



SASKATCHEWAN POPULATION HEALTH AND EVALUATION RESEARCH UNIT



# Getting Inside the Black Box: Using Theory to Plan and Evaluate *KidsFirst* in Saskatchewan, Canada



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**GETTING INSIDE THE BLACK BOX: USING THEORY TO INFORM THE  
EVALUATION OF *KIDSFIRST* IN SASKATCHEWAN, CANADA**

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by

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on behalf of the *KidsFirst* Research Team\*

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This report is one of three versions of a document focusing on the theoretical underpinnings of the Saskatchewan's intervention program in early childhood development, *KidsFirst*. This is the full report; an 11-page summary and one-page brief summary have also been produced. The three versions are tailored to reach different audiences: program managers, service providers, home visitors, program planners, policy makers, researchers and academics. While the four authors listed had a primary role in developing this paper, the final document is a much improved product of many people. They include staff of Early Childhood Development Unit, namely Gail Russell, Gary Shepherd, Wendy Moellenbeck, Robert Gates, and Murray Skulmoski. We also thank the Program Managers of the *KidsFirst* program sites for their invaluable comments and for their passion for wanting to make a difference in *KidsFirst* families' lives. We also extend our thanks to Penny McKinlay for her deft touch preparing the summary versions, and to Fleur Macqueen Smith for copyediting and creating the covers. Finally, we acknowledge with thanks the financial contribution of the Early Childhood Development Unit, Early Learning and Child Care Branch, Saskatchewan Ministry of Education for making this report possible, and the Canadian Population Health Initiative, (CPHI), part of the Canadian Institute for Health Information (CIHI) for their funding for the larger evaluation project of which this report is a part.

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# 1. Introduction

When the *KidsFirst* program<sup>a</sup> was launched in 2001, although it was modeled after other well-known programs of early childhood intervention, the role that various theories might have in the development, evaluation, and ongoing improvement of the program was not documented. With this paper, we identify a set of three theories, corresponding to the individual, family, and community improvements that the *KidsFirst* program is intended to effect. The theories we have chosen are those that are most consistent with the structure and content of the *KidsFirst* program to date. Explicitly identifying theories of relevance to *KidsFirst* is valuable because we expect that these theories will greatly assist us in our evaluation research. Taken together, these theories provide a systematic representation of the activities and components of *KidsFirst* and provide lenses through which we can assess and better understand the pathways through which *KidsFirst* operates to effect positive change in child and family development and health.

## 2. What is theory, and why is it useful for programs and evaluations?

*“Theory-based evaluation is demonstrating its capacity to help readers understand how and why a program works or fails to work. Knowing only outcomes, even if we know them with irreproachable validity, does not tell us enough to inform program improvement or policy revision. Evaluation needs to get inside the black box and to do so systematically.” (p.77)<sup>1</sup>*

Prior to beginning a discussion of specific theories relevant to the *KidsFirst* program, it is important to introduce and clarify what theory means in the context of this discussion.<sup>b</sup> We adapt the definition by Kerlinger in this paper, who states that theory is “a set of interrelated constructs (concepts), definitions, and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena” (p. 9).<sup>2</sup> We rely on this definition as it captures the characteristics of theory that many writers agree on, and these are: theories are explanatory tools that attempt to explain or represent reality, theories specify relationships between various constructs, and theories are generalizable across settings and populations.<sup>2-6</sup>

Theory has several important functions in program planning and evaluation. It is the lens through which we identify problems, and design and evaluate the solutions to these problems.<sup>7</sup> Theory can be used in all of the stages of population health programming, including planning,

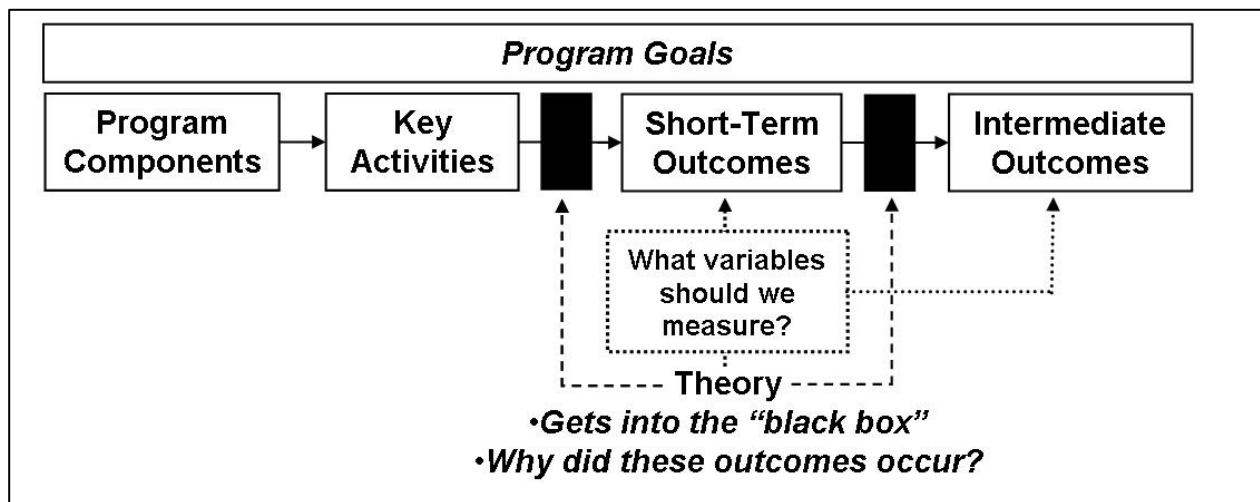
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<sup>a</sup> The *KidsFirst* program is an early childhood intervention program that was designed “to support vulnerable families in developing the capacity to care for and nurture their children.”[21, 22] The program adopts a capacity-building and community development approach to service delivery and is targeted to children living in communities with low-income and multiple risks. The *KidsFirst* program has several components, including case finding, home visiting, mental health and addictions services, and early learning and child care.

<sup>b</sup> For a glossary of terms used in this paper, see Appendix 1.

implementing, evaluating, and reformulating programs.<sup>6</sup> Because theory helps untangle the complexities of what we see in nature, it allows for a deeper understanding of a phenomenon so that interventions can be appropriately designed, targeted, evaluated and understood.<sup>4</sup> Theory also gives population health researchers and practitioners a common language that can be used to describe their work, which in turn promotes and facilitates dialogue and learning within and across disciplines and program areas.<sup>7</sup> Theory-informed program development contributes to the advancement of a shared knowledge base;<sup>3</sup> similarly, to the extent that program evaluations test theories, it allows lessons from various initiatives to be shared beyond a specific context and even time.

Perhaps the greatest advantage to using theory to inform program planning and evaluation is that it opens the “black box” that often exists between program goals, activities and outcomes. By “black box” we mean a process or mechanism that is often not understood, but is presumed to exist between goals and outcomes. Attention to theory sheds light on the processes through which the program may bring about intended changes (Figure 1). While it is possible to evaluate the impact of a program without using theory, evaluations that are informed by theory will not only determine whether or not a program was successful, but also reveal *why* it was or was not successful.<sup>6</sup> In other words, rather than just answering the question, “Did this happen?”, evaluations that are based on theory may go further and answer the additional and more useful question, “How and why did this happen?” In this way, theory-based evaluations may increase our confidence that given the right circumstances and factors coming together in an intervention, the outcome is repeatable. By moving beyond “Did this happen?” into an examination of processes of change, evaluations that draw on theory can generate more useful information for subsequent and ongoing program improvement.



