majority will be doing so as pupils in primary reception classes, also includes other EYFS provision in approved childcare settings.

preference on the part of schools for a single point of entry in reception year (Rogers & Rose, 2007), coupled to growing anecdotal evidence that parents fear losing places if they defer them (MySchoolGate, 2012; Netmums, 2012), means that most children start in the September following their fourth birthday.

This suggests that the simplest biological definition of developmental readiness for school is chronological age, a definition which is accessible yet tells us nothing about underlying processes. Development (understood as the formative interactions between genotype and environment) is regarded as beginning earlier, at conception (Toates, 2001), and is impacted upon by numerous factors prior to and at birth. These include maternal physical and mental health, heavy drinking and drug use, low birth-weight, pre-term birth, and socio-economic deprivation (Isaacs, 2012, Pulsifer, Radonovich, Belcher & Butz, 2004), all of which have been correlated with readiness and academic achievement.

More specifically, heavy alcohol use during pregnancy predicts poor educational outcomes (Olson, Jirikowic, Kartin, & Astlet, 2007) and maternal drug use associates with poor readiness (Pulsifer et al., 2004). Similarly, low birth-weight and pre-term birth both predict problems with transition to school (Hack et al., 1994; Reichman, 2005; Temple, Reynolds & Arteaga, 2010; Roberts, Lim, Doyle & Anderson, 2011). In the latter case, associations have been made with subsequent literacy and numeracy problems (Taylor et al., 2011), and, in one longitudinal US study, researchers recorded a 19% increase in exclusion risk among kindergarten children born prematurely compared to those born at full-term (Morse, Zheng, Tang & Roth, 2009).

Although it is tempting to separate these factors into groups consisting of those resulting from apparent choice (for instance, drug use) and those that are somehow biologically pre-determined (such as birth-weight), analysis of the data suggests this is inaccurate. All these factors correlate to some degree with socio-economic status (Isaacs, 2012; Kramer, 1987), suggesting that readiness may result in part from possession of certain social pre-requisites and resources (Ladd, Herald & Kochel, 2006), a conclusion which indicates a potential role for EPs in informing social policy and a point to which this thesis will return.

Further, analysis of apparently 'untouchable' factors such as low birth-weight and pre-term birth reveals strong correlations to maternal smoking (Venture, Hamilton, Matthews & Chandra, 2003), with heavy smoking in the third trimester appearing particularly predictive of low birth-weight (Bernstein et al., 2005). Although it should be emphasised that any intervention needs to treat parents-to-be with delicacy (in this example, smoking is not the sole correlate of low birth-weight: the notion of blame is potentially alienating, and may be simply wrong), this indicates a community level role in informing parenting practice.

Further, such approaches need to inform behaviour *before* birth, a conclusion that points to the changing function of Educational Psychology in informing practice not just in schools but across child and community settings (Frederickson, Miller & Cline, 2008; Fallon, Woods & Rooney, 2010). In terms of supporting readiness this suggests a role in informing parenting at consultative and policy levels (see, for instance, contributions from the Institute for Education to the DFE publication

'Children's needs – parenting capacity' - Cleaver, Unell & Aldgate, 2011), and at the community level. In the latter case, this might involve closer engagement with organisations such as Sure Start, and other organisations working with 'at risk' parents-to-be. Equally, and for practical and pragmatic reasons, recognising the limits of the EP's remit appears similarly important. In this case, organisations such as the Family Nurse Partnership Programme exist specifically to provide intensive support to 'at risk' parents-to-be (Barnes et al., 2011), suggesting EPs have a role both in informing *their* practice and (as knowledgeable, multi-agency workers) in signposting appropriately, a professional responsibility and form of support that should not be underestimated.

Although much of this research suggests correlations between pre-natal factors and a child's subsequent outcomes, very little of it *specifically* associates this to readiness. Similarly, the majority of theory focused on readiness tends (even when pursuing multi-factorial approaches) to consider developmental factors *subsequent* to birth (e.g. Miesels, 1999; Sorin, 2008). This suggests both an assumption that pre-natal factors lie outside of the remit and control of Educational Psychology (an assumption this essay challenges), and a need to widen the definition of readiness. By the same token, exploring readiness in terms of early child development proves easier, with a body of research linking successful transition to school with healthy physical development (Janus & Duku, 2007), and tying it more specifically to cognitive structures such as executive function (EF) (Fitzpatrick & Pagani, 2012; Ursach, Blair & Raver, 2012).

