PERCEPTIONS OF EXERCISE AMONG
SCHOOL AGED CHILDREN WITH ASTHMA

by

Michele Rose Shaw

Copyright © Michele Shaw 2010

A Dissertation Submitted to the Faculty of the

COLLEGE OF NURSING

In Partial Fulfillment of the Requirements
For the Degree of

DOCTOR OF PHILOSOPHY

In the Graduate College

THE UNIVERSITY OF ARIZONA

2010

THE UNIVERSITY OF ARIZONA
GRADUATE COLLEGE

As members of the Dissertation Committee, we certify that we have read the dissertation prepared by Michele Rose Shaw entitled "Perceptions of Exercise Among School-Aged Children With Asthma" and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy

Amy H. Tsang Davis, PhD, RN

Date: April 19th, 2010

Ki Moore, DNSc, RN, FAAN

Date: April 19th, 2010

Peter R. Giacobbi, Jr., PhD

Date: April 19th, 2010

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copies of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Dissertation Director: Amy H. Tsang Davis, PhD, RN

Date: April 19th, 2010

STATEMENT BY AUTHOR

This dissertation has been submitted in partial fulfillment of requirements for an advanced degree at the University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this dissertation are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the copyright holder.

SIGNED: Michele R. Shaw

ACKNOWLEDGMENTS

I owe my success throughout the entire PhD program to my family. Without their constant support and love I could not have done this. They were always there encouraging me not to give up and to keep going. Even when I doubted myself, they never wavered in their belief of my abilities. I acknowledge all of the sacrifices my children endured to allow mommy to focus on homework. They reminded me I was being a good role model and that they too would try hard in school. I hope they have learned what hard work and dedication can bring. Their love, patience, and smiles are really what pushed me through. Thank you to my beautiful and amazing children. We did it!

I cannot leave out my partner and best friend, Tullen. Thank you doesn't even begin to explain my gratitude and appreciation for all you've done to help me through. Your love and humor has made this process possible. Here's to the future!

I must also acknowledge my supportive committee members. They continuously pushed me along and also supported me through many moments of doubt.

Dr. Amy Davis, you helped me get into the program and guided me throughout this journey. Life continued to happen throughout the program and you served as both a counselor and my mentor. You told me I could do it and to have faith in myself. You practiced what you preached and instilled self-efficacy in my research abilities. Sometimes you asked me questions I did not quite understand but now I get it. You were pushing me to think independently and critically. I realized this as I went through the interview process for an Assistant Professor position. I was able to channel all of the knowledge I've gained throughout the program in an articulate and confident manner. Thank you for all of your guidance and support, I am forever grateful!

Dr. Ki Moore, you made that first call to tell me I had been accepted into the program. Throughout the last four years you have praised my progress and provided excellent feedback and new ideas to integrate into my interest area. I have been blessed to have access to your knowledge and expertise in working with children. Your work and attitude have always been inspirational to me. I hope to hold onto that inspiration and make a difference in the lives of children by increasing their involvement in exercise. Thank you!

Dr. Peter Giacobbi, you were thrown into this situation yet you were eager to assist my learning through your expertise in Grounded Theory and physical activity. You encouraged me to learn by pushing me to work through the analysis independently. Your suggestions and pointers were very helpful as I forged through the mud of learning something new and applying it. I am extremely grateful for your suggestion of using Corbin and Strauss's methods. I honestly cannot think of a better methodological fit with my research purpose as well as with my own philosophical perspectives. I hope to continue to collaborate in the future. Thank you for putting up with my constant emails. I am grateful for your time and support.

DEDICATION

This dissertation is dedicated to my three precious children: Kendal, Gage, and Hadly. All of my hard work and sacrifice has been done with them in mind. I knew I could not give up because they were counting on me. They continuously remind me to appreciate life and not to always take things so seriously. To my three biggest fans, I love you and thank you for all you bring to my life every day.

