

Implementation of attachment theory into early childhood settings

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Because numerous studies show that early child-adult attachment significantly affects a child's socio-emotional and cognitive development, we propose that establishing attachment-based child care can contribute to a healthy and happy childhood. This proposition is part of a new theoretical and experimental field and, thus, research is limited. There is a lack of clarity in definition, criteria, and common terminology of this type of child care. By synthesizing the literature around the attachment-based interventions in early child care centres, this review provides a conceptualization of attachment-based child care. Based on research findings, major components of this type of child care are: training for caregivers on attachment theory and sensitivity; employment of an appropriate policy, such as the appointment of a key person; a small child-adult ratio; and collaboration with parents that includes education about secure attachment and sensitivity.

Keywords: child attachment; primary caregiving; sensitivity; emotional availability; child-caregiver

INTRODUCTION

The healthy development of infants depends on quality of care and on early relationships. Young children whose physiological and psychological needs are satisfied develop self-confidence (Cassidy, 1988), advanced cognitive abilities (van Ijzendoorn, Bard, Bakermans-Kranenburg, & Ivan, 2009), and self-regulation capacities (Bernier, Carlson, & Whipple, 2010; Shulman, Elicker, & Sroufe, 1994). The first three years of life are crucial for social-emotional and cognitive development and overall mental health (Balbernie, 2013; Follan & McNamara, 2014). During this period, the brain is the most active (Dobbing, 1997). Early experiences involve perceptions, emotions, and behaviours, and shape a child's implicit memory and mindset (Siegel, 2001). Schore (1997, 2000a, 2000b, 2001a, 2001b) studied the neurobiology of early attachment and found that the primary caregiver's care affects the child's maturing limbic system and flexibility of mental health. He provided evidence of how early attachment experience influences the development of the right hemisphere. For

example, during face-to-face infant-mother¹ interactions, a child's brain experiences significantly increased levels of dopamine that positively impacts the right brain (Schore, 2015). Insecurely attached children display a high level of the stress hormone cortisol, excessive amounts of which is harmful and can lead to serious health problems (Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996). Therefore, abnormalities in care and relationships in early childhood periods have a strong impact on future life. Deviations in social-emotional or cognitive development of young children are risk factors for psychopathology (Karr-Morse & Wiley, 1997; Sroufe, Carlson, Levy, & Egeland, 1999). By contrast, emotionally attuned child-mother relationships, and sensitive and timely responsiveness to a child's needs creates a happy, healthy, and functional individual.

There are an increasing number of mothers in the workforce in many Western countries. To illustrate, in 2013 there were 72 percent of women in the UK workforce compared to 67 percent in 1996 (UK Office for National Statistics, 2013) and in Australia 81 percent in 2009-10 compared to 71 percent in 1997 (Australian Bureau of Statistics, 2011). The consequence, of course, is that many children are separated from their mothers during the day. According to the US Census Bureau (2011) more than 50 percent of women in the US return to work before their first child is three month old. As a result, many young children attend early child care centres. This reliance on child care centres occurs at a time when, according to the National Institute of Child Health and Human Development [NICHD], only 10 percent of early child care services in the US have high-quality care; the rest are rated as fair or poor (NICHD, 2006). As well, a greater number of insecurely attached children can be found in centre-based care compared to home-based care.

The quality of child care is an important factor for a child's psychological well-being and feeling of happiness; thus it can either contribute towards the development of mental disorders or prevent them (Balbernie, 2013; Ratnayake & Bowlay-Williams, & Vostanis, 2014). Child care can boost the development of children from high risk families. It was found that children with insecure attachments to their mothers can be securely attached to nonparental caregivers at high quality, safe and extensive early child care centres (Cárcamo, Vermeer, van Veer, & van IJzendoorn, 2016; NICHD, 1997; NICHD, 1999). The worst scenario for young children is when maternal insensitivity is combined with a low quality child care, which exposes these children to more insecurity and future emotional and cognitive problems (NICHD, 1997; NICHD, 1999). Nurturing and supportive relationships with nonparental caregivers can compensate for flaws in parental care (Geoffroy et al., 2007). Moreover, insecure children in good child care perform better in cognitive and language tasks compared to insecure children in maternal care (Spieker, Nelson, Petras, Jolley, & Barnard, 2003). Thereby, attachment-based child care can significantly reduce the occurrence of insecure attachments and improve quality of childhood.

