

Contributing to Children's Early Comprehension of Emotions: A Picture Book Approach

by

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A thesis submitted in partial fulfillment  
of the requirements for the degree of  
Master of Arts (MA) in Psychology

Faculty of Graduate Studies  
Laurentian University Sudbury, Ontario

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**THESIS DEFENCE COMMITTEE/COMITÉ DE SOUTENANCE DE THÈSE**  
**Laurentian Université/Université Laurentienne**  
 Faculty of Graduate Studies/Faculté des études supérieures

Title of Thesis Titre de la thèse	Contributing to Children's Early Comprehension of Emotions: A Picture Book Approach	
Name of Candidate Nom du candidat	Laforge, Christian	
Degree Diplôme	Master of Arts	
Department/Program Département/Programme	Psychology	Date of Defence Date de la soutenance September 07, 2017

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### Abstract

Previous studies have suggested that children's emotion comprehension begins to develop in the early stages of childhood and has been linked to prosocial behaviours, displays of empathy and better interpersonal relationships, to name a few. However, children's level of emotion comprehension does not develop at the same rhythm due to both environmental and biological factors. That said, there are few interventions that can help children in their development of emotion understanding, but these interventions are not readily accessible (e.g., cost, availability, duration). The current study examined the use of shared book reading and the effectiveness of picture books created on current theories and models of children's emotion comprehension.

Eighteen preschoolers were divided into an experimental and a control group. Over the course of multiple exposures to the experimental treatment, results revealed a significant gain for the experimental group compared to the control group. These results are promising by showing that a simple shared book reading approach can contribute to the development of emotional comprehension without requiring special training or expertise.

*Keywords:* preschoolers, emotion comprehension, shared book reading, picture book

## Acknowledgements

I would first like to thank one of my thesis supervisors, advisor, and friend Dr. Annie Roy-Charland. Throughout this entire process and since my relocation to Sudbury from New Brunswick, you have been very supportive and encouraging ... basically amazing. I am forever grateful for all the challenges and opportunities these past 3 years have provided. I wish you the happiest relocation back to Moncton, I look forward to the years to come.

To Dr. Mélanie Perron, thesis supervisor, you have always been helpful, kind, and very insightful. I am very happy to have been welcomed to Laurentian with open arms. My experience as an MA student and these past few years have been the best and totally worth the commitment. For your time and patience, I am eternally appreciative.

I would also like to thank Dr. Isabelle Carignan, my last thesis committee member, for the many laughs, our non-thesis related conversations and, of course, for your role as a committee member. Your feedback is very much appreciated. For that, I extend my warmest thanks.

To my fiancée and to my mother-in-law to be, I appreciate you taking the time to lend an extra set of hands and for stepping up when it was needed. Thank you for being great research assistants. In return, I've decided to repay your time and efforts by marrying my way into the family (joke, but not really).

To Eden Valiant and Jessica Dénommée, who have given their time and energy to ensure the success of this project, I am grateful for your generosity and help. I am sorry that you were not paid more money for your hard work as your contributions were rich in value.

Lastly, this project would not have been possible without the artistic and creative talents of Émilie Myriam Roy, without your collaboration, my experimental treatment would

not have existed and I would probably have chosen a different research project. It was a pretty cool project to have as a Master's thesis and for that, merci!

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## Contributing to Children's Early Comprehension of Emotions: A Picture Book Approach

The role of emotions in our daily interactions is nothing short than essential, ranging from ensuring the survival of our species to having better interpersonal relationships (Lench, Bemch, Darbor, & Moore, 2015; Cassidy, Parke, Butkovsky, & Braungart, 1992). From an evolutionary standpoint, emotions are modes of operation, shaped by natural selection, that impact psychological, physiological, and behavioural responses in ways to increase our capacity to respond effectively and adapt to threats, as well as encourage us to act upon enjoyment and urges (Izard, 1977; Gould, 1982; Gould & Vbra, 1982; Nesse, 1990). Apart from their survival contribution, emotions influence our decision-making, they impact our behaviour and, they affect our wellbeing (Ellsworth & Scherer, 2003; Moors, Ellsworth, Scherer, & Frijda, 2013).

The understanding of emotions starts directly in childhood (Pons & Harris, 2005). In fact, several studies indicate a relationship between the understanding that a child has of his or her emotions as well as those of others and the quality of his or her pro-social behaviours with peers and teachers, in their social adjustment and in their academic achievement (Harrison & Paulin, 2000; Harris & Pons, 2003; Pons, Harris & Doudin, 2002, 2004). From three to four years of age, the better the emotional understanding of the children, the fewer their behavioural problems (antisocial behaviour, aggression, limited empathy, etc.) (Hughes, Dunn & White, 1998). In addition, the higher the quality of social games, in four-year-old children (e.g., good cooperation & effective communication), the better their understanding of emotions (Dunn & Cutting, 1999; Hughes et al., 1998). Children with a good understanding of emotions (e.g., being able to identify and label emotions) during their first year of compulsory schooling have higher levels of popularity among their classmates (Cassidy et al., 1992). Children, from the ages of four to five, that can recognize emotions in facial expressions are also those that are

most popular with their classmates one or two years later (Edwards, Manstead & MacDonald, 1984). Because of the role of children's comprehension of emotions on children's cognitive and psychological development, it is important to understand how to promote such skills as well as explore ways to contribute to their better development. The goal of the current study was to test the effectiveness of a picture book approach based on current theories in emotional comprehension in teaching these skills to children.