**Figure 1.** The role of theory in revealing the change mechanisms of the *KidsFirst* program.

Note: This figure segment taken from the program logic model developed in consultation with the *KidsFirst* team and published in the *KidsFirst* program evaluation framework.<sup>23</sup>



We will now move from a general discussion of theory to a presentation of a set of three theories that are consistent with the structure, content, and values of the *KidsFirst* program to date.<sup>21</sup> Although theory has not yet been formally incorporated into the *KidsFirst* program, in light of the discussion above, we expect that theory can greatly assist us in our evaluation research and strengthen the ongoing improvement of the program. As we will discuss later, the theories that are introduced in this paper have been selected because they reflect the values, principles, and approaches of the *KidsFirst* program. The approach to service delivery employed by *KidsFirst* is one based on need for capacity-building and is grounded in community development principles. One of the core values held by the *KidsFirst* program is that each family served by the program possesses its own strengths and assets, and recognizing these assets and building on them is more likely to ultimately lead to sustained positive outcomes than is a focus on the family's deficits. As described elsewhere, the *KidsFirst* policy principles are: child-centredness, prevention orientation, comprehensive delivery of services, equity, empowerment, culturally affirming program delivery, accountability, co-operation, collaboration, and shared responsibility for achieving outcomes.<sup>22</sup> These principles have guided us in our selection of theories.

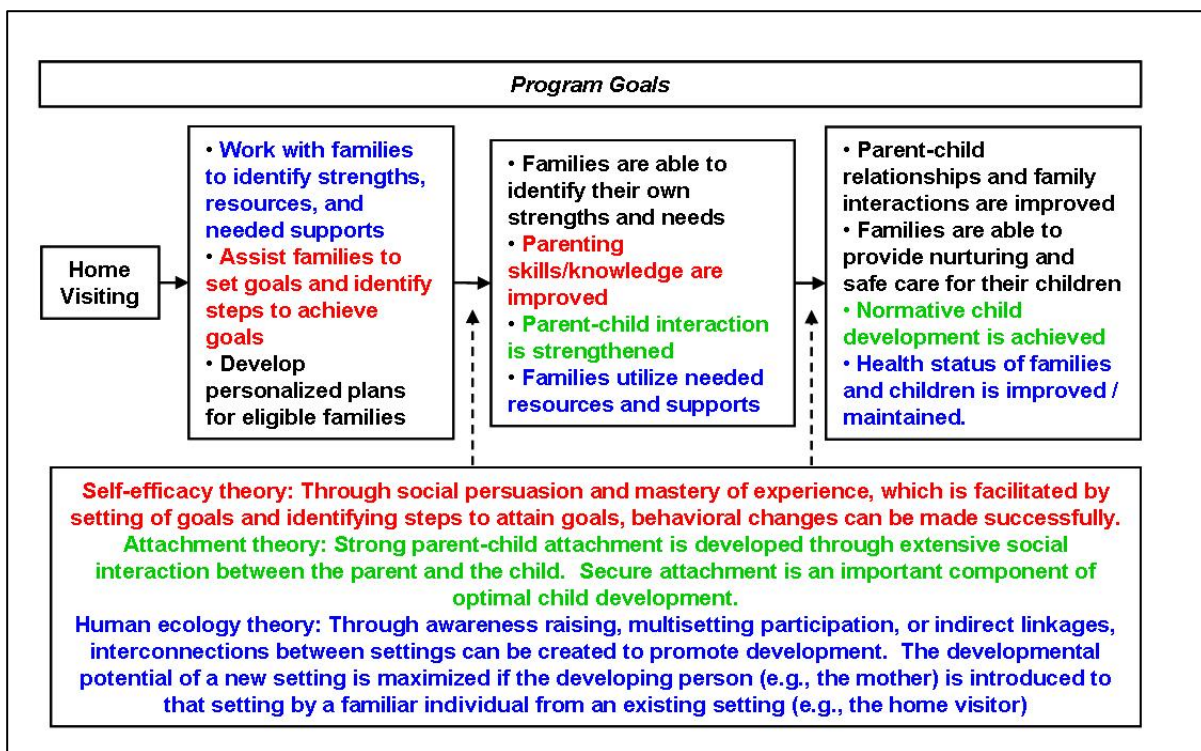
### 3. What theories are relevant to *KidsFirst*?

In this section, we introduce and explore three theories, each of which speaks to important aspects of the *KidsFirst* program. Although they do not explain everything within *KidsFirst*, the key constructs and relationships presented in these three theories provide a reasonably comprehensive picture of the structural relationships, as well as the processes and mechanisms of change that are believed to occur within children, families and communities served by *KidsFirst*. The theories we describe capture change at all three levels—child, family, and community relationships—which the *KidsFirst* program intentionally targets. Self-efficacy theory emphasizes processes and change that occur within the person (e.g., mother, father); attachment theory emphasizes processes between parents and children and the resulting changes; and human ecology theory emphasizes the multiple social levels at which change occurs and is influenced, and the dynamic and structural connections between the different levels.

How do the chosen theories relate specifically to the *KidsFirst* program? Van Ryn and Heaney<sup>6</sup> note that the “explicit goals of the program provide the marker for identifying classes of theories which may be applicable” (p.319). We note that the *KidsFirst* program is strength-based and uses community development and capacity building approaches to achieve its goals. The theories below have been selected because together they support these approaches and principles. For example, one of the principles of *KidsFirst* is that the program is culturally appropriate. Urie Bronfenbrenner's human ecology theory<sup>8</sup> stresses the importance of cultural considerations at the level of macrosystem and the crucial role that culture and macrosystem play in human development. Likewise, the capacity-building approach and principle of empowerment espoused by *KidsFirst* is well-represented by Albert Bandura's self-efficacy theory,<sup>9</sup> which provides a way of examining the sources and effects of people's beliefs in their own capabilities to conduct any number of tasks or to change behaviour. Finally, the *KidsFirst* goal that children living in very vulnerable circumstances be supported by healthy, well functioning families can be assessed

using the markers of attachment behaviour presented by John Bowlby’s attachment theory;<sup>10</sup> elements of attachment theory suggest ways to improve the parent-child bond which in turn provides life-long positive effects.

The key to incorporating theory into program evaluations is to ensure that the selected theories are useful for practitioners and that they are consistent with their everyday observations.<sup>3,5,6</sup> We kept this in mind when selecting theories to introduce to the *KidsFirst* program. Self-efficacy theory, attachment theory, and human ecology theory will all resonate with the experiences and observations of program staff. That these theories are very well-developed and accepted in the early childhood development literature is further justification for their use here. In the sections that follow, we will introduce each theory, its constructs, and key hypotheses, and then discuss the practical applications of the theory for the *KidsFirst* program.<sup>c</sup> However, before a detailed discussion of these theories, we return to the “black box” analogy used above. Figure 2 demonstrates how these theories may be used to describe what is occurring within the *KidsFirst* program, offering explanations for some observed outcomes and suggesting areas for the collection of additional information that can be used to test the explanations put forth by the theories.



**Figure 2.** Examples of the explanatory potential of three theories applied to the *KidsFirst* program. Each colour is a sample pathway for which a theory offers some insight that could be tested in a program evaluation. Note that the program component (home visiting) and the key activities, short-term outcomes, and intermediate outcomes listed are taken directly from the program logic model developed in consultation with the *KidsFirst* team and published in the *KidsFirst* program evaluation framework.<sup>23</sup>

<sup>c</sup> For published examples of how these theories have been applied in other early childhood development initiatives and evaluations, see Appendix 2.