The study of attachment-based child care is a new theoretical and experimental field. For this reason research studies are currently quite limited (Beyazkurk & Kesner, 2005; Shaver & Mikulincer, 2010). Specifically, there are no scholarly references that would provide analysis or comparative perspectives of the research findings where attachment theory was

¹ The term "mother" in this paper means the primary caregiver who is the first attached figure for the child. "Caregiver" refers to a professional caregiver. "Adult" means any adult whether parent or professional caregiver.

implemented into early child care. Also, there is a lack of conceptual clarity in a definition, criteria, and common terminology of this type of child care. Interestingly, most authors of the studies that were found in our literature review claimed that they were pioneers in the field and were obviously unaware of each other. Nevertheless, the findings of these separate studies are valuable for drawing a bigger picture of what attachment-based child care is, and what its main principles and necessary requirements are. Therefore, the main goal of the present paper is to provide a comprehensive understanding of child care centres based on attachment theory. The novelty of this theoretical study is in the conceptualization of attachment-based child care into a uniform paradigm that is supported by research findings.

The purpose of these endeavours was to give insights to practitioners in childcare settings on how the attachment theory approach can be implemented into early childcare practise with a special emphasis on the professional education of childcare staff and the policy that would enhance secure child-caregiver attachment. Furthermore, this paper provides new ideas for experiments about primary caregiving, developing caregivers' sensitivity or emotional availability, and children's secure attachment within the early child care setting.

SECURE ATTACHMENT AND CHILD DEVELOPMENT

The quality of infant-adult attachment has irreversible consequences on child development, stimulating either a self-confident and emotionally stable personality with great capacities for learning or an individual with social-emotional, behavioural, and/or cognitive problems (Bowlby, 1973; Busch & Lieberman, 2010; Granot & Mayseless, 2001; Jacobsen, Edelstein, & Hofmann, 1994; Prior, Glaser, & FOCUS, 2006). Secure attachment plays an important survival function (Bowlby, 1982/1969, 1988). A child seeks protection from his attached figure in stressful and frightening situations. Because of infant-adult proximity, a child can rely on the adult in times of need, which makes his or her world comfortable and secure (Zeanah, Berlin, & Boris, 2011). The securely attached child develops a sense of worth and healthy self-confidence (Cassidy, 1988), better social skills and ego-resilience (Shulman et al., 1994). On the other hand, a child with insecure attachment, whose needs in proximity and warm relationships were not recognized, develops a negative self-concept and lack of confidence (Cassidy, 1988). In addition, type of attachment determines the way children express their emotions (Sherman, Stupica, Dykas, Ramos-Marcuse, & Cassidy, 2013). Securely attached children freely express their negative emotions because they are not afraid of losing proximity with attached figures. Insecurely attached children express either the lowest level of negative reactivity (insecure-avoidant) to avoid rejection or heighten their negativism (insecure-ambivalent) to make sure adults are available.

Securely attached children see their mothers or other key figures as a secure base for exploring the world and learning from the environment (Bowlby, 1988). Research revealed that sensitive and responsive care significantly contributes to language and cognitive development (NICHD, 2000; van Ijzendoorn et al., 2009). Granot and Mayseless (2001) showed that attachment security was linked to better adjustment to school. According to their study, children with avoidant and disorganized attachment have the lowest level of emotional, social, and scholastic adjustment and the highest level of behavioural problems and peer rejection. Higher level of self-regulation, which includes better attentional focusing, working memory, and inhibitory control, is more common for securely attached children and

predicts school achievements and mathematical scores (Ponitz, McClelland, Matthews, & Morrison, 2009). Similarly, the insecurely attached children are characterized by having difficulties with imaginative and creative play (Read, 2014). These children are anxious and focused on possible threats in uncertain conditions, which lead to limitations in engaging in cognitive exploration of the world (Ainsworth, Blehar, Waters, & Wall, 1978; Lieberman & Pawl, 1990; Mikulincer, Shaver, & Pereg, 2003). Different attachment styles can predict different cognitive responses. Secure individuals have less negative memories and attributions, and they are more active, constructive, and creative when compared to insecure ones (Mikulincer et al., 2003).

