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The Therapeutic Power of Play:  
Examining the Play of Young Children with Leukemia

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in  
The Department  
of  
Education

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## ABSTRACT

### The Therapeutic Power of Play: Examining the Play of Young Children with Leukemia

Nadine Gariépy

Play has been described as a medium through which children explore their social and physical environments, interact with others, and develop their social and cognitive skills (Rubin, Fein, & Vandenberg, 1983). Recently, the idea that play may serve a therapeutic function has been investigated (e.g., Christiano & Russ, 1996; Rae et al., 1989). Hospitalization, illness, and medical treatments have been recognized as major stress factors that may affect children's behaviors (e.g., Adams, 1976; Matthews, 1991). In particular, cancer is the leading cause of death due to illness in childhood and adolescence, except in infancy (Vaughan, 1987). While the medical treatments in the past 30 years have improved the survival rate, children's psychological experiences have received limited attention; controlled studies on the efficacy of psychosocial interventions in the prevention and treatment of psychological disturbance in chronically ill youth remain scarce (Pless & Nolan, 1989; Rutter, 1982). Nevertheless, we know that stress can disrupt children's play (Burstein & Meichenbaum, 1979; Erikson, 1940) and that highly anxious children engage in significantly more solitary than parallel or group play (Barnett, 1984). Also, pretend play is rarely observed in anxious, angry, or conflicted children, because they engage in simpler types of cognitive activity such as functional play (Johnson et al., 1999). Thus, the present study was designed to investigate the therapeutic effects of play on children with leukemia as compared to a group of healthy children. The participants with leukemia ( $n = 11$ ) were from the external hematology-oncology clinic of a large, Francophone children's hospital in a major urban area; they were in their first year of treatment and received weekly treatments. Children were observed in the playroom of the outpatient clinic. Control children ( $n = 11$ ) attended a day

care center. All children were 3- to 5- years-old. A Stress Inventory (Chandler, 1981) assessed the two groups' experience with stress. Children's social and cognitive play behaviors during free play were coded (Rubin, 1978). As well, a self-distress measure (Weisz et al., 1994) rated children's daily moods. The results of a series of MANOVAs revealed that the children with leukemia, compared to the control children, engaged in (a) significantly fewer total play behaviors, and in particular less (b) parallel, (c) group, and (d) dramatic play. Pearsons correlations revealed that when the children with leukemia reported being happy, they were more likely to be observed in parallel play ( $r = .59$ ) and group play ( $r = .58$ ), and less likely to be observed in solitary play ( $r = -.53$ ). As well, when this group of children reported being upset, there was a strong positive relationship with functional play ( $r = .70$ ). No significant correlation was evident between the control children's play and daily moods. These results support the literature stating that children who experience stress, and in particular children who are ill, play differently than healthy children. Findings will be discussed in light of the theoretical (Adams, 1976; Jay, 1988) and practical implications for children undergoing treatment for leukemia.

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## INTRODUCTION

### Statement of the Problem

We have the expectation that children should not have worries, but rather spend all their time exploring the world that surrounds them, making new friends, and playing. Yet this is not always the case. There are many reasons why a child may not be in touch with the outside world, lack social skills, or have difficulties playing. Two of those reasons are fear and stress. Every child experiences some fears and stress in his/her early life. Common examples of stress in a young child are fear of the dark, fear of big animals, and the fear of being left alone and forgotten. Other types of stress include experiencing a separation, loss, illness, or death. In general, people tend to have the most fears when they feel least powerful and most vulnerable. Because children's fears may become their reality, it is important for adults to create a safe environment that invites children to face their fears, communicate their feelings and thoughts, and deal with their anxiety. Play offers such a context. Although stress tends to disrupt the child's play, it is important to encourage children to engage in play, for it is the most beneficial medium for them to cope with what is happening in their lives.

For children with cancer, coping with life-changes, pain, fears, and anxieties is an everyday task. Therefore, the use of play becomes more than a diversion to pass time, but also an anxiety-reducing tool. The present study investigated the play of two groups of children: preschool-aged children with

leukemia and healthy children. Different toys (medically-related, nonmedically-related, novel, or typical) were presented to both groups of children. The choice and use of toys were examined, as well as the themes that the children created and pursued, and their social interactions. It was expected that pediatric cancer patients would: (1) choose medically-related toys significantly more frequently than the healthy children; (2) develop similar themes, play with similar toys and engage in similar activities throughout the observations of their play, while the healthy children's play would be more varied; and (3) that their choice of toys and type of play would be closely related to their level of distress as compared to the control group.

In the present thesis, an introduction on pediatric cancer will be given. Children's stress will be examined, as well as one of children's most adaptive activities: play. Play will be defined, its components and uses will be described, and its therapeutic value, according to some of the most renowned childhood theorists, will be examined. A specific type of play, dramatic play, will then be explored. In addition, environmental conditions surrounding play and children's choice and use of diverse toys will be examined. Hypotheses regarding children's choice of toys, type of play, and anxiety levels will be stated and the research methodology described. The Results section will report the statistical analyses completed and a Discussion section will attempt to explain those results, address limitations, and comment on future directions for research in the field.

## Pediatric Cancer

Cancer is the leading cause of death due to illness in childhood and adolescence, except in infancy (Vaughan, 1987). While this is true, cancer is considered a relatively rare disease in children, since it was estimated that in 1996 cancer would be detected in 1330 Canadian children and adolescents (Huchcroft, Clarke, Mao, Desmeules, Dryer, Hodges, Leclerc, McBride, Pelletier, & Yanofsky, 1996). Leukemia, in particular, represents 25% of the new pediatric cancer cases and 25% of the deaths related to cancer. The highest incidence of cancer is manifested in the first five years of life with an average of 44 cases out of 100,000 inhabitants in Canada every year between 1985 and 1992 (see Figure 1 in Appendix A) (Huchcroft et al., 1996). This means that approximately 850 Canadian children between the ages of 0 and 4 are diagnosed with a cancer every year. Canadian statistics also indicate that cancer is slightly more frequent in boys than girls (see Figure 2 in Appendix A).

Diverse medical treatments have been utilized in order to treat and cure children with cancer, such as chemotherapy, radiotherapy, surgery, and bone marrow transplants. While the medical treatments in the past 30 years have improved the survival rate, children's psychological ordeal with having cancer has not been dealt with as successfully. This is one reason why the number of psychological studies on pediatric cancer patients has increased in the last 15 years. Even though research on childhood cancer is more available today, it is important to mention that many of these studies are retrospective in nature.

Controlled studies on the efficacy of psychosocial interventions in the prevention and treatment of psychological disturbance in chronically ill youth are scarce (Pless & Nolan, 1989; Rutter, 1982). Nonetheless, most of the research has offered useful information and reasons to pursue research in this domain. Regarding children's psychological response to cancer, Spinetta (1982) suggested that a child's response to cancer is dependent on many factors including, age, sex, ordinal position in the family, intellectual capacities, relationship with parents, and type of medical and psychosocial care provided. As well as the family's financial resources, previous experience with chronic illness, religious beliefs, and communication patterns may be important factors. Along with the cancer diagnosis come hospitalizations, painful medical treatments, separation from parents and home, and constant interactions with strangers. All of these create fears and anxieties for the child. The control of pain and the reduction of the distress pediatric cancer patients experience has been the subject of an increasing number of research studies in the past few years (Jay, 1988). Diverse therapeutic interventions have been examined; for example, open communication and preparation through information, teaching children coping strategies, hypnosis, and support for the family (Jay, 1988).

Research has given us a great amount of information on children's experience with cancer. It has also brought one major issue to light: there is a need to complement the medical treatments with psychological intervention. As

mentioned above, cancer creates stress and the psychological task of the ill child is to find ways to cope with this stress.

### Children's Stress

Children with cancer face anxiety, pain, medication, and physical limitations on a day-to-day basis. It is important to understand how they cope with this omnipresent stress. According to Zegans (1982), there are four different stages to the child's stress experience: (1) the event; (2) the child's sense-making of the experience; (3) the search for coping strategies; and (4) the implementation of these strategies. A stressful event, for a child, can be anything from witnessing parents having an argument, not being able to tie shoelaces, or facing a fatal disease. For each of these experiences, the child needs to face and understand what is happening. Once this is accomplished, the child will find means (i.e., coping strategies) to deal with the anxiety-inducing event. Coping strategies are defined as "the cognitive or behavioral actions taken in the course of a particular stressful episode" (Compas, 1987, p. 394). Coping is recognized as the process of initiating and maintaining attempts to relieve the threat engendered by a stressful event (Abbott, 1990; Compas, 1987; Jewett, 1997; Lazarus, 1980; Lazarus & Folkman, 1984; Rutter, 1983). Evidence suggests that children who possess a wide range of strategies will feel more competent and more in control, and therefore will experience less anxiety (Burstein & Meichenbaum, 1979; Heibeck, 1989; Rae, Worchel, Upchurch, Sanner, & Daniel, 1989). It is crucial that all children be given the means to find coping strategies that best fit their



developmental, cognitive, and emotional needs. Whether it be through play, stories, art, teaching of behavioral or cognitive coping strategies, or any other medium, children must be given ways to express themselves and face their stress. This will, in turn, reduce their anxiety level.

It has been suggested that stress can disrupt children's play (Burstein & Meichenbaum, 1979; Erikson, 1940). Play has many important functions for the young child, and thus disruption of play can be detrimental to the child's functioning. Although little empirical evidence exists to support the view that play is important to the child in coping with distress, it has been suggested that play serves the child in alleviating anxiety and increasing adjustment (Adams, 1976; Barnett, 1984; Barnett & Storm, 1981; Cassell, 1965; Gilmore, 1966; Rae et al., 1989; Singer & Singer, 1990). It is believed that play helps the child assimilate, at his/her own pace, experiences that were too large for the child to assimilate all at once (Waelder, 1932). Play is a way for the child to gain control of what he/she has lost control over in his/her life. In his 1984 study, Barnett examined preschool children's anxiety level associated with the absence of their mother. Children's anxiety level was assessed using the Palmar Sweat Index (Johnson & Dabbs, 1967) and observational ratings of children's behaviors were made, rating them on a 5-point Likert scale. Examples of these behaviors were clinging to mother, verbal responses such as pleading, whining, begging, and emotional responses like tears, sobbing, screaming, and tantrums. There were two experimental groups: in the first, children were read a story, and in the second,

children were encouraged to engage in free play while their mother was absent. Results of this study indicated that the play situation reduced highly anxious children's anxiety level significantly more than being read a story. As well, findings showed that there was no difference in anxiety between the two groups for children with low anxiety levels. According to Barnett, these results support the idea that play may be seen as the child's effort to cope with a distressing situation, at least for highly anxious children.

It has been suggested that, in the play of anxious children, there tends to be an evolution of themes through three main stages: chaos, struggle, and resolution (Allan, 1988; Allan & Berry, 1987). Play is recognized as a coping strategy for the anxious child, in addition to being a normalizing activity, especially when the child is in an unfamiliar, and often frightening setting like a hospital. Hospitalization on its own is a time of stress for young children; separating them from their parents and significant others, placing them in a novel and frightening setting, and subjecting them to painful and invasive procedures, all the while taking away whatever little control the children had over their lives. Along with the real threats of hospitalization and medical treatments come imagined and potential threats to the child. There are diverse consequences to the child's hospitalization such as the disorganization, interruption, and inhibition of the child's ability to play, therefore depriving the child of one of his/her most important coping mechanisms (Burnstein & Meichenbaum, 1979; Erikson, 1940). This play-disruption phenomenon has been

described by Erikson (1940) as "the sudden and complete or diffused and slowly spreading inability to play" (p. 476). According to Florey "when a child cannot play, we should be as troubled as when he refuses to eat or sleep" (1969, cited in Schaefer, 1976).

Play has been viewed as a normalizing activity for the child since, as a general rule, every child plays. According to Kayes (1991), the next best thing to the presence of a parent or a familiar adult for the hospitalized child is the access to play activities. She believes that play becomes a "lifeline" between the child and his/her familiar world of home, family, and activities. Therefore, play in the hospital is important because "play is something that children know how to do, and know how to do well" (Kayes, 1991, p. 3). In a study conducted by Christiano and Russ (1996), the association between the quality of children's play behavior and the efficacy of their coping responses was investigated. The participants were children (mean age of 8.1 years) undergoing a stressful dental procedure. The most important finding in this study was the positive relation between play and cognitive coping. According to Christiano and Russ' study results, "children who were good players were also good cognitive copers" (p. 136). Curry (as cited in Christiano & Russ, 1996) defined competent copers as "children who have a capacity to flexibly utilize varieties of coping strategies to successfully meet the diverse demands posed by different problematic situations" (p. 2). Cassell (1965) used puppets with children undergoing cardiac

catherization and found that anxiety was reduced before surgery for the puppet-play group compared with the no treatment control group.

In sum, significant positive relations have been established between children's play, coping, and anxiety levels. As well, it seems that play especially benefits highly anxious children in overcoming their stress and/or fears. It appears then that play is an effective medium for the child to cope cognitively and emotionally with stressors he/she is facing.

We will now look into play; describing what play is, what it provides, as well as play's stress relieving purpose. Then, theories and research on a particular type of play, pretend play, are discussed. There will be a brief overview of the environmental aspects surrounding play. And finally, the children's choice of toys and how that affects their type of play will be examined.

### What is Play?

Although there are many different definitions of play (Garvey, 1977; Johnson, Christie, & Yawkey, 1987; Piaget, 1962; Rubin, Fein, & Vandenberg, 1983), there is a general consensus that play is defined by certain characteristics. Rubin et al. (1983), in their review of play, describe the following six characteristics that distinguish play from other behaviors according to the child's orientation to goals, physical stimuli, rules, and nonplay behavior. The first characteristic is that play is intrinsically motivated and that it is self-satisfying. It includes positive affect and it is fun (also Winnicott, 1971). Second, play should involve an attention to the means rather than the ends: it should not produce

commodities (also Bruner, 1972; Landreth, 1991; Piaget, 1962). The third characteristic of play is its orientation and course in response to the child's interests. This includes the questions he/she is asking him/herself and the things he/she is curious about. Play, thus, is freely chosen by the child. Fourth is the relation of instrumental behaviors and play; that is the pretense, the make-belief nature of play. The fifth characteristic refers to the absence of imposed external rules from others. The child sets limits and gives direction to the play session or game. Finally, the sixth characteristic emphasizes the importance of the child's active participation in the activity.

In addition to these six characteristics of play given by Rubin et al. (1983), other characteristics have been thought to be important. For example, Freud (1959) believed in the idea that play is nonliteral, that it is different from the real world. As well, Piaget (1962) argued that play behaviors are spontaneous, (i.e., not prompted by motives). In addition to reviewing what characterizes play behaviors, it is interesting and most useful to look into the purposes play serves.

#### What Does Play Provide for Children?

It is believed that when children play they develop and grow in all domains. Indeed, many theorists (Garvey, 1977; Johnson et al., 1987; Rubin et al., 1983) have agreed that there are developmental aspects to play. Rubin et al. (1983) also presented six developmental aspects of play. Number one is the physical development of the child, which comes about as the child discovers his/her body through movements and manipulations (e.g., gross motor activities

versus fine motor activities, coordination). The second aspect is the emotional development that the child gains through play. Here, the child gains a sense of self and learns how to express his/her feelings, and deal with them appropriately. Third is the social growth of the child in play, and this includes: encountering others in a play situation, getting along with others, and differentiating between solitary, parallel, and collaborative play. The fourth aspect has to do with the cognitive development of the child. Indeed, the child develops the ability to reason, to think, and to problem-solve during play. Play promotes flexibility in increasing children's behavioral options. Furthermore, in play, children can experiment with new and unusual combinations of behaviors and use them to solve real-life problems. Language is the fifth developmental aspect of play. While playing, the child learns to communicate and express him/herself verbally. Woltmann (1960) believed that children's play patterns represent a kind of language where movement, acoustics, choice of play patterns, and duration and intensity of the play, as well as verbalizations, replace adults' grammar, syntax, and vocabulary. He noted that children communicate thoughts, perceptions, concepts, beliefs, and wishes through the content, theme, and process of their spontaneous play. Lastly, the child gains a sense of individuality, of uniqueness, and expresses him/herself through his/her creativity.

