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# Teaching Young Mothers to Identify Developmental Milestones

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KATELYN M. GUASTAFERRO

Teaching Young Mothers to Identify Developmental Milestones  
(Under the direction of John R. Lutzker, Ph. D.)

Inappropriate parental expectations of age-appropriate behaviors and unawareness of developmental milestones can increase instances of child maltreatment. Additionally, experiences of child maltreatment can have a negative impact on the developmental trajectory of a child. The present research describes a parental aide, the tDevelop, delivered to parents at risk for child maltreatment through SafeCare Parent-Child Interaction (PCI) training with the aim of increasing identification of developmental milestones and age-appropriate activities. Two high-risk families with children close to 24-months of age were recruited from a residential program for young mothers working to develop self-sufficiency skills. The families were presented with the tDevelop along with traditional PCI information, including Planned Activities Training and age-appropriate activities. Data from a multiple-probe, single-case experimental design, suggest that mothers are able to recognize developmental milestones with increased accuracy upon intervention with the tDevelop. These findings suggest that the enhanced PCI protocol may enhance parental identification of developmental milestones.

*Keywords:* child maltreatment, child development, developmental milestones, health literacy, SafeCare

Teaching Young Mothers to Identify Developmental Milestones

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B. A., Boston University

Thesis Submitted to the Graduate Faculty of Georgia State University  
in Partial Fulfillment of the Requirements for the Degree

MASTER OF PUBLIC HEALTH

ATLANTA, GEORGIA

TEACHING YOUNG MOTHERS TO IDENTIFY DEVELOPMENTAL MILESTONES

By

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## INTRODUCTION

Child maltreatment is a significant issue in society. It has been the subject of a substantial amount of research over several decades that has helped inform the development of laws protecting children. The U.S. Department of Health and Human Services (DHHS) has identified the prevention of child maltreatment (referred to as unintentional injuries) as one of its objectives in Healthy People 2020, the nation's plan to improve the health of all Americans (U.S. Department of Health and Human Services [DHHS], 2010a). The National Child Abuse and Neglect Data System (NCANDS), a systematic data collection and analysis tool mandated by the *Child Abuse Prevention and Treatment Act* (CAPTA) in 1988, estimated that 3.3 million referrals of alleged maltreatment were received by Child Protective Services (CPS) in 2009 (U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau [DHHS], 2010b). Of these referrals, CPS determined intervention was necessary in 61.9% (or slightly over 2 million) of these cases. These data are likely to represent an underestimate of the actual prevalence of child maltreatment as they represent only the cases brought to the attention of CPS. The National Incidence Study of Child Abuse and Neglect (NIS), a congressionally mandated nationally representative survey of sentinels (community professionals who have routine contact with parents and children), reported the prevalence of all child maltreatment to be 1,256,600, or a rate of 17.1 per 1,000 children between the years of 2005 and 2006 (Whitaker, Lutzker, & Shelley 2005; Sedlak, Mettenburg, Basena, Petta, McPherson, Greene & Li, 2010). It is likely the actual number of child maltreatment cases falls between NCANDS and NIS estimates, as neither system

can capture the data with complete validity. The need for a consistent and all encompassing surveillance system is evident in the discrepancies in reported prevalence and incidence rates (Whitaker, Lutzker, & Shelley, 2005).

The majority of resources and media attention has focused largely on sexual abuse- despite that the numbers of children suffering from or at risk for physical abuse and neglect to be substantially more significant (Dubowitz, Pitts, Litrownik, Cox, Runyan, & Black, 2005; Whitaker, Lutzker, & Shelley, 2005). Between 2007 and 2008, NCANDS data showed a decline in rates for sexual abuse, physical abuse, and neglect; although, the percentage of decline in neglect was not as substantial as other categories (Finkelhor, Jones, & Shattuck, 2009). According to 2009 estimates from DHHS only 7.6% of cases were designated as sexual abuse, whereas over 78% of cases were due to neglect (DHHS, 2010b). Thus, neglect is the most commonly experienced form of maltreatment in the United States (Hildyard & Wolfe, 2002).

Further complicating the accuracy of reports are the varying definitions, and experiences, of child maltreatment, making it difficult, if not impossible, to monitor overall incidence. Child maltreatment encompasses neglect, physical abuse, sexual abuse and psychological (or emotional) abuse. Every state has its own unique definitions of abuse and neglect that are based upon federal laws. CAPTA, amended by the *Keeping Children and Families Safe Act* of 2003, defines child maltreatment as an “act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act which presents an imminent risk of serious harm” (DHHS, 2010b, p. vii). This legislative protection extends from birth through age 18. Consensus among researchers has broadly defined neglect as

an omission in care by parents or caregivers that results in actual or perceived harm (Dubowitz, Pitts, Litrownik, Cox, Runyan, & Black, 2005). Neglect is heterogeneous and may involve physical, emotional, medical and educational neglect in addition to the failure to provide supervision or the exposure to violent environments (Dubowitz, Pitts, Litrownik, Cox, Runyan, & Black, 2005; Hildyard & Wolfe, 2002). Neglect is not easy to identify, as it is not as visible as a bruise and often not confined to a discrete incidence (Hildyard & Wolfe, 2002). Parents reported for physical abuse and neglect of their children often lack the skills to engage in appropriate parent-child interactions frequently engaging in inappropriate verbal and playful exchanges (Bigelow & Lutzker, 1998). These parents are often less responsive to the developmental needs of their children; The lack of stimulation possibly resulting in a toddler who is less energetic, more frustrated, and angrier in problem-solving tasks when compared to non-maltreated peers (Hildyard & Wolfe, 2002).

DHHS estimated that 1,770 children died from abuse and neglect in 2009, of whom 80.8% were under age 4 (DHHS, 2010b). Frequently cited risk factors include age, disability status, and ethnicity. Children most at risk for child maltreatment are generally under the age of 4 and may have special needs (CDC, 2009b). In 2009, one-third of all child maltreatment victims were under the age of four; age two specifically had a victimization rate of 11.3 victims per 1,000 indicating this to be a highly vulnerable age (DHHS, 2010b). Children with a reported disability (including learning disabilities, visual or hearing impairments, physical disability, behavioral problems, or any combination of these) accounted for 11% of victims in 2009 (DHHS, 2010b). Conversely, Jaudes and Baker (2008) indicated that children with a developmental

disability were not at an increased risk. Instead, they found that children with behavioral or mental health conditions were almost two times more likely to experience maltreatment than their peers. Disparities among ethnicities indicate that some ethnic groups have higher rates of victimization. For instance, in 2009, 22.3% of cases were African American, 20.7% were Hispanic, and 44% were Caucasian (DHHS, 2010b). While race does not preclude specific populations from experiencing child maltreatment, race may be a predictor of what type of child maltreatment is experienced. Utilizing the National Longitudinal Study of Adolescent Health and relying on retrospective accounts of experiences of child maltreatment, Hussey, Chang and Kotch (2006) found that Hispanic and Asian adolescents were more likely to report having experienced supervision neglect, physical neglect, and physical assault; African American adolescents reported experience with physical neglect and sexual abuse, and Native Americans were more likely to report physical neglect (Caucasian adolescents were used as the referent population). Gender does not appear to be predictive factor for maltreatment. In 2009, victimization was a virtual even split between genders with girls accounting for 51.1% and boys 48.2% (DHHS, 2010b).

Frequently cited risk factors when identifying individuals at risk for committing child maltreatment include: education, age, income, and a personal history of child maltreatment. Perpetrators of child maltreatment are most often a parent, family member or a caregiver; It has been suggested more than 80% of maltreatment is perpetrated by parents or guardians alone (apart from sexual abuse) (Gilbert, Spatz-Wisdom, Browne, Fergusson, Webb, & Janson, 2009). In 2009, it was estimated two-fifths of victims were maltreated by their mother, one-fifth by their father, and two-fifths by both parents

(DHHS, 2010b). Overall, perpetrators are usually under age 39, and females are typically younger than male perpetrators (CDC, 2010b). Teenage parents in particular are especially at risk given the likely co-occurrence of other risk factors, such as income and low education levels (Pomerleau, Scuccimarri, & Malcuit, 2003). Unmarried or single parents, who have completed minimal schooling, have a large number of dependent children, and have a low income are most likely to commit child maltreatment (CDC, 2009b; Dubowitz, Kim, Black, Weisbart, Semiatin, & Magde, 2011). Those who perpetrate child maltreatment typically lack an understanding of a child's needs and development are likely to have a history of child maltreatment in their family of origin, and may have substance abuse disorders (CDC, 2009b; Flaherty, Stirling, & The Committee on Child Abuse and Neglect, 2010; Scott, 2009). Additionally, those who commit maltreatment are likely to socially isolate themselves in disadvantaged neighborhoods lacking social connectedness, have disorganized home environments which may also at times be violent, experience high levels of parenting related stress, and thus have negative interactions with their children. Protective factors that may buffer a child maltreatment episode include positive relationships, familial and communal support, and the development of positive parenting and stress management skills (CDC, 2009b; Drake & Pandey, 1996; Flaherty, Stirling, & The Committee on Child Abuse and Neglect, 2010).

The field of social epidemiology explores the way a population biologically incorporates the environment into their bodies (Krieger, 2001). Under this premise, also referred to as the social-ecological model of health, the impact of health issues are organized into an interactive, multilevel system: individual, interpersonal, communal and

societal. These levels are used to understand the many factors affecting an individual or population in everyday life. Child maltreatment is particularly well understood through this model in the sense that maltreatment occurs through a confluence of multiple factors (Cicchetti, 2010; Edwards & Lutzker, 2008; Lutzker, Bigelow, Doctor, Gershater, & Greene, 1998; Lutzker, Tymchuk, & Bigelow, 2001). The interaction of this multiple level framework provides justification for delivering child maltreatment prevention programs in situ; that is, delivered in the family's home where this interaction of factors comes to fruition (Lutzker, Campbell, Newman, & Harrold, 1989).

Over the course of the past 50 years, a significant body of research has been generated surrounding the consequences of child maltreatment as it relates to the social-ecological model of health. While some consequences of maltreatment are evident immediately, such as in the cases of physical abuse, other consequences lie below the surface and may take months, even years, to surface. Research on the sequelae and adverse childhood experiences have uncovered the effect of child maltreatment on the individual level according to the social-ecological model of health.

Executed and funded by the CDC and Kaiser Permanente's Department of Preventative Medicine, the Adverse Childhood Experience (ACE) Study is a longitudinal research initiative examining the childhood origins of leading health and social problems based from the social epidemiological notion that traumatic experiences in childhood have a direct correlation on health and social impairments later in life (Anda, 2009; Krieger, 2001). High levels of co-occurrence, and the reliance on retrospective accounts, make an accurate prevalence of ACEs impossible; however, in the sample of 17,337 men and women, 60% reported experiencing abuse in their childhood and 25% reported

experiencing neglect, indicating the overall experience of ACEs to be relatively common (Anda, 2009). The ACE studies, similar to other research, have shown that those who have reported experiencing an ACE are likely to use and abuse alcohol, to engage in high-risk sexual behaviors, to have early smoking initiation, and to experience extreme depression with possible suicidal tendencies (Anda, 2009).