DESCRIPTORS OF SECURE ATTACHMENT

One of the main conditions for secure attachment is a mother's or other primary caregiver's *sensitive responsiveness*, which means that she or he understands a child's signals and feelings, and provides a timely and appropriate response. According to Ainsworth (1967) "sensitivity of response to signals implies that signals are perceived and correctly interpreted and that the response is prompt and appropriate" (p. 397). It was shown that maternal sensitivity and responsiveness significantly correlates with children's attachment security (Howes & Wishard Guerra, 2009; NICHD, 1997; Oliveira, Fearon, Belsky, Fachada, & Soares, 2015). Mothers' sensitivity is positively linked to children's verbal and overall IQ (Biringen, 2005; Busch & Lieberman, 2010). Children who have sensitive mothers have a lower level of aggression and victimization (Biringen, 2005). A Canadian study found that sensitive mothers have higher working memory, impulse control, and set shifting than non-sensitive mothers (Bernier et al., 2010).

Gerber, Whitebook, and Weinstein (2007) demonstrated that sensitivity of professional caregivers was associated with their accreditation status, smaller centre size, and overall quality of the child care. A meta-analysis of 29 attachment-based interventions showed that enhancing caregivers' sensitivity is a highly effective way to improve child-adult attachment relationships (Bakermans-Kranenburg, van Ijzendoorn, & Juffer, 2003). The researchers concluded that changing caregivers' sensitivity is easier than directly changing children's insecure or disorganized attachments. Accordingly, all the interventions in early child care within attachment theory's framework found in our search targeted the development of maternal or professional caregivers' sensitivity. Another term used to describe sensitivity is *emotional availability*. There is confusion in distinguishing "sensitivity" and "emotional availability." In most of the works, the terms are identical or interchangeable (see, e.g., Biringen, 2005; Ebbeck, Phoon, Tan-Chong, Tan, & Goh, 2015). We, therefore, conclude that *sensitivity* and *emotional availability* are synonyms to describe the ability to recognize a child's psychological needs and to provide an appropriate, timely, and affectionate response.

Another important principle that determines secure child-adult attachment relationships is *primary caregiving*, which characterizes proximity between a caregiver and child or a caregiver and small group of children (Kovach & De Ros-Voseles, 2015). The primary caregiving model helps children to be engaged in special relationships with a key person who understands their needs. The primary caregiver in a child care centre becomes a secure base for the children while the children are in the child care centre (Edwards & Raikes, 2002). The children develop trust and secure attachment to him or her "knowing that the primary

caregiver is there to respond appropriately to their unique temperament, needs, and interests” (Ebbeck et al., 2015, p. 234).

Howes, Angeles, Galinsky, and Kontos (1998) were the first to highlight the three criteria of primary caregiving: physical contact, consistency of care, and emotional communication. Later, Theilheimer (2006) added the following practices into the primary caregiving criteria: a) home visiting (caregivers interact with children in their homes to build a better communication with families); b) remaining with the same caregiver for at least three years; c) considering child’s cultural diversity (e.g., a Spanish-speaking caregiver is paired with a Spanish-speaking child, or a caregiver learns several words in a child’s native language); d) knowledge about child’s preferences and home routine (e.g. how the child likes to fall asleep, how she reacts to touches, what are his transitional objects); e) established good-bye rituals (to help ease separation anxiety); f) caregiver’s team work (distribution of responsibilities); g) stability of child care’s personnel.

METHOD

To identify studies related to attachment-based interventions in early childhood setting, we searched ERIC and Google Scholar databases. By using a combination of key words *child care* and *attachment* our search in ERIC database identified 414 peer reviewed studies which were stratified into 25 descriptors (e.g., “Attachment Behaviour,” “Parent Child Relationships,” “Mothers,” “Infants,” “Child Development,” “Foreign Countries”). We then reduced the results to 51 by choosing the descriptor “Child Care.” Only one article related to the attachment-based intervention in early child care (i.e., Ebbeck et al., 2015). Using a phrase “*child care attachment*” that occurs in the title of the article, an advanced search of Google Scholar yielded 158 results. We reduced this number to 79 by excluding citations. Finally, only three articles were selected after we applied qualitative search (i.e., Biringen et al., 2012; Gray, 2015; Angeles, Galinsky, & Kontos, 1998).