While these developmental aspects are widely agreed upon, certain theorists have chosen to concentrate on one particular aspect of child

development through play. For instance, Freud and other psychoanalysts have paid close attention to the emotional purpose of play. In particular, they view play in relation to wishes, anxieties, and ego processes. For example, Peller (1952 and 1978) wrote that children's choice of roles, when engaging in role-playing, are mostly based on feelings of love, admiration, fear, or anger for a particular person. Piaget and other cognitivists focused on the cognitive development of the child. According to the cognitive theory, children move through different stages of development and their relation with the world evolves as they grow physically and cognitively. The concepts of assimilation and accommodation are central to the Piagetian theory and they will be examined later. Vygotsky (1978) believed play to be a useful evaluation construct in early childhood. According to Vygotsky, children seem to exhibit higher levels of competence in play than in other contexts. Play represents an interesting and most valuable alternative to formal testing procedures. As well, Vygotsky stressed the social collaboration found in play and the "culture-learning" component of play for all children.

Other theorists have looked at play, and more specifically, at the usefulness of play as an anxiety-reducing tool (Landreth, 1991; Waelder, 1932). According to Waelder (1932) and Freedheim and Russ (1992), the central purpose of play is that it offers the child a way to gradually assimilate the anxiety he/she is experiencing. In order to comprehend why play is used to identify and used as a tool to work with children's anxieties and fears, it is necessary to look back at certain theorists and their key concepts in more detail.

### Play to Relieve Stress: A Theoretical Standpoint

The idea that play is therapeutic is rooted in psychodynamic theory, which started with its founder, Sigmund Freud (1920). Freud believed that “the opposite of play is not what is serious, but what is real” (Freud, 1959, p. 144). According to Freud, play creates a safe context that allows the child to escape reality and deal with anxiety-inducing events. He stated two major aspects of play as therapeutic: catharsis and mastery. Play's cathartic aspect, according to Freud, represents the child's need to let out the aggression that is inhabiting him/her through play. Since it is not socially correct for a person, even a child, to engage in aggressive behaviors such as tantrums, play allows the child to let go of the aggression in play. For example, the child will scold a doll or stuffed animal for behaving badly or will build with blocks only to demolish his/her construction right afterwards.

On the other hand, the mastery element emphasizes the importance of one's control over one's life. The child attempts, through play, to regain control over what he/she has lost control of in real life. The child's need to recreate his/her experiences in order to assimilate them has been referred to as the concept of abreaction (Schaefer, 1994). Abreaction is a mental process in which repressed memories are brought to consciousness. The memories are reexperienced giving the child an opportunity to take on an active role in the unfolding of the stressful event. This sense of control in play will enable the child to adjust to the loss of control in real life. According to Freud, in order to



gain control over a “no-control” situation, the child will reenact what is happening to him/her in play and will modify what is happening. He/she will adopt different roles to gain a better understanding of what is going on and will repeat this process until he/she does not feel the need to reenact the experience anymore. Freud’s ideas were revolutionary and drew a great deal of attention. The concepts he developed interested many who followed more or less in the psychodynamic path, but who also elaborated their own theories and ideas.

Two main devotees were Erik H. Erikson and Melanie Klein. First, Erikson had worked with Freud’s concept of “repetition compulsion”, believing that children in play reconstruct, reenact, and reinvent their stressful experiences in order to understand them, assimilate their reality, and achieve mastery over them. According to Erikson, the child unconsciously arranges for variations of an original theme when he/she has not learned either to overcome or live with it. Waelder (1932) has described play as “a method of assimilating piecemeal an experience which was too large to be assimilated at one scoop” (p. 218). More recently, Rae et al. (1989) conducted an empirical study on the anxiety-reducing effects of play. This study revealed a significant reduction in reports of hospital fears following two 30-minute sessions of nondirective, child-centered play therapy. Children in this therapeutic play condition were compared with three other groups of children. There was a control group, a diversionary group, and a verbal-support group. In the control condition, children had no interaction with the research assistant other than for the assessment sessions. The diversionary

play condition was set for the children to play with toys. Here, fantasy play was discouraged in order to distinguish this condition from the therapeutic play condition. The final condition provided verbal support to the children. In this condition, children were asked to discuss their fears, anxieties, and concerns with the research assistant. According to Rae et al.'s findings, only the therapeutic play condition helped the ill children face and cope with their health condition and fears concerning it. Play, in particular fantasy play, seems to have allowed children to relive their anxiety-filled moments and to communicate their emotional state and feelings about those moments.

Paraphrasing Sigmund Freud, Erikson wrote that "play is the royal road to the understanding of the infantile ego's efforts at synthesis" (Erikson, 1963, p.209). They both saw play as a means to allow the child to cope with emotional difficulties. Thus comes the importance of using play with therapeutic intentions: to allow the child to self-cure him/herself and actively problem-solve. Freud had started the discussion about the therapeutic value of play, and Erikson continued examining how and why a child would benefit from play therapy. In addition to the perspective that play serves to reduce anxiety, he believed that play had an ego-building function, since it enhances the child's self-esteem by giving him/her more control and competence in various domains (physical, emotional, cognitive).

Melanie Klein (1955) was the first to distinguish clearly child psychotherapy from adult psychotherapy. Her explanation for the need to use

play in child psychotherapy was simple: children do not have the capacity to express themselves verbally. They do not have the vocabulary or the ability to 'talk things out' like adults do. Children rather 'act things out', and the therapist must analyze the child's dynamic materials, (i.e., the child's play productions). Play, then, is the child's communication mode and becomes a window into children's minds. Play is considered a means of transference (Freud, 1920; Klein, 1955) and it is analyzed in order to explore the child's unconscious and past. Klein believed that familiar toys and a familiar environment were important to make the child feel comfortable and encourage the child to communicate.

In the same line of thought, Anna Freud believed that children act out their emotions and thoughts. Like Klein, she emphasized the need for certain conditions to facilitate the child's communication and play. In addition to Klein's arguments, she claimed the importance of an emotional relationship between the child and the therapist (1952). As long as a trusting relationship has been established, it is possible for the therapist (or educator) to interpret the child's play and actions because then the child does not feel threatened by the play sessions. She wrote (1965) that "... the purpose of his (the) therapeutic intervention was not the unconscious mind itself but its derivatives" (p. 14). She believed the child's ego reacts with anxiety when it finds its existence or integrity threatened by dangers in the external or internal world. Anna Freud made a major contribution to the psychodynamic approach dealing with the children,

especially for children with various emotional difficulties. Her work brought novel attention to the issue of therapeutic play.

Although the foundations of therapeutic play are well established with the former psychodynamic theorists, others like Piaget, Bruner, and Sutton-Smith have also examined the therapeutic use of play. Piaget's theory relies heavily on the concepts of assimilation and accommodation. The former refers to the inclusion of new information into already existing categories or schemas, while the latter refers to the process of adapting existing categories and schemas in order to include new information. He observed that play is assimilative for it enables the child to relive past experiences and gain mastery over them. Bruner, suggested that the safe context play brings to the child allows him/her to develop behavioral strategies that may help the child in other contexts. Sutton-Smith (1967) also believed that play offered a safe opportunity to explore new ideas and behaviors, and he mainly focused his attention on the "what if" nature of children's symbolic play. He considered symbolic play to contribute to creative thinking, role reversals, and children's development of role flexibility and autonomy.

We will now examine a specific kind of play that allows children to 'act out' and adopt different roles. Pretend play is indeed recognized by many researchers and theorists to be a therapeutic tool, a means to learn about life, and an opportunity to discover problem-solving strategies for everyday problems

(Cohen, 1993; Grossman-McKee, 1990; Leslie, 1987; Piaget, 1962; Singer & Singer, 1990).

### Pretend Play

Pretend play is a form of play in which children use an object as a symbol to stand for something else. Pretend play is also referred to as dramatic, symbolic, fantasy, imaginative, or make-believe play. It appears that there are two general forms of pretend play in the preschool child. The first consists of monologues of the child, often using very limited props, and evolving into very elaborate play. The child gives life to and builds a story using dolls, figurines, and/or stuffed animals. The second form of pretend play involves transitional objects (Winnicott, 1953), such as soft cloth or a stuffed teddy bear, which becomes a friend and to whom a name and personality are given. Greta Fein (1981) has proposed the following criteria as representing pretend play: (1) familiar activities may be acted out in the absence of props or social context; (2) activities may develop and conclude in many different original ways; (3) a child may give life to an inanimate object; (4) an object may represent something different in the play than its usual function; (5) a child may perform an activity usually carried out by another person or especially an adult. In the present case, the second and fifth criteria are of particular interest. Indeed, children who face stressors or traumatic events often reenact the event in their play and will adopt different roles and/or modify the outcome in order to help them gain more control over the situation. As well, dramatic play allows the child to express

feelings that could not be expressed verbally. It appears that 'playing it out' decreases children's anxiety and helps them cope with their stress and difficulties (Abbott, 1990; Barnett, 1984; Cassell, 1965; Fein, 1981; Grossman-McKee, 1990; Rae et al., 1989).

The relation between play and anxiety was investigated by Grossman-McKee. In her 1990 study, Grossman-McKee found that children's use of imaginative play and expression of affect in play (measured by the Affect of Play Scale from Russ, Grossman-McKee, and Rutkin, as cited in Russ and Grossman-McKee, 1990) was positively correlated with self-esteem and negatively correlated with somatic complaints and anxiety. As well, the inverse relation between play and distress found in Christiano and Russ (1996) is consistent with research that supports the use of play as an intervention technique to mitigate stress in a medical setting (Cassell, 1965; Rae et al., 1989). Piaget believed that the symbolic play of the child was associated with assimilation, as discussed. Children's play is thought to be, partly or mainly, motivated by what they are experiencing in real life. Piaget claimed that children's choice of toys and the use they make of them will reflect the repercussions of everything that has happened in their lives recently. He wrote: "We can be sure that all happenings, pleasant or unpleasant, in the child's life will have repercussions on her doll" (Cohen, 1993). Vygotsky (1967) also believed that the features of the world most salient to the child were apparent in his/her make-believe play.

As mentioned earlier, pretend play is one of the key elements of child psychotherapy. It allows the child to express and communicate his/her feelings, emotions, thoughts, and fears and it provides him/her with an opportunity to face the fear or stressful event in a safe context. As well as giving the child an opportunity to deal with his/her emotions, pretend play facilitates certain areas of cognitive development (Cohen, 1993; Singer & Singer, 1990). In a review of the literature, Singer and Singer (1990) found pretend play to be positively related to verbal fluency, divergent thinking, and general cognitive functioning. They, as well as Fein (1981) and others, have found that it is rare to observe pretend play amongst children who are anxious, very angry, or in conflict. Nevertheless, Barnett's (1984) findings suggest that children who had high levels of anxiety engaged more in dramatic play than children with low anxiety levels. The latter group engaged more in functional or manipulative styles of play. Barnett (1984) also reported that highly anxious children engaged in significantly more solitary than parallel or group play (see Appendix B for details on Rubin's Play Scale and its classification of levels of social play). Solitary play is viewed as a means to assess information concerning the child's 'inner person', as well as his/her anxieties and the experiences that produced them (Levin & Wardwell, 1962; Sears, 1947). Pretend play seems to be a key skill in the child's social and cognitive development. According to Leslie (1987), pretend play is "one of the earliest manifestations of the ability to characterize and manipulate one's own and others' cognitive relations to information" (p. 422).

It is difficult for children with cancer to accept their illness and the new lifestyle, including physical limitations and medical treatment, that comes with it. Because what they have to face and live with is nothing like they have ever experienced before, they need to readjust their vision of what their life is and find alternatives to their usual way of dealing with stressors. Play, as stated previously, allows the child to practice and explore different beginnings, developments, and ends of an event. It seems that in order for a child to become fully involved in play, certain environmental conditions should be respected.

#### Play and Appropriate Environmental Conditions

The effect of environmental conditions on play behaviors and play patterns has been examined (Christie, Johnsen, & Peckover, 1988; Johnson, Christie, & Yawkey, 1999). Such setting variables as spatial density, arrangement of space, materials, curriculum structure, and time allowed for free play were found to have an impact on children's play. The space available for play determines what kind of play can take place. While a large room with a few climbing structures and balls will encourage the children to engage in gross motor play, a small corner with cushions and books will invite them to sit down, look at a book and have some quiet time. Setting theme centers with appropriate structures and props will encourage children to take on one role or another and engage in pretend play. If the dramatic play center is set close to the blocks area, children might be tempted to integrate more constructive types of play to their pretend play.



The time of day (i.e., morning vs. afternoon) was found to have no effect on preschoolers' play behaviors (Smith & Connally, 1972), however the availability of time is a condition that influences children's play behaviors. The more time that is available, the more complex the play may become. According to Johnson et al. (1999), children understand after being told a few times to clean-up before they could really get involved in their game that in the future they should spend less time preparing the play and that they should engage in simpler forms of play. Functional play is considered to be simpler in nature than dramatic play. Indeed, dramatic play requires that the child first recruit some playmates, then assign some roles, prepare the play environment (e.g., dressing-up, moving the table), and then take on the roles and create a story. Constructive play fluctuates from very simple to very complex. It has been found that preschoolers are more likely to engage in dramatic and complex forms of constructive play during longer (30-minute) play periods than during shorter (15-minute) periods (Christie et al., 1988; Tegano & Burdette, 1991). In their study, Tegano and Burdette (1991) found that in the first ten minutes of a free play period, children were highly involved in functional types of play and displayed more nonplay behaviors. Christie et al. (1988) obtained similar results: there were more unoccupied and onlooking behaviors in the 15-minute periods as compared to the 30-minute periods. As well, they found group play and dramatic play to occur more often in the longer periods of time.

Providing children with long periods for free play is important, but it seems also important that these long periods of play be uninterrupted. Farham-Diggory and Ramsey (1971) conducted a study in which 56 Black 5-year-old girls were assigned to one of four conditions. In the neutral condition, the girls were allowed to play as they wished with a variety of toys and materials. In the defective condition, the girls could play all they wanted with toys that had been damaged (defective). In the interruption condition, the girls had access to the toys in good condition, but the experimenter constantly interrupted them. And finally, in the social reinforcement condition, the girls could play with the good toys and were reinforced on the same schedule as the interruption. Each of those play conditions lasted ten minutes. All the girls were then provided with parquetry blocks with which they could play for as long as they wanted. The researchers were interested in the girls' play persistence with the blocks in relation to the condition to which they had been assigned. They found the only significant difference in persistence to be for girls in the interruption condition. The girls who had been interrupted a few times during their ten minutes of play showed significantly less persistence with the parquetry blocks. This finding supports Johnson et al.'s (1999) claim that children react to interruptions by limiting their involvement in future play productions. It seems that, allowing long periods of uninterrupted play allows children to engage in complex forms of play, which provides them with an opportunity to explore their creative potential (Tegano, Moran, & Sawyer, 1991).

While space and time are central variables affecting children's play, play materials and toys are also of great importance. A child will tend to construct with blocks, roll or throw a ball, and hug a teddy bear or doll. To examine children's play patterns and creativity, researchers have used diverse toys such as puppets, blocks, puzzles, costumes, crayons, and paint. As well as examining children's use of toys, researchers have looked at children's choice of toys. Why do children choose the blocks and not the puppets? Why do children choose the teddy bear with a missing eye and a broken leg instead of the beautiful doll right next to it? Children's choice and use of toys will be examined in this final section of the literature review.

### Play with Toys

Bettelheim (1987) wrote that "What a child chooses to play with is motivated by inner processes, desires, problems, and anxieties" (p. 128). He believed that we can gain an understanding of how a child sees the world from the way he/she plays. As discussed previously, play is thought to be therapeutic in that it is a safe context in which the child can face his/her fears or stressful situation, by reenacting experiences in order to take control over them. Landreth (1993) also believed in the healing power of play as well as in the importance of toys. He stated that "The (children's) use of toys enables them to transfer anxieties, fears, fantasies, and guilt to objects rather than people" (p. 17).

Theories put forward by Piaget and psychoanalytic writers suggest that when a child is anxious he/she will prefer to play with toys that are relevant to

the source of their anxiety, whereas when a child is not anxious, he/she will prefer to play with toys based on their novelty. Gilmore (1966) tested these theories by introducing four different sets of toys to two groups of children: a group of children who faced surgery and a group of children from a public elementary school. The children hospitalized for a tonsillectomy were identified as the anxious group, while the school group was identified as nonanxious. Children in both groups were ages 5.4 to 8.11 years old. Each set of toys was composed of four individual toys and the dimensions of novelty and relevance were represented within each set of toys. The term relevance in this study refers to the toys' relevance to hospitalization. The first set of toys was classified "novel-relevant" (e.g., doctor's kit); the second, "novel-irrelevant" (e.g., 3-D maze puzzle); the third, "simple-relevant" (e.g., toy ambulance); and the fourth, "simple irrelevant" (e.g., plastic pig). Each child was given six minutes to play with each set of toys. This study's results showed that the mean time spent on novel and simple toys differed depending on the group of children to whom they were presented. As hypothesized, the children who were to undergo surgery showed a preference for hospital-relevant toys over the hospital-irrelevant toys. This was not the case for the school group. Gilmore also found that the surgery group played more with novel toys and less with simple toys than did the children from the elementary school. This latter finding contradicts the theory that children who are not anxious will prefer to play with novel toys. While Gilmore's findings regarding the novelty dimension of toys did not support

Piaget and psychoanalysts' ideas about nonanxious children's choice of novel toys, the findings regarding the relevance dimension of toys did provide support for this argument.