Sequelae commonly cited as a result of child maltreatment may be categorized as: impaired physical health, impeded emotional/mental health, social difficulties, cognitive dysfunction, high-risk behaviors, and behavioral problems (Chapman, Dube, & Anda, 2007; Chapman, Whitfield, Felitti, Dube, Edwards & Anda, 2004; Christoffersen & DePanfillis, 2009; Cicchetti, 2010; Hagele, 2005; Hawley, 2000; Koch et. al., 2008; Wang & Holton, 2007; Whitaker, Lutzker, & Shelley, 2005). Children who experience maltreatment may have suppressed immune systems and thus chronic illness, including but not limited to asthma, hypertension, and obesity (Hagele, 2005; Wang & Holton, 2007). Abuse and neglect have structural and functional long-term implications for a child's brain and often result in cognitive dysfunction (Child Welfare Information Gateway, 2008; Cicchetti & Rogosch, 2009; Hagele, 2005). An experience of maltreatment prior to age 4 is associated with anxiety, depression, and attention problems through age 10 (Thompson & Tabone, 2010). Behavioral issues seen in victims of child maltreatment encompass a broad-spectrum; increased levels of aggression in victims being one outcome. A longitudinal study explored the association of early childhood neglect (specifically birth to age 2) and subsequent aggression levels at ages 4, 6, and 8 (Kotch et. al., 2008). These findings indicate that neglect experienced during the first years of life is a good indicator of childhood aggression at later ages more so than neglect

experienced during later ages. This relates to the importance of preventing maltreatment and early intervention. Fang and Corso (2007) also indicated those who experience maltreatment as children were more likely to perpetrate youth violence and young adult intimate partner violence. This relates to the impact of child maltreatment on behavior later in life. Challenges with social interactions may manifest in insecure (i.e., anxious) relationship attachments and therefore lead to social isolation (Hildyard & Wolfe, 2002; Wang & Holton, 2007). The ACE studies indicate that those who experience maltreatment in their youth are more likely to engage in high-risk sexual behaviors. Even a single instance of maltreatment increases the likelihood of the victim acquiring a sexually transmitted infection and being promiscuous, defined as having more than 50 partners in their lifetime (Anda, 2009). These outcomes of child maltreatment have both immediate and long-term cumulative implications for the individual and society at large.

Child maltreatment is viewed as an ‘extreme traumatic insult’ to a child’s developmental trajectory (Hagele, 2005). The ACE studies have indicated the direct impact on neurodevelopment and lasting effects on the structure and functioning of the brain that an experience of maltreatment may cause (Anda, 2009; Cicchetti & Rogosch, 2009; Hagele, 2005). Repeated exposure to such experiences will lead to significant changes in brain structure and chemistry, thus impacting an individual’s functioning both on an individual level and within society. Advances in technology and the field of neurophysiology have discovered that prolonged exposure to stress produced by maltreatment may lead to negative outcomes, including neurobiological dysfunction (Cicchetti & Rogosch, 2009). This continual exposure to stress alters the neurophysiology and neuroanatomy of the brain through the persistent activation of the



hypothalamic-pituitary-adrenal (HPA) axis and the catecholamine stress system, commonly referred to as the ‘fight or flight’ hormones (Hagele, 2005). The HPA axis is a physiological system that helps to direct and sustain cognitive, emotional, behavioral, and metabolic responses in a threatening situation or environment (Cicchetti & Rogosch, 2009). The discovery and appreciation for the impact of child maltreatment on the brain and its development emphasizes the importance of early detection and intervention regarding developmental delays.

Amidst the conversation of the serious long-term consequences of child maltreatment, it is worthwhile to mention the ‘resiliency’ of some who emerge from these unfortunate circumstances endured in their upbringing as well-adjusted productive adults (Twardosz & Lutzker, 2010). Resiliency, according to Cicchetti and Rogosch (2009) may be understood as an individual’s capacity to successfully cope and function despite experiencing chronic stress or adversity. Although this may not occur consistently, it is possible and speaks to the adaptive quality of children that may be positively impacted through intervention.

Being a victim of child maltreatment not only lists a host of possible negative sequelae, but society at large is commonly affected in direct and indirect ways. Often the burden of providing services and care to child maltreatment victims falls on the community, thus affecting public coffers (Geeraert, Van den Noortgate, Grietens, & Onghena, 2004). While the pervasive effects of child maltreatment are felt by society, there is a paucity of empirical data on the cost of child maltreatment (Conrad, 2006; Corso & Lutzker, 2006). The need for cost-analysis is becoming central to the allocation of resources and provision of the best practices. While it may be a challenge, scholars

have begun to break down the costs of child maltreatment into direct or indirect categories. Direct costs, those of immediate needs following an instance of child maltreatment, include hospitalizations, mental health care or treatment, child welfare services, and law enforcement involvement. Children who are hospitalized as a result of maltreatment, compared to other children, are more likely to have died during hospitalization (4.0% to 0.5%), to have a longer hospital stay (8.2 vs. 4.0 days), and to incur double the total charges (\$19,266 vs. \$9,513) (Rovi, Chen, & Johnson, 2004). This suggests that when a child experiences an instance of child maltreatment necessitating hospitalization, the incident was substantial. However, it must be noted that not all incidents of child maltreatment produce injuries requiring hospitalization, thus this is a limitation in any economic cost estimate. Indirect costs, on the other hand, meaning those that are associated with the long-term or secondary effects of child maltreatment, may include special education, continuing mental health and health care, involvement in the criminal justice system as an adult and as a juvenile, and the lost productivity to society (Wang & Holton, 2007).

The overall estimated cost, direct and indirect combined, of child maltreatment is estimated to reach more than \$103.8 billion dollars in 2007 values (Wang & Holton, 2007). An alternative model proposed by Conrad (2006) combines direct, indirect and opportunity (includes loss of productivity and lost tax revenues) costs and the respective probabilities of these costs occurring making the cost estimate exceed \$6,055,675 per case. Of course, these estimates are likely conservative, as an accurate cost analysis is impossible. A list of costs is unlikely to be exhaustive due to the personal variation in experiences and the social stigma associated to identifying or reporting instances of child

maltreatment. It is also difficult to calculate the pain, suffering, and impact on the quality of life (Wang & Holton, 2007), although, some researchers have attempted to explain the impact of child maltreatment on the victim's quality of life using the Quality-Adjusted Life-Year (QUALY) estimate. Corso, Edwards, Fang, and Mercy (2008) indicated that adults who reported any form of child maltreatment in their past has a yearly loss of 0.03 QUALYs, translating to 11 days per year. Other research has examined the socio-economic status of adults who reported experiencing child maltreatment in their youth. Zielinski (2005) found roughly 20% of unemployed adults were maltreated as children, suggesting additional negative sequelae. This research also indicates that male and female victims of child maltreatment are more than twice as likely to fall below the poverty line as adults. Contributing factors include: less school completed, subsequent experiences of victimization, and physical or mental health issues that interfere with job hours. The proportion of child maltreatment victims who use or rely on Medicaid is two times higher than those who were not maltreated (Zielinski, 2005). Intergenerational maltreatment creates a cyclical pattern that must be broken to have a long-lasting impact in the prevention and early intervention of child maltreatment.

Home Visiting models, such as SafeCare (Lutzker & Bigelow, 2002), that aim to prevent incidences of child maltreatment before they arise and prevent recidivism by parents with substantiated child maltreatment have been determined effective by the by the United States Task Force on Community Preventative Services and the American Academy of Pediatrics (APA) (Corso & Lutzker, 2006; Flaherty, Stirling, & The Committee on Child Abuse and Neglect, 2010; Zielinski, 2005). Early participation in primary prevention programs teaches parents to manage stress and create an optimal

development environment before negative patterns emerge (Hawley, 2000; Whitaker, Lutzker, & Shelley, 2005). Created in 1979 originally as Project 12 Ways (Lutzker & Rice, 1984), the SafeCare model is an international evidence-based parent-training program for parents at risk or who have been reported for child maltreatment who have children between 0-5. The overarching goal of SafeCare is to prevent child maltreatment. The curriculum is particularly well suited to address neglect, the most common form of child maltreatment. Currently, SafeCare is implemented in 13 U.S. states, including broad state-wide implementation in four of those states. Training has also occurred in the United Kingdom. The National SafeCare Training and Research Center (NSTRC), located within Georgia State University's Center for Healthy Development, estimates the cost per family to implement SafeCare in its entirety to be approximately \$2,275. However, this figure is compounded by the other services providers are expected to deliver to their clients (National SafeCare Training and Research Center [NSTRC], 2011).

The curriculum is typically presented to families by a trained home visitor in weekly home visits lasting up to 90 minutes. Over the course of 15-20 weeks, the families are presented with three modules: child health, home safety, and parent-child/parent-infant interactions (Edwards & Lutzker, 2008). The number of session in each module depend on parents meeting mastery criteria. On average, however, each module takes six sessions. The participants of this study only received the Parent-Child Interactions (PCI) module. A core component of the parent-child interactions module is planned activities training, which involves teaching parents strategies for structuring daily activities to prevent challenging behaviors. Additionally, parents must incorporate

bonding skills, such as looking, talking, touching, and smiling (Bigelow & Lutzker, 1998).

The SafeCare curriculum utilizes a four-tiered approach to instruction: explanation, modeling, practice and feedback (Bigelow & Lutzker, 2000). The importance of modeling and role-playing was demonstrated in the instruction of the health module (Delgado & Lutzker, 1998). This delivery of services has similarly been shown to also be effective when teaching parents bonding skills, those that are significant in mitigating risk factors for neglect. Generalization of content is promoted by in situ delivery as well as by assigning homework to practice skills in community settings (Lutzker, Bigelow, Doctor, Gershater, & Greene, 1998; Lutzker, Tymchuk, & Bigelow, 2001).

The efficacy of SafeCare has been indicated through moderately-sized clinical trials (Edwards & Lutzker, 2008; Gershater-Molko, Lutzker, & Wesch, 2002 & 2003). Families who participated in SafeCare had significantly lower rates of recidivism compared to other families reported for maltreatment who did not complete SafeCare, but received other family preservation services (Gershater-Molko, Lutzker, & Wesch, 2002 & 2003). Families that completed SafeCare had a survival rate (meaning no future instances of reported maltreatment ) of 85% compared with a survival rate of 56% in the comparison group (Gershater-Molko, Lutzker, & Wesch, 2002). The efficacy of SafeCare is also in large part due to the conscious effort to create an easily disseminated and implemented model (Edwards & Lutzker, 2008; Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). The curriculum implementation is held to high standards regulated by

NSTRC's repeated fidelity monitoring, or the evaluation of a service providers adherence to the program's specified protocol (Edwards & Lutzker, 2008).