TABLE OF CONTENTS

LIST OF FIGURES	10
LIST OF ILLUSTRATIONS.....	11
ABSTRACT	12
CHAPTER ONE: INTRODUCTION	13
Statement of Purpose.....	16
Research Questions.....	16
Background and Significance.....	17
Philosophical Perspective.....	19
Epistemological Outlook.....	20
<i>Four Patterns of Knowing</i>	20
<i>Chosen Epistemology: Constructionism</i>	22
<i>Theoretical Perspective: Interpretivism & Symbolic Interactionism</i>	24
<i>Philosophical Summary</i>	25
Proposed Conceptual Framework.....	26
<i>Social Cognitive Theory</i>	30
<i>Theories of Perception</i>	32
<i>Proposed Framework Summary</i>	34
Chapter Summary.....	35
CHAPTER TWO: REVIEW OF THE LITERATURE.....	36
General Perception & Health Behavior Literature.....	36
<i>Perceptions</i>	36
<i>Self-Efficacy</i>	36
Perception of exercise & Asthma Literature.....	38
<i>Physical & Social Impacts of Asthma</i>	39
<i>Benefits of Exercise among Children with Asthma</i>	39
<i>Affective & Cognitive Characteristics as Exercise Predictors</i>	40
<i>Negative Emotions Influence on Exercise</i>	41
<i>Determinants of Fitness</i>	41
<i>Physical Activity & Physical Self-Concept</i>	42
Chapter Summary.....	43
CHAPTER THREE: METHODOLOGY.....	45
Purpose Statement & Research Questions.....	45
Qualitative Methods Perspective.....	46
Grounded Theory Defined.....	48
Suitability of Grounded Theory.....	49

TABLE OF CONTENTS-Continued

Protection of Human Subjects.....	49
<i>Children as a Vulnerable Population</i>	49
<i>Human Protection Procedures</i>	50
Recruitment.....	51
Sample & Setting.....	52
<i>Purposeful Sampling</i>	52
<i>Rationale for Age of Sample</i>	52
Data Collection	54
<i>Theoretical Sampling</i>	54
<i>Interviewing</i>	55
Data Analysis.....	58
<i>Process Explained</i>	59
<i>Beginning Coding</i>	60
<i>Open Coding</i>	60
<i>Comparative Analysis</i>	61
<i>Theoretical Integration & the Core Category</i>	62
<i>Theory Refinement</i>	63
Maintaining Credibility.....	64
<i>Fit</i>	64
<i>Applicability, Concepts, & Contextualization of Concepts</i>	65
<i>Logic</i>	65
<i>Depth</i>	66
<i>Variation & Creativity</i>	66
<i>Sensitivity & Evidence of Memos</i>	67
Chapter Summary.....	68
CHAPTER FOUR: RESULTS.....	69
Overview of Participants & Context.....	69
Sample Description and Demographics.....	71
Participant Descriptions & Study Context.....	73
<i>Carmen</i>	73
<i>Evan</i>	74
<i>Rachael</i>	76
<i>Zach & William</i>	77
<i>Penny</i>	79
<i>Brenda</i>	81
<i>Rick</i>	83
<i>Kendra</i>	85
<i>Cooper</i>	87
Summary of Participant Portraits and Context.....	88
The Process: Creating Perceptions of Exercise.....	88
Emergent Core Category: Ongoing Creation of Perceptions of Exercise.....	91