## **Emotion**

What is an emotion? How can it be defined? In 1884, William James, followed by Carl Lang in 1887 independently proposed two of the first contemporary theories of emotions, later being combined to form the now known James-Lang theory of emotion (Power & Dalgleish, 2008). According to the James-Lang theory, as described in Niedenthal, Krauth-Gruber, and Ric (2006), when an event stimulates a person (e.g., arousal), the autonomic nervous system would react by creating a physiological manifestation (e.g., faster heartbeat, increased muscular tension). After the occurrence of the physical episodes, the brain would interpret those reactions. However, the James-Lang's theory is not without criticism. The Cannon-Bard theory later refuted the James-Lang theory of emotion stating that emotions and bodily changes do not share a causal relationship. Rather, they occur simultaneously, following a stimulating event. Then, Schachter and Singer (1962) proposed a cognitive-psychological theory of emotions. Their theory is considered to be at the centre of physiological theories and cognitive interpretation of emotion, including physiological manifestations and cognitive interpretation of emotions (e.g., Niedenthal et al., 2006). Cognitive theories later appeared with Arnold, who argues that the brain is not a place of simple reflexes, but rather has a very active role in the decoding of emotional stimuli (e.g., Frijda, 1986). Hockenbury and Hockenbury (2007) define it as being "a

complex psychological state that involves three distinct components: a *subjective experience*, a *physiological response*, and a *behavioral or expressive response*". Keltner and Gross (1999) define emotions as being "episodic, relatively short-term, biologically based patterns of perception, experience, physiology, action, and communication that occur in response to specific physical and social challenges and opportunities". Ekman and Cordaro (2011) describe emotions as being "discrete, automatic responses to universally shared, culture-specific and individual-specific events". Although there is no consensus in the scientific community on a definition of emotion, the literature reveals certain characteristics that are common across the different definitions, such as the expressive response, which usually consists of expressive component such as facial expressions, voice and body movements, a physiological component, an action tendency component and a cognitive component (e.g., Niedenthal et al., 2006; Power & Dagleish, 2008; Scherer, 2000).

Agreeing on a definition of emotion is one part, however, how do we recognize and discriminate the different types of emotions? How many emotions are there? Some research suggests the notion of *basic* emotions, as well as the notion of *discrete* emotions (e.g., Ekman 1992). Ekman and Cordaro (2011) define the term "basic," which is used to describe emotions, as embodying two major characteristics. The first one being that emotions are discrete and that they can be distinguished fundamentally from one another. The second characteristic is the belief that emotions have evolved by adapting to the environment. The difference between the first and second characteristic is in its origin, a discrete-emotion does not require an evolutionary justification. As for how many emotions or universally basic emotions that exist, authors, researchers, models, and theories have yet to agree upon that number (e.g., Ekman, 1992; Ekman & Davidson, 1994; Scherer, 1994/1997). The term "universally," in the previous sentence, is

used to underline the fact that the production and the recognition of basic emotions are observed throughout diverse cultures (Ekman, 1992).

The purpose of this thesis is not to settle or agree on a definition of a concept of what consists an emotion and how many of them truthfully exist, but rather the importance of emotion comprehension, specifically.

### **Emotion Comprehension**

The theoretical background for the current thesis is based on Pons, Harris, and de Rosnay's model (2004) of emotional comprehension as few models, detailing the development of emotion comprehension in hierarchical and chronological phases with explicit categorical components based on children's chronological aging with such detail, as this one, exist.

Emotional comprehension has been proposed as one of the three components of emotional competencies (with the expression and regulation of emotion) (see e.g., Saarni, 1999). The past few decades of research have led to the proposition of three stages of development and with at least nine different components of children's emotional comprehension (three components per stage), with most of these components developing between early childhood and preadolescence (Harris & Pons, 2003; Pons & Harris, 2005; Pons, Harris & de Rosnay, 2000, 2004; Saarni, Mumme & Campos, 1998) (Table 1).

During the first stage (from two to four or five years of age), which can be identified as the understanding "external" dimensions of emotions, three components of emotional comprehension emerge (*components I, II, III*). *Component I (Recognition)* refers to the children's ability to identify and label different emotions by observing facial expressions, such as the expressions associated with the basic emotions (e.g., smiling with happiness) (Bullock & Russell, 1985; Cutting & Dunn, 1999; Denham, 1986; Dunn, Brown, & Beardsall, 1991;

Hughes & Dunn, 1998; Pons et al., 2004; Rothenberg, 1970). *Component II (External cause)* refers to the children's understanding of how external causes influence the emotions of others (e.g., a child could anticipate the sadness another experienced at the loss of an animal) (Barden, Zelco, Duncan, & Masters, 1980; Cutting & Dunn, 1999; Denham, 1986; Harris, Olthof, Meerum Terwogt, & Hardman, 1987; Hughes & Dunn, 1998; see Pons et al., 2004, for more details). Finally, during *Component III (Memories)*, young children begin to comprehend the relationship between emotion and memory (Harris, 1983; Harris, Guz, Lipian, & Man-Shu, 1985; Lagattuta & Wellman, 2001; Lagattuta, Wellman, & Flavell, 1997; see Pons et al., 2004, for more details). For instance, a child can feel sadness in reminiscence of losing a prized object or person.

During the second stage (four or five years to eight or nine years of age), three new components emerge (*components IV, V, VI*). This stage can be described as that of the understanding of the "internal" dimensions of emotions, such as understanding the role of the cognitive processes (e.g., knowledge). *Component IV (Desire)* refers to children's ability to appreciate that others' emotional reactions depend on their desires and comprehend that people can feel differently regarding a situation because of the difference in desire (Harris, Johnson, Hutton, Andrews, & Cooke, 1989; Pons et al, 2004; Yuill, 1984). For example, two people in the same situation (are craving a snack and discover a bowl of peas), but that do not have the same desires (one person likes peas, while the other hates it) can feel different emotions (happiness and sadness, respectively). During *Component V (Belief)*, children begin understanding that someone's beliefs, false or true, will play a role in determining one's emotional reaction to a given situation (Bradmetz & Schneider, 1999; Fonagy, Redfern, & Charman, 1997; Hadwin & Perner, 1991; Harris et al., 1989; see Pons et al., 2004, for more

information). For instance, a child can understand that a protagonist might feel happy in an activity while his or her bicycle is being stolen without their knowledge. During *Component VI (Real and apparent emotion)*, children start to understand that what an individual is feeling might be different than what he or she expresses (Perron & Gosselin, 2007; 2009). For instance, a child can understand that someone can be sad about receiving an unwanted gift but express happiness.