Another study examined anxiety related to hospitalization and medical treatment. Burstein and Meichenbaum (1979) hypothesized that children who played with toys "symbolically loaded for medical content, thoughts and fantasies" about the medical procedures they would soon undergo will think about their medical condition and will learn to cope with the stress evoked by their thoughts. These authors identified a group of children who actively played with stress-related toys prior to being hospitalized. They found that these children reported lower anxiety following surgery, demonstrating that their active engagement in their play and their choice of toys facilitated the children's use of active coping strategies. Burstein and Meichenbaum (1979) examined children's choice of toys before their surgery, while Barnett and Storm (1981) investigated children's choice of toys after an anxiety-provoking event. They conducted a study in which children (age range: 3.2 to 4.10 years) viewed a Lassie movie and then were asked to play with some toys. In the experimental group, children viewed the Lassie movie in which the ending was stressful showing that Lassie was lost, and the control group viewed the same movie with an additional minute where Lassie was shown to be fine and returned to her owner. Two pencil-and-paper tests and two play sessions took place after children viewed the movie. The first test and play session took place

immediately after the viewing and the second time was 24 hours later. The pencil-and-paper tests consisted of identifying which facial expression on the paper corresponded to children's feelings (from a wide smile to a sad frown). The first play session was conducted right after the pencil-and-paper testing on the first day. Children were given five minutes to play with a set of toys, which was composed of a fire truck, a construction kit, a bending box, a bead game, and building blocks. The same pencil-and-paper test was administered on the second day and another play session followed. The set of toys was different for the second play session, and included a stuffed Lassie animal, a stuffed cat, Play-Doh modeling clay, a wooden puzzle, and a construction kit. Diverse elements of the children's play were examined, for example children's choice of toys, the amount of time each toy was used, and the theme developed during play. The results were the following. As expected, children in the experimental group were found to be reliably more anxious than those in the control group after viewing the Lassie movie. As well, children in the experimental group played significantly longer with the Lassie dog than the children in the control group. Another interesting finding was that children in the experimental group played longer reflecting on a theme (reenacting) from the Lassie movie than did the children in the other condition. Lastly, children in the experimental condition showed a decrease in their physiological anxiety after playing with the toys while the anxiety level for those in the control group remained stable. Physical anxiety was measured with the Palmar Sweat Index (Johnson & Dabbs, 1967).

It appears that anxiety is related to children's choice of particular toys. Anxious children seem to choose toys that will help them face anxiety, reenact events, and lead them to cope with those events. Themes related to children's anxiety are often demonstrated in their play. This suggests that, in their play, anxious children attempt to deal with stressors they were faced with or are still facing. As it has been mentioned previously, one particularly stressful event for a child is hospitalization. Hospitalization, illness, and medical treatments are indeed recognized as major stressors for children, often major changes are observed in their behaviors (Adams, 1976; Clatworthy, 1981; Golden, 1983; Matthews, 1991; Vernon, 1966). Developmental regressions have repeatedly been observed in hospitalized and ill children (Katz, Kellerman, & Siegel, 1980; Kayes, 1991; Kielhofner, Barris, Bauer, Shoestock, & Walker, 1983). This means that, because a child does not feel safe, he/she might take a step back in his/her developmentally appropriate behaviors. For example, the child may return to behaviors such as thumb sucking, bed-wetting, loss of toilet training, and clinging, when these behaviors had not been recent issues.

For the hospitalized child, four functions of play have been identified: (1) to prepare the child for the medical procedure and increase his/her understanding of the illness and treatment; (2) to enhance communication; (3) to meet developmental needs and master developmental skills such as logical thought and self-control; and (4) to cope with negative emotions and stress (Irwin, 1991; Matthews, 1991; McCue, 1988; Thompson & Stanford, 1981). All

four functions have a common goal, which is to help the child deal cognitively and emotionally with overwhelming experiences. Two main types of play are encouraged in the hospital: developmental play and medical play (Kielhofner et al., 1983; McCue, 1988). Developmentally appropriate play, which is play that is appropriate to children's age, meets the child's developmental needs while medical play is specifically designed to meet the needs of the hospitalized or ill child. Developmentally appropriate play corresponds to a child's age, mental and physical development, social capacities, and language skills. Common characteristics of medical play are the use of pretend or real medical equipment and a focus on a medical and hospital theme (Goldberger, 1988; McCue, 1988). Role rehearsal and role reversal is an important part of medical play since it allows the child to relive experiences by adopting a different role and assimilating different elements of the experience. Dolls and stuffed animals are often used to allow children to act out and replay events, often using medical equipment. The use of medical equipment, whether it is pretend or real, serves the child in discovering the specialized equipment, facing fears, and encouraging play with it to feel more comfortable with the equipment. The child can play on his/her own with the toys or can be assisted by a parent or a therapist.

In sum, whether it is with a doctor's kit or a teddy bear, it is argued that the child's play will help him/her reenact certain events that were stressful and allow him/her to take on a more active role. Studies previously reviewed showed that children's choice and use of toys was important in helping them



cope with their anxiety. Gilmore (1966) and Barnett and Storm (1981) found that anxious children showed a preference for toys that were related to their anxiety. Barnett and Storm's (1981) results also suggested that anxious children reenact the stressful event in their play. As well, anxious children's play with "anxiety-related" toys was associated with a decrease of their anxiety level (Barnett & Storm, 1981; Burstein & Meichenbaum, 1979). All these findings are pertinent to the present study and are most revealing about the relationship between anxiety and play in children. The present study emanates from psychodynamic, cognitive, and developmental perspectives, as well as research conducted in the past forty years on children's play, anxiety, and the usefulness of play as an anxiety-reducer.

### The Present Study

The purpose of the present study was to compare the play of two groups of children; specifically, the study examined how children with leukemia and a control group of children, who attended a day care centre, played with different toys (medically-related, nonmedically-related, novel, or typical). It has been hypothesized that anxious children tend to play with toys related to the source of their anxiety, while nonanxious children tend to choose toys according to their novelty. In the present study, children's play was investigated, specifically the choice and use of toys, the type of social interactions, the cognitive level of play, and the themes developed in play. Toys were introduced systematically over a 6-week period using a multiple baseline design. In order to examine the

children's play, a time sampling method based on a valid and reliable instrument, Rubin's Play Scale (Rubin, Watson, & Jambor, 1978) will be used.

The following hypotheses were formulated:

(1) Children with leukemia will be observed in dramatic play with medical toys more frequently than the control group of children. Theoretical foundations for this hypothesis are found in Piaget (1962) and psychoanalytic theorists' work, such as Freud (1920, 1959).

(2) Children with leukemia will show a persistent theme through their play with the different toys compared to control children. This group of children will tend to choose the same toys and engage in similar activities week after week. This is based on the concept of abreaction or repetition compulsion put forward by Freud (1920) and Erikson (1976). The belief is that children who are anxious reenact in their play what happened to them in real life in order to assimilate the experience and gain a sense of greater control over what is happening to them. Thus, it is expected that children with leukemia will focus more on their hospital-related anxieties and, in their play, will develop themes related to those anxieties. In this group, the theme and choice of toys and activities are expected to be constant throughout the observation sessions, whereas children in the control group are expected to develop diverse dramatic themes and demonstrate a wider variety of toy choices and uses over the observation sessions.

(3) There will be a relationship between the level of stress the children experience and the type of play they engage in (cognitive and social). It is expected that children with high anxiety levels (group of children with leukemia) will engage in simpler types of play (functional), solitary play, and will be observed in nonplay behaviors more than children with lower anxiety levels (control group). This relationship is expected to be stronger for the pediatric cancer patients group than for the control group. This hypothesis is based on a study conducted by Barnett (1984) where he examined preschool children's anxiety level associated with the absence of their mother. Children were assigned to one of two conditions: children were either read a story or encouraged to engage in free play. Results of this study indicated that the play situation reduced highly anxious children's anxiety level significantly more than being read a story. As well, findings showed that there was no difference in anxiety between the two groups for children with low anxiety levels.

## METHOD

### Participants

The participants in the experimental group were pediatric cancer patients receiving weekly treatments at Sainte-Justine Hospital. They were all in their first year of treatment after receiving a diagnosis of leukemia. The control group of children was recruited in a francophone day care centre in downtown Montreal. There were 24 participants (12 from each setting), from which two were

excluded/dropped (one from each group) due to missing data. The children's ages ranged from 3 years and 1 month (37 months) to 5 years and 5 months (65 months) (Mean age = 4.17, SD = .65). Children in both groups were matched on age and gender factors. Children's age in the hospital group varied more than the ones from the control group (hospital group: M age = 4.1; SD = .79 and control group: M age = 4.3; SD = .51) due to the fact that it was more difficult to recruit children with leukemia who filled the selection criteria established in this study. The children who participated in the present study were of diverse ethnic and socio-economic backgrounds, however no specific details were obtained due to the high confidentiality policy of the hospital. The day care centre was also resistant to sharing personal information about the children.

Some inquiries were made of educators in the day care setting to know whether the children had experienced a moderate to very stressful situation in the last six months (using the Stress Inventory: Chandler, 1981). The rationale for these inquiries was to differentiate clearly the two groups and also to make the day care sample as representative as possible of children who attend day care. Any day care child with a recent history of stressful experiences was not included in the present study. No child was excluded following this assessment. The study took place at Sainte-Justine Hospital's hematology-oncology outpatient external clinic's playroom and at the Complexe Guy-Favreau day care centre. The observations were conducted from the first week of November to mid-December 1999.

## Settings

While observations were conducted in playrooms in both settings, the environments were found to be different. The playroom at the external clinic of hemato-oncology at Sainte-Justine hospital serves also as a waiting room for children of all ages and their parents. This space is separated from the rest of the external clinic by two sections of walls. It is accessible from three large entrances, which bring a great amount of circulation in the room. The room can also get very crowded: as many as 60 people can come in and out and in again during a busy morning, with one educator and a volunteer to see that every child is attended to. Nurses, doctors, and social workers come to the playroom to call children to their office or to one of the treatment rooms constantly, interrupting children's play. A great variety of toys and material for arts and crafts are available to children at all times.

The room where children were observed in the day care centre was a large room divided into different centres: gross motor, games and puzzles, kitchen corner, book centre, and blocks area. There were 14 children and two educators in the observed group.

## Procedure

The researcher met with her supervisors at Sainte-Justine Hospital (Dr. Jocelyn Demers and Caroline Rivest) and at the Complexe Guy-Favreau Day Care Centre (Liette Tremblay) and selected participants according to their age and the number of times a week they attend the clinic or day care centre. As well

parental permission (Appendix D) was requested for the children at the day care centre and parents at the hospital were informed that someone would conduct observations four days a week for a period of six weeks. The physical state of children with cancer, in particular, and day care children was considered on a day-to-day basis. In addition, the recent history of stressful experiences was examined for the day care group. The severity of the stressful events were assessed using the Stress Inventory (Chandler, 1981). Once a schedule was established for both the hospital and day care centre, the observer assessed the quality of the hospital and day care settings by using the Early Childhood Environment Rating Scale - revised edition (ECERS-R). This was done before data were collected and before the observer became familiar with the environment where the play sessions took place.

Observations of the children's play were conducted during free play period. For each observation session, the children's anxiety level was assessed before they engaged in play. They were asked to point to one out of three facial expressions that most corresponded to how they were feeling at the moment (see Appendix E for a modified version of Weisz, McCabe, and Dennig's (1994) pictorial scale for self-reported distress). This exercise gave the observer indications about the children's emotional state.

The children's play was observed using a time sampling method and a slightly modified version of the Rubin's Play Scale (1978) was used (see Appendix B for definitions of the terminology and Appendix C for an example of

the observation grid used in this particular study. The same procedure was applied and the same toys were added in both settings (see Appendix H for the list of new nonmedical and new medical toys). Children were presented with different toys (multiple baseline) throughout the study:

(1) Week 1: During this first week, there were no new toys in both the hospital and day care settings. Observations were made on children's play with the toys usually found in the playroom<sup>1</sup>.

(2) Weeks 2 and 3: During these next two weeks, new nonmedical toys were introduced, specifically a memory game, a big doll, a farm set, and dress-up clothes. The new set of toys was available as the observer arrived at the hospital or day care and were taken away as the observer left the setting.

Because there was only one set of nonmedical toys and one set of medical toys, the observer needed to bring these toys from one setting to the next. This also ensured that all children were exposed to the same toys for equal amounts of time.

(3) Week 4: The new nonmedical toys were taken away and no new toys were introduced for this week as a return to baseline condition.

(4) Weeks 5 and 6: During these two weeks, new medical toys were introduced, such as a doctor's kit, a teddy bear with bandages, a memory game with a medical theme, and doctor and nurse dress-up clothes.

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<sup>1</sup> Toys available were made as similar as possible in the hospital playroom and the day care's playroom

## Measures

(1) ECERS-R: The Early Childhood Environment Rating Scale - Revised Edition (ECERS-R) (Harms, Clifford, & Cryer, 1998) is a scale (1 to 7) devised to measure the quality of childcare settings. The rating was accomplished by examining certain components of the settings as described by the seven subscales. The different subscales are: (1) space and furnishings (e.g., room arrangement for play); (2) personal care routines (e.g., safety practices); (3) language-reasoning (e.g., books available); (4) activities (e.g., dramatic play area); (5) interaction (e.g., interactions among children); (6) program structure (e.g., schedule); (7) parents and staff (e.g., provisions for parents). The ECERS-R has long been recognized as a valid and reliable instrument to measure the quality of child care settings (Harms et al., 1998). Numerous studies have demonstrated that the ECERS' evaluation of quality has predictive validity (Peisner-Feinberg & Burchinal, 1997; Whitebook, Howes, & Phillips, 1990) and that it leads to very high levels of interrater agreements. As well, the authors report that the subscale scores and the total scores should be considered to represent meaningful aspects of the environment. This instrument was used in the present study to evaluate and compare the hospital and day care settings. By comparing the two environments using the ECERS-R, assumptions regarding the similarity of the quality of settings were made. Indeed, two observers evaluated both settings using the ECERS-R and the following results were obtained: overall rating scores were, for the hospital setting 5.09 and 5.36, and for the day care setting 5.5 and



5.39. A Cohen's Kappa was calculated and interrater reliability reached .74. The hospital playroom and the day care centre's playroom were considered to be equivalent (see Appendix E for a graph depicting the ratings for both settings on the ECERS-R).

(2) Self-distress measure: This measure was designed by McCabe and Weisz (in Weisz et al., 1994) to assess pediatric cancer patients' adjustment to their illness. This pictorial scale is used to determine children's self-reported distress, which gives indications to the observer about children's emotional state. A modified version was designed in which there were three facial expressions to choose from instead of five (see Appendix F). This, we believed, would make it easier for children to discriminate between the different emotions depicted by the faces on the board. Children were asked to indicate how happy, scared, or upset they were before they engaged in play. Each child, individually, was asked to place the big red arrow (attached with velcro) below one of the three facial expressions.

(3) Stress Inventory: The Stress Inventory is an instrument that was designed to be used in schools and clinics as part of the intake/referral procedures for children with emotional adjustment problems (Chandler, 1981). The Stress Inventory is a list of 37 events, ranked according to the level of stress they provoke. This list was designed especially for children. It was used to insure that the two groups were different from one another. A Stress Inventory was completed, with the assistance of the educator in the day care centre, for

each child. In the case that a child was one standard deviation away from the mean on his/her score on the Stress Inventory, he/she would be excluded from the study (See Appendix G for a copy of the Stress Inventory). The educator informed the observer of the stress elements that she was aware of for each child. Even if she could not give details due to the confidentiality of some information, she gave indications as to whether a child should take part of the study or not. No child was excluded from the study due to the results from this measure. A one-way ANOVA was conducted to examine if the groups differed on their experience of stress. The statistical analysis revealed that the two groups were indeed very different from one another on this dimension,  $F(1, 21) = 66.16$ ,  $p = .00$  ( $M = 36.76$  for the level of stress for children with leukemia and  $M = 5.44$  for children in the control group) (see Stress Inventory in Appendix G). Every child in the hospital group experienced items #5: *Aquiring a visible deformity* (the loss of their hair, sudden weight loss or gain, etc.) and #8: *Serious illness requiring hospitalization of child* (they have all been hospitalized at least three times and they attend the outpatient external clinic for treatment every week). In each group, two children were experiencing the separation of their parents. There was one child in the hospital group who was from New York and was staying in Montreal for her treatments. Finally, in the control group, one child's grandmother had passed away in the previous 6-month period.