Although more complex models continue to be developed, EF can be viewed simply as a set of cognitive processes supported by underlying biological and neurological structures, which serve to integrate other operations within the brain and ultimately form the basis of self-regulation (Hughes, Graham & Grayson, 2004). In terms of educational readiness, there are three elements of EF that have been identified as particularly predictive of successful school transition: working memory, behavioural inhibition and task switching (Hoffman, Schmeichel & Baddeley, 2012; Liew, 2012). Simply defined, these can be seen as the ability to retrieve and integrate information, the effortful control of behaviour, and the capacity to shift attention between tasks, competencies widely viewed as vital to social and academic success (Kolnik, 2010; Liew, 2012).

Broadly, underdeveloped EF has been associated with poor social adjustment and aggression in infants (Calkins & Fox, 2002), ADHD in 4-6 year olds (Torell & Whalstedt, 2006), and problems with emotional self-regulation (Blair, 2002), factors which impact on readiness. More specifically, research links inhibitory control to reading skills (Booth & Boyle, 2009), task switching to mathematics (Van der Ven, Kroesbergen, Boom & Leseman, 2012), suggests correlations between working memory and science achievement (Gathercole, Pickering, Knight & Stedman, 2003; Yuan et al., 2006) and indicates that EF impacts on longer term educational outcomes. Many of these findings have proved robust across samples and cultures (Thorell, Veleiro, Siu & Mohammadi, 2012), with the result that EF is often treated as a measurable predictor of school readiness (Fitzpatrick & Pagani, 2011). This latter study assessed working memory in children recruited from the Quebec Longitudinal Study of Child Development (n=1824), using a card sorting task to assess working

memory at 29 and 41 months. At 74 months, the same group were assessed on classroom engagement, number knowledge and vocabulary, with results suggesting that performance on the earlier sorting tasks predicted classroom and academic performance better than other measured factors such as verbal skills, gender or socio-economic status.

As the authors of the preceding article suggest, their findings offer a relatively simple and cheap way of assessing this element of readiness. Various studies substantiate, suggesting that EF can be measured in pre-school children with some accuracy (Wiebe et al., 2011). Methods typically involve variants on card sorting to measure working memory and task switching (Diamond, Carlson & Beck, 2005; Fitzpatrick & Pagani, 2011), and use of tests such as Go/No-go or Stroop to measure response inhibition (Wiebe et al., 2011). Equally, it should be noted that the various components of EF appear functionally interdependent, and that measures using a battery of tests are likely to be more accurate (Garon, Bryson & Smith, 2008; St Clair-Thompson & Gathercole, 2006). This points to an assessment role for EPs, but at the same time assessment without the possibility of intervention has limited value.

Consequently, the greater challenge is that of how to support the development of EF, which poses the question of what causes deficits, responses to which fall broadly into two categories. The first of these consists of early developmental factors, including those already reviewed: low birth-weight, pre-term birth, foetal alcohol syndrome and maternal drug use all correlate with poor EF (Bayless & Stevenson, 2007; Kodituwakku, 2009; Lowe, Erickson, Maclean & Duvall, 2009; Pulsifer et al, 2004). Again, this argues for a proactive role for the profession in informing parenting

(and pre-parenting) practice, but equally points to the need to address poor EF where this approach has *not* been effective.

The second category consists of factors subsequent to birth, which introduces a social dimension, and specifically the importance of interactions between child and social environment. Such approaches stem largely from a social constructivist tradition (Vygotsky, 1978), which perceives behavioural regulation and development of EF as a process shaped by social interactions (Lewis & Carpendale, 2009). This shaping occurs in part due to the adoption of cultural tools such as language, which are ultimately internalised, structuring cognition and playing a role in self-regulation. Such processes are further scaffolded through the teaching and boundary setting that occurs within the zone of proximal development that exists between child and carer(s) (Oates & Grayson, 2004).

Although elements of this are open to criticism (specifically, whether speech is literally internalised, and whether this can be regarded as the same thing as thought – Oates & Grayson, 2004), subsequent research supports, pointing to the importance of parent and peer interactions on the development of EF (Lewis & Carpendale, 2009). Factors of importance include a stable family life allied to boundary setting and parental scaffolding of understanding (Bibok, Carpendale & Muller, 2009; Lewis & Carpendale, 2009) and the importance of experiencing a quality and variety of interactions (Fox & Calkins, 2003; Rhoades, Greenberg, Lanzer & Blair, 2011; Sokol, Muller, Carpendale, Young & Iarocci, 2010). As a result, the simplest answer to how Educational Psychology can support the development of EF is again through advising parenting and pre-school practice: avoidance of known pre-natal risk factors,

provision of stable, interactive family relationships which scaffold understanding, and exposure to a range of social situations appear as simple but important parts of this.