During the third stage of development of the understanding of emotions, which can be described as a "complex" dimension of emotions, three new components emerge (*components VII, VIII, IX*): understanding the nature of mixed emotions, the impact moral rules on certain emotions and the ability to understand the possibility of control of the emotional feeling. *Component VII (Control of the felt emotion)* refers to children's understanding that individuals are able to control an emotion that they feel (see Pons et al., 2004, for more details). An example of this component is the ability to understand that if we think of a happy situation, it would help reduce the feeling of sadness. For the *Component VIII (Mixed)*, children are able to understand the concept of ambivalent or contradictory emotions that one might experience in a given situation (Lemerise & Arsenio, 2000; Brown & Dunn, 1996; Donaldson & Westerman, 1986; Fischer, Shaver, & Carnochan, 1990; Harris, 1983; Harris, Olthof, & Terwogt, 1981; Harter & Buddin, 1987; Hughes & Dunn, 1998; Kestenbaum & Gelman, 1995; see Pons et al., 2004, for more details). For instance, the understanding that we can be happy when finding our lost pet but sad that it is hurt. Finally, during *Component IX (Morality)*, children are in the early stages of comprehending that negative feelings can be the result of morally questionable actions, for example, lying to one's parent. The opposite is true as well; they can also understand that a positive feeling can be the result of praised action

(Harter & Whitesell, 1989; Harter, Wright, & Bresnick, 1987; Nunner-Winkler & Sodian, 1988; Lake, Lane, & Harris, 1995; Pons et al., 2004).

### **Teaching Emotion Understanding**

The School Matters in Lifeskills Education Program (SMILE) has been developed in hopes to assist children in developing their emotion comprehension (Pons, Harris, & Doudin, 2002). To summarise the procedure of the SMILE program, it is composed of four sections (me, my family, my friends and others) including thirteen themes centered on, for instance, discussing present and past emotions, distinctions between apparent and real emotions, distinguishing the origins of negative emotions, etc. These activities are conducted individually and in groups using a variety of readings, discussions and games. Furthermore, not only does this program aim at developing the understanding of emotions through cognition but also through induced emotions. Finally, before the program can be delivered, the administrator has to attend at least a two-week training session on how to properly use the SMILE program.

The SMILE program was shown to be successful with an 82% improvement in the level of emotion understanding in children. However, some restrictions prevent it from being available to all. First, being trained in the SMILE program is a long and time demanding process. Teachers and educators must follow a two-week training prior to being able to administer the program to the children in the classroom (see Pons et al., 2002, for more details). Second, the program itself is long as it extends on several months. Third, because of the previous limitations, the SMILE program is only available to a select few children and thus, is not easily accessible to a mass population of children. Fourth, and most importantly, because of the numerous components of the program and the variety of the activities involved, it remains unclear what parts of the program are indeed successful in improving children's emotional understanding. Considering the

mentioned restrictions of the SMILE program, more accessible and available tools or programs could benefit more children with their development of emotion comprehension.

### **Vocabulary**

Previous studies have demonstrated that between the early ages of two and four children learn to correctly label and identify emotions (Denham, 1998; Harris, 1989). Children have shown considerable ability to employ emotion-descriptive adjectives, also understanding those terms in conversations and begin to employ emotion language to meet their own emotional needs, demonstrating evidence of a relationship between one's vocabulary and emotion comprehension (Bosacki & Moore, 2004; Saarni, 1999). An important part of children's understanding of emotions is mediated through the language processes involved in certain settings as in parent-child conversation, for example (see Kitayama, Markus, & Matsumoto, 1995). Relatively few studies have been found that have studied, in depth, the link between language and emotion comprehension. However, a study by Beck, Kumschick, Eid, and Klann-Delius (2012), found evidence supporting a relationship between language competence and emotional competence, more precisely receptive vocabulary with emotion knowledge in children between the ages of 7 and 9 years old.

When studying the relationship between children's vocabulary and emotion comprehension or the acquisition of new words with shared book reading, studies like Bosacki and Moore (2004), Evans and Saint-Aubin (2013), and Evans, Saint-Aubin, and Landry (2009), have used measures such as the Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 1997), its French equivalent *l'Échelle de vocabulaire en images Peabody* (ÉVIP; Dunn, Theriault-Whalen, & Dunn, 1993) or the Letter Naming Scale from the *Échelle de compétences en lecture* (Desrochers, 2008).

## **Shared Book Reading**

Shared book reading can be defined as any reading activity where a skilled-reader reads aloud to a child, whether it is a parent to his or her children, the teacher in class or another skilled child to a friend (see e.g., Levy, Gong, Hessels, Evans, & Jared, 2006). Of all educational activities, shared book reading has been identified as the preferred activity by children and the most frequently practiced activity across households (Bus, van IJzendoorn, & Pellegrini, 1995; Scarborough & Dobrich, 1994). Shared book reading has been empirically supported with regards to its contributions to children's learning outcomes such as familiarizing children with the grammar and syntax to developing print awareness, enriching the child's vocabulary and knowledge of literate discourse rules as well as social learning and relational skills (e.g., Brett, Rothlein, & Hurley, 1996; Bus et al., 1995; Elley, 1989; Evans & Saint-Aubin, 2013; Mol, Bus, & de Jong, 2009; Pick, Unze, Brownell, Drozdal, & Hopmann, 1978; Scarborough & Dobrich, 1994; Senechal, 1997). A relatively unique characteristic of shared book reading is that the child does not even know that he or she is learning, and they can benefit simply from listening (see Roy-Charland, Perron, Boulard, Chamberland, & Hoffman, 2015).

To the best of our knowledge, there has been no empirical research examining the potential of shared book reading as a strategy to help children in the development of their understanding of emotions. However, a recent study by Evans and Saint-Aubin (2013), examined whether preschoolers' vocabulary could be stimulated by shared book reading. More precisely, they presented picture books comprising novel words seven times without other explicit explanations of the words to see if children could learn them by simply listening to the storyline and following the narration through the illustrations. Results revealed that children made significant vocabulary gains on the words in the books and those gains were related to

their general receptive vocabulary. An important conclusion by the Evans and Saint-Aubin (2013) is that children are actively matching the pictures with the narration during shared book reading and that this link might have contributed to the gains in vocabulary. The current study will borrow the procedure by Evans and Saint-Aubin (2013) to stimulate emotion comprehension skills.