### 3.1 Albert Bandura's Self-Efficacy Theory

#### What is the theory?

Bandura<sup>9</sup> has suggested that changes in behaviour can be explained by changes in self-efficacy, which is defined as “beliefs in one’s capabilities to organize and execute the courses of action required to manage prospective situations” (p.2).<sup>11</sup> In other words, self-efficacy is an individual’s self-assessed judgment of their own ability to do what is necessary in order to perform a task.

The essence of Bandura’s theory is that before a person carries out a new task, their self-efficacy, in terms of a specific belief in their ability to do what is necessary to accomplish it, must be strong. For example, in order for a mother to take her infant for immunizations, she must believe that she is able to carry out all the steps involved in accomplishing this task. Expectations people have of their ability to perform a task are not the only determinant of behaviour. However, if the necessary skills and appropriate incentives are in place, such efficacy expectations are hypothesized to be “a major determinant of people’s choice of activities, how much effort they will expend, and of how long they will sustain effort in dealing with stressful situations” (p.194).<sup>9</sup>

Bandura’s theory suggests that self-efficacy influences behaviour through specific cognitive, motivational, affective, and selection processes.<sup>9</sup> Self-efficacy influences behaviour through *cognitive processes* because many behaviours, including those that *KidsFirst* wants to influence, are purposive and require forethought and goal-setting prior to being carried out. Self-efficacy impacts these goal-setting pathways by limiting or expanding the number and variety of scenarios that individuals visualize that they might encounter, and within which they might carry out behaviour. In other words, self-efficacy influences predictions, which in turn influence behaviours.

*Motivational processes* that influence behaviour are similar to the cognitive processes mentioned above, in that they involve goals. However, motivational processes also involve the effort individuals will put into the achievement of goals, as well as perseverance in the face of obstacles. Self-efficacy is believed to influence both of these—effort and perseverance. Individuals with high self-efficacy perceive difficult situations as challenges to be mastered, while those with low self-efficacy see these same situations as threats that will set them back. For example, a mother sets the goal of bringing her child to the clinic for a check-up. She visualizes several intermediate steps such as booking an appointment, arranging transportation, finding the clinic, and so on, but, because of low self-efficacy, sees these steps as threats that are likely to set her back. When she faces an obstacle, like missing the bus, she lacks the motivation to continue trying to complete the task and abandons her original goal. With high self-efficacy, however, the mother perceives obstacles as challenges that she can master and will pursue her goal regardless of the obstacles that she faces. In this example, a mother with high self-efficacy who misses the bus may find another bus route, phone the clinic to say she’ll be late, or arrange for alternate transportation to the clinic. While in the first example the mother has yet to believe in her ability to complete the task successfully, and uses any presence of obstacles as proof of her inability to complete the task, in the second example the mother is confident and motivated to complete the task, in the process increasing her self-efficacy.

Self-efficacy may influence behaviour through *affective processes*, or emotions. Self-efficacy directly impacts levels of stress and depression through individuals' perceptions of various situations. It also affects coping behaviours and individuals' abilities to control stressors. Part of self-efficacy involves the belief in one's ability to manage threats and stressors effectively. If this belief is weak, an individual is likely to become increasingly stressed, fatigued, or depressed, which will reduce their ability to carry out the desired behaviour.

Finally, self-efficacy also affects behaviour and health through *selection processes*. Because self-efficacy determines (in part) the behaviours that individuals carry out, or hope to carry out, it affects the environments that we select and thereby impacts development over the life course. For example, individuals with low self-efficacy may avoid placing themselves in any situation other than in a low-skill, low-paying job because they don't believe in their ability to perform successfully in a higher-skill, higher-paying jobs. This decision, which may actually be the culmination of an ongoing series of smaller decisions, will impact their health and development subsequently over the life course in a significant way.

Self-efficacy theory provides guidance for programming and interventions; it suggests four sources of information which influence self-efficacy. These sources include: (1) personal experiences, (2) vicarious experiences, (3) social persuasion, and (4) physical states.<sup>9</sup> Personal experiences of success and mastery strengthen an individual's belief in their ability to manage situations. If a mother successfully feeds her child, for example, her self-efficacy in regards to that specific activity is improved. Conversely, previous experiences of failure can have negative effects on self-efficacy. Vicarious experiences are those involving individuals observing someone else doing a task or activity. These are believed to be particularly potent when the model is similar to the individual whose self-efficacy is being impacted. In addition, it is helpful when the model, in addition to simply carrying out the behaviour, also teaches and transmits appropriate and relevant (i.e., procedural) knowledge. Social, or verbal, persuasion occurs when those surrounding the individual verbalize their belief that the individual has the required skills and competencies to succeed. Finally, physical and emotional states influence self-efficacy. Individuals perceive adverse affective states, such as stress, fatigue, and negative mood, as indicators that they lack the ability to succeed. Self-efficacy can be impacted by changing the perceptions of these states and reducing their frequency. The impact of each of these sources of efficacy information is varied, although it is generally accepted that personal mastery experiences have the greatest impact on enhancing self-efficacy.

Self-efficacy theory applies to predictions about efficacy that go beyond a specific task (e.g., belief in one's capability to breastfeed). It predicts the transferability of self-efficacy expectations from one set of behaviours performed successfully to another. Individuals with high self-efficacy can expect this confidence to transfer to other sets of similar behaviours. Coleman and Karraker<sup>12</sup> identify four types of parenting self-efficacy: (1) task-specific (e.g., belief in one's capability to breastfeed), (2) domain-specific (e.g., belief in one's capabilities to carry out the specific tasks such as feeding, cuddling, cleaning, etc. that make up a domain such as parenting), (3) domain-general (e.g., belief in one's capabilities to perform within a domain such as parenting successfully), and (4) general self-efficacy (e.g., generalized belief in one's capabilities to perform all tasks). Ideally, through the various sources of self-efficacy enhancements introduced

above, helping individuals improve their self-efficacy on a number of specific tasks will eventually improve their general self-efficacy.

### **How is the theory relevant to *KidsFirst*?**

Although *KidsFirst* materials do not explicitly reference it, Bandura's self-efficacy theory appears to provide helpful explanatory links for several program components and outcomes, most notably between home visitor activities and changes in parent behaviour. Enhancing self-efficacy in itself also provide a good target for intervention activities (i.e., increasing parental self-efficacy) in the *KidsFirst* program.

Family assessments serve to evaluate the needs of the parent, child and other family members and to determine how specifically to address these needs. Ongoing assessments help the program managers to monitor families' progress towards achieving their intended goals as well as to identify any new needs that may occur. Family assessments therefore provide a reliable way to measure the needs of the parents and family, including psychosocial needs such as self-efficacy, and to monitor how these needs change over time in the program.

Self-efficacy theory may also be useful in determining which programs and services are the most appropriate for families based on their existing levels of self-efficacy. Parents with very low perceived capacities may require a different intervention than those with high perceived capacities. Bandura's sources of self-efficacy<sup>9</sup> may be drawn upon here, with personal experiences of mastery, vicarious experiences, and social persuasion all representing useful ways to boost both specific as well as general self-efficacy of participants in *KidsFirst*.

The program component that is the most closely associated with self-efficacy theory is the home visiting component. The key activities and short-term outcomes listed for the home visiting component in the program logic model provide an excellent example of the role of theory in informing the *KidsFirst* program and its evaluation. While both the activities and outcomes seem intuitively to flow from one another, self-efficacy theory provides an explicit link between the two, explaining how *KidsFirst* positively influences families. By knowing the information on the mechanisms of change, self-efficacy theory may provide targets for program improvement should certain areas of *KidsFirst*, such as home visiting, not work in expected ways. Figure 3 provides examples taken from the Program Logic Model of *KidsFirst*; it shows how self-efficacy may play a mediating role between selected key activities and short-term outcomes for the home visiting component of the *KidsFirst* program.