We entered *primary caregiving* in the ERIC database because primary caregiving describes the main approach in the attachment-based child care (Margetts, 2005; McMullen & Apple, 2012; NICHD, 1996). Fourteen peer-reviewed articles appeared as a result. Only three of them related to our topic (i.e., Ebbeck et al., 2015; Lee, Shin, & Recchia, 2016; Colmer, Rutherford, & Murphy, 2011). In Google Search, the *primary caregiving* phrase identified the same related articles that were found in the ERIC database, thus we do not describe the details. The key phrase *attachment-based intervention* in the ERIC database gave 11 peer-reviewed results, none of them were related to child care and thus excluded. The same combination of the key words, *attachment-based intervention*, was used to search in Google Scholar, which provided 27 results with excluded citations; only one related to our focus (i.e., Juffer, Bakermans-Kranenburg, & van Ijzendoorn, 2008).

The earliest empirical study that was identified in our literature search was published in 1998 and the latest in 2016, therefore our final corpus of seven studies were from 1998 until 2016.

Table 1 provides details of the focal studies.

Table 1(a): Empirical studies of the attachment-based interventions in early childhood setting

Authors/ Country	Howes, Angeles, Galinsky, and Kontos (1998)/USA	Elicker, Georgescu and Bartsch (2008)/USA	Aylward and O'Neill (2009)/Australia
Sample	<p><i>Study 1:</i> Community based child care (n=55) Age=18 months (at time 1), 24 months (2), 30 months (3) and 36 months (4)</p> <p><i>Study 2:</i> Family child care (n=72) Age=21.8 months (1) and 30.7 months (2)</p> <p><i>Study 3:</i> Centre-based child care (n=36) Age=31.8 months (1) and 46.9 months (2)</p>	Caregivers: intervention group (n=21) and control group (n=16)	High-risk families with children aged 0-5 years (n=126)
Aim	To examine if increasing caregiver's sensitivity increases children's secure attachment to their caregivers over time	To increase sensitivity and responsiveness in child care staff	To develop secure attachments between children and their parents
Intervention	<p><i>Study 1:</i> No intervention</p> <p><i>Study 2:</i> Training for family child care workers on how to enhance child development and positive interaction with children</p> <p><i>Study 3:</i> In-service training for centre-based caregivers on positive social interaction with children. Selective retaining of caregivers. Caregiver-child ratio: 1-3.5 for infants, 1-4.6 for toddlers and 1-5.5 for pre-schoolers</p>	<p>Four-week intervention. Video-feedback was used for daily records of child-caregiver interactions. Video clips were observed during individual and group sessions with following discussion of sensitive and non-sensitive behaviours.</p> <p>Descriptive cards were used to analyse caregivers' own attachment histories.</p>	<p>Six-month intervention. Circle of Security: Providing a "road map" to understand children's attachment-related needs. Intensive educative and therapeutic sessions for mothers weekly that included videotaping of child-mother interactions and reflection upon them, and fathers' sessions. Attachment-based child care for the children twice a week.</p> <p>Staff training and professional development on attachment theory, child development, principles of working with parents, developing self-awareness and self-reflection, mastering</p>

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Authors/ Country	Howes, Angeles, Galinsky, and Kontos (1998)/USA	Elicker, Georgescu and Bartsch (2008)/USA	Aylward and O'Neill (2009)/Australia
Measures	Attachment Q-Set, Howes Adult Involvement Scale, Caregiver Interaction Scale (CIS)	Adopted scales from Caregiver Interaction Scale and parent-child video interaction scales (used by National Early Head Start)	sensitivity and responsiveness monthly Hospital Anxiety & Depression Scale (HADS), Parenting Stress Index Short Form (PSI/SF), Emotional Availability (EA) Scales, Children's Wellbeing and Involvement Observations
Findings	<i>Study 1:</i> No changes in caregiver's sensitivity or children's secure attachments <i>Study 2 and 3:</i> Increased sensitivity in some of the caregivers. Positive correlation between enhancing caregiver's sensitivity and children's secure attachment	Sensitive and responsive caregiving predicts quality of child care	Positive behavioural changes in children. Improved family functioning. Enhanced mother-child relationships and mothers' copings with stress and anxiety. Heightened professional motivation in child care staff.