(4) Play Scale: The play scale used in the present study is based on Rubin's Play Scale (Rubin et al., 1978). In the grid used by the observer, the

categories Play and Nonplay appear. The Play category is divided in three subgroups differentiating different types of social play: solitary play, parallel play, and group play. In addition, in each of these three subgroups, cognitive play is differentiated between functional play, constructive play, dramatic play, and games-with-rules.

The grid is separated into twelve blocks of 10 seconds, allowing the observer to record 120 seconds of the child's play (see Appendix C). The 10 seconds of observation were alternated by 20 seconds of recording. Each child was observed for twelve 10-second intervals on each day of observation. The total number of observations ranged from 36 to 72 intervals for each child. A grand total of 1210 observation intervals was collected. During an observation period, a check mark was inscribed next to the kind of play in which the child was observed engaging in. As well, the observer took notes on the toys used by the child during each time interval. The observation order of children was determined randomly for every day of observation. Once the random order was established, the order remained the same throughout the observation day. For example, Child 1 was observed for 10 seconds and the observations were recorded for the next 20 seconds, then Child 2 was observed for 10 seconds and his/her behaviors were recorded during the following 20 seconds, etc. This procedure was repeated until twelve 10-second intervals of observation were collected for each child.

### Interrater Reliability

Interrater reliability was expected to be high considering that the main instrument was the Rubin's Play Scale (1978), on which validity and reliability have been well established in children's play research. The observer and her colleague piloted the grid prior to the start of the data collection at a day care centre not involved in the present study. During the data collection, the observer collected data alone and was joined by her colleague for 20.6% of the total observation intervals (249 out of 1210). Cohen's Kappa was equal to .84 on those reliability observation intervals.

## RESULTS

### Normality and Homogeneity of Variance

The data from the present study were tested for normality and homogeneity of variance as these two measures provide insight into the data and valuable information regarding the composition of the sample. The assumption of homogeneity of variance was not violated, which suggests that the variances of the hospital and the control groups were approximately equal. On the other hand, normality was violated in some cases. Results of the latter test are not surprising due to the small sample involved in the present study. Indeed, with small sample sizes, there are reduced probabilities of having a normal distribution. Several factors may cause a sample to have a nonnormal distribution: a characteristic that does not have a normal distribution (e.g., many psychometric measures) (Micceri, 1989), a particular group that is biased in some

way, errors in the data collection, and small samples (Thorndike, 1982).

Transformations of the data are sometimes conducted to create a more normal distribution (see Appendix I for a discussion of this issue). In the present study, the raw data (frequency counts) were transformed into proportion scores.

### Preliminary Considerations and Descriptive Statistics

Observations of children's play and nonplay behaviors were transformed into proportion scores due to the different number of observation sessions that were conducted for each child. This strategy allowed us to compare children and groups by using a common denominator. Proportion scores were computed by dividing the frequency of a certain behavior by the total number of observations. For example, one child in the hospital group was observed in solitary dramatic play 11 times (eleven 10-second observation intervals). Over a total of 72 10-second observation intervals, the number 11, which represented the frequency of that particular behavior, becomes a proportion score of .15. Another child in the same group, was observed in solitary dramatic play 5 times. A total of 48 10-second observation intervals were collected for this child. Therefore the proportion score for that particular behavior equals .10. These mean proportion scores along with standard deviations and percentages for each group are summarized in Tables 1 and 2.

Before examining particular types of play and diverse nonplay behaviors, the frequency of play and nonplay behaviors the hospital and the control groups was compared. For the hospital group, play behaviors represented 45% and

Table 1

Proportion Scores, Standard Deviations and Percentages\* of Observations of Social, Cognitive, and Nonplay Behaviors

Variable	Hospital Group ( <u>n</u> = 11)			Control Group ( <u>n</u> = 11)		
	<u>M</u>	<u>SD</u>	%	<u>M</u>	<u>SD</u>	%
SOCIAL						
Solitary	.24	.15	(67.7%)	.21	.14	(35.4%)
Parallel	.08	.10	(21.8%)	.18	.10	(30.2%)
Group	.04	.12	(10.5%)**	.21	.12	(34.4%)
COGNITIVE						
Functional	.07	.07	(16.2%)	.10	.08	(17.3%)
Constructive	.21	.16	(47%)	.22	.10	(35.7%)
Dramatic	.10	.12	(22.4%)	.23	.18	(37.6%)
Games	.06	.09	(14.4%)	.06	.05	(9.4%)
NONPLAY						
Unoccupied	.01	.02	(2.7%)	.01	.02	(2.9%)
Onlooker	.13	.07	(24%)	.08	.08	(20.5%)
Peer Convers.	.02	.06	(3.5%)	.13	.06	(32%)
Adult Convers.	.06	.06	(10.1%)	.07	.03	(18.3%)
Parent Convers.	.12	.06	(21.8%)	0	0	(0%)
Transition	.01	.02	(1.9%)	.02	.01	(5.3%)
Rough/tumble	0	0	(0%)	.01	.02	(2.4%)
Exploration	.03	.04	(6.3%)	.03	.02	(6.5%)
Reading	.01	.03	(2.2%)	.01	.01	(.3%)

T.V.	.10	.14	(17.7%)	0	0	(0%)
Tattoo	.05	.06	(9%)	0	0	(0%)
Wandering	.01	.01	(.8%)	.05	.04	(11.7%)
Aggression	0	0	(0%)	0	0	(0%)

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\* Percentages within categories are calculated in this table

\*\* Only group play with peer is taken into account here. The portion of group play where parents were involved has been taken out.

Table 2

Proportion Scores, Standard Deviations and Percentages\* of Observations of Social, Cognitive, and Nonplay Behaviors

Variable	Hospital Group ( <u>n</u> = 11)			Control Group ( <u>n</u> = 11)		
	<u>M</u>	<u>SD</u>	%	<u>M</u>	<u>SD</u>	%
SOCIAL						
Solitary	.24	.15	(17.8%)	.21	.14	(13%)
Parallel	.08	.10	(6%)	.18	.10	(11.1%)
Group	.04	.12	(3%)**	.21	.12	(13%)
COGNITIVE						
Functional	.07	.07	(5%)	.10	.08	(6.2%)
Constructive	.21	.16	(15.6%)	.22	.10	(13.6%)
Dramatic	.10	.12	(7.4%)	.23	.18	(14.2%)
Games	.06	.09	(4.5%)	.06	.05	(3.7%)
NONPLAY						
Unoccupied	.01	.02	(.7%)	.01	.02	(.6%)
Onlooker	.13	.07	(9.6%)	.08	.08	(4.9%)
Peer Convers.	.02	.06	(1.5%)	.13	.06	(8%)
Adult Convers.	.06	.06	(4.5%)	.07	.03	(4.3%)
Parent Convers.	.12	.06	(8.9%)	0	0	(0%)
Transition	.01	.02	(.7%)	.02	.01	(1.2%)
Rough/tumble	0	0	(0%)	.01	.02	(.6%)
Exploration	.03	.04	(2.2%)	.03	.02	(1.9%)
Reading	.01	.03	(.7%)	.01	.01	(.6%)



T.V.	.10	.14	(7.4%)	0	0	(0%)
Tattoo	.05	.06	(3.7%)	0	0	(0%)
Wandering	.01	.01	(.7%)	.05	.04	(3.1%)
Aggression	0	0	(0%)	0	0	(0%)

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\* Percentages for overall play and nonplay behaviors are calculated in this table

\*\* Only group play with peer is taken into account here. The portion of group play where parents were involved has been taken out.

nonplay behaviors, 55% of the total behaviors observed. In the control group, play behaviors represented 60% and nonplay behaviors, 40% of the total behaviors observed. To determine if the proportion of play and nonplay behaviors differed in the two conditions, a one-way ANOVA (play X hospital group, control group) was conducted. The two play conditions were the independent variables and play was the dependent variable. A significant difference was evident,  $F(1, 21) = 6.42, p < .05$ . A significant difference for play behaviors automatically means that there is a significant difference for nonplay behaviors as well, since these two categories are mutually exclusive. Paired samples  $t$ -tests were conducted to examine differences within groups. A significant difference was found between play and nonplay behaviors for the control group,  $t(10) = -2.81, p < .05$ , two-tailed ( $M = .60$  for play behaviors and  $M = .40$  for nonplay behaviors). The  $t$ -test for the hospital group was non-significant,  $t(10) = 1.07, ns$  ( $M = .45$  for play behaviors and  $M = .55$  for nonplay behaviors).

#### Dramatic Play with Medical Toys

The first hypothesis stated that children with leukemia would be observed more frequently in dramatic play with medical toys than the control group of children. A 2 conditions (hospital group, control group) X 2 dramatic play (with medical toys, with nonmedical toys) MANOVA was conducted. The 2 conditions were the independent variables and the dramatic play with medical toys and nonmedical toys were the dependent variables. The Wilks' Lambda

analysis revealed no significant differences between the two groups,  $F(1, 21) = 1.38$ , ns. Within group comparisons were also performed and no significant differences were apparent between the amount of dramatic play with medical toys and dramatic play with nonmedical toys in both groups,  $t(10) = .85$ , ns (hospital group) ( $M = .02$  for dramatic play with medical toys and  $M = .01$  for dramatic play with nonmedical toys); and  $t(10) = .2$ , ns (control group) ( $M = .04$  for dramatic play with medical toys and  $M = .04$  for dramatic play with nonmedical toys).

#### Theme Persistence and Recurrence of Activities and Behaviors

The second hypothesis stated that children with leukemia would show a persistent theme through their play with the different toys compared to the control children. Theme persistence refers to children choosing the same toys and engaging in similar activities week after week. A one-way ANOVA, where the mean number of activities the children engaged in was the dependent variable and the two conditions were the independent variables, was conducted. Children in the control group engaged in a wider variety of activities than the hospital group,  $F(1, 21) = 9.41$ ,  $p < .01$  ( $M = 6.55$  for the hospital group and  $M = 8.82$  for the control group). This hypothesis is examined further and more in depth with qualitative analyses later in the Results section.

#### The Relationship Between Reported Stress and Play

The third hypothesis stated that there would be a relationship between the level of stress the children experienced and the type of play observed. The stress

level of children was assessed using the Stress Inventory (Chandler, 1981). To examine this question, correlation analyses were conducted (see Tables 3 and 4). Few significant differences were found in these analyses, however the significant results followed a pattern. Children in the hospital group were observed to engage in significantly more functional types of play when they reported being upset. As well, choosing toys that encouraged occupation types of play were associated with reports of being upset. Engaging in more dramatic play and choosing significantly more fantastic types of toys was associated with the rating of their mood as "so so". The data were examined to see if the literature suggesting that highly anxious children engage in significantly more solitary than parallel or group play (Barnett, 1984), was supported. While correlations were not significant to support that premise (due to the small n size), some trends showed that when children in the hospital group reported feeling happy, there was a positive relationship with parallel and group play, and a negative relationship with solitary play (see Table 3). Within the control group, no significant correlations were found. There was however a trend indicating a negative relationship between children's report of feeling happy and the amount of play with new medical toys (see Table 4).

### Social Play

The purpose of these analyses was to compare the type of social play children in the hospital and control group engaged in. Here, a 2 conditions (hospital group, control group) X 3 play (solitary, parallel, group) MANOVA

Table 3

Correlations Between Children's Mood and their Play Behaviors**Hospital Group**

	Happy	Soso	Upset
Solitary Play	-.53x	.42	.46
Parallel Play	.59x	-.20	-.25
Group Play	.58x	.15	-.42
Functional Play	-.42	.18	.70*
Constructive Play	.45	-.14	-.24
Dramatic Play	-.12	.62*	-.04
Games	.21	.01	-.10
Nonplay behaviors	-.28	-.37	.02
Play behaviors	.28	.37	-.02
New medical toys	.23	-.02	-.25
New nonmedical toys	.47	-.13	-.17
Bricolage	.53x	-.06	-.14
Playing House	-.23	.03	.41
Occupation	-.53x	.02	.71*
Fantastic	-.29	.75**	.12
Blocks	not available		

\* Significant at the .05 level (2-tailed)

\*\* Significant at the .01 level (2-tailed)

x indicates a trend (significance level between .05 and .10)

Table 4

Correlations Between Children's Mood and their Play Behaviors

Day Care Group	Happy	Soso	Upset
Solitary Play	-.12	.23	.27
Parallel Play	-.31	-.01	.10
Group Play	.20	-.18	-.30
Functional Play	.25	-.20	-.01
Constructive Play	-.15	-.10	.02
Dramatic Play	-.13	.21	.04
Games	-.09	-.09	-.01
Nonplay behaviors	.19	-.07	-.08
Play behaviors	-.19	.07	.08
New medical toys	-.53x	.33	-.17
New nonmedical toys	-.23	.27	-.07
Bricolage	-.13	-.14	.08
Playing House	-.13	.32	-.01
Occupation	.21	-.18	.30
Fantastic	.20	-.18	.09
Blocks	.08	-.16	.08

x indicates a trend (significance level between .05 and .10)

was conducted. The two conditions were the independent variables and the three types of social play were the dependent variables. The Wilks' Lambda analysis revealed a significant difference between the groups,  $F(1,21) = 11.05$ ,  $p < .001$ . Further analyses revealed a significant difference between the groups for parallel play,  $F(1, 21) = 5.72$ ,  $p < .05$  ( $M = .08$  for the hospital group and  $M = .18$  for the control group), where children in the control group were observed more often in this type of social play. A distinction was made between group play with parents and peers and with peers only because it is important to know who children chose as their play partners. Comparing children's group play with peers results in a more equitable comparison. Group play with peers for the hospital group was also significantly different from group play for the control group,  $F(1, 21) = 17.86$ ,  $p < .001$  ( $M = .04$  for the hospital group and  $M = .21$  for the control group). When group play included parents, there was no significant difference between the groups,  $F(1, 21) = 2.73$ ,  $ns$  ( $M = .12$  for the hospital group and  $M = .21$  for the control group). Solitary play was not found to be different between the two groups,  $F(1, 21) = .24$ ,  $ns$  ( $M = .24$  for the hospital group and  $M = .21$  for the control group)

After comparisons between groups were made, it was found useful to investigate differences in social play within the groups. Specifically,  $t$  tests were used to conduct these analyses (see Table 5). Within the hospital group, the frequency at which children engaged in solitary play was found to be significantly different from the frequency of parallel play and it was also found

to be significantly different from the frequency of group play (when group play included peers only). These results indicate that children in the hospital group were significantly more involved in solitary play than the other two types of social play. The remaining analyses were not found to be significant for the hospital group and no significant differences were found between the three types of social play for the control group (see Table 5).

### Cognitive Play

The purpose of the following analyses was to compare cognitive play between the two groups and within the groups. First, a 2 condition (hospital group, control group) X 4 play (functional, constructive, dramatic, games) MANOVA was conducted. The independent variables were the two conditions and the dependent variables were the four types of cognitive play. The Wilks' Lambda analysis revealed no significant differences between the hospital and the control groups,  $F(1,21) = 1.85$ , ns. Considering the small n size, it was judged appropriate to conduct further analyses even if the overall F was nonsignificant. Further analyses identified a trend for dramatic play  $F(1,21) = 3.78$ , p = .07 (M = .1 for the hospital group and M = .23 for the control group), suggesting that children in the control group might have engaged in more dramatic play than the children in the hospital group.