### **Current Study**

Although there is no evidence directly suggesting that shared book reading would be an effective method or tool to assist children with their development of emotion comprehension, its popularity with parents and children, its simplicity, and its repeated past successes as a vehicle for facilitating the learning of new knowledge suggests a potential worth exploring. The current study aims to explore the effectiveness of a single strategy that overcomes the above-mentioned limitations of the SMILE program. More precisely, we will examine the effectiveness of a shared book reading strategy using picture books created based on Pons and Harris's model in teaching of the first two stages of emotional understanding (six first components) to preschool age children (Pons et al., 2004). The 6 picture books were solely created for the purpose of this study as to investigate the effectiveness of books based on a current model of emotion comprehension. Based on the vocabulary gains observed in the Evans and Saint-Aubin's (2013) shared book reading study, it is hypothesized that the children exposed to the created picture books (experimental condition) would demonstrate significant gains in their levels of emotion comprehension in comparison with the children whom were not exposed to the picture books based on current emotion comprehension literature.

### **Method**

#### **Participants**

Eighteen francophone preschoolers (4 boys, 14 girls,  $M_{\text{age}} = 40.89$  months, age range: 34-

54 months) recruited in bilingual (English, French) communities took part in the study. The 18 preschoolers were separated into 2 different groups, an experimental (2 boys, 7 girls,  $M_{age} = 41.78$  months, age range: 34-54 months) and a control (2 boys, 7 girls,  $M_{age} = 40$  months, age range: 34-47 months) group. The children's families were composed of 15 two-parent families, 2 single-mother families, and 1 shared-custody family. Most of the parents (100% of mothers and 94.4% of fathers) that participated in the study have reported having obtained their high school diploma, with the majority (100% of mothers and 88.8% of fathers) having completed some postsecondary education. The majority of families (66.7%) reported to have an annual income higher than 100,000\$, whereas 11% of families reported to earn between 85,000\$- 100,000\$; 5.6% of families reported earning between 70,000\$-85,000\$ and 40,000\$-55,000\$, with finally 11.1% of families reporting to have earned less than 16,000\$ annually. All 18 families reported owning at least 35-75 children's books, and most parents (55.6%) reported owning at least 75-200+ children's books. Finally, many parents (72.2%) reported reading to their children 7 times (sessions) a week, with many (72.2%) reportedly reading between 10-20 minutes per session.

## **Materials**

**Home Literacy Experiences Questionnaire.** A French translation of the Home Literacy Experiences Questionnaire (see Roy-Charland, Saint-Aubin, & Evans, 2007) was sent to the parents and completed before the experimental sessions. This questionnaire was used to gather general information about the household and about reading activities and materials with which the children were engaged in their homes. The parent the most familiar with the reading activities was asked to answer the questionnaire. The majority (88.9%) of the Home Literacy Experiences Questionnaire were reportedly completed by the mother.

**Picture books.** For the experimentation sessions, six picture books were created by the artist Émilie Myriam Roy (2016), one book per component of emotion tested. The facial

expressions, expressed by the characters in the book, were evaluated by a Facial Action Coding System (FACS) certified professional, “first published in 1978 by Ekman and Friesen, the FACS has since undergone several revisions, the FACS is a tool for measuring facial expressions. It is an anatomical system for describing all observable facial movement. It breaks down facial expressions into individual components of muscle movement” (Paul Ekman Group, 2017).

These books were created to serve as tutorials for different emotional components, *components I* through *VI*. For each of the books, the illustrations and text were found on different pages: the text was displayed on the odd numbered pages and the illustrations on the even numbered pages.

The first book, entitled *Les émotions* [Emotions], has a Flesch reading score of 70.78, is composed of 13 pages, including the title page, with a mean of 1 sentence, 19.83 words, and 99.67 characters per page. This book was created to reflect *component I (Recognition)*, stage 1. The storyline and illustrations emphasised and described the individual facial characteristics found with each corresponding emotion. For example, *Lorsque Lana est heureuse, ses joues remontent en tirant sur les coins de sa bouche pour former un beau sourire* [When Lana is happy, her cheeks raise in order to pull the corners of her mouth to form a beautiful smile] (see Figure 1).

The second book, entitled *La crème glacée* [Ice Cream], Flesch reading score of 88.75, is composed of 13 pages, including the title page, with a mean of 6 sentences, 68.83 words, and 370.50 characters per page. This book was created to reflect *component II (External cause)*, stage 1. The storyline and illustrations describe a young girl, Abby, who lost her ice cream cone and stole a friend’s ice cream only to have him upset with her actions. However, with the arrival of a new friend willing to share some of his dessert with both Abby and Christian, the three youngsters are very happy with their friendships.

The third book, entitled *Le cadeau surprise* [The Surprise Gift], Flesch reading score of 83.24, is composed of 13 pages, including the title page, with a mean of 5.83 sentences, 68.67 words, and 365.59 characters per page. This book was created to reflect *component III (Memories)*, stage 1. The storyline and illustrations describes children receiving an unexpected gift and their expectations of the gifts, some are disappointed with the unimagined outcome, while others seem to be satisfied with the surprise.

The fourth book, entitled *Annie a peur du chien* [Annie's Afraid of the Dog], Flesch reading score of 87.1, is composed of 13 pages, including the title page, with a mean of 5.50 sentences, 50.50 words, and 269.67 characters per page. This book was created to reflect *component IV (Desire)*, stage 2. The storyline and illustrations describe Annie's love for a dog, while he's within his cage, but the dog's unplanned escape scared the young girl as she didn't see him escape while she was playing near the cage.

The fifth book, entitled *Les souvenirs* [Memories], Flesch reading score of 85.46, is composed of 9 pages, including the title page, with a mean of 5.50 sentences, 69.75 words, and 353 characters per page. This book was created to reflect *component V (Belief)*, stage 2. The storyline and illustrations emphasised and described how memories can affect our current emotions, that thinking about happy memories when sad can change our sadness into happiness and how the opposite is true as well.

The sixth book, entitled *Le livre brisé* [The Broken Book], Flesch reading score of 83.6, is composed of 9 pages, including the title page, with a mean of 5.75 sentences, 69.25 words, and 377.50 characters per page. This book was created to reflect *component VI (Real and apparent emotion)*, stage 2. The storyline and illustrations emphasised and described a young boy's sadness over his favourite book being broken and no matter what other books he decided to look

at, they couldn't make him feel any better. Eli tried different activities until he could find something that made him happy again – playing outdoor with friends.