Beyond this lie a range of reactive strategies, which seek to directly 'train' EF. These include projects such as the Headstart REDI programme (Bierman, Nix, Greenberg, Blair & Dimitrovich, 2008), which sought to improve EF as part of a broader readiness intervention aimed at socio-economically disadvantaged children (McAlister, Wilson, Green & Baldwin, 2005). Three elements of the curriculum were targeted in order to improve EF: language (through an interactive reading programme), social-emotional skills (through the PATHS curriculum, utilising teacher led role-play, modelling stories, etc) and parent-child relationships (through provision of take home packs containing tips, activities, etc). However, although the chosen activities clearly associate with EF, they were not explicitly mapped onto it, a limitation the authors admit (Bierman et al., 2008). Further, although *some* of the subsequent data analysis achieved statistical significance, effects sizes on EF appear tiny where they appear at all, and, given the nature of the intervention, causal factors appear hard to isolate.

Although this is only one study, it appears representative of a general problem in the literature surrounding EF. Whereas illustrating that it is an important aspect of readiness is easy, finding research that evidences the efficacy of interventions for pre- and primary school children is harder. Searches of standard databases (Ebsco, PsycARTICLES, ScienceDirect, PubMed) reveal a very confused literature, usually based on small samples, with no obvious meta-analyses; journal specific searches (EPiP and BJEP) suggest there is little or no UK based research. The US literature indicates reasonable results from *Tools of the Mind* (a Vygotskian approach based

around pretend and imaginative play – Imholz & Petrosino, 2012), some evidence for computer-based approaches aimed at working memory such as CogMed (Holmes, Gathercole & Dunning, 2009), and a variety of suggestions (evidenced to varying degrees) around the value of exercise, mindfulness and the benefits of Montessori based curricula (Diamond & Lee, 2011). This last paper offers no original research, but provides one of the only overviews of current approaches and (where possible) collated outcomes. As such, it might form a useful starting point for addressing some of these issues.

This suggests that one of the primary roles for Educational Psychology should be that of reviewing current literature and re-analysing data to see what approaches appear to succeed, and (if possible) corroborating through meta-analysis. Any such review needs to focus on whether the approach taps the component(s) of EF that it claims to, and whether this generalises across contexts. Initial trials aimed at applying this to a UK population *might* focus on *Tools of the Mind* (which has some evidence behind it and is relatively inexpensive – Diamond & Lee, 2011) and computer based approaches (which can be used at home and often appeal to children), although such decisions need to follow from the review. The subsequent role of the EP lies both in research and implementation, much of which might involve training parents and pre-school/primary teachers in how to incorporate these tools into their home or practice.

Whilst consideration of EF introduces the importance of a social dimension to definitions of readiness, effectively moving us beyond within-child explanations, it is clearly an area that requires more attention. Systemic approaches consider the multiple social and environmental systems within which the child is embedded,

emphasising the formative effect of varied interactions and transactions (Mashburn & Pianta, 2006; Sameroff, 1995). 'Social', in this sense, refers to interactions within the family and the community, to resources (which may mean objects such as books and computers, or places such as libraries and preschools), and to the local cultural norms through which readiness is understood.

Taking these in order, home stability and sensitivity of parent/caregiver interactions appear predictive of subsequent readiness (Lewis & Carpendale, 2009). In particular (and although the primary focus of this essay is learning and development, not emotional development), it should be noted that various commentators point to the importance of secure attachment on readiness (Darbonne, 2007), with theorists suggesting that quality of attachment relationship predicts subsequent reactions to teachers (Bowlby, 1982). Reactive (Type D) attachment, in particular, appears highly predictive of poor outcomes (Main, 1991; Schwartz & Davis, 2006). This again emphasises the systemic nature of readiness, given that emotional self-regulation correlates with good EF, social interactions and secure attachment (Blair, 2002; Darbonne, 2007), all of which strongly associate with successful transition to school (Webster-Stratton & Reid, 2004).

Peer interactions are also of importance, with commentators pointing to the value of the learning and negotiation that occurs in horizontal (sometimes adult mediated, but essentially child-to-child) relationships (Littleton & Miel, 2009). School readiness demands social competency, including the ability to collaborate, make meaningful friendships, fall-out and make friends again (Littleton & Miel, 2009; Webster-Stratton & Reid, 2004). These abilities result in large part from play, which, for all its apparent simplicity, is a complex interactive process involving turn-taking,

dispute resolution (Littleton & Miel, 2009) and varying emotions: ‘pleasure, affection, hostility, aggression, jealousy, rivalry and frustration’ (Dunn & Kendrick, 1982, pp. 210-211). Theorists suggest that this forms one of the primary means through which children attain readiness, with research (drawn from a US sample engaged in a Head Start intervention) suggesting that positive peer-play interactions in home and pre-school settings predict subsequent positive classroom and school behaviours (Fantuzzo & McWayne, 2002).