Using t-tests, significant differences were found when computing within group comparisons (see Table 6). Within the hospital group, significant differences were found between functional play and constructive play and



Table 5

T-tests for Social Play within Groups

Types of Social Play	<u>t</u>	<u>p</u>
<b>Hospital Group (df = 10)</b> (Means)		
Solitary play (.24) and Parallel play (.08)	2.46	.03
Solitary play (.24) and Group play (.04)	4.33	.00
Parallel play (.08) and Group play (.04)	1.15	<u>ns</u>
<b>Control Group (df = 10)</b> (Means)		
Solitary play (.21) and Parallel play (.18)	.48	<u>ns</u>
Solitary play (.21) and Group play (.21)	.11	<u>ns</u>
Parallel play (.18) and Group play (.21)	-.44	<u>ns</u>

Table 6

T-tests for Cognitive Play within Groups

Types of Cognitive Play	<u>t</u>	<u>p</u>
<b>Hospital Group (df = 10)</b> (Means)		
Functional play (.07) and Constructive play (.21)	-2.22	.05
Functional play (.07) and Dramatic play (.10)	-.82	<u>ns</u>
Functional play (.07) and Games (.06)	.21	<u>ns</u>
Constructive play (.21) and Dramatic play (.10)	1.51	<u>ns</u>
Constructive play (.21) and Games (.06)	2.72	.02
Dramatic play (.10) and Games (.06)	.81	<u>ns</u>
<b>Control Group (df = 10)</b> (Means)		
Functional play (.10) and Constructive play (.22)	-3.07	.01
Functional play (.10) and Dramatic play (.23)	-1.77	.1 (trend)
Functional play (.10) and Games (.06)	1.58	ns
Constructive play (.22) and Dramatic play (.23)	-.14	ns
Constructive play (.22) and Games (.06)	4.39	.00
Dramatic play (.23) and Games (.06)	2.81	.02

between constructive play and games. These findings show that the children in this group were involved in more constructive play than functional play and games with rules. Within the control group, significant differences were found between functional play and constructive play, constructive play and games with rules, and dramatic play and games with rules. These results indicate that the control group of children were engaged in more constructive play than functional play and games, and in more dramatic play than games with rules.

#### Children's Use of New Toys

To examine the possible differences between the hospital group and the control group on their play behaviors with medical toys, a 2 condition (hospital group, control group) X 4 play with new toys (play with new medical toys, nonplay with new medical toys, play with new nonmedical toys, and nonplay with new nonmedical toys) MANOVA was conducted. The two conditions were the independent variables and the four play with new toys were the dependent variables. The Wilks' Lambda analysis did not reveal a significant difference between the two groups overall, but it did identify a trend,  $F(1, 21) = 2.63$ ,  $p = .07$ . Further analyses revealed significant differences for (a) play behaviors with nonmedical toys,  $F(1, 21) = 5.77$ ,  $p < .05$  ( $M = .02$  for the hospital group and  $M = .08$  for the control group); (b) for play behaviors with medical toys,  $F(1, 21) = 5.6$ ,  $p < .05$  ( $M = .01$  for the hospital group and  $M = .07$  for the control group); and (c) for nonplay behaviors with medical toys,  $F(1, 21) = 4.38$ ,  $p < .05$  ( $M = .00$  for the hospital group and  $M = .01$  for the control group). Each of these analyses

indicated that the control group engaged in more play with medical toys, more play with nonmedical toys, and were observed in more nonplay behaviors with medical toys.

Within the control group, some  $t$ -tests were used to analyze certain behaviors. It was found that this group engaged in play with nonmedical toys more than in nonplay behaviors with those toys,  $t(10) = 3.22$ ,  $p < .01$ , two-tailed ( $M = .08$  for play with nonmedical toys and  $M = .01$  for nonplay with nonmedical toys). As well, they engaged in more play than nonplay behaviors with medical toys,  $t(10) = 2.69$ ,  $p < .02$ , two-tailed ( $M = .07$  for play with medical toys and  $M = .01$  for nonplay with medical toys). Interestingly, no significant differences were found between the amount of observed play with medical toys and play with nonmedical toys,  $t(10) = .51$ ,  $ns$  ( $M = .07$  for play with medical toys and  $M = .08$  for play with nonmedical toys).

Within the hospital group, there were no significant differences between the play and nonplay behaviors with medical and nonmedical toys:  $t(10) = 1.74$ ,  $ns$  ( $M = .02$  for play with nonmedical toys and  $M = .00$  for nonplay with nonmedical toys); and  $t(10) = 1.14$ ,  $ns$  ( $M = .01$  for play with medical toys and  $M = .00$  for nonplay with medical toys). As well, no significant difference was found between the amount of observed play with medical toys and play with nonmedical toys,  $t(10) = .28$ ,  $ns$  ( $M = .01$  for play with medical toys and  $M = .02$  for play with nonmedical toys).

## Conversation

The amount of adult conversation the children were engaged in was compared to the amount of peer conversation. A 2 condition (hospital group, control group) X 2 conversation (peer, adult) MANOVA was conducted. The two conditions were the independent variables and the conversation with adults and peers were the dependent variables. The Wilks' Lambda analysis revealed a significant difference between the two groups,  $F(1, 21) = 33.44, p < .001$ . Further analyses showed that the hospital group was involved in significantly more conversations with adults than the control group,  $F(1, 21) = 19.86, p < .001$ . Peer conversation, on the contrary, was significantly more present in the control group,  $F(1, 21) = 18.65, p < .001$ . Significant differences were also found within groups. For the hospital group, peer conversation was observed significantly less than adult conversation,  $t(10) = -8.48, p < .001$ , two-tailed ( $M = .02$  for peer conversation and  $M = .18$  for adult conversation). The opposite pattern was true for the control group,  $t(10) = 3.17, p < .01$ , two-tailed ( $M = .13$  for the peer conversation and  $M = .07$  for adult conversation).

## Passive Behaviors

A passive behavior was, in the present study, defined as a child being unoccupied, onlooking, wandering around, or having a tattoo drawn (with make-up crayons) on his/her hand, arm, face, or head. A one-way (hospital group, control group X passive behaviors) ANOVA was conducted. The independent variables were the two conditions and the dependent variable was

passive behaviors. A statistically significant difference was found between the groups for passive behaviors,  $F(1, 21) = 32.79, p < .001$  ( $M = .16$  for the hospital group and  $M = .00$  for the control group). Children in the hospital group were found to engage in significantly more passive behaviors than the children in the control group.

#### A Further Examination of Theme Persistence

The purpose of these qualitative analyses was to examine in greater detail the findings related to the second hypothesis. Quantitative analyses revealed that children in the hospital group engaged in a significantly fewer number of activities than the control group over the weeks of observation. In order to examine the second hypothesis regarding the persistence of themes and recurrence of activities and behaviors, qualitative analyses were undertaken. The frequency of behaviors and toys the children played with in the different conditions were tabulated and graphed for each child. In the graphs, the behaviors and toy choices have been sorted by observation periods so as to demonstrate the distribution and repetition of behaviors across the weeks.

Frequency of recurring activities/behaviors. Graphs and frequency tabulations were completed for all 22 children, however four cases, two from the hospital group and two from the control group, were selected to illustrate the procedure and the differences between members of the two groups (see graphs of the four cases in Appendix J). The two cases from the hospital groups were chosen to represent cases similar to what the literature refers to when referring to

the play of children under stress. Random sampling was used to select the two cases from the control group. Julie and Gabrielle<sup>2</sup> were two girls from the hospital group, and both showed a high recurrence of behaviors/activities. In Julie's case, 7 activities/behaviors were observed over a total of 72 10-second interval observations. The ones that occurred most often were: conversations with an adult (26.4%), having the educator draw a tattoo on her hand (19.5%), bricolage (19.5%), and passive behaviors (15.3%). Gabrielle was observed engaging in 6 activities/behaviors, over a total of 42 10-second interval observations. The most frequent ones were: watching television (42.9%), conversations with an adult (21.4%), and passive behaviors (14.2%). To represent the control group, Marika and Philippe<sup>2</sup> were selected. Marika was observed for 60 10-second intervals and 14 different activities/behaviors were noted. Amongst the most recurrent were: passive behaviors (18.3%), playing with the doctor's kit (16.7%), and conversations with peers (11.7%). Over 48 10-second intervals, Philippe was observed engaging in 12 different activities/behaviors such as passive behaviors (20.8%), conversations with peers (14.6%), playing with the doctor's kit (14.6%), and playing dress-up (12.5%).

Activities and behaviors were less varied for members of the hospital group and their recurrence was also higher. In effect, Julie was observed conversing with an adult and having a tattoo drawn on her hand five weeks out of six. Passive behaviors were observed during each of Julie's observation

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<sup>2</sup> To assure confidentiality, the names of the participants have been substituted with fictitious ones.

sessions (6/6). Gabrielle also engaged in the same activities week after week: she watched television, conversed with an adult, and displayed passive behaviors every week (4/4). The two children from the control group engaged in a wider variety of activities/behaviors throughout the weeks. Marika played with dinosaurs, marbles, and bowling pins the first week and with a farm set and a memory game the second week. She drew with stencils during the third week of observations, played in the kitchen corner during the fourth week and played with a doctor's kit during the fourth and fifth weeks. Philippe's case presents almost as much variety over the weeks: he played with blocks, a doctor's kit, drew and was observed engaging in rough-and-tumble play during the first week. He played dress-up and a memory game during the second week, and with dinosaurs and tubes and marbles during the third week. Finally, Philippe played with another doctor's kit and climbed the gross-motor structure during the fourth week of observations.

In conclusion, the patterns identified with these qualitative analyses support the hypothesis stating that children with leukemia would show a persistent theme through their play with the different toys compared to the control children. As mentioned previously, theme persistence referred to children choosing the same toys and engaging in similar activities week after week. Indeed, the analyses and graphs strongly suggest that children in the hospital group played with fewer toys and that they tended to play with the same toys often.



## DISCUSSION

The play of children with leukemia was compared to the play of a group of healthy children. As expected, some interesting differences were found between the two groups. Children's play and nonplay behaviors during free play were observed, coded (Rubin et al., 1978), and tabulated. Observations of children's play and nonplay behaviors were transformed into proportion scores due to the different number of observation sessions that were conducted for each child. The same number of observation intervals were collected for the control children, except for one child, but for the children with leukemia, the range of observation intervals was greater: some children could not be observed some days because they were too sick and were resting in the dormitory. Sometimes, children would spend some time in the playroom and then go to the dormitory to lie down.

Due to the small sample size of this study, caution is suggested in drawing definite conclusions from the data. The study would need to be replicated with a larger sample before generalizations can be made to other samples and/or the larger population. A fuller discussion of limitations is found later in the discussion.

In the sections that follow, the present study's findings will be discussed in light of the stated hypotheses and the relevant theory and research. First, descriptive statistics and overall play are discussed. Then, the three stated hypotheses are examined: children's dramatic play with medical toys, theme

persistence, and the relationship between stress and play. As well, other elements of play, such as the social and cognitive aspects, are examined. And finally, particularities of the play of ill and anxious children are explored (e.g., choice of toys, passivity). Subsequently, the limitations to the study are enumerated, future directions are suggested, and implications of the present study are described.

### Overall Play Behaviors

We have come to know that stress can disrupt children's play (Burstein & Meichenbaum, 1979; Erikson, 1940). Play has many important functions and a disruption may be detrimental to the young child. It has been suggested that play serves the child in alleviating anxiety and increasing adjustment (Adams, 1976; Barnett, 1984; Barnett & Storm, 1981; Cassell, 1965; Gilmore, 1966, Rae et al., 1989; Singer & Singer, 1990). It is believed that play helps the child assimilate, at his/her own pace, experiences that were too large to assimilate all at once (Waelder, 1932). Play is a way for the child to gain control of what he/she has lost control over in his/her life. It was found in the present study that children's overall amount play and nonplay behaviors differed in the two groups. Indeed, children in the control group engaged in more play behaviors than the children with leukemia. As well, the children with leukemia engaged in more nonplay behaviors than play behaviors and the opposite was true for the control children. Details on the particularities of children's play and nonplay behaviors are described and discussed in the following pages.

### Children's Dramatic Play with Medical Toys

It is believed that children who experience stress seek toys that are related to the stress factor and that they choose these toys to work through their anxiety or fear (Piaget, 1962). Based on this theory, it was hypothesized that the children with leukemia would be observed in more dramatic play with medical toys than the control children. Results from the present study did not support the hypothesis: children with leukemia did not engage in more dramatic play with medical toys. In fact, the two groups did not differ from one another on this question. However, it is important to note that the control children engaged in more overall dramatic play than the children with leukemia. Six children out of eleven in the hospital group did not engage in dramatic play at all. Had the two groups engaged in similar amounts of dramatic play, it is possible that the children with leukemia might have been observed in dramatic play with medical toys more than the control children.

There are several reasons that could explain why the children with leukemia did not engage in as much dramatic play as the control children. First, it is not the simplest type of play and children in their physical, mental, and emotional condition might not be able to engage in such activity easily. The literature suggests that children who are experiencing stress will play with toys that are related to their stress and that they will act out the stressful events in their play. This type of behavior may be observed in the privacy and confidential situation that is created when a child is alone with his/her therapist,

but is not encouraged in a room filled with other children and parents. Indeed, space and crowding are important factors that affect children's play (Christie et al., 1988; Johnson et al., 1999). Time is another factor affecting play; not solely the amount of time available to play, but the quality of the time that is allowed (i.e., uninterrupted play) (Christie et al., 1988; Tegano & Burdette, 1991). The external clinic of hemato-oncology is a great addition to the medical services and is designed to alleviate children's stress as well as parents'. However, the space provided was relatively small, the room was always filled with children and parents, and children's play was interrupted constantly by the nurses and doctors. These three factors may have affected children's capacity to engage in dramatic play and, in particular, in dramatic play with medical toys.

#### Theme Persistence and Recurrence of Activities and Behaviors

It was hypothesized that, in the play of children with leukemia, more similar themes would emerge week after week. This statement was founded on the literature suggesting that anxious children will tend to play with the same toys, engage in the same activity, develop a similar theme to cope with the stressful event. Erikson (1976) named this process the "repetition compulsion". He believed that children in play reconstruct, reenact, and reinvent their stressful experiences in order to understand them, assimilate their reality, and achieve mastery over them. According to Erikson, the child unconsciously arranges for variations of an original theme when he/she has not learned either to overcome or live with it. In the present study, the children's play and nonplay behaviors

were observed once a week for four to six weeks. The emergence of patterns in some children's behaviors and activities was noted. More patterns were identified for the children with leukemia than for the control children. Indeed, children with leukemia were observed engaging in the same activities and adopting the same behaviors week after week, whereas the control children had a larger repertoire of activities that varied across the different observation sessions. Both settings had a similar quantity and quality of toys available, however the children with leukemia tended to reach for the same toys and engage in the same types of activities week after week.

Some qualitative analyses were conducted to examine further theme persistence in children's play. Two cases were selected from each group to examine the recurrence of themes in the children's play. In the hospital group, conversations with adults, tattoos drawn on children's hands, watching television, and passive behaviors were amongst the most frequently observed behaviors. In the control group, conversations with peers, group play, playing with medical toys, playing house, and drawing with stencils were frequently observed. It is possible that children with leukemia seek and find a certain security and stability in the activities they engage in when they attend the hospital to receive treatment every week. According to Zegans (1982), there are four different stages to the child's stress experience: (1) the event; (2) the child's sense-making of the experience; (3) the search for coping strategies; and (4) the implementation of these strategies. The child first needs to face and understand

what is happening. Once this is accomplished, the child will find means (i.e., coping strategies) to deal with the anxiety-inducing event. Coping is recognized as the process of initiating and maintaining attempts to relieve the threat engendered by a stressful event (Abbott, 1990; Compas, 1987; Lazarus, 1980; Lazarus & Folkman, 1984; Rutter, 1983). The repetition of certain cognitive or behavioral actions helps the child cope with his/her stress. To nurture a certain routine may be, therefore, especially reassuring for the anxious and conflicted children.

#### The Relationship Between Reported Stress and Play

Children were asked to identify their mood on a 3-item scale (happy, so-so, upset) at the beginning of every observation session. It was hypothesized that there would be a relationship between children's reports of mood and their play behaviors. It has been suggested that, in the play of anxious children, there tends to be an evolution of themes through three main stages: chaos, struggle, and resolution (Allan, 1988; Allan & Berry, 1987). Moreover, anxious children tend to focus on toys and activities that will help them assimilate and cope with their stress (Piaget, 1962). Findings identified an association between the hospital groups' social play and their reports of mood: there was a positive relationship between their report of being happy and their parallel play and group play, and a negative relationship with solitary play. A strong positive relationship was also noted between children's reports of being upset and their functional play. No such patterns were identified for the control group. These

findings suggest that the play of the children with leukemia was affected by their mood, which, in turn, may have been influenced by the stress they were feeling. Functional play is known to be the simplest type of cognitive play and the present findings suggest that when the children felt stressed and upset, they engaged in functional play more than any other type of cognitive play. Fein (1981) and others, have found that it is rare to observe pretend play amongst children who are anxious, very angry, or in conflict. It is, in effect, more probable to observe simpler types of cognitive play such as functional and low-level constructive play for these children (Tegano & Burdette, 1991). As well, when they felt less stressed, they tended to engage in more parallel and group play and when they were more stressed and upset, they tended to play on their own (solitary play). Levin and Wardwell (1962) and Sears (1947) have suggested that solitary play is a means to assess information concerning the child's 'inner person', as well as his/her anxieties and the experiences that produced them. It is possible that, when they are stressed, the children need to focus all of their energy on themselves to cope with their stress and may not have enough energy remaining to interact with others.