Table 1(b): Empirical studies of the attachment-based interventions in early childhood setting

Authors/ Country	Biringen, Altenhofen, Aberle, Baker, Brosal, Bennett, and Swaim (2012)/USA	Ebbeck, Phoon, Tan-Chong, Tan, and Goh (2015)/Singapore
Sample	Child-caregiver pairs: intervention group (n=33), control group (n=24). Age=11-32 months at the start of the study	Caregivers (n=8) and children (n=17) Age= 4-17 months
Aim	To examine if EA intervention for child care staff would enhance child- caregiver EA and secure attachment and emotional classroom climate	To investigate how primary caregiving would be implemented in Singapore and to examine if primary caregiving would strengthen child- caregiver secure attachment
Intervention	Education about EA, different types of attachment and keys to identify them. Training to master caregivers' emotional availability (completing EA Checklist, watching and discussing pretest videos)s	Five-month intervention. Educating caregivers about primary caregiving. 55 hours of videotaped child-caregiver interactions with the follow up observation and discussion of the videos. Ratio: 2-3 children per a caregiver

Authors/ Country	Biringen, Altenhofen, Aberle, Baker, Brosal, Bennett, and Swaim (2012)/USA	Ebbeck, Phoon, Tan-Chong, Tan, and Goh (2015)/Singapore
Measures	EA Scales, Attachment Q-Sort, CIS, Observations in classrooms with video recording	Qualitative data: Interviews with caregivers, principals and parents, observations of children and analysing video recordings
Findings	Increased caregivers' structuring over time. Children became more connected and responsive to their caregivers.	Increased child-caregiver secure attachment

Table 1(c): Empirical studies of the attachment-based interventions in early childhood setting

Authors/ Country	Gray (2015)/USA	Lee, Shin, Recchia (2016)/USA
Sample	Licensed family child care providers: intervention group (n=34), control group (n=17)	Infants (n=8) Age=2-24 months. Head teachers (n=2). M.A. students with a major in early education (n=8)
Aim	To examine the impact of Circle of Security Intervention on family child care providers, particularly their depressive symptoms, job related stresses, self-efficacy in dealing with challenging behaviours and self-reflection practices.	To examine primary caregiving as a framework for teaching students to understand and care for infants
Intervention	Eight-week intervention Circle of Security: Providing a "road map" to understand children's attachment-related needs. Watching educational videos. Teaching to apply attachment principles. Reflection on caregivers' own childhood Handouts with summary of sessions	Educating students about primary caregiving. Flexible daily schedule for children based on their needs. A student as a key person for 1-2 children Students' observations and weekly journaling, videotaping of caring behaviour, home visits, and the following reports of the experience. 55 hours of videotaped child-caregiver interactions with the follow up observation and discussion of the videos. Ratio: 2-3 children per a caregiver
Measures	Child Care Worker Job Stress Inventory, Depression Scale-Revised, Teacher Opinion Survey-Revised, Goal Achievement Scale, Parental Reflective Functioning Questionnaire, Caregivers' open-ended feedback	Qualitative Data: Interviews and students' weekly journals
Findings	Improved caregivers' self-efficacy and competence in dealing with children's	Students' learned skills: Building positive relationships with young children and their parents; caring practice as a team

Authors/ Country	Gray (2015)/USA	Lee, Shin, Recchia (2016)/USA
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challenging behaviour and supporting their socio-emotional development

RESULTS

As our investigations showed, the attachment-based interventions in early child care setting are relatively new and limited. Thus, our review is qualitative rather than quantitative. All the interventions were targeting child care professionals and were highly successful. One project included education and therapy for high risk parents, which also significantly improved children's attachments to them. Five out of seven interventions used videotaped recordings to document child-caregiver or child-mother interactions with follow-up observation and discussion. The videos gave the opportunity to the caregivers or parents to notice their sensitive and non-sensitive behaviours and practice more sensitive ones. Three interventions emphasized the importance of reflection on adults' histories of early attachments which was effective in changing their patterns of non-sensitive behaviours. Two studies effectively implemented the Circle of Security Intervention that aimed to provide parents and caregivers with understanding of children's attachment-related behaviour and provide guidance of a sensitive response (Marvin, Cooper, Hoffman, & Powell, 2002). Five studies were conducted in the US, one in Australia and one in Singapore; supporting the statement that attachment theory is more familiar and popular in the West than in the East (Beyazkurk & Kesner, 2005).

WHAT IS ATTACHMENT-BASED CHILD CARE?

Read (2014) bridged attachment theory and early child care practice. She presented a helpful guide for the development of new policies and instructions in child care centres that would overhaul the early years institutions and put them on the path leading to secure child-caregiver relationships. Theilheimer (2006) outlined the principles of primary caregiving which embraced major principles of attachment-based child care. We seek to continue the conceptualization of the paradigm of attachment-based child care but with a greater emphasis on research findings than relied upon by predecessors in this field of study.