SafeCare recognizes the importance of sharing expected developmental trajectories with parents who may not otherwise be aware of them. The curriculum also promotes the expectation and provision of age-appropriate behaviors and activities. The curriculum presents developmental milestones in a checklist format to parents but has not previously measured mothers' acquisition of the material. It is in the interest of the program to measure the efficacy of the instruction of the milestones given the impact of early developmental experiences on the child's later quality of life.

Pediatricians and child development specialists have identified specific, age-appropriate developmental goals, referred to as developmental milestones, which may be used to monitor appropriate social and behavioral development. Parents may be presented with this information by their pediatricians and encouraged to schedule well-child visits to monitor developmental progression so as to provide the opportunity for early intervention when necessary (American Academy of Pediatrics et. al. [AAP], 2006; Glascoe, 2000). Additionally, typical child development experiences, such as waking in the night, crying, exploratory behavior, or toilet training, may trigger an episode of child maltreatment (Flaherty, Stirling, & The Committee on Child Abuse and Neglect, 2010). Azar and Weinzierl (2005) have discussed the way in which unrealistic parental understanding of developmentally appropriate behaviors may put the child at risk for maltreatment.

Risk factors including environmental, genetic, biological, social and demographic factors may impact development and increase a child's risk for developmental delays

(AAP, 2006). Milestones reflect multiple aspects of child development: language and communication, motor skills, cognitive processing, and social/emotional skills.

Foundations of language are established between 38 and 40 months, however, sufficient evidence of acquisition is evident prior to 36-months and permits screening early on (Walker, Gugenheim, Downs, & Northern, 1989). A late onset of language is frequently the precipitating factor for parents seeing a pediatrician. Pomerleau, Scuccimarri, and Malcuit (2003) indicated that mothers at high risk, especially teen parents, typically wane in providing developmental stimulation as their children age, specifically after the first six months of life. Specifically, the researchers found that as the children aged, mothers vocalized less and were not as responsive to their child's needs.

The brain, the most immature of organs at birth, continues to grow and develop in the first years of life (Hawley, 2000). Maturation processes of the brain through interactions with other people and objects have been found to be essential for the growing and developing brain, similar to vitamins and other nutrients (Fox, Levitt, & Nelson, 2010; Hawley, 2000). Thus, good and bad experiences cause the brain to develop in different ways. The brain is genetically programmed to produce more synapses than are ultimately utilized, and over time prunes synapses that are not utilized (Hawley, 2000). Proper stimulation and interactions in early childhood are therefore essential to maintaining synapses and promoting optimal development, especially during the early years of life. Parents who are struggling to provide proper nutrition and a safe environment for their children, may not have the resources or knowledge base to provide the stimulation to foster this optimal brain development in their children (Hawley, 2000).

Fortunately, early intervention has been indicated as an effective strategy in preventing long-term consequences.

Early identification of developmental delays should lead to early intervention, that is a strategy to maximize development so as to minimize delays (Majnemer, 1998). Estimates in the literature indicate early intervention yields an effect size of nearly one-half to three-quarters of a standard deviation (Sonnander, 2000). The earlier a delay is identified, and thus intervention begins, the greater the likelihood a disability is prevented, or minimized, and the lesser the impact on the overall functionality of the child and family (Committee on Children with Disabilities [CCWD], 2001a; Geeraert, Van den Noortgate, Grietens, & Onghena, 2004; Williams, Mughal, & Blair, 2008). Commonly targeted groups for early identification are individuals at an increased environmental or biological risk and individuals with established developmental disabilities (Majnemer, 1998; Sonnander, 2000). Mild developmental delays may be seen by age two (Glascoe, 2005). However, despite the efficacy of early detection, it is estimated that in the global West, fewer than 30% of children with developmental and behavioral problems are identified prior to the child entering school (Williams, Mughal, & Blair, 2008).

Services provided through early identification target children from birth to three years (Geeraert, Van den Noortgate, Grietens, & Onghena, 2004; Majnemer, 1998) and have the overarching goal of providing children with disabilities with the ability to achieve their full potential (CCWD, 2001a). In 1975, the first major federal legislation, The Education of the Handicapped Law, was passed that established the right of children aged 5-18 to receive free, appropriate education, however, this was optional for children



ages 3-5. This was amended in 1986 to support the development of early intervention programs for infants and children with disabilities or developmental delays (CCWD, 2001b). Amended again in 1997 and 2004, now known as the Individuals with Disabilities Education Act (IDEA), required the development and implementation of community-based systems of coordinated, family-centered, and culturally-competent care. This required early identification and provision of services to infants and toddlers (CCWD, 2001b). In 2001, the AAP called for all infants and young children to be screened for developmental delays regularly (Sand, Silverstein, Glascoe, Gupta, Tonniges, & O'Connor, 2005), and in 2006, screening intervals were specified for 9-, 18-, and 30- month well-care visits. However, because 30-months is not consistently recognized by most third-party payers at this time, screening is often performed at 24-months of age (AAP, 2006). Healthy People 2020 objectives emphasize the importance of early identification of developmental delays, such as autism, and providing effective intervention (DHHS, 2010a ; Pinto-Martin, Dunkle, Earls, Fliedner, & Landes, 2005). This work over time has answered the concerns of many families and children with developmental disabilities who previously had few choices when it came to services and care, which all too often came in the form of institutionalization. Services are now also provided for children with irreversible deficits (Majnemer, 1998).

Developmental surveillance may be seen as a continual process during which a health professional performs skilled observations of the child during the provision of routine health care visits (CCWD, 2001a). Pediatricians are often involved in early identification because it is usually only in their office that most children under age five are routinely seen (CCWD, 2001b). The process of developmental surveillance consists

of soliciting and attending to parental concerns, taking a developmental history, observing in the clinical setting, and referral when necessary (AAP, 2006). Silverstein, Sand, Glascoe, Gupta, Tonniges, and O'Connor (2006) found among a sample of pediatricians that 64% believe it was important to have a confirmed diagnosis before referring to early intervention services. It is the position of the AAP that it is the role of the pediatrician to coordinate early intervention programs and services for children who have special needs (Silverstein, Sand, Glascoe, Gupta, Tonniges, & O'Connor, 2006). Thus, educating parents on when to seek extra care or medical opinions concerning their child's development is just as important as continuing to educate pediatricians about new surveillance and detection methodologies.

Developmental surveillance is not a means of diagnosis, as the foundational levels of prevention inherently suggest, but rather is a tool to identify children who should be more extensively evaluated (Committee on Children With Disabilities [CCWD], 1994). Continued surveillance is also essential as risk factors may change or develop over time and research has indicated an inconsistent use of screening mechanisms by pediatricians (Glascoe, 2005; Pinto-Martin, Dunkle, Earls, Fliedner, & Landes, 2005). The emphasis placed on parental concerns has been controversial, and while they should not be the sole screening tool, research indicated that parental observations and concerns of language, fine motor, cognitive and emotional-behavior development are highly predictive of a subsequently diagnosed delay (CCWD, 2001a). Pediatricians are utilizing an evidence-based approach to surveillance that may not otherwise be possible in the clinical setting when soliciting parental concerns (Glascoe, 2000). While parental concerns have been found to be just as accurate as expensive screening tests, varying levels of parental

literacy and who is most likely to take the child to these appointments must be taken into consideration. However, the lack of parental concern does not confirm the absence of a developmental delay (AAP, 2006). To take advantage of this indicator, parents must be educated and provided with the tools to detect and assess developmental milestones, and must be enabled to discuss these with their pediatrician.

Pediatricians may pay particular attention to a parent's monitoring of language, as it provides the cue to pediatricians to investigate other developmental deficiencies (Luinge, Post, Wit, & Goorhuis-Brouwer, 2006). Buschmann, Jooss, Rupp, Dockter, Blaschikowitz, Heggen and Piez (2008) indicated that a language delay at two-years to be a marker for developmental problems. A child's use and command of language may be challenging to observe in a clinical setting, compared to motor skills for instance, because often the young child's language is highly contextual and an unfamiliar environment may not provide the concepts with which they are familiar and may typically discuss. Buschmann et. al. (2008) noted it is most often the pursuit of medical diagnosis is precipitated by parental concern regarding a late onset of language use in children diagnosed with autism. Pediatricians therefore must rely to a degree on the parents observations and concerns during well-child visits.

Similar to definitions of child maltreatment, developmental disabilities and developmental delays are also challenging to define. The lack of a clear definition and inconsistent usage makes the provision of services for those in most need equally difficult. A developmental delay identifies a condition that prohibits a child from developing or achieving skills during an expected time frame (AAP, 2006). Scholars use the terms developmental disability or developmental disorder to refer to all significant

deviance in child development that results in substantial limitations in functioning in major life activities, including: speech, hearing and visual impairments; intellectual disabilities; learning disabilities; emotional disturbances; physical or health impairments; or any combination of impairments (AAP, 2006; Sonnander, 2000). The categorization of a long list of conditions in this broad manner is apt to leave some individuals marginalized and others misclassified, ultimately resulting in services not necessarily being appropriately allocated. Complexities in definitions aside, the AAP posited in 2005 that between 12-15% of the general pediatric population had developmental difficulties (Sand, Silverstein, Glascoe, Gupta, Tonniges, & O'Connor, 2005).

Early detection is not without challenges. Despite the recognition of its importance, screening tools are still lacking in sensitivity and predictive validity (Sonnander, 2000). Efforts to increase awareness in screening have been successful. The percentage of 0-24 month-old children screened increased from 15.3% in 2000 to 75% in 2004 (Pinto-Martin, Dunkle, Earls, Flidner, & Landes, 2005). Hix-Small, Marks, Squires, and Nickel (2007) noted that when pediatricians were provided with a screening tool at the 12 and 24- month well-child visits, referral rates to developmental specialists for further screening increased by 224%. These findings indicate pediatricians can play a major role in prevention when provided with proper tools, and while over-referral may not be ideal, it is likely better than letting those who do need help slip through the cracks.

The success of early intervention is also indicated in the school outcomes of those children identified early as having a developmental disability. Intervention prior to starting kindergarten has substantial academic, social, and economic implications; for instance, a \$30,000 to \$100,000 long-term cost reduction per child (Pinto-Martin,

Dunkle, Earls, Fliedner, & Landes, 2005). If screening is successful and results are remarkable, it remains important to educate parents, solicit their concerns, and develop efficient and effective interventions.