Such considerations foreground the importance of access to resources, which may consist of people and experiences, or objects and places. Readiness is positively correlated with material measures including access to books, computers and libraries, factors which associate with socio-economic status (Pivik, 2012). It would appear easy to conclude from this that access to social environments such as pre-schools and the material assets they possess should support social competence and school readiness, a form of reasoning that underpins the government drive to expand free early education for disadvantaged children (DFE, 2012[2]). However, available data appears mixed, with US research suggesting that such approaches improve literacy and numeracy but predict higher levels of behavioural problems (Ruhm, Magnuson & Waldfogel, 2007; Ruhm & Waldfogel, 2011), and UK data from Sure Start indicating that involvement with the scheme has negative effects on the most disadvantaged groups (Belsky et al., 2006; DFE, 2010), although whether this results from differences in expectations at home and nursery or some other cause remains unclear.

Although these findings should not be viewed as representative of outcomes from pre-school programmes as a whole, they suggest that current interventions are failing to reach the groups identified as most in need (Belsky et al., 2006), and that

this failure requires further exploration. This argues for a more rigorous approach to understanding the factors that make for successful engagement, and a more systemic approach to supporting readiness across the various contexts a child experiences, pointing specifically to the need for early proactive engagement of expectant parents. It also indicates the need for Educational Psychology as a profession to respond to concerns about curriculum delivery and data collection. Data from Sure Start has proved hard to collate, highlighting geographical differences in both project delivery and reporting (All Party Parliamentary Group for Sure Start, 2011), and echoing more general concerns regarding different educational providers' interpretations of the EYFS (Roberts-Holmes, 2012).

That said, the final element of a social definition of readiness is the extent to which it can be viewed as a cultural norm rather than a fixed concept. At a local level, definitions of readiness vary 'even within the same school district' (Graue, 2004, p.48), with a number of commentators suggesting that the structure of pre-schools and schools reflects local parenting and teaching beliefs (Graue, 1993; Miesels, 1999), a variation which arguably stands to increase with the growth in numbers of free-schools and academies, and a further reminder that any definition of readiness has to consider local curricular understandings.

Despite this, the EYFS aspires to be a national curricular (and arguably cultural) norm, and the final element of this essay consists of consideration of the extent to which its structure fits comfortably alongside understandings of readiness. By its nature, any curriculum imposes expectations on those subject to it, but should equally be tailored to account for their likely needs, abilities and developmental stage. Broadly, the EYFS shares ontological understandings with the definition presented

here, drawing on a social constructivist tradition that sees the child as a necessarily scaffolded co-constructor of knowledge, whose learning and development depends heavily on their environment (Alexander, 2008; Roberts-Holmes, 2012). Further, both the research presented and the EYFS argue for the importance of play to learning and assimilation of social rules and roles (DFES, 2007; Dunn & Kendrick, 1982; Roberts-Holmes, 2012). Likewise, recent revisions to the curriculum identify three areas of particular importance: communication and language; physical development; and personal, social and emotional development (DFE, 2011), areas which map accurately onto the factors considered here.

Leaving aside the thorny question of school start-age and whether there should be a curriculum for children this young (Alexander, 2008), and the question of whether the revised EYFS still sets too many targets (ATL, 2010; NurseryWorld, 2012), this does suggest a level of fitness-for-purpose. Given, also, that the pragmatic social purpose of any early years curriculum in the UK is to provide developmentally appropriate activities that also support entry to KS1, a strong argument can be made that the EYFS is a culturally apposite means of supporting transition to formal education.

Finally, it is necessary to acknowledge the limitations of this debate. Any complete analysis needs to take more account of methods of readiness assessment, the relationship between readiness and long-term outcomes, the child's emotional competencies, and the process of transition from EYFS to KS1. It must also be noted that an alternative argument can be made for readiness being essentially determined by socio-economic factors, which arguably determine many of the other correlates

examined here. Although this must be acknowledged (and although this position argues that Educational Psychology practice *must* inform social policy), it has not been pursued in this instance due to the immediate limitations it imposes on any understanding of the individual factors constructing readiness, and on the potential response strategies.

In summation, the definition presented extends existing interactionist models (Miesels, 1999) of developmental readiness for school, arguing for explicit integration of pre-natal factors alongside consideration of varied interactions, access to material and social resources, and local cultural/curricular norms. Readiness is thus presented as both constructivist (the result of scaffolded, often explicitly guided, relationships), and systemic, in that it results from cumulative interactions between child, parent, broader social systems and curricular expectations.