Based on the results of the empirical studies described above, a child care centre that aims to enhance children's secure attachment to their caregivers meets the following criteria:

Training and professional development within attachment theory for child care staff. This is the most important step that can help establish a new type of child care with a given priority to secure child-caregiver relationships. Research shows that it is not a formal education but emotional education for caregivers that significantly increases quality of care (Aviezer, 2008; Biringen et al., 2012; Shonkoff & Phillips, 2002). All seven interventions described in our review provided evidence that education and training for caregivers within attachment theory enhanced children's secure attachment and sensitivity in the caregivers. Moreover, the training helped caregivers increase motivations and positive attitudes towards their careers (Aylward & O'Neill, 2009; Ebbeck et al., 2015). We view these outcomes as an essential

factor for employment stability, which, in turn, strengthens trust and security in child-caregiver relationships.

The good news is that the training does not have to be prolonged in order to make significant changes in caregivers. A four week intervention conducted by Elicker, Georgescu, & Bartsch (2008) was as successful as a five month intervention conducted by Ebbeck et al. (2015). In support, the study by Bakermans-Kranenburg et al. (2003) showed that interventions with fewer contacts were more effective compared to prolonged intensive interventions. Therefore, organization of special training for child care professionals within the attachment theory's framework is not a costly investment.

Five out of seven interventions successfully used video recording of child-caregiver/mother interactions to increase adults' sensitivity/emotional availability. The video intervention was a very useful tool because it helped caregivers increase their self-reflection and self-awareness, which is the first steps in a behavioural change. Elicker et al. (2008) presented a technique for exploring caregivers' own attachment histories. First, caregivers chose cards that described their own early caregivers. Second, they described themselves as caregivers using the same set of cards. Participants got insights on what role their own caregivers played in their caring style, and reflected on how similar or opposite they were compared to their early caregivers. These are two examples of the techniques that proved their potency in increasing caregivers' sensitivity and children's secure attachments.

Caring for young children requires many duties and responsibilities; therefore, clear communication, understanding, and distribution of duties between, usually, two caregivers (primary and secondary) without engaging another staff member positively affected child-caregiver relationships. The interventions demonstrated that training on how to work as a team is a necessary part of successful practice and needs to be included in professional development for child care staff (Ebbeck et al., 2015; Lee et al., 2016).

According to the study by NICHD (1996), the higher the caregivers' education the more positive they are towards children. Hence, children benefit significantly from child care centres in which professional development and special training are a regular practice.

Lee et al. (2016) successfully implemented the primary caregiving approach as a framework for practicum of future caregivers. This creative intervention demonstrated that learning child development and care is more effective when it is combined with practice. Moreover, by learning sensitive responsiveness and primary caregiving, the students formed their caring style and professional habits in the initial stage of their careers. We consider this intervention as a highly effective attempt to build a new generation of caregivers who would prioritize building secure relationships with children. The earlier that caregivers become familiar with attachment theory and practice the easier and smoother the establishment of secure child-caregiver relationships.

Attachment-based child care requires application of a special policy. Because primary caregiving requires individualized care and a key person, a *small child-caregiver ratio* is a prerequisite. A regulated child-adult ratio is correlated with adult's responsive behaviour and children's secure attachment (Ahnert et al., 2006; Aylward & O'Neill, 2009; Ebbeck et al., 2015; Elicker, Fortner-Wood, Noppe, 1999; Howes et al., 1998). Caregivers are more likely to observe children's cues and provide timely and appropriate responses to children when the

ratio is small. The American Academy of Pediatrics and American Public Health Association recommended the following adult-to-child ratio: 1) children at age 6–18 months: one caregiver to three children; 2) children at age 1.5–2 years: one caregiver to four children; 3) children at age 2–3 years: one caregiver to seven children (NICHD, 2006). Maintaining a small child-adult ratio can also help caregivers be engaged in meaningful interactions with children, which is another core component of attachment-based child care. By storytelling, face-to-face interactions, calling by names, playing, touching, and providing undivided attention, caregivers are able to build emotional bonds with children and, as a result, foster their secure attachments (Ebbeck et al., 2015).

The next important ingredient in attachment-based child care is a *collaboration with parents*. Although, every child care centre differs by group sizes, child-adult ratio, caregivers' level of education, and socio-economic status of parents, communication with families is an inescapable part of developing secure child-caregiver relationships (Elicker, 1997; NICHD, 2002). Aylward and O'Neill (2009) conducted an intervention where parents at risk participated in educative and therapeutic program. The parents learned the basics of attachment theory and positive parenting, practiced sensitive responsiveness, and received group support. Such a holistic approach generated highly positive outcomes for child-parent relationships and secure attachment, and can serve as a model for programs aimed to increase parental sensitivity.