Key activities	→ Activities develop self-efficacy →	Short-term outcomes
<ul style="list-style-type: none"> <li>• Work with families to identify existing strengths, resources, and needed support.</li> <li>• Assist families to set goals and identify steps to achieve goals.</li> <li>• Develop personalized plans for eligible families.</li> <li>• Provide learning opportunities.</li> <li>• Model advocacy skills and advocate for families</li> </ul>	<ul style="list-style-type: none"> <li>• Verbal/social persuasion develops self-efficacy by indicating to families that they have the strengths and capabilities to conduct certain behaviours and tasks that may have been previously seen as threatening.</li> <li>• Situations are created through goal development and personalized plans wherein success is facilitated and failures, which can be harmful to self-efficacy especially in vulnerable families, are avoided.</li> <li>• Personalized plans encourage resilience, effort, and commitment and thereby strengthen self-efficacy by ensuring challenges are mastered.</li> <li>• Where the skills to conduct certain behaviours are not present, these are developed.</li> <li>• Modelling allows for self-efficacy to be developed through vicarious experiences.</li> </ul>	<ul style="list-style-type: none"> <li>• Families are able to identify their own strengths and needs.</li> <li>• Parents have better understanding of children’s growth and development.</li> <li>• Parenting skills/knowledge are strengthened.</li> <li>• Self-reliance of families is increased.</li> <li>• Families increase their confidence in engaging with service providers.</li> </ul>

**Figure 3.** The explanatory potential of self-efficacy theory between the key activities and outcomes of the *KidsFirst* program. Note that the program component (home visiting) and the key activities, short-term outcomes listed are taken directly from the program logic model developed in consultation with the *KidsFirst* team and published in the *KidsFirst* program evaluation framework.<sup>23</sup>

Of particular interest to the *KidsFirst* program is the role of vicarious experiences; they offer insight into the role of home visitors in the program. The home visiting component of *KidsFirst* emphasizes relationships. Self-efficacy theory suggests how to maximize the impact of home visitors as they model healthy parenting behaviours and support families through positive social persuasion. Also, the impact of home visitors can be maximized if program families can relate to the visitors, and if the visitors share their practical knowledge in addition to modelling the behaviour.

The *KidsFirst* evaluation framework sets out an evaluation objective to assess whether and to what extent parenting confidence and knowledge is higher in *KidsFirst* families than in comparison families. The evaluation proposes asking:

- Do parents show higher levels of parenting confidence and knowledge?
- In which areas has their confidence and knowledge improved?

- To what extent have they improved?

Self-efficacy theory is useful to incorporate into the evaluation addressing this area for two reasons. First, as noted above, the theory has the potential to direct evaluators and program staff to several valid and reliable evaluation tools that will produce useful data to assess if, how, and why *KidsFirst* is improving parental confidence and knowledge. These data also may add to the wider body of knowledge on early childhood interventions. Second, self-efficacy theory can add valuable depth to the evaluation by explaining the relationships between parental beliefs in their abilities, knowledge and behaviours.

### **3.2. John Bowlby's Attachment Theory**

#### **What is the theory?**

John Bowlby's theory of attachment has become so widespread throughout many disciplines that it is difficult to imagine how novel and controversial it was when it was first introduced in a series of volumes beginning in 1969.<sup>10</sup> Bowlby's intention was to put forward a theory that could explain the distressed behaviours shown by children when separated from their mothers.<sup>10</sup>

Although these behaviours had been observed and recorded, several questions remained for Bowlby, including, "Why is the child so distressed by the separation from its mother?" and "How do we understand the nature of the mother-child bond?"<sup>10</sup> Existing theories in the field of attachment postulated that separation behaviours arose because of needs and drives that the child needed to be fulfilled. Bowlby saw these as inadequate.

Noting significant gaps in other theories' ability to effectively explain empirical findings related to separation and attachment, Bowlby developed a new theory, one based on goals and behavioural systems. Bowlby's attachment theory suggests that a "child's tie to his mother is a product of the activity of a number of behavioural systems that have proximity to mother as a predictable outcome" (p.179).<sup>10</sup> The behavioural systems that result in proximity are referred to as attachment behaviours, and include signalling behaviours like crying, smiling, calling, gestures, and babbling and approaching behaviours like seeking, following, and clinging.<sup>10</sup> In general terms, attachment behaviours are those that initiate interaction with the attachment figure, those that respond to and maintain the attachment figure's own attachment initiatives, those that avoid separation, and those that are exploratory in nature, implying that the child is securely attached to the attachment figure and is comfortable using her as a secure base from which to explore unfamiliar places.<sup>10</sup>

The "secure base" construct is an important one in attachment theory because it represents a significant hallmark of attachment. When attachment is active and strong, the attachment figure is perceived to be a secure base for exploration and experimentation. Although researchers have conceptualized secure bases in different ways, Waters and Cummings<sup>13</sup> identify some common characteristics of forming a secure base. Characteristics of a secure base change and evolve over time, and include such attributes as sensitive and cooperative interactions, explicit instructions (e.g., "stay close to Mommy"), and the encouragement of independence.

Although all attachment behaviours share the same general goal, the behaviours are not interchangeable. Rather, each behaviour is unique because each will tend to elicit conditions that

are intended to bring about different behaviours from their target.<sup>10</sup> Crying, for example, will likely draw out a faster, more concerned response from the attachment figure than will smiling. There are several conditions that may activate attachment behaviour and influence its form and intensity. These include distance from the attachment figure, absence of the attachment figure, condition of the child (e.g., hungry, ill, cold, etc.), alarming or frightening events, rebuffs by other individuals, and the passage of time. Attachment behaviours, because of their common objective, are terminated by the sight, sound, or touch of the attachment figure, which are all signs to the child that his or her objective has been reached. Attachment behaviours, though present throughout life, are strongest in children up to two years of age, and are less easily activated in children older than three.

While the mother most frequently is the primary attachment figure, attachment behaviours are usually exhibited in varying intensities toward more than one attachment figure (for example, father, grandmother, child care worker). Multiple attachment figures does not translate into weaker attachment behaviours exhibited toward any one figure; rather, the theory suggests that the more attachment figures a child is associating with, the stronger that each of the bonds becomes.<sup>10</sup>

The child's close association or bond with the attachment figure is often the tell-tale sign of a successful attachment behaviour; another important feature is that the behaviour is discriminatory and highly individualized to a specific person. The infant is often able to discern the object of his or her attachment figure from strangers. Mother-child interaction, therefore, is different from other interactions that the child may have, for example with a favourite aunt whom the child encounters less often than his mother.

Bowlby's original work in 1969 presented a timeline for the onset of various observable attachment behaviours based on the understanding of early childhood development at the time, as follows:<sup>10</sup>

- From birth to approximately 8-12 weeks, the infant orients herself and makes signals to indiscriminate figures or objects. Perceptual discrimination, or the ability to differentiate an attachment figure from those who are strangers, is not yet evident. Because the behaviour is undifferentiated, behaviours in this phase are not considered to be attachment-related behaviours. As stated earlier, attachment behaviour by definition needs to have as its objective forming a bond, or establishing close proximity, with an attachment figure, and it needs to be discriminating.
- From approximately 12 weeks to six months of age, orientation and signalling become more marked and directed towards one or more specific attachment figures. During this phase, infants begin to act differently towards their mother and other caregivers than they do towards others. It is in this phase that the purposeful behaviours of attachment forming first sets in, and this phase includes a highly sensitive period from four to six months of age for attachment to develop.