**Letter naming measure.** The letter naming scale from the Échelle de Compétences en Lecture (Desrochers, 2008) was administered to assess alphabetic knowledge. Children were asked to name the 26 uppercase letters of the alphabet presented in a random order, three or four letters per page. The experimenter pointed to the letters from the top of the page. For kindergarteners, the alpha coefficient is .93. Concurrent validity coefficients with oral reading of simple words, grapheme sounding, and upper-lower case letter matching varies between .47 and .76.

**Vocabulary measure.** The vocabulary measure was the ÉVIP, form B, (Dunn, Theriault-Whalen, & Dunn, 1993), the French version of the PPVT. This scale assesses children's receptive vocabulary by asking them to point to the correct pictorial representation of a word out of four possible choices. Split-half reliability for the age groups tested in the current study varies between .66 and .80, and test-retest reliability varies between .65 and .68. The median of the concurrent validity coefficients with other vocabulary measures is .71.

**Test of Emotion Comprehension.** The *Test of Emotion Comprehension* (TEC) was administered to evaluate children's understanding of emotions (Pons & Harris, 2000). The children were only assessed with *components I* through *VI*. The test materials consisted of two A4 picture books, one version for boys and one for girls. The items in the books were identical; only the protagonists' names were changed. Each upper section of the pages had a cartoon scenario in a 16 cm x 11 cm frame. Under each scenario, were indicated four emotional outcomes, usually illustrated as facial expressions (each in frames of 7.5 cm x 5.5cm), see Figure 2.

## Procedure

An overview of the procedure is given in Figure 3. Children were seen seven times over an interval averaging 3 weeks. Children were seen, for all 7 sessions, at their respective daycare centres. Participants were divided into two equal groups, an experimental group and a control group. During the first session (approximately 45 minutes), children completed the *ÉVIP* test, the TEC (pre-measure; a more detailed procedure is given below) and letter naming task, individually. The order of all 3 measures was counterbalanced. Finally, the children in the experimental group were individually read the 6 picture books created for this study. The children in the control group were read storybooks that were readily available at the daycare centre. The research assistant was instructed to read the storybooks in a straightforward manner without pointing to elements found on the pages, commenting, elaborating, defining words, or emphasizing aspects of the text with their voice. If a child was to deviate from the story (i.e., talk about an unrelated subject), the research assistant would kindly redirect the child to the story or question at hand.

For both groups, sessions 2 to 6 (approximately 20 minutes) were comprised of readings only, either individually or in small groups and the last session, session 7 (approximately 30 minutes), consisted of a final individual reading, from their respective books, followed by the TEC (post-measure). The research assistant was also told not to ask questions to the child, nor answer questions from the child related to the story. Only the pictures from the books were presented to the children, while the textual pages were read by the assistant.

The general procedure, for the TEC, can be divided into two steps and described as followed:

- (1) While showing a given cartoon scenario, the experimenter read the accompanying story about the depicted character(s). The face(s) of the characters in

the cartoon were left blank. The situations were described in an emotionally neutral fashion with a deliberate attempt to remove verbal and nonverbal emotional cues; (2) after hearing the story, the child was asked to make an emotion attribution to the main character by pointing to the most appropriate of the four possible emotional outcomes (depicted below the scenario). (Pons & Harris, 2005, pp. 1163).

The following procedures are as outlined in Pons et al. (2004) and in Pons and Harris (2005): The four possible outcomes were two negative emotions (sad/scared, sad/angry, or scared/angry) and two non-negative emotions (happy/just all right), see Figure 2. The position of the correct response was varied systematically among each of the four positions across test items. Control questions were sometimes introduced to check children's comprehension of the situation. The test is divided into nine blocks presented in a fixed order. However, only the first six blocks were presented. Each block assesses a component of the understanding of emotion.

(I) *Recognition* of emotions based on facial expression (e.g., recognition of the face of a sad person). (II) Understanding of external *causes* of emotions (e.g., attribution of an emotion to a character being chased by a monster). (III) Understanding of *desire*-based emotions (e.g., attribution of an emotion to two characters in the same situation but having opposite desires). (IV) Understanding of *belief*-based emotions (e.g., attribution of an emotion to a rabbit that is enjoying a carrot without knowing that a fox is hiding behind the bushes). (V) Understanding the influence of a *reminder* on a present emotional state (e.g., attribution of an emotion to a character who is reminded of the loss of a pet). (VI) Understanding of the *regulation* of an experienced emotion (e.g., attribution of a psychological strategy, such as "think happy thoughts", to a character who wants to stop feeling sad).

A description of component II (i.e., understanding of the impact of situational causes

on emotions) is given below for illustrative purposes (as reported in Pons & Harris, 2005).

The experimenter started by presenting the first item as follows: *Ce garçon est en train de regarder sa tortue qui vient juste de mourir* [This boy is looking at his little turtle, which has just died].

Then, the experimenter asked: *Comment ce garçon se sent-il? Se sent-il heureux, triste, effrayé ou juste bien?* [How is this boy feeling? Is he happy, sad, angry, or just all right?] The experimenter pointed to each of the four possible emotional outcomes. The procedure was the same for the subsequent four items. Only the situation depicted in the scenario and the four possible outcomes were changed. These were as follows: *Ce garçon vient juste de recevoir un cadeau pour son anniversaire. Se sent-il heureux, triste, juste bien ou effrayé?* [This boy is getting a birthday present. How is this boy feeling?] (happy, sad, just all right, or scared); *Ce garçon essaye de faire un dessin, mais son petit frère est en train de l'embêter. Se sent-il heureux, juste bien, fâché ou effrayé?* [This boy is trying to do a drawing but his little brother is stopping him. How is this boy feeling?] (happy, just all right, angry, or scared); *Ce garçon est en train d'attendre le bus. Se sent-il heureux, triste, fâché ou juste bien?* [This boy is standing at the bus stop. How is this boy feeling?] (happy, sad, angry, or just all right); and finally *Ce garçon est en train d'être poursuivi par un monstre. Se sent-il heureux, juste bien, fâché ou effrayé?* [This boy is being chased by a monster. How is this boy feeling?] (happy, just all right, angry, or scared). The experimenter pointed to each possible emotion as it was articulated. The children were only assessed with *components I* through *VI* (Pons, Harris & Rosnay, 2004 for a complete description of materials and procedure for the TEC). The scalogram analysis suggested that at a general level the nine components are scalable and that the scale is valid, it produced an *I* of 0.676 and an *R* of 0.904 (Pons & Harris, 2005).