In light of the increased prevalence of developmental disabilities CDC developed the *Learn the Signs. Act Early.* (LTSAE) campaign and launched it nationally in 2004 employing social media as the main dissemination tactic. The LTSAE campaign provides parents with developmental milestones from birth through age five, activities to encourage development, and indicators of when to speak to the child's pediatrician. The materials are presented in a highly textual format averaging at a 10<sup>th</sup> grade reading level, this was analyzed using the Flesch-Kincaid Grade Level readability function of Microsoft Word. The multi-stage, audience-centered campaign was targeted for parents, healthcare educators, and early childhood educators (Daniel, Prue, Taylor, Thomas, & Scales, 2009). However, the primary target is parents of children under four-years-old. This coincides with two factors: children under age four are at the highest risk for child maltreatment and that developmental disabilities, such as Autism Spectrum Disorder, are able to be diagnosed under age three (Corsello, 2005).

Those parents who are likely at risk for child maltreatment are also most likely to have low health literacy skills. Thus, providing materials at too high of a reading level is not beneficial. This relates to the predictors of those who may commonly be child maltreatment perpetrators, specifically, parents with low education levels. To make the materials more accessible for those at high risk, the reading level was systematically lowered, again utilizing the Flesch-Kincaid Grade Level readability function of Microsoft word. Health literacy is a discrete form of literacy, but requires much more than reading

and writing; it instead requires a person to apply reading and numeracy skills in a health care setting (Kickbusch, 2001; Mika, Kelly, Price Franquiz, & Villarreal, 2005). Health literacy can be broadly understood as an individual's ability to comprehend, process, and evaluate health information and materials (Nutbeam, 2000 & 2008). Those with low levels of health literacy rely upon oral explanations, visual cues, and demonstrations (Baker, Parker, Williams, Pickin, Parikh, Coates & Imara, 1996).

The most common strategies used by pediatricians for parents with low health literacy are using simple language, repetition of key information, and limiting materials presented each visit (Turner, Cull, Bayldon, Klass, Sanders, Frinter, Abrams, & Dreyer, 2009). Health educators also have utilized a 'teach-back' strategy to confirm understanding (Parker, 2000). These strategies are valuable, but in the case of eliciting parental concerns of their child's development, it may be important to provide accessible materials as reference.

Health literacy is a significant public health issue. Low literacy levels of parents in the U.S. could have a negative impact on their children's development. Providing parents with materials that they can comprehend, process, and act upon is crucial.

Given the prevalent rates of health illiteracy and what is known about its association with child development and maltreatment, designing an accessible curriculum of developmental milestones becomes essential. Feldman (2004) has demonstrated the efficacy of instructional materials which utilize pictorial checklists among mothers with an intellectual disability. In light of this finding, it is logical that the introduction of pictorial representations of developmental milestones would be beneficial to parents at risk for child maltreatment. For the purpose of discussing developmental milestones,

representational pictures, meaning those that have a close physical resemblance to the concept the picture is conveying, would seem to be the most beneficial to the aim of this study (Alesandrini, 1984). Dwyer (1978) indicated line drawings, a more abstract, highly detailed version of representational pictures that rely on realism in visualization were the most effective and helpful to adult learners (as cited in Alesandrini, 1984).

The purpose of the present research is to combine what we know regarding the prevalence of child maltreatment and its long-lasting effects, specifically regarding optimal child development, into an accessible format that teaches parents to monitor, recognize, and discuss developmental delays as is necessary. This enhancement of the SafeCare curriculum combines evidence in the literature indicating the effect of child maltreatment on development, the validity of parental concerns regarding development, and the need for accessible materials. A succinct and simple version of developmental milestones inserted into extant PCI coincides with the overarching goal of the prevention of child maltreatment and SafeCare's agenda. Additionally, a succinct enhancement is supported by a meta-analysis on successful components of parenting programs (Kaminski, Valle, Filene, & Boyle, 2008) indicating that adding too many services in an intervention may decrease or inhibit overall effect size of the intervention. Further, the present research sought to evaluate the materials describing developmental milestones and age appropriate behavior provided to parents, a limitation in the existing literature. Thus, the research question addressed by the current research is: *“Can a combination of line-art drawings and discussion increase a mother's identification of developmental milestones?”* Multiple-probe, single-case research design across two mothers was used to

assess the efficacy of a tool created to enhance parental recognition of developmental milestones.



## METHOD

### Participants

Participants were recruited with the help and guidance of the Georgia *Parents as Teachers* (PAT) state leader. The PAT program strives to provide information, support, and encouragement to parents to provide their children the chance to optimally develop and thrive during the early years. Mothers who met the following eligibility criteria were recruited: consented to participation, had a child between 19 and 30-months-old so that by the final follow-up session, the child would be at a minimum of 2-years old, or would not have yet reached the next step of developmental milestones (36 months), and had an interest in enhancing parent-child interactions.

The PAT state leader provided the researcher (hereafter referred to as Home Visitor) with the contact information for parent educators at affiliate organizations. The state leader had presented these parent educators with basic information regarding the research and the eligibility criteria of the participants initially. The Home Visitor (HV) contacted the parent educators and subsequently met with interested parent-child dyads. Families A and B were recruited from the Families First program, which aims to guarantee the success of children by empowering families. Participants for this study were recruited from a residential component of this program in which rent-free housing is provided to mothers between the ages of 13 to 26 with children under pre-school age. In this residence, the mothers attend parenting classes and complete their education with the goal of becoming self-sufficient.

The House Coordinator for the Families First program initiated recruitment in screening the program participants using the eligibility criteria and introducing the study

in a cursory manner to eligible participants. The House Coordinator then invited the HV to attend a weekly parenting meeting at which the HV was introduced to the eligible and interested families. In individual meetings, the HV introduced herself, the program, and briefly reviewed what being a participant in the study would entail for participants. They were provided a copy of the informed consent to review before the date of their first individual sessions. At the start of the first session, the HV reviewed the informed consent with the participant and the forms were signed. The participants and House Coordinator were each given a copy of the signed Informed Consent forms for their records. For participation, the mother's received \$10 at the end of each session and \$30 at the end of the second follow-up, thus the total was \$100 for the entire study.

Family A, a 20-year-old mother and her 25-month-old daughter, had lived at the facility since the child was 7-months-old. The mother graduated from the foster care system during the course of this research, was enrolled in college classes, and was in the interview process for a security position. She was presently unemployed and earning an annual income under \$10,000. The mother was a part of the foster care system due to a history of violence in her family of origin and a personal history in the criminal justice system.

Family B, a 17-year-old mother and a 29-month-old daughter, were new to the facility at the beginning of the research. The mother had found the Families First program through Internet searches as a means of avoiding a turbulent home environment and the foster care system. The mother disclosed that since the untimely death of her mother in the previous year, she and her daughter had moved between the homes of family members and family friends, including living in California for several months. Prior to

moving into the residence, the mother was living in California while her daughter was in Georgia with a family friend. The day they moved into the facility was the first time they had seen each other in two months. The mother was studying to pass the GED examination during the research with aspirations of studying nursing or audio engineering in college. In addition to studying, the mother worked part-time as an administrative support and teachers' aide in the daycare that her daughter attended.

### **Setting**

All training and observations for the purpose of this research were conducted at the participants' residences at the facility. Families A and B resided in the Families First program residential support program located in close proximity to Atlanta. This multiple occupancy residence, rent-free home is secured behind a limited access gate in a low-income, predominantly African-American neighborhood according to the 2000 US Census Bureau (U.S. Census Bureau, 2000). The facility is located a short distance from a major highway between a daycare facility attended by many of the residents' children and a single occupancy family home. The residence may house as many as eight mothers at a time, each with up to two children who range in age from infancy to pre-school. Many of the women reside in the home as a result of being in the foster care system. Other women may find the services on their own. Due to the structure of the program and the limited number of rooms, families might have to wait several months, if not longer, for a room to become available. Participants rotate out of the facility frequently and suddenly. The average duration of stay varies by participant, but each resident begins with a 30-day probation period during which she must comply with the rules in order to gain privileges, such as visitors or vacation passes. This environment is rigidly structured

and teaches participants life and parenting skills with the goal of economic sustainability and independence.

Visitors are permitted with notice, but are confined to the public area of the facility, which includes the offices of the House Supervisor and Caseworker, a conference room, a restroom and a living room. Visitors are asked to sign-in when they arrive. They must disclose to which agency they belong, with whom they are visiting, and the duration of the visit. The mothers are able to come and go from the facility as they please, but they must note their destination in a binder next to the front door.

The residence is supervised by a staff of three: a caseworker who lives in full-time, the House Manager, and House Supervisor who enforce structure and educate parents. Each family is assigned a private room with an attached full bathroom, furnished with a twin bed, a toddler bed (and/or a crib), a desk, and one dresser. Residents are permitted to bring in a TV and pay for cable and Internet if they desire. All residents share several common areas including the kitchen, a workout room, laundry room, and a living room with computer access. All residents have dinner together each evening that is prepared by the mothers on a rotating basis. Families also rotate days to do laundry and are encouraged to keep their rooms clean.

Sessions for Family A were conducted in the facility conference room or the caseworkers' office if she was elsewhere in the facility. The conference room served as an analog to the natural environment. As SafeCare is typically delivered in the home environment to facilitate maximum generalization, the HV attempted to mimic this environment by encouraging role-playing of routine daily activities, such as bath time or bedtime, with the mothers. Props, such as clothing or bath toys, were also utilized. The

HV met Family B in the conference room initially, but after seeking approval from the house staff, the Family B mother invited the HV to conduct sessions 3-6 in her room. The presentation of the materials in this natural environment was regarded as highly beneficial for this young family, which is why the house staff agreed to allow the HV into the more private area of the facility. The house staff expressed less concern about the parenting skills of Mother A, as she had been in the program for nearly two years. They were eager to expand her knowledge of developmental milestones, but felt it best to honor her privacy by asking the HV to conduct her sessions outside of her room.

### **Materials Development**

The tDevelop was created as an adaptation of the SafeCare curriculum. It is based closely on the *Learn the Signs. Act Early.* campaign from the Centers for Disease Control and Prevention, which separates milestones into four categories: social/emotional, language/communication, cognitive, and movement/physical development. It was designed as a parent aide to integrate developmental milestones and corresponding developmentally appropriate activities more robustly into the SafeCare curriculum. Prior to the development of this aide, SafeCare materials presented participants with developmental milestones and age-appropriate activities separately. Minor modifications to the wording of the milestones were made for low literacy parents and included line-art scenarios depicting each milestone. SafeCare materials utilized for this study are adaptations to the SafeCare curriculum and may inform future revisions.

### **Materials**

Mothers received standard PCI materials including the tCards, an explanation of skills reviewed with the HV, and reviewed the DAC (Daily Activities Checklist) to

identify challenging daily behaviors for the parent-child dyad. In addition, the mothers were presented with the tDevelop that the HV added to throughout the course of intervention. All materials (tDevelop and standard PCI materials) were presented to the mother on color coded card stock. The tDevelop consisted of a series of 8.5" x 5.5" cards, with milestones segmented into the four categories delineated in the *Learn the Signs. Act Early.* campaign (Appendix 2).