- From approximately six months of age into the child's second or third year, indiscriminating responses wane and the child maintains proximity to a specific figure through locomotion and signalling behaviours. Because both differentiation and the maintenance of proximity are observable and present in this phase, the child is considered as exhibiting attachment behaviour.
- After the second or third year, more complex goal-corrected partnerships are formed between the child and one or more attachment figures. The child gains insight into his or her mother's activities, motives, and feelings, and acts accordingly.
- Attachment behaviour is strongly and regularly exhibited until the child's fourth birthday, at which point an increased confidence and security with unfamiliar places weakens attachment behaviours.
- Attachment exists in some form "from the cradle to the grave" (p.208).<sup>10</sup>

Although Bowlby sets out this timeline, he notes that there is significant individual variation, and even variation from minute-to-minute within individuals, in the intensity and consistency of attachment behaviours.<sup>10</sup> Some of the conditions that dictate the intensity of attachment behaviour are hunger, fatigue, illness, unhappiness, alarm, or the movement or absence of the attachment figure. A contented, well-rested infant will therefore exhibit less strong attachment behaviours than that same infant would an hour later when he or she is hungry.

Unlike other theories of mother-child interaction that are based purely on physiological needs and drives, Bowlby's theory gives infants an active role in attachment forming. By activating certain behavioural systems with the goal of establishing proximity, infants can maintain and shape the responses of others to their behaviours. At a very young age, infants lack the mobility and development to maintain proximity themselves. When the attachment figure is responsive to signals exhibited by the child for maintaining or establishing proximity, in essence the adult is carrying out the reciprocal to attachment behaviour, which is referred to as caretaking behaviour. As infants age, a gradual shift in responsibility occurs in that young children become increasingly responsible for maintaining the proximity between themselves and their attachment figures.<sup>10</sup>

The chief practical application of attachment theory is that it provides guidance for how to strengthen attachment between two individuals. Because attachment is not about physiological needs or drives, attachment theory suggests that the best way to strengthen the bond between an infant and an adult is by maximizing the social interaction between the two. Attachment behaviours are reinforced in one of two ways; first, by the attachment figure's readiness to respond to attachment behaviour, and second, by her willingness to initiate interaction on her own. Bowlby notes that "the mothers whose infants are most securely attached to them are mothers who respond to their babies' signals promptly and appropriately, and who engage in much social interchange with them—to the delight of each party" (p.316).<sup>10</sup>

## How is the theory relevant to *KidsFirst*?

The *KidsFirst* program supports the formation of attachment processes in families, with explicit program outcomes that identifies strengthening parent-child relationships and improving family interactions as program goals. *KidsFirst* home visiting in particular and the Growing Great Kids curriculum used to instruct and inform parents are clear examples of *KidsFirst* intentions to work with parents and their young children to form the necessary attachment beginning in the earliest time possible. Although these goals and program components are very closely related to attachment theory, the theory has not been made explicit in program planning to date.

Once again it is worthwhile to explore why it is important to make theory explicit. The utility of attachment theory for the *KidsFirst* program is that it explains the nature and origin of attachment behaviours and provides a guide for describing, assessing, and strengthening them. By making connections with attachment theory explicit, we gain a perspective on potential mechanisms by which positive health and development outcomes occur in a child, as well as possible means of maximizing these impacts.

One important contribution of the attachment theory in the *KidsFirst* program is to provide a guide for program developers, site staff, and evaluators to assess attachment behaviour at various stages in a child's life. As described previously, Bowlby's theory provides several phases of attachment associated with approximate ages. These may be useful for home visitors in assessing the current state of attachment between the child and his or her caregivers, and can provide site staff with indications of whether or not attachment is progressing as expected. These phases can also be useful guides in evaluations to explain the state of the parent-child interaction at the time of the evaluation and what can, or should, be expected in the future.

Attachment theory can also inform the *KidsFirst* program in terms of how to strengthen attachments between children and their parents. By encouraging parents to show a high readiness to respond to their children's social advances, and by encouraging parents to initiate interactions with their children themselves, home visitors can strengthen the attachment between parents and children.

From an evaluative standpoint, *KidsFirst* evaluators, who have expressed a desire to determine whether and to what extent parent-child interaction is better in *KidsFirst* families than in non-*KidsFirst* families, can use the theory to evaluate areas such as the degree of social interaction between mothers and children. When these data are collected, the theory can allow the researchers to better understand why attachment is stronger in *KidsFirst* families and, if it is not stronger, how it can be improved. As with other theories that are incorporated into the evaluation, attachment theory has the potential to explain and explore the mechanisms of change that are operating between program activities and program outcomes.

The concept of a secure base in attachment theory can be used by *KidsFirst* in the crucial home visiting program component as well. Home visitors can encourage, support, and model the formation of a secure base from which *KidsFirst* parents and caregivers can explore and experiment with new resources and support systems. Complementing the modelling role that home visitors can take based on self-efficacy theory described earlier, home visitors can be a

strong, supportive, and safe resource for caregivers in the *KidsFirst* program. The concept of a secure base, therefore, becomes both a benchmark for program staff to strive for as well as a variable for the evaluation to consider.

In the *KidsFirst* evaluation framework, several questions are proposed to examine whether or not parent-child interactions are of a higher quality in *KidsFirst* families when compared to families in comparison groups. These questions are:

- Is the quality of parent-child interactions better among *KidsFirst* families?
- In what ways is it better?
- To what extent is it better?

Attachment theory provides insight into all of these questions by providing evaluation targets, information on the nature and origin of attachment behaviours, and benchmarks of strong attachments. In addition to informing these evaluation questions, attachment theory can strengthen the evaluation of the program by revealing further information to address the following valuable questions:

- How is the *KidsFirst* program improving parent-child interactions?
- How can parent-child interactions be improved further?
- Why are parent-child interactions different between *KidsFirst* families?

By explicitly incorporating attachment theory into the evaluation, therefore, valuable insight can be gained with which to further improve the program. Attachment theory can take the evaluation from describing whether or not the program is working to a practical discussion of why the program is or is not working and how the program can be improved.

### **3.3. Urie Bronfenbrenner's Ecology of Human Development (Human Ecology) Theory**

#### **What is the theory?**

When it was developed by Urie Bronfenbrenner in 1979, the ecology of human development (human ecology) theory<sup>8</sup> represented both a critique and a major shift in the focus and methodology of child development research in psychology. While existing work in developmental psychology focused on understanding an issue or phenomenon by studying the individual characteristics of children, Bronfenbrenner and other ecological researchers stressed instead the importance of the environment and context surrounding the developing child, creating a theory of “development-in-context”.

In Bronfenbrenner's own words, “the ecology of human development involves the scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by relations between these settings, and by larger contexts in which the settings are embedded”(p.21).<sup>8</sup> In essence, the theory states that human development is largely

influenced by the various social settings and contexts that surround the developing person as well as the relationships and connections between these settings. The theory relates more to broad structures than to specific processes, and its value is therefore in directing programs and evaluations to look vertically and consider development in contexts.