This suggests various roles for Educational Psychology, not least among which is the need for the profession to support readiness through engagement at policy and community level. This includes working to inform legislative and curricular structure, and pre- and post-natal parental decision making. It involves reviewing current Early Years interventions, structuring the practical reactive strategies which prove essential when pro-active approaches have failed, and working as a sensitive, empathic practitioner to deliver these. As scientist-practitioners, it requires that EPs pursue identified gaps in the evidence base, such as those surrounding interventions that train EF. Overall, it demands a joined up approach that sees readiness at child and curricular levels, a capacity and a requirement, and which seeks to bridge the gap without losing site of the need for both compassion and pragmatism.

References -

Ackerman, D., & Barnett, S. (2005). *Prepared for kindergarten: what does readiness mean?* New Jersey: National Institute for Early Education Research.

All Party Parliamentary Group for Sure Start. (2011). *Sure Start Delivery in 2011/12: An inquiry/interim report.* Retrieved 23-11-12 from: http://offlinehbpl.hbpl.co.uk/NewsAttachments/PYC/Sure_Start.pdf

ATL. (2010). *Tickell Review of the Early Years Foundation Stage Call for Evidence: Response from the Association of Teachers and Lectures.* London: ATL.

Barnes, J., Ball, M., Meadows, P., Howden, B., Jackson, A., Henderson, J., & Niven, L. (2011). *The Family Nurse Partnership Programme in England: Wave 1 implementation in toddlerhood and a comparison between Waves 1 and 2a of implementation in pregnancy and infancy*. London: Birkbeck, University of London.

Bayless, S., & Stevenson, J. (2007). Executive functions in school-age children born very prematurely. *Early Human Development*, *83*(4), 247-254.

Belsky, J., Melshuish, E., Barnes, J., Leyland, A., & Romaniuk, H. (2006). Effects of Sure Start local programmes on children and families: early findings from a quasi-experimental, cross-sectional study. *British Medical Journal, 332*:1476.

Bernstein, I., Mongeon, J., Badger, G., Solomon, L., Heil, S., & Higgins, S. (2005). Maternal smoking and its association with birth weight. *Obstetrics and Gynecology, 106*(5), 986-991.

Bibok, M., Carpendale, J., & Muller, U. (2009). Parental scaffolding and the development of executive function. *New Directions for Child and Adolescent Development, 123*, 17-24.

Bierman, K., Nix, R., Greenberg, M., Blair, C., & Domitrovich, C. (2008). Executive functions and school readiness intervention: Impact, moderation, and mediation in the Head Start REDI program. *Development and Psychopathology, 20*(3), 821-843.

Blair, C. (2002). School readiness: integrating cognition and emotion in a neurobiological conceptualisation of children's functioning at school entry. *American Psychologist, 52*(2), 111-127.

Booth, J., & Boyle, J. (2009). The role of inhibitory functioning in children's reading skills. *Educational Psychology in Practice, 25*(4), 339-350.

Bowlby, J. (1969/1982). *Attachment and Loss 1: Attachment.* New York: Basic Books.

Calkins, S., & Fox, N. (2002). Self-regulatory processes in early personality development: A multilevel approach to the study of childhood social withdrawal and aggression. *Development and Psychopathology, 14*, 477-498.

Chase, R., & Diaz, J. (2011). *Cost savings of school readiness per additional at-risk child in Detroit and Michigan.* Minnesota: Wilder Research.

Darbonne, K. (2007). *School Readiness and Preschoolers' Attachment Representations.* Louisiana: Open Access Dissertations Repository. Retrieved from: http://etd.lsu.edu/docs/available/etd-08292007-110755/unrestricted/Darbonne_thesis.pdf

DFES. (2007). *Early Years Foundation Stage: setting the standards for learning, development and care for children from birth to five.* Nottingham: DFES.

DFE. (2010). *The Impact of Sure Start Local Programmes on five year olds and their families.* London: Institute for the study of children.

DFE. (2011). *Statutory Framework for the Early Years Foundation Stage.* Cheshire: Department for Education.

DFE. (2012) [1]. *Provision for Children Under Five Years of Age in England – January 2012.* Retrieved 13-11-12 from: http://www.education.gov.uk/rsgateway/DB/SFR/s001074/index.shtml

DFE. (2012) [2]. *Early education for two-year-olds.* Retrieved 24-11-12 from: http://www.education.gov.uk/childrenandyoungpeople/earlylearningandchildcare/delivery/free%20entitlement%20to%20early%20education/b0070114/eefortwoyearolds

Diamond, A., Carlson, S., & Beck, D. (2005). Preschool children's performance in task switching on the dimensional change card sort task: separating the dimensions aids the ability to switch. *Developmental Neuropsychology, 28*(2), 689-729.