The materials reflected an average of an 8<sup>th</sup> grade reading level or lower. The front side of each card contained a verbal description of two to three developmental milestones, such as "Gets excited with other children," and a line art scenario depicting each developmental milestone. On the backside of each page were activities that support corresponding development through interaction between child and parent. Additionally, the cards provided guidance and recommendations for missed developmental milestones. The tDevelop was designed so that the HV could give the mother the cards one at a time, so as to control the number of materials and information given to the mother. Each session the HV added more cards to the tDevelop ring until the parent had all 27 milestones specific to two-years-old. The order of cards presented to the mothers was randomized and the amount of cards presented to each mother during a given session varied due to individual learning levels (Table 1).

### **Consumer Evaluation and Demographic Survey**

At the conclusion of the sixth session, each Family was given the consumer satisfaction evaluation and the demographic survey. The HV asked the Mother to fill out the surveys for two purposes: she was told the anonymous demographic survey was useful in discussing the relevance of the findings to the general population and that the

Consumer Satisfaction Survey was used to evaluate the program and the HV so that improvements and modifications could be made.

The consumer evaluation was presented to the mother on two 8.5" X 11" sheet of paper. Statements regarding the mother's responses about the ease of use of the materials, whether it helped in decision-making, and if the materials prompted them to have a conversation with her child's physician were evaluated using a Likert scale ranging from Strongly Agrees to Strongly Disagrees. The mother was also given the opportunity to comment on her favorite and least favorite aspects of her training with the PCI module. The demographic survey (results in Table 2) was also presented on a 8.5" X 11" sheet of white paper. The mother was asked to provide information regarding her age, race, education, employment, and annual income. Additionally, the mother had to indicate if she Strongly Agrees, Agrees, Disagrees, or Strongly Disagrees with statements regarding her comfort with child development prior to intervention.

The mothers were asked to complete both surveys while the HV engaged their child in play activities. Once completed, the mothers were instructed to put each survey in a separate sealed envelope. To maintain confidentiality, the consumer satisfaction survey had no identifying markers, however, a reference code was written on the demographic survey so as to match the information to the appropriate participant. The HV completed intervention sessions with both mothers before opening the completed surveys.

### **Observation System**

**Data Collection.** Data were collected using the tDevelop Score Sheet (Appendix 1). The tDevelop Score Sheet recorded the mothers' responses to prompts for child

behaviors that corresponded to a given milestone. Each score sheet consisted of 10 randomly selected milestones per session. The milestones were assigned an alphabetic identifier, which were then printed on paper and cut out as individual strips. The identifiers were then randomly drawn out of a hat by the HV prior to the recruitment of the participants. The HV drew out 10 slips of paper at a time, recorded the identifier, then replaced the strips into the hat and shook up the contents to shuffle its contents. Thus, the families were likely to have the same prompts repeated any number of times during the course of all the sessions. The HV recorded the mothers' response verbatim on the score sheet as well as any gestures or movements that accompanied their responses. For each response reflecting an example of a child behavior that corresponded to the milestone prompt, a check () was placed in the score box on the tDevelop Scoring Sheet. Answers that did not provide an example of a child behavior corresponding to the milestone prompt were recorded with an X (). The mothers were given the assessment at the beginning of each session so that she was assessed on the information received during the preceding training session.

Data were collected under two conditions using the tDevelop Score Sheet. During condition A, the HV prompted the mother to provide an example of a child behavior that corresponded to a milestone prior to any intervention and without any reference materials. The mother had to provide any example that demonstrated the specified milestone to be scored with a (). If the mother was unable to provide any example or if the child behavior did not respond to the given prompt, an () was recorded. For example, if the milestone read: "Says sentences with 2 to 4 words," the mother needed to supply an answer such as, "More milk!" for a correct score to be recorded. An incorrect



answer might have been “I’d like to go to the zoo tomorrow and wear my new dress” or “mmmmm milk” or “I don’t know.”

During condition B, the mother responded to the prompt after having received training with the tDevelop. During this condition, the mother responded to the same prompt from the HV but was able to consult the tDevelop that was received and reviewed with the HV during a prior session. When prompted by the HV, the mother had to provide a novel behavior, meaning one different from that was depicted in the line art scenarios, in order to receive a correct score. If the milestone read: “Says sentences with 2 to 4 words,” and the line art scenario depict a child saying “More milk!” the mother had to supply a different response indicating a novel concept such as “Let’s go!” for a (☑) to be recorded. If an example extremely similar to that depicted in the line drawing is supplied, such as “More Water!”, an (☒) was recorded.

### **Parent Child-Interaction Module Training**

Prior to beginning the study, the HV completed standard SafeCare Parent-Child Interaction (PCI) module training. A National SafeCare Training and Research Center (NSTRC) Training Specialist provided the training in a small group setting. The session consisted of a five-hour session utilizing didactic presentations by the trainer, the viewing of sample video SafeCare PCI sessions, modeling of skills by the trainer, role-play exercises, and positive and corrective feedback from the trainer. The HV was provided with a binder of PCI resources, copies of PowerPoint slides, and worksheets. At the conclusion of the training session, the HV was certified based on the successful ( $\geq 85\%$  correct) completion of a training assessment.

While there was no predictable risk to participating mothers in the presented research, the HV was sensitive to potential parental frustrations with regard to information overload and elevated text or language. During PCI training, the HV was provided with the problem-solving worksheet, which would have been utilized to work through any concerns or frustrations impeding the SafeCare sessions.

### **Reliability**

A graduate research assistant at the Center for Healthy Development at Georgia State University (GSU) served as the reliability observer. The reliability observer repeatedly reviewed the goal of the presented research and materials with the trained HV. Using a bank of sample responses to the probes, provided in advance by a selective sample of students, staff, and faculty at GSU, the reliability observer scored the tDevelop Scoring Sheet with the HV to create operational definitions and guidelines that were used as a guide during reliability. The bank of sample responses was created through face-to-face meetings whereby the HV probed the interviewee with the same probes to be asked of the mother. This served also as practice for the HV in probing the mothers in a clear and meaningful manner. The HV and reliability observer practiced scoring the sample answers with the tDevelop Score Sheet prior to implementing the tool with families at the Center for Healthy Development. The HV and the reliability observer independently scored the tDevelop Score Sheet with either a correct () or an incorrect () response and then compared the results creating operational definitions and guidelines where discrepancies occurred. The estimated duration of training and practice was between three and five hours. The HV and reliability observer practiced scoring until reliability

agreement consistently reached a minimum of 80%. Reliability was calculated by the following equation:

$$\frac{\textit{Agreements}}{\textit{Agreements} + \textit{Disagreements}} * 100$$

Reliability observations were conducted a minimum of 25% of each condition (baseline and intervention) for each mother. The HV provided the unscored completed tDevelop Score Sheet electronically to the reliability observer without a score so as to ensure an unbiased reliability score. Gestures and all verbal responses were recorded on the Score Sheet. The reliability observer independently scored the responses and electronically returned the completed form. The HV then calculated reliability from the two sets of completed score sheets.

### **Experimental Procedure**

**Design.** A multiple probe design across mothers was employed to evaluate the effects of the tDevelop intervention. Data were collected with the mothers until stability or descending trends were evident at which point intervention began. Once the intervention began and was seen to be effective in Mother A, the HV introduced the intervention to Mother B.

**Dependent variables.** Mothers were prompted by the HV to provide examples of behaviors corresponding to developmental milestones for the referent child during baseline and training conditions. Intervention implementation, the introduction of the tDevelop, taught the mothers developmental milestones using line art scenarios to facilitate comprehension and generalization. The HV prompted mothers the same way in each condition: “One milestone for a two- year old is \_\_\_\_\_. Can you give me an

example of a two-year old \_\_\_\_\_?” For example, “One milestone for a 2-year-old is copying others. Can you give me an example of a two-year old copying others?”

### **Experimental Conditions**

The present study was embedded within the standard implementation of PCI. The goal was to enhance the mother’s ability to detect milestones, detect delays, and to be alert to developmentally appropriate activities from her child while encouraging monitoring of her child’s development, knowing to contact the child’s physician when necessary.

In order to contextualize the milestones, the HV integrated the milestone discussion into the core planned activities training of PCI. First, the mother would read the milestone with the HV, pointing out important components of the accompanying line-art scenario, for instance, noting the smile and arms raised for the “Gets excited when with other children” milestone. The HV then selected the related activity on the opposite side of the tDevelop card and asked the mother to walk through the PAT steps as applicable to the specified milestone. The HV encouraged the mothers to talk through the set up of an activity including presenting rules and consequences to their child. The HV and mother practiced these steps with at least two activities per session. The mother was asked to select several activities at the end of each session to practice the PAT steps as homework between sessions. Milestones were discussed in a random order. The purpose for this randomization was to strengthen internal validity of the study (Kratochwill & Levin, 2010).

**Baseline.** The mother's existing knowledge regarding behaviors that depict developmental milestones was assessed during baseline. During baseline, the mother was provided no instruction, materials or feedback from the HV.

**Training.** Once data revealed stable or descending trends, the intervention was first introduced with Mother A. Her scores indicated it appropriate to intervene in Mother B. The Mothers were presented with a few tDevelop cards and the HV reviewed the critical components of the milestone with the mother. The HV shared possible ways of considering the milestone, emphasizing what elements were important following the example provided in the line art scenario. The Mother was then asked to pick corresponding activities to practice for homework. At the beginning of each training session, the HV prompted the mother for responses to the 10 pre-selected milestones. The HV assessed the responses quickly in situ and would make sure to emphasize a specific way of thinking if necessary while introducing the subsequent round of milestones.

**Follow-up.** One-month postintervention the HV returned to the residential facility to assess the mothers' retention of 24-month developmental milestones. The mothers were permitted to refer to the tDevelop cards if they wanted to do so.

## RESULTS

Figure 1 shows effects of the tDevelop intervention. There was a considerable improvement after introduction of the discussion and the tDevelop cards. The mother was permitted to refer to the cards she had previously received during subsequent assessments. Assessment questions were randomly pre-selected as were the tDevelop cards the mother received at each session. This meant that the mothers may or may not have had the tDevelop card specifically addressed in the assessment at her disposal even though she was allowed to refer to her cards at any time.

Each mother received a total of six sessions and one follow-up with a second follow-scheduled in the months to come. Overall, the mothers performed well with the PCI module, although mastery criterion was not consistently met.

### Baseline

Outcomes for both mothers during baseline sessions were below the identified mastery criterion level of 8 correct responses. Mother A's data indicated a decreasing trend from an initial 6 correct answers to 5 correct answers in the second session. Mother B's data remained stable at 3 correct answers during her first two sessions.