The ecological settings that human ecology theory directs us to look at exist at multiple levels—from the individual to society at large. In order to optimize the developmental potential of the settings and interconnections, all of these levels need to be thoroughly examined. There are four levels, or systems, that Bronfenbrenner<sup>8</sup> introduces in his theory: microsystem, mesosystem, exosystem, and macrosystem (Figure 4). Bronfenbrenner presents several propositions and hypotheses that can be used to enhance the developmental potential of the systems, but in general, the quality of the systems and their potential to promote healthy development are functions of the connections between them. Social environments are more habitable and more conducive to child development when there are strong links between them.<sup>8</sup>

<b>Construct</b>	<b>Definition</b>	<b>Example from <i>KidsFirst</i> program</b>
Microsystem	“A pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics”(p.22) <sup>8</sup>	<ul style="list-style-type: none"> <li>• “Mother” role</li> <li>• Breastfeeding initiation and maintenance</li> </ul>
Mesosystem	“The interrelations among two or more settings in which the developing person actively participates (such as, for a child, the relations among home, school, and neighborhood peer group; for an adult, among family, work, and social life”(p.25) <sup>8</sup>	<ul style="list-style-type: none"> <li>• Relationships between home environment and childcare environment (outside the home)</li> </ul>
Exosystem	“One or more settings that do not involve the developing person as an active participant, but in which events occur that affect, or are affected by, what happens in the setting containing the developing person”(p.25) <sup>8</sup>	<ul style="list-style-type: none"> <li>• Parents’ workplace</li> <li>• Home visitors’ office</li> </ul>
Macrosystem	“Consistencies, in the form and content of lower-order systems (micro-, meso-, and exo-) that exist, or could exist, at the level of the subculture or the culture as a whole, along with any belief systems or ideology underlying such consistencies”(p.26) <sup>8</sup>	<ul style="list-style-type: none"> <li>• Community characteristics</li> </ul>

**Figure 4.** Systems in human ecology theory

The theory of human ecology also provides some explanatory insight into how the interconnections between and within settings, or how the functioning of each system, can be optimized for developmental purposes. A number of these propositions are valuable for *KidsFirst* and are therefore introduced below.

Human ecology theory specifies the characteristics of dyads (in the microsystems, for example, between a home visitor and parent) and inter-setting relationships (in the mesosystem and exosystem, for example, between child's home and parents' workplace) that enhance development. Programs can strive to enhance these inter-setting relationships and program evaluations can look for and assess the degree of these interrelationships. The three characteristics that influence the developmental potential of interpersonal relationships, in a given setting, are reciprocity, balance of power, and positive affect.<sup>8</sup> Optimal dyads for development (i.e., "developmental dyads") involve reciprocity, positive affect, and a gradual shift in power to the developing person. Optimal characteristics for inter-setting relationships, for example between child's home and the parents' workplace, are very similar and include mutual trust and common goals, balance of power, positive affect, bi-directional communication, and the ongoing provision of information for both settings.<sup>8</sup>

Within dyads, and other more complex relationships, human ecology theory proposes that every individual in the relationship is affected by the development of the other people involved. This idea, referred to as reciprocal development,<sup>8</sup> suggests that in the case of a dyad if one member of a relationship undergoes some sort of developmental change, then the other member will also likely undergo a developmental change. This concept is important not only when identifying recipients of programs, but also when assessing the impact of programs, as individuals other than the intervention target may have been affected.

Similar to reciprocal development within a dyad is the phenomenon of the influences of third parties on a dyad, referred to by Bronfenbrenner as second order effects.<sup>8</sup> Second order effects can disrupt or enhance dyads depending on the characteristics of reciprocity, affect, and balance of power, and should also be considered in programming and evaluation. Examining second order effects involves a careful consideration of individuals who are not involved in the home setting but may nonetheless impact the development of the child and their family, such as parents' employers, the home visitors, etc.

Human ecology theory presents a number of propositions relating to the optimal developmental potential of the mesosystem and exosystem. For example, settings in a mesosystem are expected to have the highest development potential if the developing person's initial transition into the new setting is made in the company of individuals who have a strong pre-existing relationship in a familiar setting with the developing person.<sup>8</sup> An example applicable to the *KidsFirst* program is a mother accompanying her child to a child care setting; because the mother and child have a strong relation in the home setting (a mesosystem setting) and the child care setting is a new one for the child (an exosystem setting). In this example, the mother is beginning to create supportive, supplementary links with the new setting that will boost the development potential of the new setting for the child.

The best type of supportive link is formed when a member of a primary dyad with a developing person (e.g., a mother) creates primary dyads with new members in new settings (e.g., a mother having a positive and strong relationship with a teacher). Human ecology theory suggests that child development can be enhanced when settings such as home and school or home and peer group are linked by multiple individuals who create several supportive links for the developing

child between the settings. Linkages between settings may include participation in both settings, linkage through an intermediary (e.g., the home visitor), inter-setting communications, or inter-setting knowledge and familiarity.

The fourth system in human ecology theory is the macrosystem, which refers to ideologies, cultural norms, and policies that lead to a number of key consistencies in the form and content of the lower systems.<sup>8</sup> The inclusion of the macrosystem in human ecology theory points to the importance for programs and evaluations to examine the broad, often implicit, assumptions within which the other systems, and within which human development, takes place. Public policy, for example, is part of the macrosystem and is a major influence in early childhood development. Programs and evaluations guided by theory should acknowledge, investigate, and analyze public policies in a given place and time to ensure that they are conducive to child development.<sup>8</sup>

It is important to note that incorporating human ecology theory into a program or into evaluation is a challenging but worthy task. The theory requires a very broad exploration of a phenomenon and therefore requires the acknowledgement and inclusion of a wide range of constructs, some of which are difficult to observe and measure. Bronfenbrenner notes that incorporating an ecological approach to inquiry, including program evaluations, “considerably extends the realm of responsibility incumbent on investigators of human behavior and development”(p.97).<sup>8</sup>

### **How is the theory relevant to *KidsFirst*?**

The goal of incorporating theory into the *KidsFirst* program at this stage is both to inform the evaluation of the program, and to aid in interpreting the results of the evaluation, eventually influencing the ongoing improvement of the program. It is therefore important to clearly articulate the potential relevance of human ecology theory to the *KidsFirst* program. Below, we discuss the role of human ecology as a theory of social structure to guide evaluation work. This approach enables one to look vertically (child, parent, family, schools, child care settings, social policies, ideologies) as well as to discuss some of the mechanisms of change suggested by the theory. It enables us to reveal whether or not optimal conditions for development exist within and between settings for a child that the *KidsFirst* program wishes to impact.

Human ecology theory relates well to several aspects of *KidsFirst*. For example, the language of “supporting” children used in the vision and goals of *KidsFirst* implies an awareness that development is occurring within different contexts and settings, and that in order for healthy child development to occur, the environments and settings that surround the child, such as their family and child care settings, must be oriented toward the child. Human ecology theory also relates well to *KidsFirst* because the program emphasizes the development of supportive partnerships and interactions between various groups located in various settings that influence children.

Human ecology theory can be used in the *KidsFirst* program evaluation to identify who should be consulted or included in the evaluation. Because the theory explores child development as it

occurs within a larger social context, several stakeholders, even though they may seem peripheral to the development of the child, should be included in the evaluation. The impact of *KidsFirst* likely extends beyond the child's home environment and *KidsFirst* program evaluation may benefit from input provided by individuals in these external settings.