Diamond, A., & Lee, K. (2011). Interventions shown to aid executive function development in children 4 to 12 years old. *Science, 333*, 959-964.

Duncan, G., Claessens, A., Huston, A., Pagani, L., Engel, M., Sexton, H., Dowsett, C., Magnuson, K., Klebanov, P., Feinstein, L., Brooks-Gunn, J., Duckworth, K., & Japel, C. (2007). School Readiness and Later Achievement. *Developmental Psychology, 43*(6), 1428-1446.

Dunn, J., & Kendrick, C. (1982). *Siblings: love, envy and understanding*. London: McIntyre.

Fallon, K., Woods, K., & Rooney, S. (2010). A discussion of the developing role of educational psychologists within children's services. *Educational Psychology in Practice, 26*(1), 1-23.

Fantuzzo, J., & McWayne, C. (2002). The relationship between peer-play interactions in the family context and dimensions of school readiness for low-income preschool children. *Journal of Educational Psychology.* 94(1), 79-87.

Faux, K. (2012). *Revised Early Years Foundation Stage: new framework is out.* Retrieved 28-11-12 from: www.nurseryworld.co.uk/news/rss/1124318/Revised-Early-Years-Foundation-Stage-new-framework/

Fitzpatrick, C., & Pagani, L. (2012). Toddler working memory skills predict kindergarten school readiness. *Intelligence, 40,* 205-212.

Fox, N., & Calkins, S. (2003). The development of self-control of emotion: intrinsic and extrinsic influences. *Motivation and Emotion, 27*(1), 7-26.

Frederickson, N., Miller, A., & Cline, T. (2008). *Educational Psychology.* London: Hodder.

Garon, N., Bryson, S., & Smith, I. (2008). Executive function in preschoolers: a review using an integrative framework. *Psychological Bulletin, 134*(1), 31-60.

Gathercole, S., Pickering, S., Knight, C., & Stedman, Z. (2003). Working memory skills and educational attainment: evidence from national curriculum assessments at 7 and 14 years of age. *Applied Cognitive Psychology, 18,* 1-16.

Ginsberg, K. (2007). The Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds. *Pediatrics, 119*(1), 182-191.

Graue, E. (1992). *Ready for what? Constructing the meanings of readiness for kindergarten*. Albany: State University of New York Press.

Graue, E. (2006). The Answer is Readiness – Now What Is the Question? *Early Education and Development, 17*(1), 43-56.

Hack, M., Taylor, H., Klein, N., Eiben, R., Schatschneider, C., Mercuri-Minich, N. (1994). School age outcomes in children under 750g. *The New England Journal of Medicine, 331*(12), 753-759.

Hoffman, W., Schmeichel, B., & Baddeley, A. (2012). Executive functions and self regulation. *Trends in cognitive sciences, 16*(3), 174-180.

Holmes, J., Gathercole, S., & Dunning, D. (2009). Adaptive training leads to sustained enhancement of poor working memory in children. *Developmental Science, 12*(4), f9-15.

Hughes, C., Graham, A., & Grayson, A. (2004). Executive Functions in Childhood: development and disorder. In J. Oates & A. Grayson (Eds.), *Cognitive and*

Language Development in Children (pp. 207-230). Milton Keynes: Open University.

Hughes, C., & Ensor, R (2006). Behavioural problems in 2 year olds: links with individual differences in theory of mind, executive function and harsh parenting. *The Journal of Child Psychology and Psychiatry, 47*(5), 488-497.

Imholz, S., & Petrosino, A. (2012). Teacher observations on the implementation of the tools of the mind curriculum in the classroom: analysis of interviews conducted over a one-year period. *Creative Education, 3*(2), 185-192.

Isaacs, J. (2012). *Starting School at a Disadvantage: The School Readiness of Poor Children*. Washington: The Brookings Institution.

Janus, M., & Duku, E. (2007). The School Entry Gap: Socioeconomic, Family, and Health Factors Associated With Children's School Readiness to Learn. *Early Education and Development, 18*(3), 375-403.

Kelly, Y., Sacker, A., Gray, R., Kelly, J., Wolke, D., & Quigley, M. (2009). Light drinking in pregnancy: a risk for behavioural problems and cognitive deficits at age 3? *International Journal of Epidemiology, 38*(1), 1-12.

Kelly, Y., Sacker, A., Gray, R., Kelly, J., Wolke, D., Head, J., & Quigley, M. (2012). Light drinking during pregnancy: still no increased risk for socio-emotional

difficulties at 5 years of age? *Journal of Epidemiology and Community Health, 66*(1), 41-48.

Kinard, E., & Reinhertz, H. (1986). Birthdate effects on school performance and adjustment: a longitudinal study. *Journal of Educational Research, 79*(6), 366-372.