## Results

The focus of the analysis was to determine the impact of the created picture books on children's emotion comprehension and to establish any relations between vocabulary and emotion comprehension.

### Emotion Comprehension

Preschoolers were exposed to one of two sets of picture books (experimental, control) and were assessed prior to the onset of the readings (pre-test) and again when the experiment ended (post-test). A two-factor repeated measures analysis of variance was computed (see Table 2).

The between-subjects main effect of condition,  $F(1,16) = 2.761$ ,  $p = .116$ ,  $\eta_p^2 = .147$ , with .346 observed power, revealed no statistically significant differences in TEC scores between the experimental and control condition.

The within-subjects main effect of TEC scores,  $F(1,16) = 8.828$ ,  $p = .009$ ,  $\eta_p^2 = .356$ , with .796 observed power, revealed a significant difference between the scores at the pre-test and post-test levels.

As for the main effect of TEC score (pre, post) X condition (experimental, control),  $F(1,16) = 1.241$ ,  $p = .282$ ,  $\eta_p^2 = .072$ , with .182 observed power, no statistically significant interaction was observed.

### Receptive Vocabulary

An analysis of variance (ANOVA) revealed no significant difference between the experimental group ( $M = 17.33$ ,  $SD = 9.34$ ) and the control group ( $M = 21.63$ ,  $SD = 9.26$ ) from the *ÉVIP* raw scores at the beginning of the experiment,  $F(1,16) = 0.90$ ,  $p = .36$ ,  $\eta^2 = .06$ .

These results suggest that both groups did not differ in their receptive vocabulary skills.

### **Letter Identification**

On average, children were only able to identify a few of the alphabet letters ( $M = 5.44$ ,  $SD = 8.33$ ). An analysis of variance (ANOVA) revealed no significant difference between the experimental group ( $M = 3.33$ ,  $SD = 8.23$ ) and the control group ( $M = 7.56$ ,  $SD = 8.34$ ) from the letter naming task scores,  $F(1,17) = 1.17$ ,  $p = .30$ ,  $\eta^2 = .07$ . These results suggest that both groups were in the beginning of their development regarding alphabetical knowledge.

### **Correlations**

A Pearson's  $r$  was computed to assess the relationship between raw *ÉVIP* scores (Vocabulary) and TEC (pre-test) scores (emotion comprehension). There was no significant correlation between the two variables,  $r = -.28$ ,  $p = .47$ . Results suggest no apparent relationship between children's receptive vocabulary skills and their level of emotion comprehension. A second Pearson's  $r$  was computed to assess the relationship between letter identification scores and TEC (pre-test) scores. There was no significant correlation between the two variables,  $r = .34$ ,  $p = .37$ . These results suggest that there is no relationship between children's ability to identify letters and their level of emotion comprehension.

### **Discussion**

The goal of the current study was to test the effectiveness of a picture book approach based on current theories in emotional comprehension in teaching these skills to children. It was hypothesised that the children whom would have multiple exposures to picture books based on a current model of emotion comprehension (Pons et al., 2005) would demonstrate a higher gain of emotion comprehension than children whom were exposed to picture books not created or based on emotion comprehension literature.

When comparing within-subjects, pre-test and post-test, emotion comprehension scores (TEC scores), results revealed significantly higher scores at the post-test level than the pre-test level scores (see Table 2). However, when comparing between-subjects TEC scores, no statistical significant differences were observed between both groups, experimental and control. When taking statistical power into consideration for the between-subjects comparison, the result in a non-significant main effect of group. With .346 observed power being well under the suggested .80 minimum power level allowing for a more definitive and accurate representation of the results provided by the statistical analysis (e.g., Button et al., 2013; Self & Mauritsen, 1988). Even though no significant differences in TEC scores between the two groups, were demonstrated with the current sample sizes, the possibility of obtaining a between-subjects effect is not out of the possibility with an adequate number of participants in each group.

In line with the hypothesis, these results lend their support as significant gains in emotion comprehension were observed when children were exposed to multiple readings of the created picture books. Thus, lending support that shared book reading and evidence-based picture books is an effective, easily accessible, low cost, and easy to use tool in assisting preschool-aged children in their emotion comprehension development. Ultimately, allowing the development of emotion comprehension of many young children that otherwise would not have had the opportunity to benefit from the multitude of advantages related to having a good level of emotional understanding.

Previous studies have demonstrated evidence of a relationship between one's vocabulary and emotion comprehension (e.g., Bosacki & Moore, 2004; Saarni, 1999). However, results demonstrate no significant differences in raw receptive vocabulary scores when comparing the

two groups. In addition, no evidence of a relationship between one's receptive vocabulary and level of emotion comprehension was observed between the two variables.

Even though children at this age level are not able to identify many alphabet letters, upper- or lower-case, children in the experimental group were not able to identify a significantly higher number of upper-case letters. Children's letter identification abilities in this study are similar to those found in the Evans et al. (2009) study with children roughly of the same age. An equally important set of findings was that in general, children with higher letter knowledge did not score higher on the TEC, suggesting no apparent relationship between the two. Although previous studies, such as Evans et al. (2009), have looked at both children's receptive vocabulary and letter knowledge or letter identification abilities as predictive variables in children's attention to print. These variables seem to have no relationship with children's level of emotion comprehension.

Prior receptive vocabulary skills and letter knowledge do not seem to be factors that contribute to the gains in emotional comprehension. In effect, there was no correlation between scores on the measures of vocabulary or letter naming. Thus, demonstrating no apparent relationship between one's receptive vocabulary skills and level of emotion comprehension, suggesting the variables might not be important contributors to emotional comprehension skills. Although the literature reveals little evidence of an existing relationship between emotion comprehension and receptive vocabulary at the preschool age level, our results are contradictory to those found by Beck, Kumschick, Eid, and Klann-Delius (2012). They found evidence supporting a relationship between language competence and emotional competence, more precisely receptive vocabulary with emotion knowledge, between the ages of 7 and 9, in school-age children. It is possible that this relationship only

becomes apparent later in children's language and emotional development.