A key feature of human ecology theory is the emphasis on interconnections between settings. As discussed earlier, human ecology theory makes note of the optimal conditions for inter-personal and inter-setting relationships (reciprocity, balance of power, and positive affect) and these conditions can be assessed in the *KidsFirst* evaluation in order to explain the mechanisms through which the program may impact child development. Interconnections between settings are not an abstract idea or a hypothetical occurrence. Rather, we can see practical examples such as a parent who is present in the home setting and is also a member of the parent council at their child's school (inter-setting participation by parent); a health care professional phoning the home of a developing child (cross-setting communication); or simply an individual in one setting being aware of the issues and influences existing in another setting.<sup>8</sup>

For the developing child, the most important settings in the mesosystem are home, school, and the peer groups. Dyadic relationships that are important in *KidsFirst* include the relationships between the home visitor and the mother, the home visitor and the father, the mother and father, the mother and child, etc. Human ecology theory suggests that in order to effectively assess the functioning of the *KidsFirst* program, program evaluation should assess the degree to which these various dyads and inter-setting connections exhibit reciprocity, a balance of power, and positive affect.

### 3.4. Summary

The set of theories described above provide lenses through which to examine and evaluate the *KidsFirst* program. Figure 5 (below) attempts to visually represent the role that these theories may take in *KidsFirst*. Theory may direct us towards where to look in an evaluation (i.e., in what settings) and may also point us towards what to look for (i.e. what processes of change are mediating the generation of program outcomes from the key activities). In this way, the set of theories described, one each pertaining to the individual, family, and community levels at which *KidsFirst* aims to effect change, may guide and amplify the ongoing evaluation and conduct of the program.

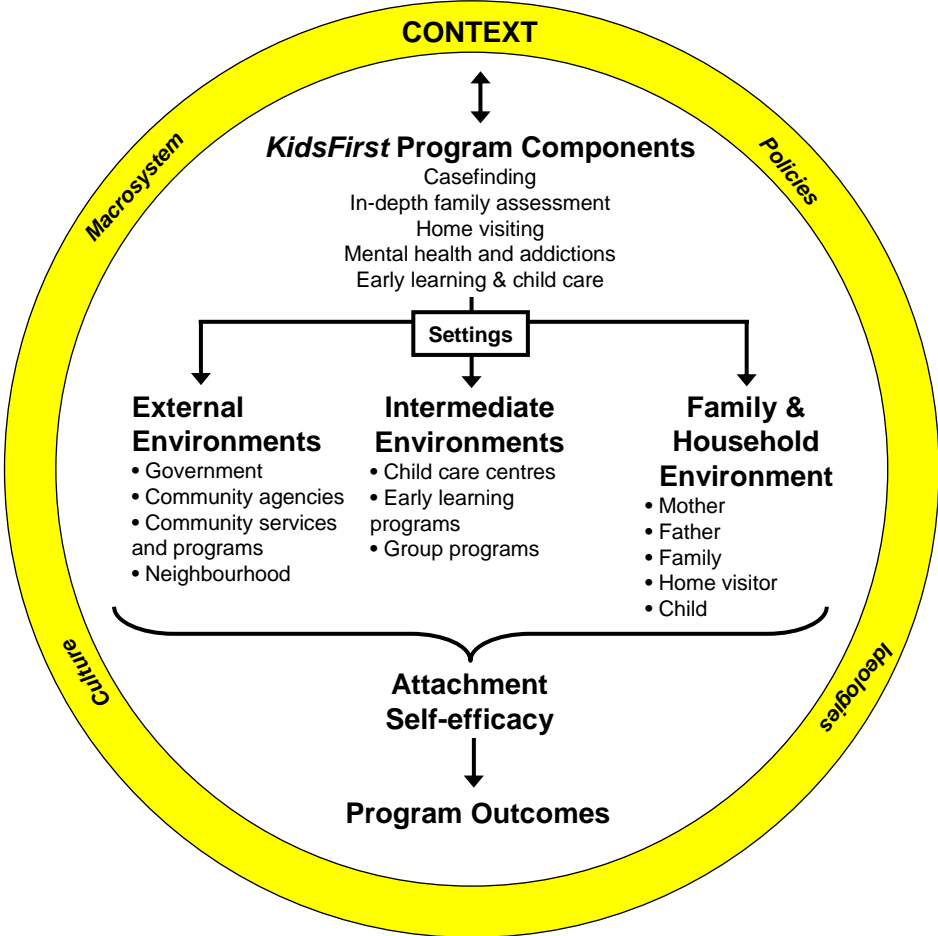


Figure 5. Model incorporating several theories into the existing *KidsFirst* program components and processes.



## 4. Conclusion

The overall objective of this paper is to situate the *KidsFirst* program, its evaluation and development, in a theoretical context, providing readers with the necessary tools to incorporate theory into its evaluation and ongoing development. The theories of self-efficacy, attachment, and human ecology operate together to provide a series of overlapping lenses, or perspectives, through which we can better understand the *KidsFirst* program and ultimately maximize the program's ability to achieve its vision, goals, and objectives. These theories shed light into the black box that exists between program activities and outcomes to reveal the mechanisms of change that are operating at individual, relational (between parent and child), and systems levels. As we gather evidence to understand these processes, theory can also guide us towards the steps that are necessary to optimize them.

While the theories discussed in this paper serve *KidsFirst*, they are also relevant and useful to early childhood interventions similar to the *KidsFirst* program. The theories discussed here have been utilized in previous early childhood development programs, and similarly we expect that these theories will inform other early childhood interventions current and in future.

We believe that the incorporation of theory into the *KidsFirst* evaluation will allow us to generate invaluable information and ultimately lead to improvements in programming and the fuller realization of the vision, goals, and objectives of the *KidsFirst* program.

## Appendix 1: Glossary<sup>d</sup>

**Attachment behaviour:** Behaviours with the goal of achieving proximity to the attachment figure (often the mother). These behaviours include those that initiate interaction with the mother, those that maintain interaction and avoid separation, and those that are exploratory in nature, implying that the mother is a secure base.<sup>10</sup>

**Concept:** “Symbolic representations of an observable or experienced referent.” (p. 318) Signalling and approaching behaviours described in attachment theory, are examples of concepts.

**Construct:** “Symbolic representation of shared experience that does not have an observable or directly experienced referent.” (p. 318) Attachment, from John Bowlby’s attachment theory, is a construct that is present in *KidsFirst*.

**Data:** “Set of information obtained through systematic investigation; data can refer to information that is numerical or narrative.” (p. 318) Information gathered using the four-point Likert scale on perceived maternal parenting self-efficacy (i.e., the scores) described in Appendix II are examples of data.

**Human ecology:** “The scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by relations between these settings, and by larger contexts in which the settings are embedded.”(p. 21)<sup>8</sup> In other words, it is the study of “development-in-context”.

**Hypothesis:** “Testable statements that indicate what the researcher expects to find, based on theory and level of knowledge in the literature.” (p. 320) The statement that positive parenting behaviors modeled by home visitors in the *KidsFirst* program will lead to higher perceived self-efficacy in parents (through vicarious experiences) is an example of a hypothesis.

**Operational definition:** “Definition that reduces the abstraction of a concept to a concrete observable form by specifying the exact procedures for measuring or observing the phenomenon.” (p. 322) The concept of signalling behaviour above can be operationalized by defining it as crying, smiling, or calling by the infant.

**Principles / Propositions:** “Statements that govern a set of relationships and give them a structure.” (p. 323) Bronfenbrenner includes several propositions in his description of human ecology theory, considering them to be the base of his theory. An example of one of these

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<sup>d</sup> Unless otherwise specified, the definitions given in this appendix are taken directly from the glossary provided by DePoy and Gitlin.<sup>24</sup>

propositions is “If one member of a dyad undergoes developmental change, the other is also likely to do so.” (p. 65) <sup>8</sup>

**Self-efficacy:** “Beliefs in one’s capabilities to organize and execute the courses of action required to manage prospective situations.”(p. 2)<sup>11</sup>

**Theory:** “Set of interrelated constructs, definitions, and propositions that presents a systematic view of phenomena by specifying relations among variables, with the purpose of explaining or predicting phenomena.” (p. 324) Albert Bandura’s theory of self-efficacy is an example of a theory presented in this paper.