TABLE OF CONTENTS-Continued

Predominant Categories.....	93
Predominant Category: Perceived Benefits.....	94
<i>Fun</i>	95
<i>Friends</i>	97
<i>Health</i>	98
Predominant Category: Striving for Normalcy.....	100
<i>Keeping it Private</i>	101
<i>Planning</i>	103
<i>Continuing</i>	105
Predominant Category: Exercise Influences.....	107
<i>Parental</i>	107
<i>Physical Education Teachers</i>	110
<i>Health Care Providers</i>	111
Predominant Category: Asthma's Influence.....	113
<i>Symptoms</i>	114
<i>Triggers</i>	116
<i>Tolerated Activity Level</i>	118
Credibility of Findings.....	121
Chapter Summary.....	125
 CHAPTER FIVE: DISCUSSION & RECOMMENDATIONS.....	127
Grounded Theory Overview: The Process of Creating Perceptions of Exercise.....	127
Integration of Initial Research Questions.....	131
Integrating Existing Knowledge.....	134
<i>Social Cognitive Theory</i>	134
<i>Self-Efficacy</i>	136
<i>Physical & Social Impacts of Asthma</i>	137
<i>Affective & Cognitive Characteristics as Exercise Predictors</i>	138
<i>Negative Emotions Influence on Exercise</i>	138
<i>Determinants of Fitness</i>	139
<i>Physical Activity & Physical Self-Concept</i>	140
Summary of Integration of Existing Knowledge.....	141
Integration of Philosophical Perspectives.....	142
Limitations of Study.....	144
Nursing Implications.....	147
<i>Nursing Theory</i>	147
<i>Nursing Education</i>	148
<i>Nursing Practice</i>	149
<i>Nursing Research</i>	150
Conclusion.....	151

TABLE OF CONTENTS-*Continued*

APPENDIX A: UNIVERSITY OF ARIZONA IRB APPROVAL.....	153
APPENDIX B: CONSENT & ASSENT FORMS.....	155
APPENDIX C: RECRUITMENT PHONE SCRIPT.....	162
APPENDIX D: RECRUITMENT FLYER.....	165
APPENDIX E: INITIAL INTERVIEW QUESTIONS.....	167
APPENDIX F: HEALTH HISTORY QUESTIONNAIRE.....	169
REFERENCES.....	172

LIST OF FIGURES

FIGURE 1. Proposed Perceptions of Exercise Framework.....	29
FIGURE 2. The Process of Creating Perceptions of Exercise.....	91

LIST OF ILLUSTRATIONS

TABLE 1. Participant Demographics.....	72
TABLE 2. Description of Participants' Symptoms Experienced During Exercise.....	115
TABLE 3. Summary of Symptom Triggers.....	117

ABSTRACT

This grounded theory driven study explored the predominant categories and concepts involved with perceptions of exercise among school aged children with asthma. Ten children (five males, five females), ages 8-12, with various asthma disease severity, were interviewed in their homes. In addition, nine parents completed a health history questionnaire. The emergent grounded theory: The process of creating perceptions of exercise was identified from the data. The ongoing creation of perceptions of exercise was influenced by four predominant categories: perceived benefits, striving for normalcy, exercise influences, and asthma's influence. Because process is an ongoing occurrence, the four predominant categories may influence the creation of exercise perceptions simultaneously, or at different times and in various ways dependent upon the characteristics of the child and their unique situations and experiences (context). Perceived benefits, striving for normalcy, exercise influences, and asthma's influence were identified categories involved with the interactions, actions, and consequences interwoven throughout the creation of perceptions of exercise process. These categories help explain how exercise perceptions are developed from the participants' perspective. The process of creating perceptions of exercise is a continuous, circular, happening with the consequences leading to the development of exercise perceptions. The context may change but the overall process retains applicability to creating perceptions of exercise. The subjective insight gained throughout the development of the theory: the creation of perceptions of exercise, gives light to numerous areas for future nursing research and practice in hopes of improving the overall quality of life among this population.

CHAPTER ONE

INTRODUCTION

Asthma is the most common chronic illness among children, currently effecting roughly ten percent of children in the United States (American Lung Association, 2005). According to the Centers for Disease Control and Prevention (CDC) more than nine million children living in the United States have been diagnosed with the disease, and roughly 4 million children per year report having had at least one asthma attack (2007). Asthma has been linked to fourteen million absences from school per year, as well as being one of the most common childhood causes for a trip to the emergency room (CDC; American Lung Association). Over the past few decades, the incidence and severity of the disease continue to rise among school aged children (Mansour, Lamphear & Dewitt, 2000; McConnell, Berhane, Gilliland & London, 2002). Asthma prevalence rates among children aged 0-17 nearly doubled from 3.6% to 7.5% from 1980 through 1995, currently remaining at an all time high with 12.7% of all children receiving an asthma diagnoses sometime in their life (CDC, 2006).