Kodituwakku, P. (2009). Neurocognitive profile in children with fetal alcohol spectrum disorders. *Developmental Disability Research Review, 15*(3), 218-224.

Kolnik, S. (2010). *Predicting School Readiness: Executive Functions, Problem Behaviours and Theory of Mind in Preschoolers.* Retrieved from Open Access Dissertations: Paper 416.

Kramer, M. (1987). Determinants of low birth weight: methodological assessment and meta-analysis. *Bulletin of the World Health Organisation, 65*(5), 663-737.

Kurdeck, L., & Sinclair, R. (2001). Predicting Reading and Mathematics Achievement in Fourth Grade Children From Kindergarten Readiness Scores. *Journal of Educational Psychology, 93*(3), 451-455.

Ladd, G., Herald, S., & Kochel, K. (2006). School Readiness: Are There Social Prerequisites? *Early Education and Development, 17*(1), 115-150.

Lewis, C., & Carpendale, J. (2009). Social Interaction and the development of Executive Function. *New Directions in Child and Adolescent Development, 123*, 87-97.

Lewis, S., Zuccolo, C., Smith, G., Macleod, G., Rodriguez, S., Draper, E., Barrow, M., Alati, R., Sayal, K., Ring, S., Golding, J., & Gray, R. (2012). Fetal alcohol exposure and IQ at age 8: Evidence from a population-based birth-cohort study. *PLoS ONE, 7*(11). Retrieved 14-11-12 from: http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0049407

Liew, J. (2012). Effortful control, executive functions, and education: bringing self-regulatory and social emotional competencies to the table. *Child Development Perspectives, 6*(2), 105-111.

Littleton, K., & Miel, D. (2009). Children's interactions: siblings and peers. In S. Ding & K. Littleton (Eds.), *Children's Personal and Social Development* (pp. 95-125). Milton Keynes: Open University.

Lowe, J., Erickson, S., Maclean, P., & Duvall, S. (2009). Early working memory and maternal communication in toddlers born very low birth weight. *Acta Paediatrica, 98*(4), 660-663.

Main, M. (1991). Metacognitive knowledge, metacognitive monitoring, and singular (coherent) vs. multiple (incoherent) models of attachment: Findings and

directions for future research. In C. Parkes, J. Stevenson-Hinde & P. Marris (Eds.), *Attachment across the lifecycle* (pp. 127-159). London: Routledge.

Mashburn, A., & Pianta, R. (2006). Social Relationships and School Readiness. *Early Education and Development, 17*(1), 151-176.

McAlister, C., Wilson, P., Green, B., & Baldwin, J. (2005). 'Come and take a walk': Listening to Early Head Start Parents on School-Readiness as a Matter of Child, Family, and Community Health. *American Journal of Public Health, 95*(4), 617-625.

Miesels, S. (1999). Assessing Readiness. In R. Pianta & M. Cox (Eds.), *The transition to kindergarten* (pp. 39-66). Baltimore: P. H. Brookes.

Morse, S., Zheng, H., Tang, Y., & Roth, J. (2009). Early school age outcomes of late pre-term infants. *Pediatrics, 123*(4), e622-e629.

MySchoolGate. (2012). *Your rights – deferring your child's primary school place.* Retrieved 5-11-12 from: http://www.myschoolgate.co.uk/blog/view/your-rights-deferring-your-childs-primary-school-place/

Netmums. (2012). *Primary school admissions: ACE tackles common queries.* Retrieved 5-11-12 from: http://www.netmums.com/your-child/older-child-and-school/getting-to-grips-with-school-admissions/primary-schools-admissions-ace-tackles-common-quer

NICE. (2012). *Social and emotional wellbeing: early years draft guidance.* Retrieved 5-11-12 from: http://www.nice.org.uk/guidance/index.jsp?action=download&o=58879

Oates, J., & Grayson, A. (2004). Cognitive and Language Development in Children. Milton Keynes: Open University.

Olson, C., Jirikowic, T., Kartin, D., & Astlet, S. (2007). Responding to the challenge of early intervention for alcohol spectrum disorders. *Infants and young children, 20*(2), 172-189.

Pivik, J. (2012). *Environmental scan of school readiness for health (2nd ed).* Vancouver: Human Early Learning Partnership.

Pulsifer, M., Radonovich, K., Belcher, H., & Butz, A. (2004). Intelligence and school readiness in preschool children with prenatal drug exposure. *Child Neuropsychology, 10*(2), 89-101.

Regalado, M., Goldenberg, C., & Appel, E. (2001). *Building Community Systems for Young Children: Reading and Early Literacy*. Los Angeles: UCLA Centre for Healthier Children, Families and Communities.