### Training

Intervention began in Mother A at the conclusion of the session 2 given the descending trend of the baseline data. She was given several tDevelop cards to review and practice corresponding activities until she saw the HV again. Upon receiving training, which included a subset of tDevelop cards and discussion with the HV, data measuring the immediate effect of intervention indicated an increase to 9 correct answers. This demonstration of a favorable impact of intervention signaled the appropriateness in

intervening in Mother B. The staggered introduction of intervention is characteristic of the multiple-probe experimental design. As with the Mother A, Mother B's data during the session following intervention increased (10 out of 10 correct). In the next session, Mother A's scores increased to a 10 as well. The level of 100% mastery was sustained through the remaining intervention sessions for both mothers. tDevelop cards were left with the mother to review and practice corresponding age-appropriate activities from for homework at the conclusion of every session. The duration of sessions for each mother is presented in Table 5. The proportion of time spent on the tDevelop enhancement was not recorded given the integrated instructional strategy. However, the duration was not longer than average PCI sessions.

### **Follow-Up**

At one-month post-intervention, Mother A showed a high level of retention, although not receiving a perfect score (instead she identified 9 correct out of 10). Mother B also demonstrated a high level of retention, however she too did not receive a perfect score (also identified 9 correct).

### **Reliability**

Reliability sessions were conducted in three of the six sessions with each family. The reliability scores for each family are shown in Table 3. Two reliability sessions occurred for each family in baseline and once during intervention. Reliability observation means for the two families were 90% and 93.3%, respectively. Given the high level of reliability during intervention, reliability was not conducted during follow-up sessions.

### **Consumer Satisfaction Results**

The Mothers completed the consumer satisfaction survey during their sixth session with the HV (Table 4). Overall, the mothers' responses showed a general satisfaction both with the HV and the SafeCare program including the tDevelop.

Both mothers indicated they had learned new or useful skills and that they believed the training and materials would be useful to other parents. When asked about providing age-appropriate activities to their children following the PCI training, both mothers 'strongly agreed' that they had more ideas and felt comfortable in engaging in the activities. Both were positive in their response to the question asking if doing these activities had become easier, one indicated 'strongly agree' and the other indicated 'agree.' In response to the question asking about the usefulness of the practice component of sessions both mothers indicated 'agree.'

Both mothers agreed that the pictures on the tDevelop were clear, however, they disagreed on whether they actually made it easier to understand the milestones. One mother indicated 'neutral' for this question and the other indicated 'strongly agree.' In response to the question regarding the mother's use of the tDevelop to follow their child's development, one mother indicated 'strongly agree' and the other marked 'agree'. There was also discrepancy in responses to the question regarding the use of the cards to decide to speak to the child's pediatrician; one mother indicated 'neutral' and the other 'agree'.



## DISCUSSION

The introduction of the tDevelop and discussion to the SafeCare PCI module yielded significant results in increasing a mother's identification of developmental milestones for her two-year-old child. The multiple probe design demonstrated that it was the intervention that caused the improvement in identification rather than extraneous outlying factors. This confirms the hypothesis that a combination of line-art scenarios and oral instruction supports a mother's identification of developmental milestones. Overall, the findings of this research confirm that mothers are able to identify developmental milestones and generalize milestones to their own child's behaviors once trained. This finding has the potential to inform modifications to the SafeCare curriculum and future research endeavors.

Baseline data showed that each mother had a limited ability to translate a standard milestone to her own child's development. Mother A scored moderately well during baseline (six and five correct answers) indicating some familiarity with the material. However, as her correct answers did not reach mastery and in fact decreased during baseline, it may be supposed that she had not retained what she had previously learned or it was haphazard that she scored as she did given the random assortment of questions. Similarly, Mother B's low scores may be an indication of familiarity, but not to the level of retention or may indicate the effect of random selection. Upon introduction of the tDevelop tool, a marked increase in correctly identified developmental behaviors indicates that when provided proper training, mothers can be successful in this task. Quickly, both mothers surpassed the mastery criterion and sustained throughout the session. The follow-up data showed a slight decrease in correct responses, although

remaining above mastery criteria. Both mothers' correctly answered 9 out of 10 prompts which may be indicative of a loss of retention of the materials or another external factor since during intervention both mothers correctly answered all 10 prompts. It could be inferred that since their children had moved past the two-year-old milestones, it was harder for the parents to draw from their experience in answering.

While SafeCare had previously presented developmental milestones to parents, this research represents the first effort to systematically integrate milestones into the curriculum in conjunction with age appropriate activities and to measure the efficacy of the materials with which the milestones are presented. The data show that prior to intervention, the mothers lacked skills in identifying milestones (Figure 1). Upon introduction of the line-art scenarios and discussion with the HV utilizing the tDevelop tool, both mothers' data showed a rapid and effective acquisition of the concepts.

The tDevelop tool utilizes the findings of prior research in an effective manner. Turner et. al. (2009) revealed that pediatricians use simple language, repetition and the limiting of materials presented per session. These notions formed the basis of the instructional component of intervention. Similarly, Parker's (2000) finding that health educators 'teach-back' was a successful strategy was employed by the HV in having the mothers discuss the important aspects of the milestones. The success of the line drawings confirms the research of Dwyer (as cited in Alesandrini, 1984). The line drawings led to perfect scores in both participants.

The mothers were told that they were allowed to refer to the milestone cards as they needed during assessments, however, the HV observed Mother A do this only once during Session 4 and Mother B did not actively refer to her cards during assessment,

although they were in a visible location each time the HV was in the family's room. Despite the opportunity to refer to the cards, overall the mothers did not during assessments. This speaks to their level of comprehension with the material, but may also suggest that it was the discussion more so than the pictures that aided in retention. Additionally, the randomization of the milestones during each assessment supports this supposition.

The information conveyed through the consumer satisfaction survey by the participants indicated an affinity for the program, materials, and home visitor (see Table 4). The mothers were generally positive in their perception of the tDevelop material. However, one mother suggested the cards be 'updated'. Although she did not elaborate, her feedback is useful when considering making large-scale modifications to the SafeCare curriculum. The overall positive attitude toward the tDevelop is evident in its positive effect on assessment outcomes.

The findings of this study support the notion of utilizing parental concerns as a means of monitoring development. Parents, however, must be provided the opportunity to learn developmental milestones, recognize them in their children, and receive guidance on when to seek medical opinion. Additionally, these findings also indicate that particularly high-risk mothers succeed when provided individual support and modeling.

Given what is known about all the barriers high-risk parents face while raising their children, it could not have been predicted that these mothers would do so well. The young mothers who participated in this study perhaps are atypical given the structured, parent-centered environment in which they reside, however, the mother's age, education level, income, and marital status highly represent the typical SafeCare population.

Pomerleau, Scuccimarri, and Malcuit (2003) who found teen mothers in particular were less likely to engage with their child as they aged, yet the results of this study indicate that mothers can be taught milestones quickly, and thus may encourage comfort in executing age-appropriate activities and stimulating their child during all ages. The success of the tDevelop in this population bodes well for other mothers at varying degrees of risk.

The introduction of the tDevelop into standard PCI sessions did not prolong session duration beyond typical parameters (Table 5). Although the amount of time spent solely on instruction of developmental milestones was not independently recorded, the length of each session, as indicated by Table 5, did not exceed typical implementation session duration. To be a sustainable, effective intervention, the more concrete and succinct the material is, the better suited it is for dissemination (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005). With no substantial increase in the delivery time of these materials for the Home Visitor, the incorporation of these materials into SafeCare PCI implementation should be without much complication or added burden of work for the HV and families. The participants of the study met with the HV twice weekly, as their schedule would allow. This has two potential effects on the findings of this study: it indicates that mothers are able to succeed on acquisition of developmental knowledge with multiple sessions per week and also the frequency of visits with the HV may have an impact on the high level of success in assessments.

While the findings of this study are promising, several limitations deserve acknowledgement. Only two high-risk young mothers with low incomes and levels of education, limit the generalizability of these findings to other populations at risk for child

maltreatment and to middle-class parents who might benefit from this module. It would be beneficial to see how the materials are received and interpreted by a wider variation of participants. Additionally, the present research does not examine whether typical SafeCare Home Visitors can produce similar results. Although this research has indicated the ability of mothers, it did not assess whether or not these parents would follow-through with their child's with seeking medical consultation when a delay or missed milestone is detected. Thus, another limitation is evident in that this research did not assess whether the intervention translates into action by the parent. An additional limitation arises as the setting change of Mother B could be a possible confounding variable. Changing the setting from baseline and intervention sessions may have introduced or eliminated distractions and thus, the measurements cannot be adequately compared. By design, the present research sought to evaluate the effects of discussion supported by the tDevelop. It is thus a limitation in that is not possible to determine whether it was the discussion alone, the tDevelop aide alone, or the pairing of the two that had the positive effect on identification of developmental milestones.

The present research illuminates a few possible research endeavors for the future. It would be worthwhile to further explore the impact of interactive teaching and line-art scenarios independently. Research of this nature would have implications for curriculum revisions and thus, is important to explore before modifying the SafeCare curriculum as it is currently. Similarly, it would be beneficial to include a broader range of milestones to examine the validity of the materials with other ages. It would be worthwhile to build upon these results and within the larger violence prevention community, concerning the integration of technology into the prevention strategies. Self-Brown and Whitaker (2008)

observed that technology is particularly applicable in the identification of maltreatment instances, the delivery of prevention programs, and powerful in the dissemination and implementation of programs. Jabaley, Lutzker, Whitaker, and Self-Brown (2011) revealed the success of using iPhones in decreasing the number of face-to-face home safety sessions in the SafeCare curriculum. It would be of interest to translate the results of the tDevelop to an electronic format, such as an App, to streamline the presentation of the material to the parent and to expand the reach of the material when the Home Visitor is not present in the home.

In conclusion, despite the recognized limitations, the present research indicates that the integration of developmental milestones and age appropriate activities in the SafeCare curriculum is effective in increasing parental identification of developmental milestones. Moreover, this research indicates high-risk mothers can be taught to utilize the tDevelop tool in a concise manner. This may be beneficial in the long-term in preventing instances of child maltreatment, and aiding parents in making early decisions to seek intervention for a child for whom they determine may have a developmental delay.