Some of the recommendations for child care centres to maintain or develop child-parent and child-caregiver secure attachments have been provided by Marty, Readdick, and Walters (2005): a) separation and reunion rituals to decrease separation anxiety and frustration in children; b) open-door policy for parents to help them participate in children's daily activities; c) encouraging breastfeeding, skin-to-skin contacts, and using carriers to enhance mothers' sensitivity and mother-child proximity; d) daily reports about children's eating, sleeping, and other activities; e) using transitional objects to help children feel familiar surroundings. In addition, Read (2014) recommended parents be advised to have loving time before child care starts to help the children feel that they are loved.

To sum up, the attachment based child care centre is a place that provides caregivers with specific training aimed to increase their sensitive responsiveness, practices a key person approach and small child-caregiver ratio, and educates parents about secure attachment and positive parenting.

DISCUSSION AND CONCLUSION

Children in high quality child care do not differ in their development from home-raised children (Ahnert, Rickert, & Lamb, 2000). Van Ijzendoorn and van Vlet-Visser (1988) found that toddlers of working mothers have richer vocabulary and more advanced language development. A study in Germany demonstrated that working mothers had more intensive social interactions with their children than stay-at-home mothers (Ahnert et al., 2000). Indeed, children raised in a child care might have specific challenges related to quality of the care but it does not mean that these children are behind in their development compared to home-raised children. Therefore, early child care settings that emphasize primary caregiving, small child-caregiver ratio, sensitive, consistent care and appropriate frequent physical

contacts can foster secure secondary attachment and significantly contribute to healthy child development.

In our view, the conceptualization of attachment-based child care is an important step in understanding the implications of Bowlby's theory into early care practice, overlooked thus far. A clearer understanding of the principles and main components of this type of child care can help shorten the distance between theory and practice. According to our framework, the major components of attachment-based child care are: education of caregivers utilizing the lessons of attachment theory and sensitivity; employing a policy, such as an appointment of a key person and a small child-adult ratio; and collaboration with parents that includes informing the parents about secure attachment and sensitivity.

Due to a shortage of attachment-based research interventions in a child care setting, our theoretical study is small-scale and qualitative rather than quantitative. Although, attachment theory and the idea of attachment-based child care are gaining popularity, more studies and interventions are needed to fill the gap between attachment theory and early child care practice.

Another limitation of the present review is a lack of cross-cultural representation of the studies. Six out of the seven interventions found in our search were conducted in Western nations (mostly in the US). In fact, attachment processes are similar in different societies. For example, in all cultures secure attachment is a prevalent attachment pattern, or maternal sensitivity is a key factor for forming secure attachment in children, or secure relationships are linked to social-emotional and cognitive competencies (for a review, see Cassidy, Jones, & Shaver, 2013). The different mentalities, religions, economies, and life styles of different societies, however, significantly affect early child-adult relationships. For instance, a Turkish study showed that caregivers' education level was not linked to child-caregiver secure attachment whereas data from the US indicated the opposite (Beyazkurk & Kesner, 2005; NICHD, 1996). Certain insecure patterns are more prevalent over other insecure patterns in different countries. For instance, insecure-avoidant type is more dominant over other insecure types in Germany whereas insecure-ambivalent is more common for Japan and Israel (Bretherton, 1992). The possible explanation of the phenomenon is that Germans value more independence in children rather than proximity, while children in Japan and Israel are exposed to many extended family members. Another illustration of cultural differences in different countries is found in the study by Cárcamo et al. (2016). They did not find a link between maternal sensitivity and family income in a Chilean sample, however this link was found in several studies conducted in US (Bradley, Corwyn, McAdoo, & García Coll, 2001; for the review, see Magnuson & Duncan, 2002, and Shaver & Mikulincer, 2010).

Attachment-based child care is a Western world product (Cassidy et al., 2013; Bell, 2012; Mikulincer et al., 2003). Therefore, all the interpretations and conclusions that we draw from the research findings presented in this paper are related to Western societies and might not be directly relevant to other societies. More cross cultural research in attachment theory and its implications should be conducted in order to project similarities and differences in childrearing and child care practices in different societies and to provide universal recommendations for attachment-based child care practices.

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