### Social Play

Children's play was coded for three types of social interaction: solitary, parallel, and group. It was found that the control children engaged in more parallel and group play than the children with leukemia. Children with leukemia also engaged in significantly more solitary play than parallel or group play.

These findings support the theory affirming that children tend to play more on their own when they experience stress (Levin & Wardwell, 1962; Sears, 1947). In support of the present findings, Barnett (1984) reported that highly anxious children engaged in significantly more solitary than parallel or group play.

Children in the control group engaged in the three types of social play in similar amounts and there was no significant difference between the three levels of interaction. The children with leukemia were observed in group play with peers and also with their parents. When the group play with parents was included, there were no significant difference between this group and the control group on this variable. Indeed, the children with leukemia interacted very frequently with their parents and peer interaction was fairly low. It is necessary to note that the children in the hospital group saw the other children and had the opportunity to play with them once a week, whereas the children in the control group saw each other every day for very long periods of time. It is, therefore, understandable that the control children would form friendships with their everyday peers and that they would play with them more than the children with leukemia who do not have a comparable relationship with their weekly peers. In addition, the parents of the children with leukemia were usually present in or in close proximity of the playroom, which made it easy for their children to reach out to them as opposed to an unfamiliar child.



## Cognitive Play

Children's play was also coded for four types of cognitive play: functional, constructive, dramatic, and games with rules. The hospital group and the control group differed on only one of these types of cognitive play: dramatic play. Indeed, the control children engaged in more dramatic play than the children with leukemia. As mentioned above, this difference may have been created by the environmental conditions of the children's play. Indeed, it is possible that the overcrowding, the limited space, and the constant interruptions may have affected the way the children played at the hospital. These constraints may have limited children's choice of toys and capacity to engage in more complex types of cognitive play such as dramatic play (Christie et al., 1988; Tegano & Burdette, 1991).

Within the groups, findings revealed that the children in the hospital group were involved in more constructive play than functional play and games and that the control group engaged in more constructive play than functional play and games, and in more dramatic play than games. The fact that the children with leukemia engaged more frequently in constructive than functional play is surprising given the literature suggesting that anxious children tend to engage in the simplest type of cognitive play (i.e., functional play). However, bricolage and drawings are considered to be constructive activities and children at the hospital frequently engaged in bricolage activities. One reason for that was that the educator in the playroom of the external clinic of hemato-oncology

always prepared many bricolage activities for children to do. She designed the bricolage activities and then prepared the pieces so that the children have time to put them together and decorate them between two medical interruptions. Had the bricolage activities been taken out of the constructive play category, functional play would surely have been more present in these children's play than constructive play. However, it is necessary to add that the drawings and the bricolage activities that are so popular with the children at the hospital were considered to be a low level of constructive play. Indeed, constructive play is recognized to fluctuate between very simple to very complex (Christie et al., 1988). Nonetheless, the role of the environment played a role in children's choice of activities.

#### Children's Use of New Toys

The manipulation used in this study was the implementation of two sets of toys at different times during the weeks of observation. The new nonmedical toys were introduced during the second and third weeks and the new medical toys were introduced during the fifth and sixth weeks. The appearance of new toys served to examine the theory stating that children with anxieties would choose toys that were related to their anxieties, whereas children who experienced no particular stress would choose toys according to their novelty (Piaget, 1962). It was found that the control children engaged in more play with (a) medical toys, (b) nonmedical toys, and (c) were observed in more nonplay behaviors with medical toys than the children with leukemia. Piaget's theory

was therefore not supported. However, the theoretical concepts advanced by Piaget (1962), Bettelheim (1987), and Landreth (1993) regarding children's choice of toys may have been based on a child's play in a private context, specifically children's play in a therapeutic context. For example, Anna Freud and Melanie Klein, as well as many others studied children in private and therapeutic conditions. As well, children in the hospital may have not had the opportunity to play with the novel toys (medically-related or not) due to the number of children that could have chosen and played with them. Indeed, since the toys were placed somewhere in the middle of the room so that the children would see them, all children could see them and choose to play with them, whether they were participants in the study or not. This problem did not appear in the day care centre since there were only 14 children in the group and they tended to engage in group play more frequently. Interestingly, there were no significant differences between the amount of observed play with medical toys and play with nonmedical toys for both groups. The limitations and constraints to the hospital group's play may explain these findings. Had the children with leukemia had similar access to the medical toys as the control group and had they not been interrupted constantly by the medical staff, their choice of toys may have been different and their level of play, more complex.

### Conversation

It was mentioned previously that the children with leukemia interacted more with adults than with peers in their play. They were also found to

converse more with adults than with their peers. On the contrary, the control children were observed in conversations with peers more frequently than with adults. Even though the children's parents were present at the hospital and were not at the day care centre, the difference between the groups may not result solely from parental presence or the interactions between children and their parents. Given that the children with leukemia played close to or with their peers more when they reported feeling happy than when they reported feeling okay or upset, the determining factor in children's choice of playmates and conversation partners may have been the anxiety that the children were feeling. When they felt more stressed and insecure, the children with leukemia chose to interact with their parents, probably because it felt safe and demanded less energy from them.

### Passive Behaviors

A passive behavior was, in the present study, defined as a child being unoccupied, onlooking, wandering around, or having a tattoo drawn (with make-up crayons) on his/her hand, arm, face, or head. It was thought that, since the children with leukemia engaged in more nonplay activities/behaviors than play activities, they would be observed engaging in more frequent passive behaviors. In their study, Tegano and Burdette (1991) found that in the first ten minutes of a free play period, children were highly involved in functional types of play and they also observed more nonplay behaviors. Christie et al. (1988) obtained similar results: there were more unoccupied and onlooking behaviors

in the 15-minute periods as compared to the 30-minute periods. It was also believed that they would exhibit more passive behaviors than the control group given that they might not have as much energy, due to physical exhaustion, medication, and stress, to play or actively participate in a conversation or other nonplay activities. The results of the analysis performed confirmed that children in the hospital group exhibited passive behaviors more frequently than the control group.

A few findings did not support the hypotheses stated or theories reviewed and this might be due to certain limitations to this study. These limitations are enumerated and discussed next.

### Limitations

The first and possibly the greatest limitation to this study was the number of participants involved. Only twelve children with leukemia between 3 and 5 years old were available at Sainte-Justine Hospital. Another twelve children were recruited from a day care centre to match the first group. After data collection was completed, two were discarded due to missing data, leaving eleven children in each group. Overall, the population of children with leukemia who are between the ages of 0 and 5 years is not large: in Canada, approximately 850 children are diagnosed with cancer every year and leukemia represents 25% of the new pediatric cancer cases (Huchcroft et al., 1996). Obviously, the present study could not extend its investigation to all the Canadian children between 0 and 5 years old who had leukemia. Instead, the recruitment was done at Sainte-

Justine Hospital, a large, Francophone children's hospital in Montreal. Sainte-Justine Hospital not only treats children in the greater Montreal, but also children from all over the province and its cancer centre is recognized to be the largest in Québec.

Because the study was exploring children's play and that the play of children under 3 years old is not as sophisticated as the play of slightly older children, one of the selection criteria became that the children be between 3 and 5 years old. In order, to include children who were at similar milestones in their treatment, only the children who attended the external clinic once a week to receive treatment were included in this study. Again, these selection criteria reduced the number of participants eligible. However, not establishing such criteria would have led to a very heterogeneous group and perhaps not very meaningful results. Researchers studying populations such as this one have to deal with small sample constraints all the time.

Another major constraint was the no-intervention research design that was established. While observations provide the researcher with abundant information, intervention-types of studies give the researchers more control. Had this study's procedure been intervention-based, several of the constraints described would have been controlled for. An example of a constraint that could not be controlled in this study was the number of children that were in the playroom and the toys they chose and played with. The crowding and the limited selection of toys that resulted from the many children who were playing

in the playroom limited the study's participants' play. As well, children in the day care centre were considerably more familiar with their peers who they interacted with many hours a day, everyday, and for long periods of time. On the other hand, the children at the hospital had the opportunity to play with their peers only once a week. This difference in familiarity with their peers is considered to have affected the frequency at which children engaged in group play. Another element affecting group play was parental presence in the playroom at the hospital. Children at the hospital were frequently observed interacting with their parents. However it is assumed that the children chose their parents as conversation and play partners not only because they were present, but because it felt safe to play with them instead of playing with children they did not know very well.

Another limitation to this study was the constant interruptions caused by the nurses and doctors that have surely constrained the children's play. Obviously, the children attended the clinic for medical treatments and, therefore, it was to be expected that they would meet with nurses and doctors. However, the short time that they had to play often did not allow them to engage in complex types of activities (Christie et al., 1988; Tegano & Burdette, 1991). The impact of the interruptions are deemed to be meaningful and it may be that without the constant interruptions, the children with leukemia would have engaged in more complex types of activities, such as dramatic play.

Finally, in order to compute statistical analyses, the raw data were transformed into proportion scores. This transformation was necessary due to the variation in the number of observation intervals that were collected for each child. In effect, in the hospital group, there was quite a range of observation intervals. This was mainly due to the children's physical condition: they sometimes went directly to the dormitory upon their arrival at the clinic and sometimes they played or more likely sat in the playroom for a short period of time before deciding to go lie down in the dormitory. The times when the children could not play because they felt too ill were not compiled in the nonplay behaviors, rather no observations were compiled in such cases. Children were simply considered to be too ill to play. Had the data collection been more individual in nature, and had the researcher had more time to collect the data, information could have been sought and noted on children's treatments every week. Having this additional information, relations may have been identified between the children's stress level, the type of treatment they would receive that day (only chemotherapy, chemotherapy and a lumbar puncture, or chemotherapy and a spinal tap), and the type of play they engaged in. Time constraints indeed limited the depth of the investigation of children's play in relation to treatment factors, personality factors, and also familial factors.

### Future Directions

Research on the value of play for children who are ill is scarce and it is crucial that more investigations be undertaken to explore and uncover the many



benefits of play for these children. The growing number of research studies should also encourage the hospitals to pay attention to the findings and provide staff who will provide children with opportunities to play and, at the same time, cope more effectively with their illness and the emotional, cognitive, and physical difficulties that come along.

In order to investigate more effectively the therapeutic effects of play, numerous observational as well as controlled studies are required. It would be particularly interesting and valuable to conduct one-on-one intervention studies to be able to discuss with the children their choices of toys, story lines, or behavior towards the toys. Such a setting would allow the researcher to establish a relationship with the child and allow him/her to feel secure to tell stories or discuss feelings. It would also be beneficial in such circumstances to present the children with medical toys, give them information about these toys, and to encourage them to explore and to play with these toys. The researcher could suggest to the child to pretend to be a doctor and to treat the stuffed animals that are in the room, giving the child an opportunity to take control over the treatments that are induced to the vulnerable stuffed animals. This role-reversal game would allow the researcher to gain a better understanding of what the child is going through and how he/she is coping with the leukemia and the treatments.

## Implications

There are diverse consequences to the child's hospitalization such as the disorganization, interruption, and inhibition of the child's ability to play, therefore depriving the child of one of his/her most important coping mechanisms (Burnstein & Meichenbaum, 1979; Erikson, 1940). Play has been described as a lifeline for the children who are ill. According to Kayes (1991), the next best thing to the presence of a parent or a familiar adult for the hospitalized child is the access to play activities. She believes that play establishes a link between the child and his/her familiar world of home, family, and activities. It is, therefore, important that play materials be provided for the children and that adequate staff see that the children play and help them work through their anxieties and fears.

In effect, more attention must be devoted to the psychological care of children fighting leukemia. Diverse medical treatments have been utilized in order to treat and cure children with cancer, such as chemotherapy, radiotherapy, surgery, and bone marrow transplants. However, while the medical treatments in the past 30 years have improved the survival rate, children's psychological ordeal with having cancer has not been dealt with as successfully. This is why more research must examine and explore the play, speech, cognitive functions, and the emotional state of children who have leukemia, in order to administer the appropriate psychological services.

Hospitals and medical centres pay much attention and important amounts of money for medical research, but very little to research that examines the psychological state of their patients. Even though a spinal tap is a routine procedure today that does not take more than 45 minutes, the child still fears it for days and feels the pain for many hours. There must be some people assigned by the hospitals to take care of children's fears and anxieties. Whether these people talk, explain, draw, or play with the children, they are needed by the children and their family. If children are psychologically healthier, they will face the illness and cope with it more effectively. In the end, the children will feel better and suffer less and the hospitals (i.e., government) will be able to treat more children with the same amount of money. While this statement may seem a little simplistic, health care funds are an important factor in the care ill children receive. In order to implement more psychosocial services for the children in the hospitals, one would need to prove to the administrators that these services will benefit not only the children, but also the hospitals' budget. It remains that our most effective argument to convince others of the necessity for extensive psychosocial services in the hospitals is solid research.

### Concluding Summary

The present study investigated the play of a group of children with leukemia and a group of healthy children. It was hypothesized that there would be differences in the play of the children from the two groups. Specifically, the children with leukemia were expected to engage in overall less play than the

control children and they were expected to exhibit more passive behaviors. The findings confirmed these expectations. Children with leukemia were also expected to engage more frequently in dramatic play with medical toys and the results of the analyses conducted revealed no differences between the two groups for this behavior. As well, it was hypothesized that there would be a greater recurrence of themes, including repetition of behaviors and choice of toys, for the children with leukemia than for the control children. The findings revealed that the children with leukemia engaged in fewer activities than the control group and that they engaged in those few activities more often. It was also found that recurrence of activities and behaviors for the children with leukemia was greater than for the control children. Finally, as hypothesized, a few relationships were established between the children with leukemia's level of stress (i.e., reported mood) and the types of play or nonplay behaviors they engaged in. Indeed, a positive relationship was evident between children's report of being upset and engaging in functional play, and between children's report of feeling okay (so-so) and engaging in dramatic play. As well, there was a positive relationship between children's report of feeling happy and engaging in parallel and group play, and a negative relationship with engaging in solitary play. No such relationship emerged for the control group. These results suggest that ill children's stress was related to their play behaviors. Overall, children with leukemia engaged in significantly more solitary play than the control children and, in turn, the control children engaged in significantly more parallel

and group play than the children with leukemia. The present findings support what the literature suggests regarding the play of ill children.

Woltman (1960) believed that children's play patterns represented a kind of language where movement, acoustics, choice of play patterns, and duration and intensity of the play, as well as verbalizations, replaced adults' grammar, syntax, and vocabulary. He noted that children communicate thoughts, perceptions, concepts, beliefs, and wishes through the content, theme, and process of their spontaneous play. For all children, play is one of the best discovery and communication tools, but for children who must face the overwhelming experience of an illness such as leukemia, play also represents a lifeline through which they will face their experience and learn to cope with it.