**TABLES, FIGURES AND APPENDICES****Table 1. Introduced Milestones by Visit**

Visit	Mother A (number of cards)	Mother B (number of cards)
1	No milestones introduced (Baseline)	No milestones introduced (Baseline)
2	2	No milestones introduced (Baseline)
3	2	2
4	4	2
5	1	4
6	2	3

**Table 2. Demographic Description of Participants**

Family	Marital Status	Age of Child(ren)	Highest Level of Education	Employment Status	Average Annual Income
A	Single, Never Married	25 month (daughter)	Some College	Unemployed	Under \$10K
B	Single, Never Married	29 month (daughter)	Some High School	Part-Time Employment/ Looking	Under \$10K

**Table 3. Reliability Scores**

Family	Baseline	Training 1	Training 2	Mean
A	90%	80%	100%	90%
B	80%	100%	100%	93.3%

**Table 4. Parent Satisfaction Survey Results for All Families**

1. Interacting with my child has become much easier.				
Strongly Agree <b>1/2</b>	Agree <b>1/2</b>	Neutral	Disagree	Strongly Disagree
2. I have more ideas about activities I would like to do with my child.				
Strongly Agree <b>2/2</b>	Agree	Neutral	Disagree	Strongly Disagree
3. I think that monitoring my child's development is important.				
Strongly Agree <b>2/2</b>	Agree	Neutral	Disagree	Strongly Disagree
4. The pictures on the tDevelop were clear.				
Strongly Agree <b>2/2</b>	Agree	Neutral	Disagree	Strongly Disagree
5. The pictures on the tDevelop made it easier to understand the milestones.				
Strongly Agree <b>1/2</b>	Agree <b>1/2</b>	Neutral	Disagree	Strongly Disagree
6. I think that this training would be useful to other parents.				
Strongly Agree <b>1/2</b>	Agree <b>1/2</b>	Neutral	Disagree	Strongly Disagree
7. The Home Visitor was negative and critical.				
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree <b>2/2</b>
8. I do not feel the PCI training gave me new or useful information skills.				
Strongly Agree	Agree	Neutral	Disagree <b>1/2</b>	Strongly Disagree <b>1/2</b>
9. Practicing during the session helped me understand the milestones.				
Strongly Agree	Agree <b>2/2</b>	Neutral	Disagree	Strongly Disagree



10. The Home Visitor was on time to appointments.

Strongly Agree <b>2/2</b>	Agree	Neutral	Disagree	Strongly Disagree
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11. The written materials were useful.

Strongly Agree	Agree <b>2/2</b>	Neutral	Disagree	Strongly Disagree
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12. The Home Visitor was warm and friendly.

Strongly Agree <b>2/2</b>	Agree	Neutral	Disagree	Strongly Disagree
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13. The Home Visitor was good at explaining the material.

Strongly Agree <b>2/2</b>	Agree	Neutral	Disagree	Strongly Disagree
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14. I have used the cards to monitor my child's development.

Strongly Agree <b>1/2</b>	Agree <b>1/2</b>	Neutral	Disagree	Strongly Disagree
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15. I have used the cards to decide if I should speak to my child's doctor.

Strongly Agree	Agree <b>1/2</b>	Neutral <b>1/2</b>	Disagree	Strongly Disagree
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16. What did you like best about the program?

**"The cards and all the material offered"**

**"The [HV] attitude all the time (positive). Learning a couple of new things."**

17. What did you like least about the program?

**"Nothing"**

**"Kate having to leave. Nothing all good!"**

18. What do you think would make the program better or more useful?

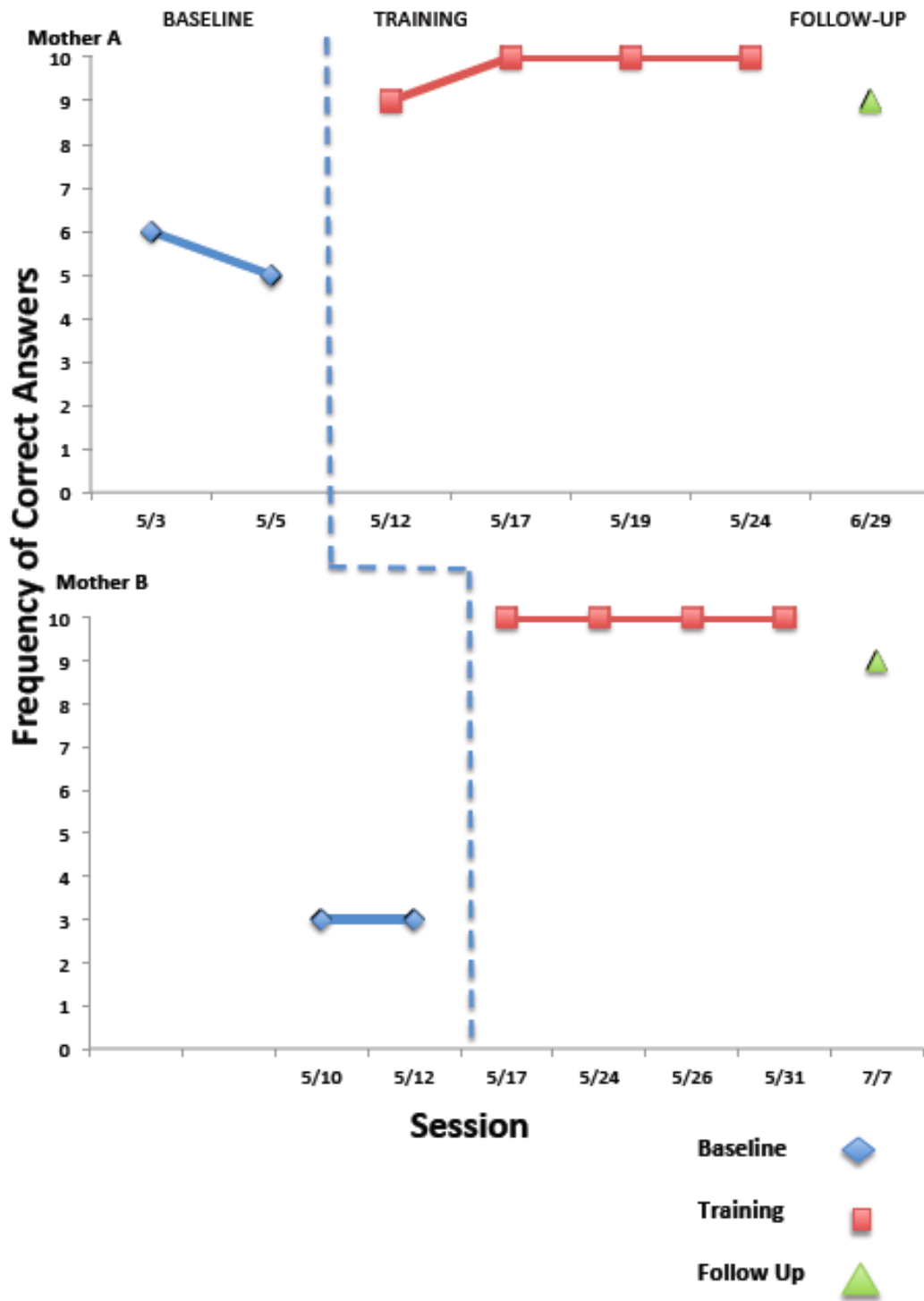
**"The program is fine"**

**"Up to date thing bring activities and cards up to date."**

**Table 5. Duration of Visit by Mother (hour)**

Visit	Mother A	Mother B
1	.75	.5
2	1.5	1
3	1	1
4	1	1
5	.5	1.5
6	.75	1

Figure 1. Results



**APPENDIX 1: tDevelop Scoring Sheet**



<b>Develop Scoring</b>		
Mom: _____	Milestone Age: _____	Date: _____
Home Visitor: _____	Timing: <input type="checkbox"/> Baseline <input type="checkbox"/> Training <input type="checkbox"/> Follow-up	
<b>1</b>	<b>Milestone:</b>	<b>Score</b>
	Verbal response:	
	Gesture:	
<b>2</b>	<b>Milestone:</b>	<b>Score</b>
	Verbal response:	
	Gesture:	
<b>3</b>	<b>Milestone:</b>	<b>Score</b>
	Verbal response:	
	Gesture:	
<b>4</b>	<b>Milestone:</b>	<b>Score</b>
	Verbal response:	
	Gesture:	
<b>5</b>	<b>Milestone:</b>	<b>Score</b>
	Verbal response:	
	Gesture:	

<b>6</b>	<b>Milestone:</b>	<b>Score</b>
	Verbal response:	
	Gesture:	
<b>7</b>	<b>Milestone:</b>	<b>Score</b>
	Verbal response:	
	Gesture:	
<b>8</b>	<b>Milestone:</b>	<b>Score</b>
	Verbal response:	
	Gesture:	
<b>9</b>	<b>Milestone:</b>	<b>Score</b>
	Verbal response:	
	Gesture:	
<b>10</b>	<b>Milestone:</b>	<b>Score</b>
	Verbal response:	
	Gesture:	
<b>Score</b>		

## APPENDIX 2: tDevelop Cards

# tDevelop

These cards will help you follow your toddler's development and give you ideas for activities to help your toddler grow and learn.

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*Graphic artist: Jean-Paul Mavinga  
mavinga.com*




Centers for Disease Control and Prevention  
www.cdc.gov/actearly  
1-800-CDC-INFO


24-3

## Social and Emotional Milestones


### 24-month-old Toddlers




**Laughs at unusual words for things, like calling an ear a belly button**



**Copies others, especially adults and older children**



**Gets excited when with other children**



**Act early!** Talk to your child's doctor if he doesn't copy actions and words *or* loses skills he once had.

24-4

## Social and Emotional Activities

### 24-month-old Toddlers

**Daily Family Routines:** Like adults, children do better when they know what to expect. Doing the same thing each day is an easy way to prevent challenging behaviors. Try doing these things at the same time each day:

- **Manners at Mealtime:** Use meals as a time to practice good manners. Practice “please” and “thank you” and using nice table manners. When your child tries, give praise. Teach your child to help bring dishes to the sink. Remember, always supervise meals.
- **Dressing Peek-a-boo:** Play peek-a-boo with clothing when dressing. Put the shirt over his head and say, “Where did you go?” As his head pops through say, “Oh! There you are!”
- **Bedtime Stories:** Ask your child to pick one book to read together before bed.
- **Bathtub Sing-a-long:** Sing bathtub songs together:

<i>Row, row, row your boat, Gently down the stream; Merrily, merrily, merrily, merrily, Life is but a dream.</i>	<i>This is the way we wash our feet, wash our feet, wash our feet, This is the way we wash our feet, So early in the morning.</i>	<i>Rubber Duckie, you're the one You make bath time lots of fun! Rubber Duckie, I'm awfully fond of you... Boop boop boopie doo.</i>
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## Social and Emotional Milestones

24-5

24-month-old Toddlers



Shows more and more independence



Does what he has been told not to



Starts to play with other children, like in play tea parties or chase games

## Social and Emotional Activities

24-6

24-month-old Toddlers


- **Copy Cat:** Move and ask your child to move that way, too. Try these things:
  - Bounce up and down
  - Clap your hands twice
  - Reach up to the ceiling
  - Spin in a circle
  - Roll on the floor
  - Tap a table
  - Stomp your foot
- **Play dates:** At this age, many children play next to (not with) each other and don't like to share. During play with other children
  - Give children lots of toys
  - Watch them closely so you can help if they fight
  - Praise behaviors you like
  - Give your child attention and praise when he follows instruction
  - Ignore minor misbehavior




24-7

## Language and Communication Milestones


24-month-old Toddlers




Says sentences with  
2 to 4 words



Points to things or pictures  
when they're named



Knows names of familiar  
people and body parts



**Act early!** Talk to your child's doctor if she does not follow simple instructions *or* use 2-word phrases *or* if she loses skills.