Although children's emotional understanding develops with time (see Pons et al., 2004, 2005), with no evidence of statistical difference observed within the control group, the passing of time between the pre-and post-tests, seems to have made no significant contribution to children's level of emotion comprehension. Thus, suggesting that children's development of emotion comprehension unfolds with some larger laps of time, several months, perhaps years, as supported by Pons and Harris (2005).

### **Implications**

It is easy to be misled when we rely on our intuition or reasoning, hence the importance of research. One of the reasons we conduct research is usually to provide evidence or lack thereof for current beliefs and practices. Reading picture books depicting cartoon characters enacting emotional understanding and highlighting external emotional causes that can influence their behaviour can be used to help children's ability to comprehend emotions and even further their emotion comprehension development, for example.

Many studies in psychology and education have suggested that children's understanding of their own emotions and those of others plays a key role not only in their social adjustment but also in their academic achievement (e.g., Harrison & Paulin, 2000; Harris & Pons, 2003). While the SMILE program is an effective intervention able to assist children in their development of emotion comprehension (Pons et al., 2002), it remains a time consuming, expensive and limited access program. Picture books created on current theories and models of emotion comprehension can be incorporated in the preferred educational activity by children and the most frequently practiced activity across households: Shared book reading (Bus et al., 1995; Scarborough & Dobrich, 1994). In addition, the results of this paper also illustrate the uniqueness of the shared

book reading as a vehicle able to transmit information effectively, with multiple exposures, without deviation from the storyline or explicit detailing.

Today, our government as well as individual households invest extensive social and economic resources yearly in the preparation of children for school. The ministry of education has focused important resources, in trying to ensure quality curriculum in preschool programs, to facilitate the transition from preschool to school (e.g., Planning Entry to School, 2005). Thus, having widely, readily, accessible resources for assisting children, not only in their emotional development, but helping them become better decision-makers, demonstrating more positive pro-social behaviours, having better interpersonal relationships with friends, peers, and teachers. That is, helping them in addition to becoming better socially adapted and achieving higher success in school.

### **Limitations**

Although the experimental treatment did not reveal a significant gain in emotion comprehension at the post-test level, like the SMILE intervention, it remains unclear what specific part could be responsible for the gain in children's emotion comprehension. Since all the children in the experimental group were exposed to the picture books in an identical order and for the same number of exposures, it is not possible to isolate which book, if not all, were responsible for the gain and one what specific component. In addition to the low number of participants in the experimental group, coupled with the low variability in component scores, this combination makes it more difficult to detect significant differences in post-treatment scores, within each component. As mentioned above, an important limit to this study is the size (n) of its samples, resulting in inadequate power levels hindering the generalisability and certainty of the current results.

## **Future Research**

Future research is necessary to obtain a broader, more complete, understanding on how shared book reading can be used as an accessible, low cost, tool able to contribute to children's emotional understanding at a variety of ages, not only for francophone as well as to look at the maintenance in time and generalization to other emotional competences. Future research examining a broader age group as well as incorporating components VI – IX would allow for a better understanding of the effectiveness of such a tool and its viable contributions to a wider population - allowing to create more adequate educational tools by providing further evidence allowing the use of evidence-based practices.

While this study investigated the effectiveness of picture books created on recent theories in emotional competencies in comparison to picture books neither created or based on emotion comprehension research, a future step would be to compare the created picture books to other storybooks of similar nature, discussing emotion content, but not necessary created on current theories and models in the field.

## **Conclusion**

To date, there has been little to no empirical research examining the potential of shared book reading as a tool to help children in their emotional comprehension development. The goal of the current study was to test the effectiveness of picture books based on current theories in emotional competencies in teaching these skills to children while using a shared book reading strategy. This study has shown possible effectiveness of this approach. Although not conclusive, this study has allowed for support of two major, important, findings. The first, being the potential use of shared book reading as a method for the transmission of emotion related information to preschool aged children. And the second,

being the possible effectiveness of evidenced based picture books as a tool for assisting children in their emotion comprehension development.