Asthma does not only effect the diagnosed child but also puts a heavy burden on parents, school systems, communities, health care providers, and our nation (CDC, 2007). According to the CDC, the annual cost for asthma is close to \$19.7 billion (2006). Treating asthma in patients under the age of 18 is costing at least \$3.2 billion dollars annually (Weis, Sullivan & Lytle, 2000). The immense cost involved with caring for children with asthma effects every American (CDC, 2007). This effect is demonstrated through increased insurance rates which continue to climb, along with

both children and adults missing days from school and work effecting current and future productivity, along with the possibility of continued tax raises to cover all of the rising costs involved with school aged children living with asthma (CDC).

The chronic disease of asthma has been linked to many childhood problems effecting quality of life. The literature suggests school aged children with asthma experience more hospitalizations, decreased overall activity, more night-time cough, and sleep disturbances when compared to their healthy classmates (CDC, 2007; McCann, McWhirter, Colemean, Devall & Calvce, 2002; Taras, Wright, Brennan, Campana & Lofgren, 2004). In addition, several studies have demonstrated a relationship between asthma and decreased involvement in exercise and physical activities among school aged children (Lang, Butz, Duggan & Serwint, 2004; Mansour et al., 2000). School aged children living with asthma commonly have decreased exercise tolerance (either subjectively perceived or objectively demonstrated) due to complaints of shortness of breath, wheezing and cough, along with possible imposed activity restrictions placed by parents, teachers, coaches, or health care providers (Basaran et al., 2006). Living with asthma and dealing with the symptoms associated with the disease have also been linked to depression and anxiety among children (Clayton, 2005). These issues are all crucial areas of a child's life that may impede their ability to live and function normally, often leading to an overall decreased quality of life.

Prior research has shown school aged children with asthma are often much less physically active than their healthy counterparts (Lang et al., 2004; Mansour et al.,

2000; Pastva & Schwiebert, 2003). Although exercise participation is now encouraged among school aged children with asthma, most asthmatic children and adolescents continue to report they are unable to fully and successfully participate in physical activity (Chadwick, 1996; Welsh, Kemp & Roberts, 2005; Wirrell, Cheung & Spier, 2006). This is a significant problem because increasing childhood physical activity and exercise plays a health promoting role among asthmatic children by decreasing symptom severity and improving the general quality of life (Lucas & Platts-Mills, 2005; Pastva & Schwiebert, 2003). Along these same lines, the National Asthma Education and Prevention Program (NAEPP) is now actively encouraging exercise participation to be an included piece in the holistic treatment plan of asthma in hopes of improving not only the disease but also the overall satisfaction with one's life (National Heart, Lung, and Blood Institute, 2007).

Because exercise has the ability to markedly improve all areas of health for school aged children, it is imperative to focus on how these children perceive exercise (Lucas & Platts-Mills, 2005; Pastva & Schwiebert, 2003). Perception is an important area for further research because the literature strongly suggests perceptions influence many health related behaviors (Barrett & Randle, 2008; Keats, Culos-Reed, Courneya & McBride, 2007). There is limited research focusing on perceptions of exercise among school aged children with asthma. Therefore if more knowledge can be gained in relation to why school aged children with asthma do or do not exercise, the possibilities for future interventions are encouraging. Although asthma has no current cure, if treated appropriately, the disease can be well controlled. Part of the currently

suggested treatment includes the prescription of exercise for asthmatic children (NAEPP, 2007). These children can and should participate in exercise to fully gain the numerous health benefits exercise has to offer. The goal of this grounded theory driven study is to investigate the process of how perceptions of exercise are influenced through various psycho-social aspects of the lives of school aged children with asthma. By increasing nursing knowledge in this important area it is hoped that predominant concepts will be clearly identified and explored. Future nursing intervention development can then be focused at increasing exercise success, along with the initial stages of creating an explanatory or predictive theory to assist in future research among school aged children with asthma.