Reichman, N. (2005). Low birth weight and school readiness. *The Future of children, 15*(1), 91-97.

Rhoades, B., Greenberg, M., Lanzer, S., & Blair, C. (2011). Demographic and familial predictors of early executive function development: contribution of a person centred perspective. *Journal of Experimental Child Psychology, 108*(3), 638-662.

Roberts, G., Lim, J., Doyle, L., & Anderson, P. (2011). High rates of school readiness difficulties at 5 years of age in very preterm infants compared to term controls. *Journal of Developmental and Behavioural Pediatrics, 32*(2), 117-124.

Ruhm, C., Magnuson, K., & Waldfogel, J. (2007). Does Prekindergarten Improve School Preparation and Performance? *Economics of Education Review, 26*(1), 33-51.

Ruhm, C., & Waldfogel, J. (2011). Long-Term Effects of Early Childhood Care and Education. *IZA Discussion Papers 6149,* Institute for the Study of Labor (IZA).

Sameroff, A. (1995). General Systems theories and Psychopathology. In D. Cicchetti & D. Cohen (Eds.), *Developmental Psychology Volume 1- Theory & Methods,* (pp. 659-695). New York: Wiley.

Schwartz, E., & Davis, A. (2006). Reactive Attachment Disorder: Implications for school readiness and school functioning. *Psychology in the Schools, 43*(4), 471-479.

Sokol, B., Muller, U., Carpendale, J., Young, A., & Iarocci, G (Eds.). (2010). *Self- and Social-Regulation: Exploring the Relations Between Social Interaction, Social Understanding, and the Development of Executive Functions.* Oxford: OUP.

Sorin, R. (2008). Readiness for school – educators' perceptions and the Australian early development index. *Journal of Australian Research in Early Childhood Education, 15*(2), 66-74.

St Clair-Thomson, H., & Gathercole, S. (2006). Executive functions and achievements in school: shifting, updating, inhibition and working memory. *The Quarterly Journal of Experimental Psychology*, *59*(4), 745-759.

Taylor, H., Klein, N., Aselmo, M., Minich, N., Espy, K., & Hack, M. (2011). Learning problems in kindergarten students with extremely preterm birth. *Archives of pediatrics and adolescent medicine, 165*(9), 819-825.

Temple, J., Reynolds, A., Arteaga, I. (2010). Low birth weight, preschool education and school remediation. *Education and Urban Society, 42*(6), 705-729.

Thorell, L., Veleiro, A., Siu, A., & Mohammadi, H. (2012). Examining the relation between ratings of executive functioning and academic achievement: findings from a cross-cultural study. *Child Neuropsychology,* i*First,* 1-9.

Toates, F. (2001). *Biological Psychology: An Integrative Approach.* Essex: Pearson.

Torell, A., & Whalstedt, C. (2006). Executive functioning deficits in relation to symptoms of ADHD and/or ODD in preschool children. *Infant and Child Development, 15*(5), 503-518.

Ursache, A., Blair, C., & Raver, C. (2012). The promotion of self regulation as a means of enhancing school readiness and early achievement in children at risk for school failure. *Child Development Perspectives, 6*(2), 122-128.

Van der Ven, S., Kroesbergen, E., Boom, J., & Leseman, P. (2012). The development of executive functions and early mathematics: A dynamic relationship. *British Journal of Educational Psychology, 82,* 100-119.

Ventura, S., Hamilton, B., Matthews, T., & Chandra, A. (2003). Trends and variations in smoking during pregnancy and low birth weight: evidence from the birth certificate, 1990-2000. *Pediatrics, 111*(Supp 1), 1176-1180.

Vygotsky, L. (1978). *Mind in Society.* Cambridge Massachusetts: Harvard University Press.

Webster-Stratton, C., & Reid, M. (2004). Strengthening Social and Emotional Competence in Young Children – The Foundation for Early School Readiness and Success. *Infants and Young Children, 17*(2), 96-113.

Wiebe, S., Sheffield, T., Nelson, J., Clarke, C., Chevalier, N., & Espy, K. (2011). The structure of executive function in three year old children. *Journal of Experimental Child Psychology, 108*(3), 436-452.

Wright, J., Huston, A., Murphy, K., Peters, M., Pinon, M., Scantlin, R., & Kotler, J. (2001). The relations of early television viewing to school readiness and vocabulary of children from low income families: the early window project. *Child Development, 72*(5), 1347-1366.

Yuan, K., Steedle, J., Shavelson, R., Alonzo, A., & Oppezzo, M. (2006). Working memory, fluid intelligence and science learning. *Educational Research Review, 1*, 83-98.