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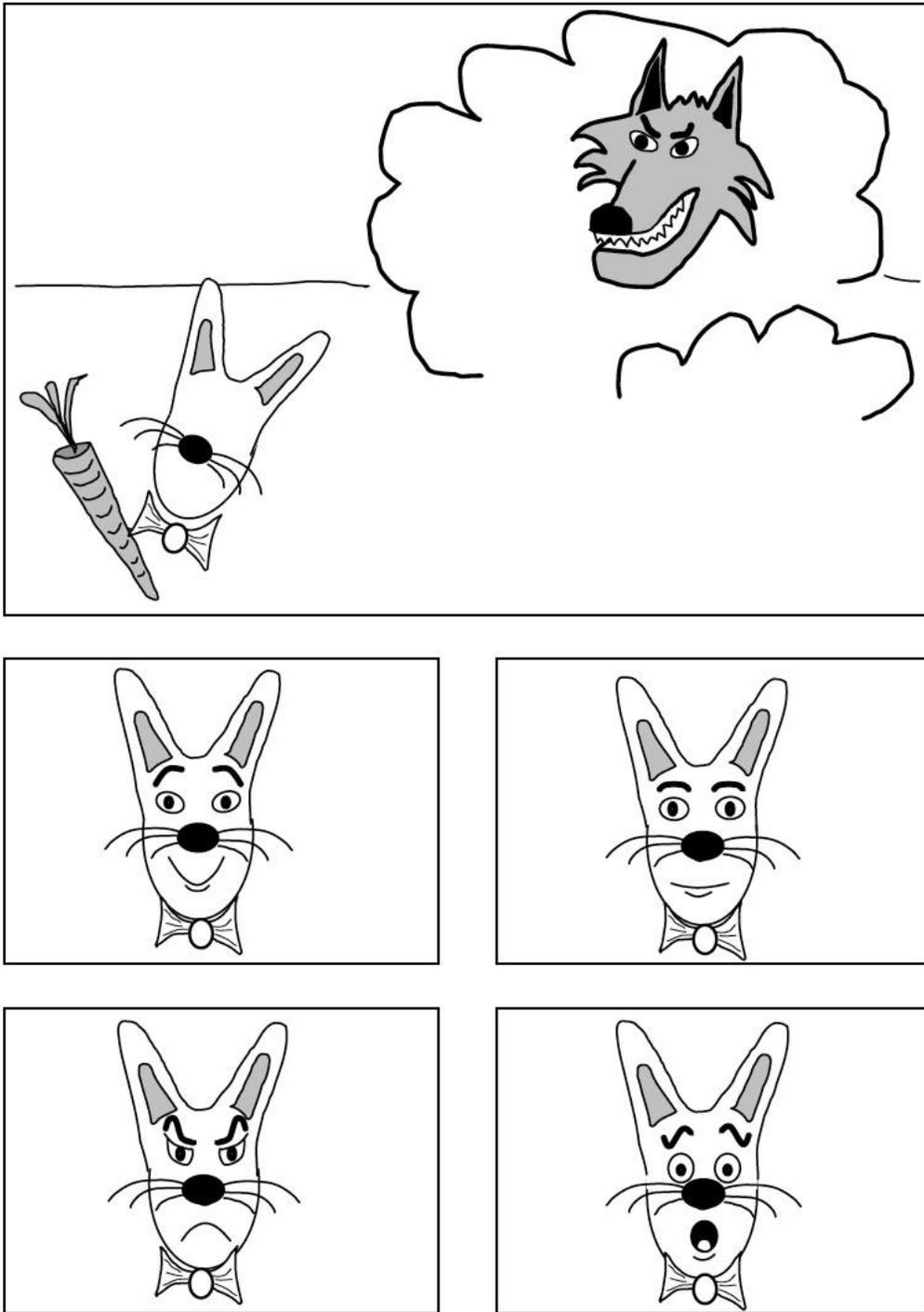
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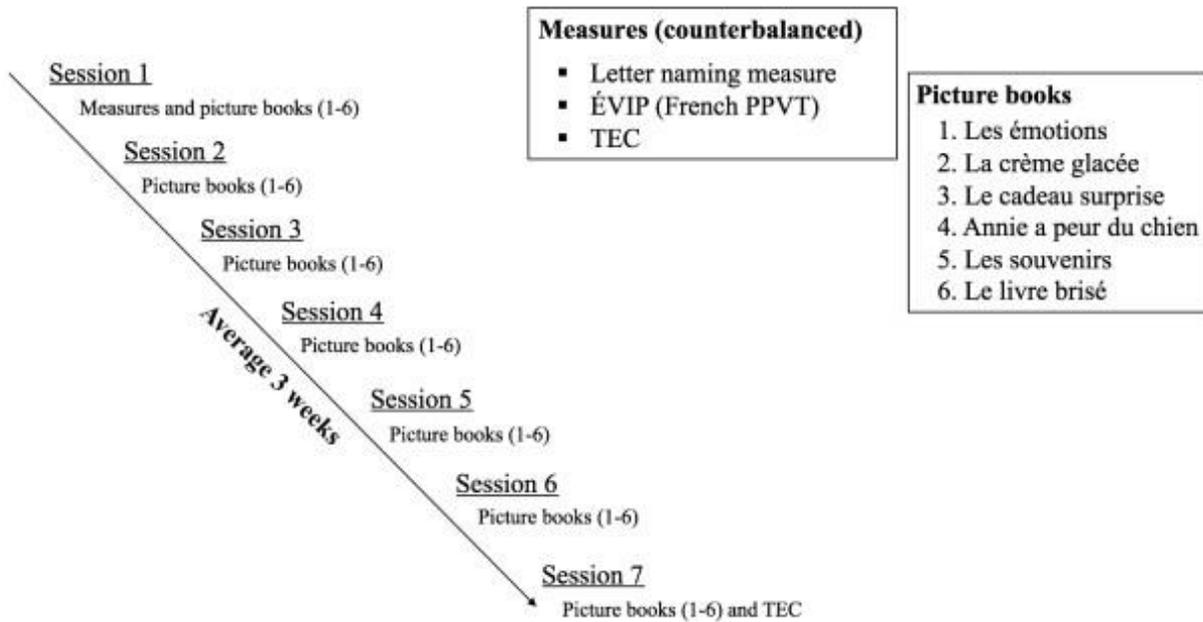


Lorsque Lana est heureuse, ses joues remontent en tirant sur les coins de sa bouche pour former un beau sourire.

*Figure 1.* Sample page from the first book *Les émotions* [Emotions], *Lorsque Lana est heureuse, ses joues remontent en tirant sur les coins de sa bouche pour former un beau sourire* [When Lana is happy, her cheeks raises in order to pull the corners of her mouth to form a beautiful smile]. The illustrations and text were found on different pages, text was displayed on the odd numbered pages and the illustrations on the even numbered pages.



*Figure 2.* Example of cartoon scenario and emotional outcomes from Component IV: Belief (as seen in Pons, Harris, & de Rosnay, 2004).



*Figure 3.* Overview of the procedure. ÉVIP = Échelle de Vocabulaire en Images du Peabody;

PPVT = Peabody Picture Vocabulary Test; TEC = Test of Emotion Comprehension

Table 1

*Stages and Competencies of Emotion Comprehension*

Stage 1	Stage 2	Stage 3
<u>External Dimension of Emotions</u>	<u>Internal Dimension of Emotions</u>	<u>Complex Dimension of Emotions</u>
<i>Component I</i> (Recognition)	<i>Component IV</i> (Desire)	<i>Component VII</i> (Control of the felt emotion)
<i>Component II</i> (External causes)	<i>Component V</i> (Belief)	<i>Component VIII</i> (Mixed)
<i>Component III</i> (Memories)	<i>Component VI</i> (Real and apparent emotions)	<i>Component IX</i> (Morality)

*Note.* This model is composed of three stages of development and with nine different components (competencies) of children's emotional comprehension - three components per stage.

Table 2

*Means (M) and Standard Deviations (SD) from Test of Emotion Comprehension Scores at Pre- test and Post-test as a function of Group*

Groups	<u>Pre-test</u>		<u>Post-test</u>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Experimental (n = 9)	1.11	0.93	2.33	1.50
Control (n = 9)	0.67	0.71	1.22	1.39