Statement of the Purpose

The purpose of this grounded theory driven study is to explicate predominant concepts in perception of exercise among school aged children with asthma, and to describe potential relationships among predominant concepts in order to develop an explanatory theory to guide development of effective interventions and further research.

Research Questions

1. What are the predominant psycho-social concepts involved with the process of perceiving exercise among school aged children with asthma?
2. How do environmental influences effect perceptions of exercise?
3. How does prior knowledge and experience influence perceptions of exercise?
4. How do beliefs and emotions effect perceptions of exercise?

Background & Significance

This section will briefly discuss current issues involved with perceptions of exercise among school aged children with asthma. Discussion will also cover the significance of the problem and provision of rationale for why this area requires further nursing exploration and research.

Although school aged children have demonstrated they are a reliable source of describing their own asthma disease, very little research has focused on perceptions of asthma and exercise from the child's own viewpoint (Kintner, 2004; Panditi & Silverman, 2003; Yawn, Wollan, Kurland & Bertram, 2006). Perceptions are an important area to explore because they often affect exercise choice and habits (Fereday, MacDougall, Spizzo, Darbyshire & Schiller, 2009; Gillison, Standage & Skevington, 2006). Current evidence suggests that in order to obtain the most accurate information, predominant aspects related to asthma should be obtained and described directly from the child with asthma instead of from their parents (Panditi & Silverman; Yawn et al.). Perceptions of exercise among school aged children with asthma are important areas to explore because parental reports are not always an accurate reflection of the child's beliefs or perceptions related to their asthma disease (Kintner; Panditi & Silverman; Yawn et al.). Gaining insight into how these children perceive exercise is a crucial step in identifying factors which may influence exercise participation.

There is limited research focusing on perceptions of exercise coming directly from the perspective of school aged children with asthma. With the ever rising

number of children affected by this chronic disease and the decrease in physical activity found among this vulnerable population, further research investigating perceptions of exercise among school aged children with asthma is greatly needed. Increased knowledge about how these children perceive exercise may provide important clues in understanding why school aged children with asthma are not exercising as much as their healthy peers, as well as identifying areas for health promoting nursing interventions for this important population (CDC, 2006). In hopes of addressing this gap in nursing knowledge, this study focuses on the exploration of predominant concepts involved with perceptions of exercise among school children with asthma.

Current evidence suggests school aged children with asthma are able to and should be encouraged to actively participate in exercise to improve and control their asthma disease, interact with their peers, improve self esteem, maintain weight, improve aerobic fitness, and experience increased satisfaction with their overall quality of life (Basaran et al., 2006; Engstrom, Fallstrom, Karlberg, Sten & Bjure, 1991; Veldhoven et al., 2001; Welsh et al., 2005). Despite the overwhelming evidence demonstrating the many positive health outcomes associated with exercising, children with asthma continue to exercise less than their healthy peers and also tend to view exercise in a negative light. Therefore, further exploration into perceptions of exercise among school aged children with asthma is needed in order to better understand and influence exercise behavior in this population.

Addressing the gap in the literature focusing on how school aged children with asthma perceive exercise is an important step in the identification of target areas for development of nursing interventions focused on modifying exercise perceptions and behaviors. By understanding perceptions related to exercise among school aged children with asthma, nurses in a variety of settings can encourage lifelong exercise participation, in hopes of improving all areas of health and wellness among this vulnerable population. There is limited research focusing on the “why” of this decreased involvement in exercise from the school aged asthmatic child’s perspective. Therefore, further exploration into school aged children’s perceptions of exercise is needed in order to understand exercise behavior.

The next section will focus on my philosophical perspective. Philosophical perspectives include one’s epistemology and theoretical viewpoints. Underlying beliefs and assumptions will also be explored and explained.