**Variable:** “Concept or construct to which a numerical value is assigned; by definition, it must have more than one value, even if the investigator is interested in only one condition.” (p.325) Variables of interest to the *KidsFirst* program include parental knowledge, infant’s gross motor skills, and household food security.

## Appendix 2: Examples of theories applied in early childhood interventions and evaluations.

### Self-Efficacy Theory:

#### *Triple P (Positive Parenting Program)*<sup>14,15</sup>

Self-efficacy theory was one of several theories used by the Triple P program to rationalize and design the strategies used to change behaviour. The program has a particular emphasis on promoting self-efficacy in parents, recognizing that doing this can result in positive health and developmental outcomes for parents and their children. Some of the desired Triple P outcomes that are related to self-efficacy theory include the development of self-sufficiency amongst parents, and the cultivation of independent problem solving. The Triple P program uses Bandura's constructs of experiences of mastery to identify targets of change and to develop activities to achieve these outcomes. Because of its central role, self-efficacy theory also informs the evaluation of the Triple P program. Using the *Parenting Sense of Competence Scale*, efficacy measures were taken before and after the intervention to inform the theory-based evaluation of the program.

#### *Perceived Maternal Parenting Self-Efficacy (PMP S-E) tool*<sup>16</sup>

Because of its generalizability, self-efficacy theory can also be used for general evaluative and research purposes rather than being tied to a particular program. Such is the case for the Perceived Maternal Parenting Self-Efficacy (PMP S-E) tool developed in the United Kingdom. The tool was developed using Bandura's self-efficacy theory, along with a few complementary theories, to assess mothers' perceptions of their ability to parent. Although the tool was developed as a screening tool to identify mothers who are in need of support, the tool could just as easily be used in evaluations or individual assessments of change. The tool assesses maternal self-efficacy along four sub-scales that include care-taking procedures (e.g., "I am good at feeding my baby"), evoking behaviours (e.g., "I can make my baby happy"), reading behaviours or signalling (e.g., "I can tell when my baby is sick"), and situational beliefs (e.g., "I can show affection to my baby"). All of the statements used in the tool are self-assessed by parents on a four-point Likert scale ranging from "strongly disagree" to "strongly agree."

The PMP S-E tool is just one example of tools relevant to early childhood interventions that are based on self-efficacy. Other examples include the Toddler Care Questionnaire, Maternal Efficacy Questionnaire, and Parenting Self-Efficacy Scale. In their review of the literature, Barnes and Adamson-Macedo<sup>16</sup> found six maternal and parental self-efficacy scales that they refer to as "Bandurian."

## **Attachment Theory:**

### *Home Visiting Program*<sup>17</sup>

Interventions can draw on attachment theory as a tool with which to design and target programming. Ammaniti et al.<sup>17</sup> provide an example of this, noting that attachment theory guides early development interventions away from an individual focus and directs them instead toward a more comprehensive, family-focused approach that includes an examination of relationships and connections with caregivers. In particular, Ammaniti et al.<sup>17</sup> describe a home visiting program that, because of its theoretical underpinnings, explicitly targets dyads, using the theory to argue that this in turn can improve overall health and wellbeing in the family. Attachment theory is also used to design a specific program activity as it is drawn upon to enhance program participants' capacity to observe and understand their children's behaviour, thereby stimulating mother-child interaction. In particular, attachment theory appears to have been used to guide the interactions and information exchange between parents and home visitors on this topic.

Attachment theory also provides the program with a benchmark for assessing attachment by proposing several functions that a high quality, secure attachment figure provides for a child, like a secure base for exploration and experimentation. Although the authors discuss the secure base as a benchmark for the relationship between the home visitor and the mother enrolled in the program, which itself draws on another tenet of Bowlby's theory that attachment is a lifelong phenomenon, the application would be equally valuable in assessing the mother-child interaction in the program.

### *Early intervention program to enhance mother-infant interaction*<sup>18</sup>

In an evaluation of an intervention designed specifically to improve the quality of mother-child interaction, the role of attachment theory in guiding the development and interpretation of an evaluation is clear. Not only was attachment theory used as the justification for the intervention and the basis on which it was designed, but it also guided the evaluation of the program. In particular, the program evaluation assessed the responsiveness of the mother to the child's behaviours and vice versa, which Bowlby notes is an important measure of the strength of an attachment. The program evaluation defined thirteen different mother-child interactions, including vocalizing, smiling, cuddling, and soothing, many of which are explicitly included as attachment behaviours in Bowlby's theory. The authors were interested in seeing how the mother reacted when the child vocalized, smiled, etc. and vice versa—once again drawing on Bowlby's theory for guidance in terms of attachment behaviour and caretaking behaviour. After collecting evaluation data based on attachment theory, the authors went on to use the theory to interpret their findings, noting that the mother's responsiveness is important to the development of attachment and that the infant's behaviour functioned well to maintain the mother's proximity.

## **Human Ecology Theory:**

### *Prenatal and early childhood home visitation program*<sup>19</sup>

The prenatal and early childhood home visitation program discussed by Olds et al.<sup>19</sup> demonstrates several uses of human ecology theory. At the program planning phase, the theory's vision of development-in-context and the proposed interrelations between families, social networks, neighbourhoods and cultures were used to design a program that could both enhance the ties between and within these settings and reorient them to be focused on the developing child. Additionally, human ecology theory was used to identify appropriate families to enroll in the program as the theory ascribes importance to the microsystem concepts of roles and role changes. Only women who had not previously had a live birth and were as a result new to the role of mother were included in the program.

Recognizing the importance of relations and cross-setting interconnections characteristic of the mesosystem, home visitors in this program worked to enhance mothers' social support by engaging partners, family members, and friends as "allies" for the mother in the capacity-building and education components of the program. Home visitors also helped to connect families to community services such as counselling, primary care, subsidized housing, and Medicaid. In so doing, they were creating linkages in the exosystem in order to enhance the development of the mother and child. Although the program does not explicitly aim to change the macrosystem, it nonetheless acknowledged the macrosystem and worked within it, ensuring that the program design and program staff were culturally sensitive.

### *Relationships for Growth / Devereux Early Childhood Assessment Program (Head Start)*<sup>20</sup>

Relationships for Growth and the Devereux program are school-based initiatives for children with behavioural challenges. Human ecology theory is evident in the programs' philosophy, which states that by changing the entire system of care that surrounds the developing child, positive change will occur. In describing these programs, the authors note that "children's development must be viewed within the ecology of family, home, and school."<sup>20</sup> Instead of creating a program that targets only children and their parents, therefore, the programs include teachers, parents, family members, and preschool staff, amongst others. Rationale for this wide inclusion is provided by the constructs of reciprocal development, second order effects, mesosystem, and exosystem, all of which were introduced earlier. Taken together, the practical implications of these constructs is that interventions that target parents, teachers, and school staff members will have positive effects for the child.

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SPHERU is a bi-university, interdisciplinary research unit committed to critical population health research. The SPHERU team consists of researchers from University of Saskatchewan and University of Regina who conduct research in three main areas - northern and aboriginal health, rural health, and healthy children.



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