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Appendix I: Normality considerations

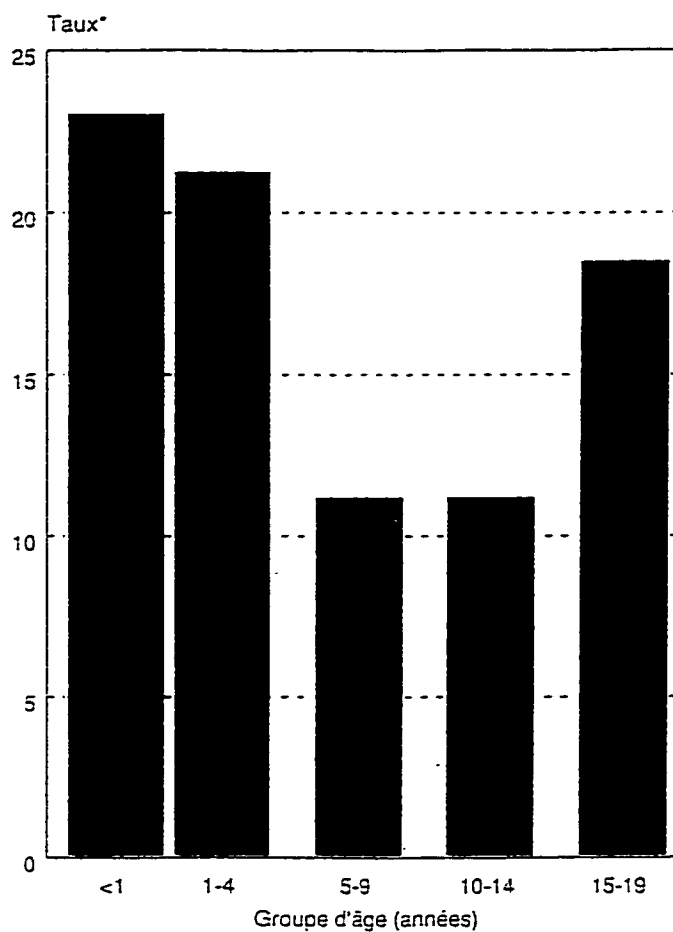
Appendix J: Four cases selected to examine the recurrence of themes in children's play (4 graphs)

## Appendix A

### Incidence of cancer

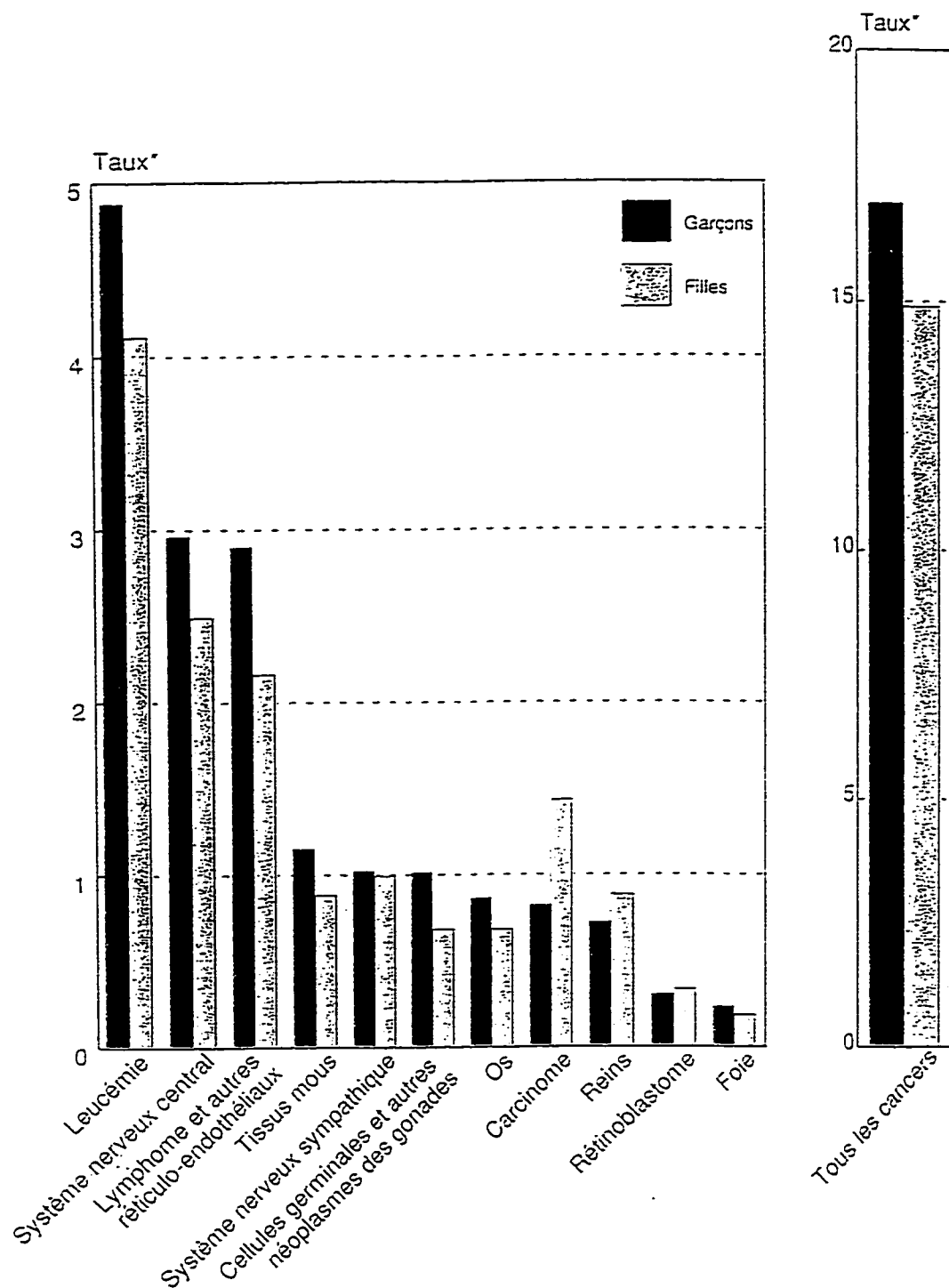
Figure 1: Incidence of cancer related to children's age

Figure 2: Incidence of cancer related to children's sex



\*Taux annuel moyen par 100 000 habitants, Canada, 1965-1992

Figure 3. Incidence de tous les cancers chez les enfants et les adolescents, selon le groupe d'âge. Chez les jeunes Canadiens de moins de 20 ans, l'incidence la plus élevée de cancer se manifeste au cours des cinq premières années de la vie. La période pendant laquelle le risque est le plus faible est celle de 5 à 14 ans. L'incidence augmente par la suite.



\*Taux annuel moyen par 100 000 habitants de 0 à 19 ans.  
Canada, 1985-1992, corrigé selon l'âge en fonction de la  
population type mondiale

Figure 2. Incidence de certains cancers chez les enfants et les adolescents, selon le sexe. Dans l'ensemble, le cancer est un peu plus fréquent chez les garçons que chez les filles. Les cancers du rein et les carcinomes font exception, car ils sont plus fréquents chez les filles que chez les garçons.

## Appendix B

### Definitions of the Play and Nonplay Terminology

## Definitions of Play and Nonplay Behaviors

### Play Behaviors

#### Social Play

- Solitary Play:** Child plays on his/her own, away from others. The objects used are different than the ones used by others.
- Parallel Play:** Child plays alone, but with the same or similar toys as the ones the children close to him/her are playing with. There is no interaction between the child observed and the ones nearby.
- Group Play:** Child plays with other children and there is a common goal to the activity.

#### Cognitive Play

- Functional Play:** Simple movements, often repetitive, that are done with or without objects. Creates physical sensation. (e.g., kicking a ball or hitting a bell)
- Constructive Play:** Manipulation of objects for the purpose of making something. (e.g., building with blocks)
- Dramatic Play:** Giving life to an object or a function different than its own or role-playing. (e.g., using a block as a tea cup or impersonating a mother)
- Games-with-Rules:** Activity with pre-established rules and where the goal of the activity is to have a winner. (e.g., board game or soccer)

### Nonplay Behaviors

- Unoccupied Beh.:** Child is not doing anything, staring blankly, or wandering without purpose. The child does not seem interested in anything.
- Onlooker:** Child, although not an active participant, is clearly involved in another child's activity through comments he/she makes or asking questions to the child he/she is observing.

Conversation:	Child clearly communicates with someone else through active listening or talking. As well, conversation is coded when a child is being spoken to by another child and is actively listening to follow directions, and when more than one child shares laughter (eye contact must be made). However, if the child is only listening to a conversation without participating, the behavior will be coded as onlooker.
Transition:	Child is between two activities, cleaning up, or setting up the next game. Included in this category is getting a drink or looking for a particular toy.
Rough-and-Tumble:	Child is engaged in playful physical activity. (e.g., tickling)
Exploration:	Child examines an object or event in order to gather information.
Reading:	Child is looking intensely at a book, reading a book, or is being read to. Included in this category is listening to a tape recording.
Wandering:	Child is not involved in anything, just walking around.
Aggression:	Child engages in physical contact with another child, expressing anger or disapproval. (e.g., hitting, kicking)

## Appendix C

### Canvas of the Observation Grid



Play Observation Scale

	T1	T2	T3	Theme	Toy used	Theme	Toy used	Theme
<b>NonPlay</b>								
Unoccupied								
Onlooker								
Peer Conversation								
Educator Conversation								
Transition								
Rough-n-Tumble								
Exploration								
Reading								
Wandering								
Aggression								
<b>Solitary</b>								
Functional								
Constructive								
Dramatic								
Games								
<b>Parallel</b>								
Functional								
Constructive								
Dramatic								
Games								
<b>Group</b>								
Functional								
Constructive								
Dramatic								
Games								

**Appendix D**  
**Parental consent letter**

DÉPARTEMENT D'ÉDUCATION

Le 4 octobre 1999

Chers parents,

Je me présente, mon nom est Nadine Gariépy et je suis étudiante à la maîtrise en Child Study à l'université Concordia, sous la direction de Dr. Nina Howe. Je suis en dernière année et je consacrerai une partie de cette année à observer le jeu des jeunes enfants avec différents jouets. Ces observations auront lieu cet automne à raison d'une fois par semaine durant 10 semaines. La période de jeu libre a été choisie pour effectuer les observations, et je demanderai aux enfants, avant et après la période de jeu libre, d'identifier sur un carton l'expression faciale qui correspond le plus à comment ils se sentent à ce moment (content(e), comme ci comme ça, ou fâché(e)).

Ce projet d'observation a été approuvé par le département d'Éducation de l'université Concordia et par son comité d'éthique. Toutes les informations concernant votre enfant ne seront pas analysées individuellement, mais plutôt en groupe. Il est important de noter que toutes les observations demeureront confidentielles. Aussi, soyez assurés que vous pouvez retirer votre consentement pour l'observation de votre enfant en tout temps.

Je vous remercie de l'attention que vous portez à cette lettre et n'hésitez pas à me contacter si vous avez quelque question ou commentaire que ce soit au (514) 848-2008 ou me laisser un message au (514) 851-3387. Veuillez remplir le bas de la page et le remettre à Liette ou à la directrice de la garderie.

Veuillez accepter mes salutations les meilleures,

Nadine Gariépy

---

\_\_\_ J'accepte que mon enfant participe à ce projet d'observation

\_\_\_ Je refuse que mon enfant participe à ce projet d'observation

Nom de l'enfant \_\_\_\_\_ Date de naissance \_\_\_\_\_

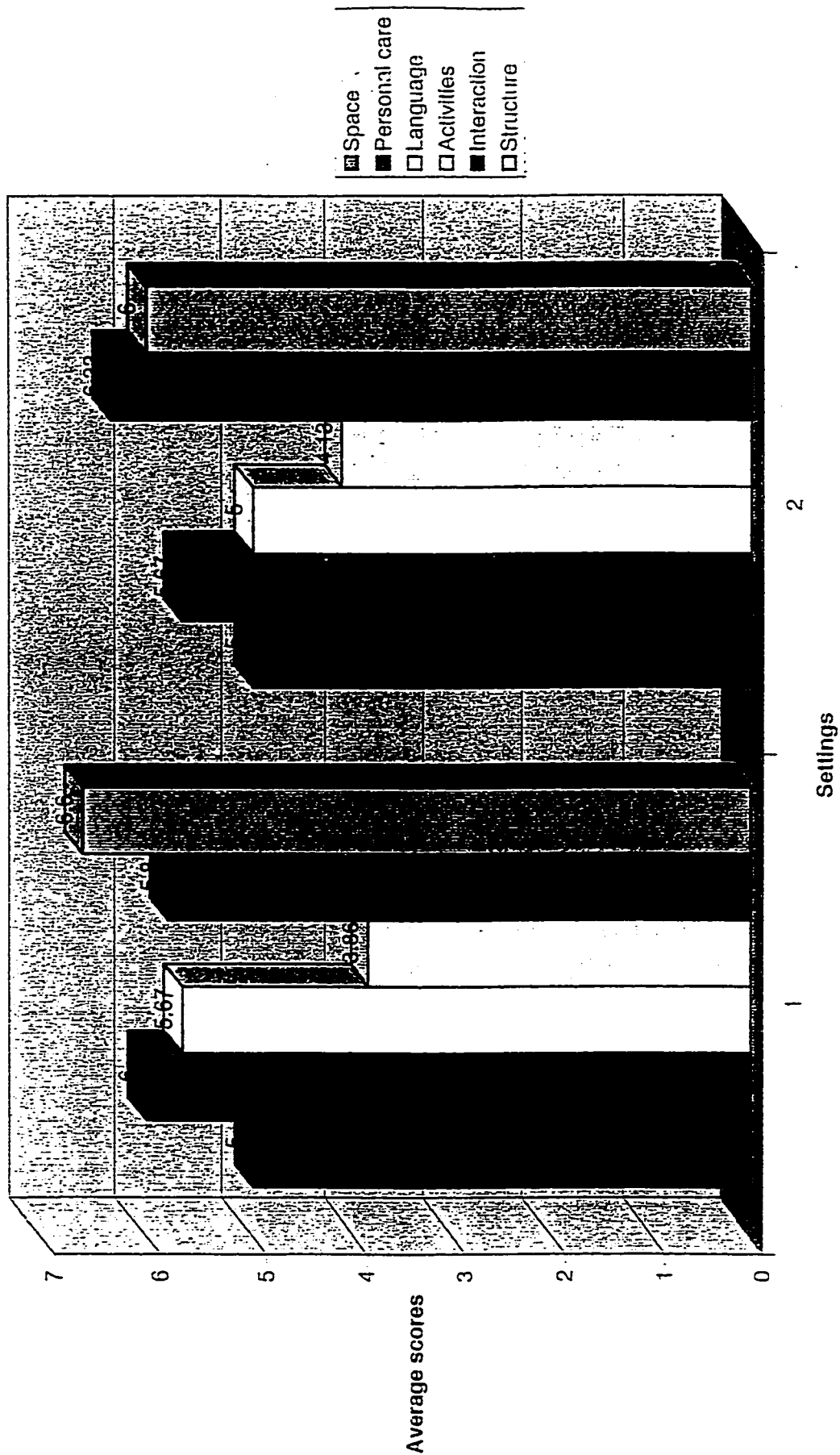
Nom du parent \_\_\_\_\_

Signature du parent \_\_\_\_\_ Date \_\_\_\_\_

## Appendix E

Graph depicting the settings evaluation with the use of the ECERS-R

ECERS-R: Comparing the two settings

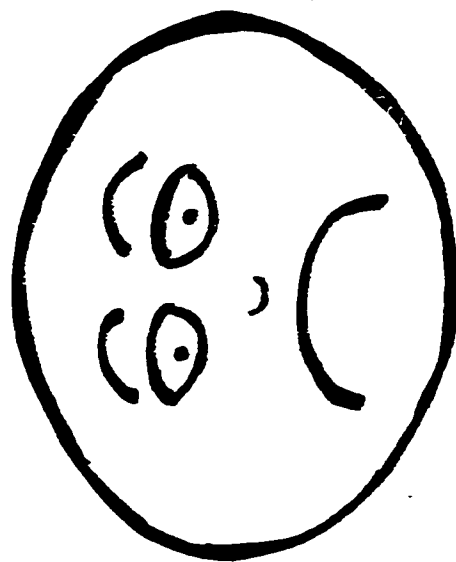
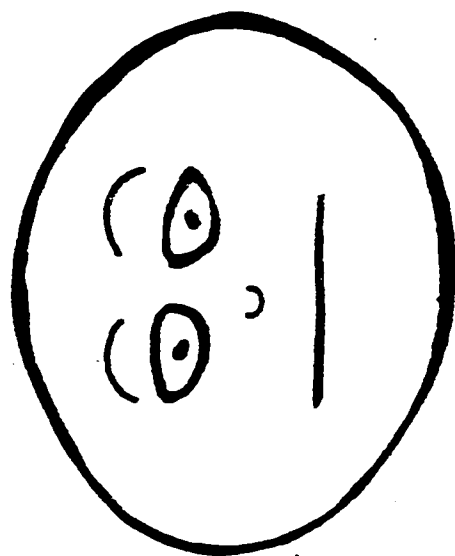
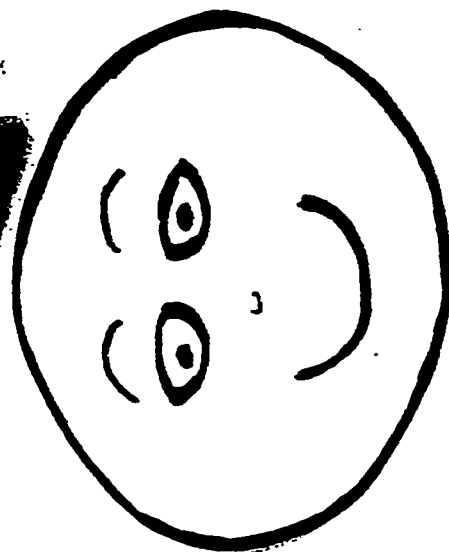
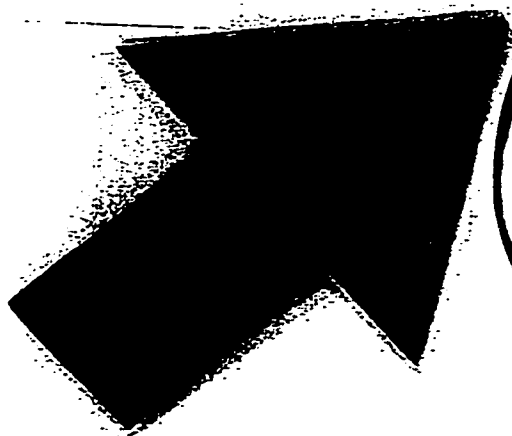