Philosophical Perspective

Gaining an understanding of one’s philosophical perspectives is an important part of the research process involved with furthering nursing knowledge in one’s interest area (Crotty, 2003; Reed, Shearer, & Nicoll; 2004). Philosophical viewpoints can be used to guide inquiry and theory development as they affect the nurse scientist’s choice of methodology and specific methods to be used in research. Philosophical perspectives include the researcher’s beliefs regarding how knowledge is generated (epistemology), as well as one’s outlook on how the world operates (theoretical perspective). According to Crotty, one’s epistemology and theoretical perspectives

should support the chosen methodology and methods. Fit among epistemology, theoretical perspective, methodology, and methods adds credibility to the study (Chinn & Kramer, 2004). Questioning current “truths” and identifying one’s ontological and epistemological viewpoints can help provide new nursing knowledge as well as a holistic understanding of nursing practice and research. Exploring one’s beliefs about knowledge development and worldviews also guides the nurse researcher’s decisions throughout the research process leading to a more holistic and contextualized understanding of the participants’ unique perspectives. Philosophical perspectives help explain the interaction among nursing practice and science by informing inquiry processes leading to the development and understanding of new nursing knowledge and theory (Chin & Kramer; Crotty et al.).

Epistemological Outlook

Four Patterns of Knowing

Epistemology is the investigation into how knowledge is developed, the rules involved in gaining new knowledge, the methods and patterns of knowing, and the criteria for knowledge evaluation (Reed, 2006; Reed et al., 2004). Before covering my chosen epistemology it is important to briefly review Carper’s (1978) four patterns of knowing. These four patterns of knowing are often used in the nursing arena to help gain an understanding of nursing itself and to guide the nurse researcher in epistemology choice (Reed, 2006). The four patterns were developed by Carper and include empirical patterns, aesthetic patterns, personal patterns, and ethical patterns of knowing (Reed; Reed et al.). Empirical patterns of knowing focus on

science, while aesthetics focus on the art of nursing (Reed et al.). Personal patterns focus on identification of the uniqueness among individuals and the importance of recognizing one's biases and perceptions of reality (Reed). Ethical patterns of knowing take on the moral aspects involved with nursing (Chinn & Kramer, 2004). Carper's four patterns of knowing provide a broad description of how nursing knowledge is acquired, and the patterns also provide areas for continued development of new nursing knowledge.

My dominant pattern of knowing is the aesthetic pattern. This pattern includes a focus on creativity in care, providing a sense of satisfaction from a nursing standpoint. Aesthetic knowing also involves intuition and empathy gained from practice experience which assists to provide holistic care or "nursing the whole patient" (Chinn & Kramer, 2004; Reed et al., 2004, p.224). The aesthetic pattern of knowing involves perceiving patients' reality or situation, often through narrative or the use of storytelling (Chinn & Kramer; Reed, 2006). This fits well with my epistemological viewpoint which focuses on the whole patient. Aesthetic knowing is an important aspect in my knowledge development as I investigate perceptions of exercise among school aged children with asthma. The incorporation of a holistic approach makes the aesthetic pattern an excellent fit with this research study because I want to learn about the participants' unique and holistic experiences through the use of open ended interviews allowing the child to tell their story.

The focus of aesthetic knowing centers on the question, "what does this mean?" (Chinn & Kramer, 2004). By gaining an understanding of how school aged children

with asthma define their perceptions of exercise; nursing will begin to answer the aesthetic pattern's central question. Placing meaning on data generated from the nurse researcher-study participant relationship involved with this study will add much needed knowledge to the nursing arena. Identifying predominant concepts involved with perceptions of exercise provides guidance into how these perceptions influence exercise behavior.

Chosen Epistemology: Constructionism

According to Crotty (2003), one's epistemology will inform his/her theoretical perspective, leading to methodology choice, and finally on to the use of specific methods. My chosen epistemology, guided by my dominant pattern of aesthetic knowing, is Constructionism with the theoretical perspectives of Interpretivism and Symbolic Interactionism (Crotty, 2003). My chosen methodology of Grounded Theory and my method of using interviews, coding, and constant comparative analysis, are informed and supported by both my epistemology and theoretical perspectives.