24-8

## Language and Communication Activities

24-month-old Toddlers

- **Add More Words:** Help your child to say words instead of pointing. Once your child uses words to ask for what he wants, help him add more. Say the sentence for him, "*Would you like more milk?*" or "*Say, I want milk, please.*" Do not correct your child when he says words incorrectly, just say it correctly.
- **What Happened Today?** Ask your child to tell someone else about what happened or what you saw. "*Tell Grandpa about the great big dog we saw.*" You can help her, but let her tell as much as she can.
- **Looking at pictures:** Look and talk about pictures in picture books, photographs, or child-friendly magazines. Ask questions, like "*Where is the...?*" "*What is this?*" "*Who is this?*" "*Point to the...*" Answer the questions yourself if your child cannot.
- **Naming Body Parts:** Face your child. Ask, "*Where is your nose?*" "*Where is mommy's nose?*" Do it again with other parts of the face or big parts of the body like the tummy and knee.

24-9

## Language and Communication Milestones

### 24-month-old Toddlers

Is understandable to others  
half the time

Follows simple instructions

Repeats words heard in conversations

24-10

## Language and Communication Activities


### 24-month-old Toddlers

- **Follow a simple direction:** Ask your child to do one thing using a positive voice, like "Please put the book in the basket." Always say "Thank you, you're such a big help!" when he follows through. Using polite words teaches your child to be polite.
- **Follow 2- or 3-step directions:** Once your child follows one direction, start giving your child directions with 2 or 3 steps. For example, "Go to your room and get your shoes and coat, please."
- **Puppet Play:** Put the sock on your hand and make the mouth of the puppet by moving your fingers to make the puppet talk. Your puppet might say silly things, like "What lovely green hair you have." or "Do cars drink milk?" Use the puppet to keep a fussy child happy when traveling. Use the puppet to sing songs and say nursery rhymes.
- **Say a Nursery Rhyme:** Say a nursery rhyme together:


<p><i>Jack and Jill went up a hill To fetch a pail of water Jack fell down and broke his crown And Jill came tumbling after</i></p>	<p><i>Humpty Dumpty sat on a wall Humpty Dumpty had a great fall All the king's horses and all the king's men Could not put Humpty together again</i></p>	<p><i>This little pig went to market This little pig stayed home This little pig had roast beef This little pig had none This little pig said Wee! Wee! All the way home.</i></p>
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## Thinking, and Problem-Solving Milestones 24-11


24-month-old Toddlers




Begins to sort shapes and colors



Points to one body part



Finds hidden things even under two or three covers



**Act early!** Talk to your child's doctor if he does not know what to do with common things like a brush, phone, or fork **or** point to body parts **or** loses skills.

## Learning, Thinking and Problem Solving Activities 24-12


24-month-old Toddlers

- ***Mirror Play:*** Look in a mirror with your toddler and make faces. Ask her to pucker her lips, puff out her cheeks, and touch her nose with her tongue. Look in the mirror together smile. Nod your head and say, "Yes." Shake your head and say, "No."
- ***Container Collection:*** Let your toddler have fun filling different containers and dumping them out. Talk about what things fit into different containers. Tell your child what you are doing with the toys, "I'm going to put all of the puzzle pieces into this tissue box." Sort things: all toy people in a shoe box and all toy animals in bowl.
- ***Stick on Stickers:*** Keep a sheet of stickers handy to entertain and teach your child when waiting for dinner or standing in line at the store. Place several stickers on your toddler and ask "Where is the sticker on your knee?" Find stickers that help you talk about colors, shapes, animals, food or letters.
- ***Hidden in the Laundry:*** While sorting the laundry, hide one of your toddler's favorite toys under a pile of clothes. Have her watch you do this then ask, "Where did it go?" See if your child can find it under the pile.


24-13

## Thinking and Problem-Solving Milestones


24-month-old-Toddlers



Plays simple pretend games



Might use one hand more than the other



Builds towers of 4 or more blocks

24-14

## Thinking and Problem Solving Activities


24-month-old Toddler

- ***Inside Fort:*** Put 4 chairs into 2 rows and cover with a sheet. Make sure the “doorways” are half covered. Show your child how to crawl into the fort. Inside you can read books, eat a picnic lunch, or snuggle up with pillows and a blanket. Leave the fort set up and give your toddler time to play.
- ***Stack Them Up:*** Using blocks, plastic Tupperware, cups, bowls, or anything not breakable, build towers with your toddler. Ask “*How high can we make the tower before it falls over?*” Take turns stacking a few and then knock them over. You can do simple counting practice, too! “*How many blocks do we have?*” or “*How many red blocks do we have here? One... Two... Three... Four...*”
- ***Make Believe:*** Fill a box with dolls, safe household things (like brushes and sponges), dress-up clothes, and toy telephones. Ask your toddler to “help you clean” or dress up whenever you are busy and cannot play together.

24-15


## Thinking, and Problem-Solving Milestones

24-month-old Toddlers



Names things in a picture book, like a cat, bird, or dog

PICK UP YOUR SHOES AND PUT THEM IN THE CLOSET



Follows two-step instructions, like "Pick up your shoes and put them in the closet."

24-16

## Thinking, Learning, and Problem-solving Activities

24-month-old Toddlers

- ***The Naming Game:*** Make a game out of naming shapes, colors, or animals in books you read or puzzles. Ask "What colors do you see on this page?" or "What shapes can you find?" See how many animals your toddler can find and ask, "What noise does the cow make? Moo!"
- ***Play-Dough:*** Let your toddler play with play-dough and talk about how it feels. Ask, "Is it sticky? Is it cold? Find patterns that can be pressed into the play-dough and things that can be poked into the play-dough, like cups or string.
- ***Finger Painting:*** Feel the texture of the paint with your fingers together. Talk about the colors or mix paints together to make new colors, "What happens when we mix blue paint with yellow paint. What color do we get?" Make hand prints, draw shapes or objects and guess what they are.
- ***Simon Says:*** Tell your toddler different things to do. Sometimes start with "Simon says." When you don't say "Simon says" tell your child should stay still. Trying not to move or doing something accidentally will be funny to your toddler. Try these:


*Simon says, Bark like a dog. [Child barks.] Wag your tail. [Child should stay still.] Simon says, Spin around three times. [Child spins.] Simon says, Make a funny face. [Child makes a face.]*




24-17

## Movement and Physical Development Milestones


24-month-old Toddlers




Kicks a ball



Stands on tiptoe



Begins to run



**Act early! Talk to your child's doctor if she does not walk steadily *or* loses skills she once had.**

24-18

## Movement and Physical Activities

24-month-old Toddlers


- **Kick-a-ball:** Kick a ball back and forth with your child. When your toddler can kick the ball, show him how to run and kick. Ask, "How far can you kick the ball?" Talk about things around you while you play: "Can you kick the ball to that tree?"
- **Ready, Set, Go!** Race together. Run, crawl, spin, or jump your way to the finish line. Use trees or bushes as the finish line.
- **Hide and Seek:** Tell your child you are going to hide. Say, "Let's count to ten. When we get to ten, come and find me." Take turns hiding.
- **Walking, Walking:** Do what the words of the song say: walk when you sing about walking, hop when sing about hopping.

*Walking, walking! Walking, walking!*  
*Hop, hop, hop! Hop, hop, hop!*  
*Running, running, running! Running, running, running!*  
*Now we stop! Now we stop!*


24-19

## Movement and Physical Development Milestones

24-month-old Toddlers



Climbs up and down furniture without help



Makes or copies straight lines

24-20

## Movement and Physical Activities

24-month-old Toddlers


- **Markers on Paper Towels:** Help your child make marks on paper towels with nontoxic markers. The lines will get wider and blurry. Talk about the different colors and how the lines change.
- **Obstacle Course:** Make a simple path using couch cushions, pillows, chairs and blankets. Change the path to make it more difficult when your toddler seems ready. Lead her through the path with different movements, like jumping off cushions, running around a pillow, rolling on a blanket, walking backwards, and standing on one foot. Talk about what you are doing. Let her lead you and talk about it, too!
- **The Hokey Pokey:** Sing Hokey Pokey while you stand next to your child and do the motions to the words of the song together. Don't worry if he doesn't do each movement perfectly.

*You put your left foot in, you put your left foot out,  
You put your left foot in, and you shake it all about!  
You do the Hokey Pokey, and you turn yourself around.  
That's what it's all about!*


24-21

## Movement and Physical Development Milestones

24-month-old Toddlers



Walks up and down stairs with help



Throws ball overhand

24-22

## Movement and Physical Activities

24-month-old Toddlers

- **Play Catch:** Play catch with your toddler. Have her stand a few feet away from you and throw the ball. Be ready to run after the ball because she will not have much control. Ask, “*How hard can you throw it?*” or “*How far can you throw it?*”
- **At the Park:** Let your toddler run around the park or playground and climb on equipment, like slides or stairs. Let him practice jumping, climbing, sliding, and swinging.
- **Let’s Swing!:** Take your child to the park and swing. Show your child how to pump her legs to make herself swing. Sing a song together while she swings.
- **Bozo Buckets:** Set up a few buckets in a line. Have your child stand at one end and throw things into buckets further and further away. Throw things that aren’t breakable and make a fun noise when they hit the bucket.



## 24-month-old Toddlers

24-23

### Books

- *Corduroy*, D. Freeman
- *The Snowy Day*, E. J. Keats
- *The Very Hungry Caterpillar*, E. Carle
- *Goodnight Moon*, M. W. Brown
- *Brown Bear, Brown Bear, What do you see?* B. Martin, Jr.
- *How Do I Love You?*, P. K. Hallinan
- *The Going-To-Bed Book*, S. Boynton
- *Spot Looks at Shapes*, E. Hill
- *Where The Wild Things Are*, M. Sendak
- *Baby Beluga*, Raffi
- *Spider on the Floor*, B. Russell
- *Best Word Book Ever*, R. Scarry

### Toys

- Play-dough
- Nontoxic crayons and markers
- Push and pull toys
- Riding toys
- Little cars
- Balls in different sizes
- Building blocks
- Shape sorter
- Pretend toys (play food, dolls, telephones, pots and pans, dress-up clothes, farm toys)
- Music CDs and CD player

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