1 = Garderie Complexe Guy Favreau; 2 = External clinic of hemato-oncology at Sainte-Justine Hospital

## Appendix F

### Pictorial scale for self-reported distress

# comment vas-tu?



content(e) | comme ci comme ça | fâchée(e)

## Appendix G

### Chandler's (1981) Stress Inventory



TABLE 1

*Ratings of Severity of Stress of Life Events by  
Mental Health Professionals and Teachers (N = 66)*

Rank	Event	M	SD
1	Physical Child Abuse	20.00	1.00
2	Death of a Parent	19.43	1.50
3	Divorce of Parents	17.80	2.56
4	Death of a Brother or Sister	17.78	2.63
5	Acquiring a Visible Deformity	16.71	3.02
6	Marital Separation of Parents	16.66	2.55
7	Foster Home Placement	16.39	3.51
8	Serious Illness Requiring Hospitalization of Child	15.87	3.55
9	Death of a Close Friend	15.47	3.95
10	Jail Sentence of a Parent	15.16	3.82
11	Severe Illness Requiring Hospitalization of Parents	15.12	3.38
12	Having a Visible Congenital Deformity	14.16	3.83
13	Increase in Number of Arguments Between Parents	13.66	3.50
14	Becoming Involved with Drugs and Alcohol	13.57	4.32
15	Marriage of Parent to Step-parent	13.31	3.86
16	Increase in Number of Arguments with Parents	12.92	3.24
17	Frequent Absence of One or Both Parents	12.83	4.28
18	Change in Child's Acceptance by Peers	12.83	3.96
19	Family Moves; Relocations	12.68	4.18
20	Academic Failure	12.27	3.45
21	Changed Schools	12.27	4.21
22	Learning Problems in School	11.95	3.27
23	Illness Requiring Hospitalization of Brother or Sister	11.16	4.25
24	Beginning School	11.10	4.84
25	Death of a Grandparent	11.07	4.42
26	Speech Problems	10.77	4.07
27	Hearing Problems	10.74	4.00
28	Child Needed Special Education Services	10.40	3.83
29	Suspension from School	10.06	4.25
30	Mother Beginning to Work	10.00	3.56
31	Loss of Job by Parent	9.83	4.36
32	Poor Grades in School	9.69	3.64
33	Birth of Brother or Sister	9.27	3.81
34	Increased Argument with Brothers and Sisters	9.15	3.53
35	Brother or Sister Leaving Home	8.93	4.27
36	Addition of a Third Party to Family (i.e., Grandmother, etc.)	7.98	3.27
37	Vision Problem Requiring Glasses 110	6.21	3.69

## Appendix H

### List of the Medically-Related and Nonmedically-Related Toys Introduced

## List of Toys Introduced

### Medical Toys

- Doctor's kit
- Teddy bear with bandages
- Dress-up clothes (nurses and doctors' pieces of uniform)
- Sequencing game (with medically-related pictures)

### Nonmedical Toys

- Memory game
- Farm set
- Big doll
- Dress-up clothes

Appendix I

Normality Considerations

## NORMALIZED SCORES

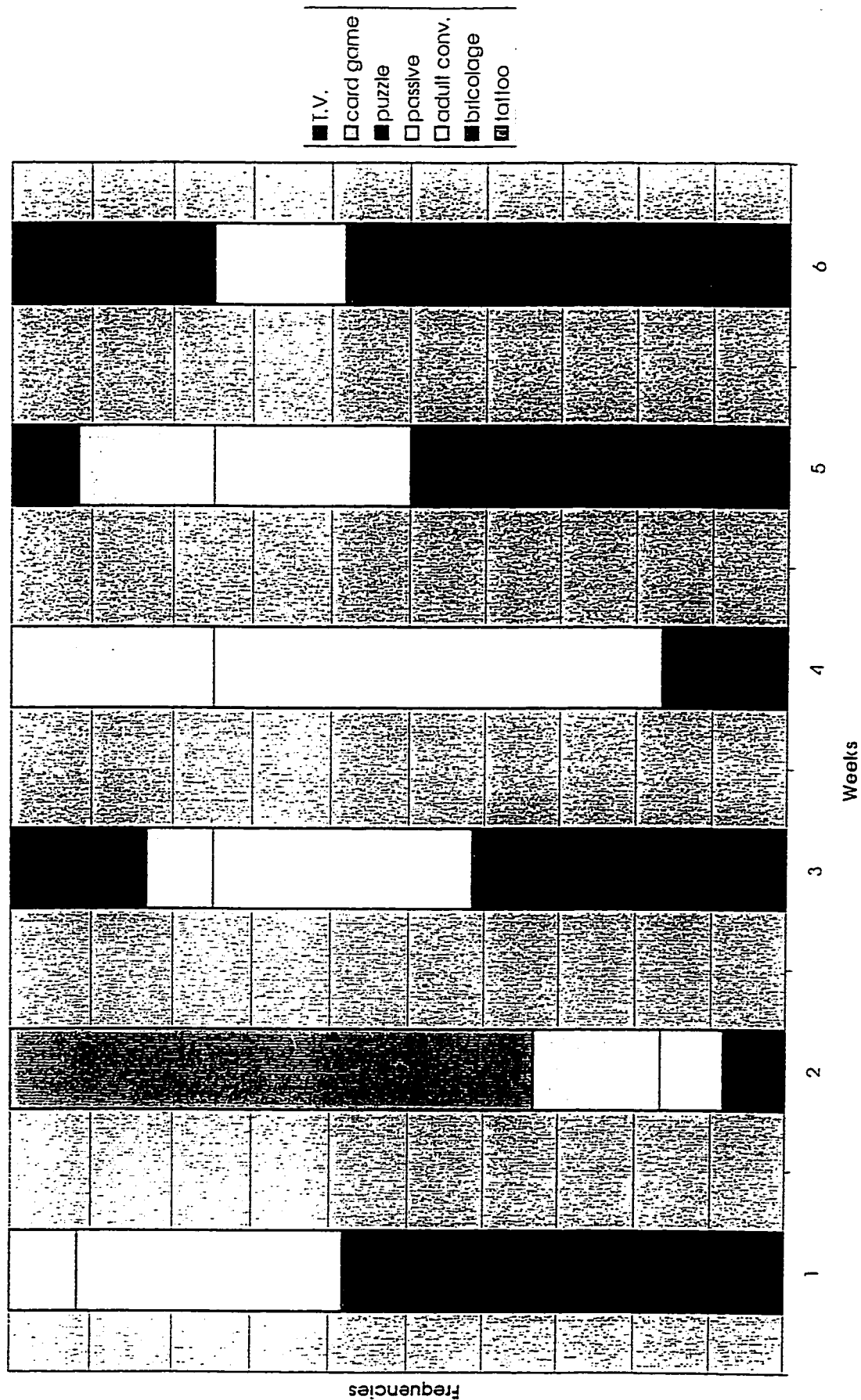
Normalized scores are particularly useful for conveying normative information about individuals and there are means to normalize the distribution of scores. The transformation is usually accomplished in two stages. The first phase is a nonlinear transformation that will position the scores into a normal distribution of z-scores. A linear transformation is then performed to eliminate negatives and decimal values. The process of normalizing the distribution consists of determining percentile ranks and using the table of areas under the normal curve to assign new z-scores (Thorndike, 1982). In the present study, the raw data (frequency counts) were transformed into proportion scores (see Descriptive Statistics section for more detail on this procedure). Transforming again the data would take away from its value. As well, there has been some questioning regarding the sample size calculations and the robustness and sensitivity of parametric statistics such as the t and F tests to departures from population normality. Kirisci and Hsu (1993) evaluated the use of the multivariate Box Cox (1964, in Kirisci & Hsu, 1993) transformation in normalizing the distribution of multivariate data. They tested its effect on the power of MANOVA under various sample sizes, number of variables, variance-covariance structures, and distributional assumptions. After comparing the data before and after the Box Cox transformation, they reported a notable effect on the power due to the transformation. However, they found the smallest increase in

power (.09%) to appear with a sample size of 15 for each group. The present study has a sample size of 11 for each group, thus Kirisci and Hsu's (1993) findings suggested few advantages of performing this "laborious and time consuming" (pp. 10-11) Box Cox transformation. In addition, most researchers assume that under the assumptions of equal variance-covariance matrices and of equal group sample sizes, the violation of normality has a small effect on the power of MANOVA. In fact, Kirisci and Hsu (1993) have found, when surveying the literature in psychology and behavioral sciences since 1988, that transformations on multivariate data for normality has almost never been employed in practice. Hence, no transformations were performed on the present data and  $t$  tests, ANOVAs, MANOVAs, and correlation tests were performed.

## Appendix J

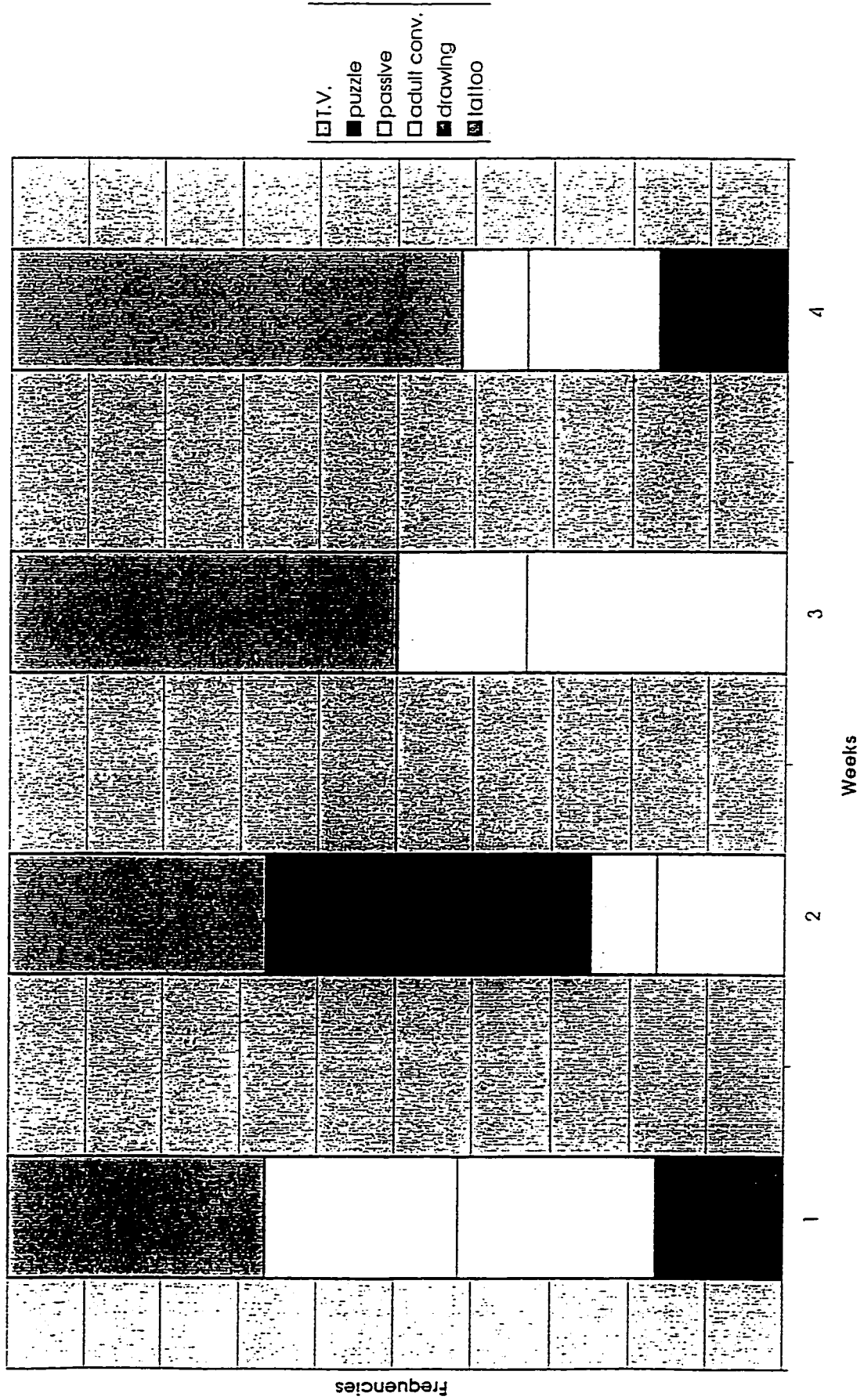
### Four Cases Selected to Examine the Recurrence of Themes in Children's Play

# Case 1: Julie

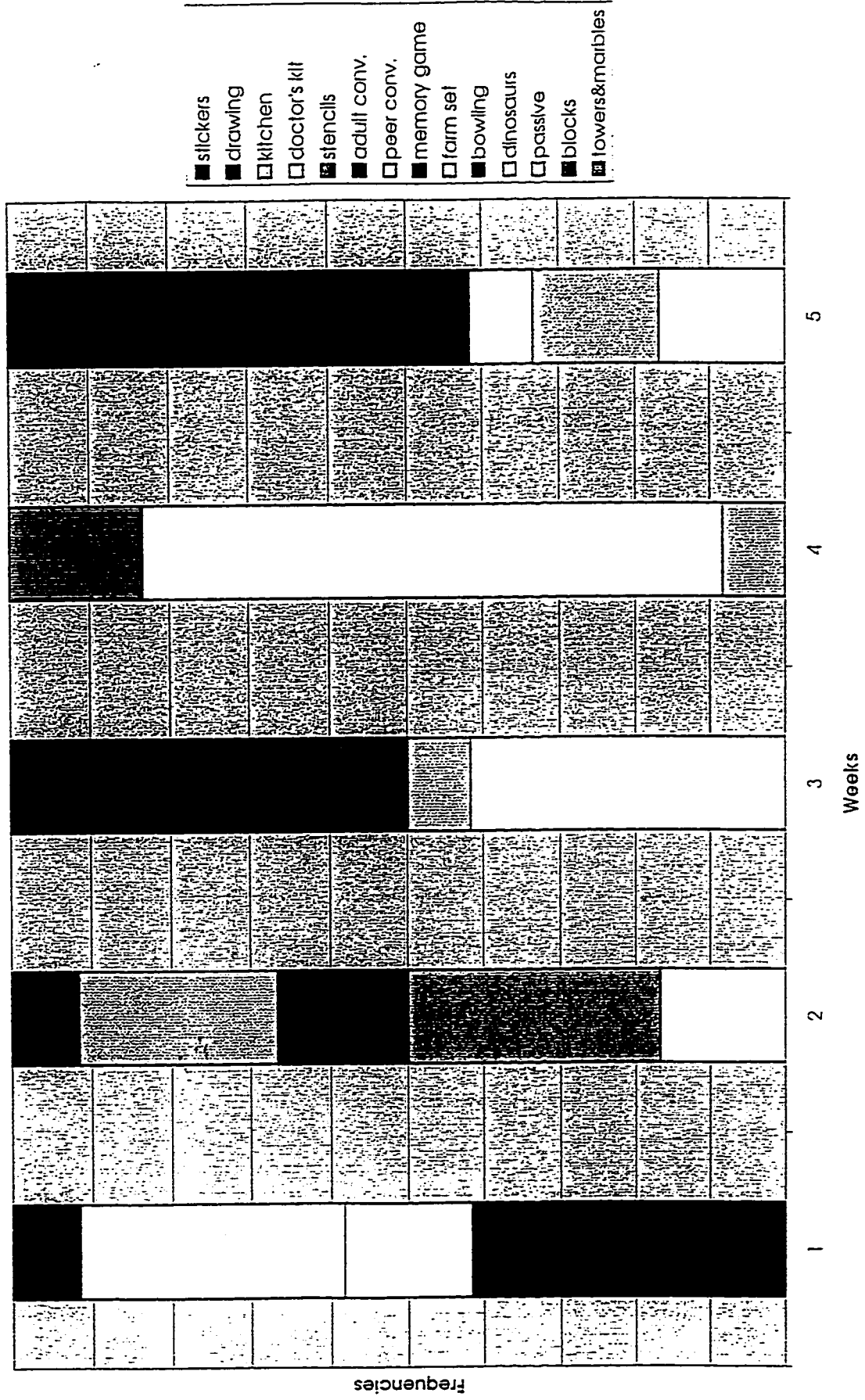




# Case 2: Gabrielle



# Case 3: Marika



# Case 4: Philippe