Constructionism focuses on the idea that knowledge is developed through human experiences (Crotty, 2003). Emphasis is placed on the interactions that occur between our patients and their environments with a particular consideration of the social aspects involved (Crotty). There is no meaning placed on objects or events if not yet experienced by the person. This means that knowledge is developed through real life social interactions. According to Constructionism, meaning is not solely objective or subjective in nature, but instead it is *constructed* through the overlap of

both objective and subjective inference referred to as intentionality (Crotty). This means that we learn through the use of our consciousness. We become aware of things and are drawn to them by our consciousness and then we perceive or place meaning again through consciousness. Subject and object are interrelated and are not separable. It is this emphasis on the interaction of the subject with the environment that makes Constructionism an excellent fit with my interest area of perceptions of exercise among school aged children with asthma. I believe there are many aspects of the asthmatic child's environment that influence the development of exercise perceptions as well as the exercise behaviors of these children.

Constructionism also assumes meanings are made through interpretations of reality (Crotty). Interpretations are individualized; meaning we each may interpret experiences differently. The key with Constructionism is remembering the importance of keeping subjectivity and objectivity together throughout the research process. This involves gathering detailed descriptions (subjective accounts) of the asthmatic children's perceptions of exercise, as well as allowing key concepts (objectively identified through coding) to emerge from the data for theory generation.

Constructionism incorporates a strong focus on social aspects involved with the interactions that occur between patient and environment (Crotty, 2003). Generation of knowledge or the making of meaning occurs through cultural and social influences in the surrounding environment. Constructionism in nursing research requires an open mind and imagination in order to step away from previously engrained notions of the truth and instead, approaches the study unbiased with hopes of new discoveries to

further nursing knowledge. This epistemological view is an excellent fit for my approach in studying perceptions of exercise among school aged children with asthma because the inquiry focuses on the psycho-social environmental influences involved with exercise perceptions and behavior.

Theoretical Perspective: Interpretivism & Symbolic Interactionism

The theoretical perspectives guiding my choice of Grounded Theory methodology are Interpretivism along with the subset of Symbolic Interactionism. Interpretivism incorporates an attempt to increase understanding of how patients form reality or place meaning on events or objects (Crotty, 2003). Using the Interpretivism perspective means investigating how one interprets their world with an emphasis placed on social contextual influences. The focus is on the interpretation of the individual, human interactions, and subjective meaning (Crotty). Interpretivistic inquiry focuses on how meaning is made or constructed through the interpretation of subjective descriptions of this process.

Symbolic Interactionism is a subset of the Interpretivism approach incorporating social interaction influences, individualized meanings, and interpretation (Crotty, 2003). Pragmatism is also a key assumption involved with Symbolic Interactionism. This means the approach is uncritical, optimistic, and that meanings have practical explanations or consequences (Crittty; Reed, 2006). George Herbert Mead was a social psychologist who believed Interpretivism and Symbolic Interactionism to have pragmatic philosophical underpinnings (Crotty). Mead believed knowledge development began in childhood through role playing or imitation (Crotty).

Questioning how others act and think is part of how meaning is developed. Symbolic interaction, therefore involves, “putting of oneself in the place of the other” (Crotty, p.75). Gaining subjective descriptions of exercise from school aged children with asthma through the use of Grounded Theory methodology allows nurses to begin to understand the perception process from the child’s unique perspective.

Philosophical Summary

My philosophical perspective guides my choices throughout the research process involved with investigating perceptions of exercise among school aged children with asthma. As mentioned above, the aesthetic pattern of knowing involves creative thinking and a desire to gain a deep understanding of the phenomena of interest from the subject’s perspective. I believe in order to gain an accurate depiction of the predominant concepts involved with perceptions of exercise among school aged children with asthma, the nurse must listen to the children’s stories of their experiences through the use of qualitative inquiry. My approach includes Constructionism as the driving epistemology (guided by my dominant pattern of aesthetic knowing), along with the theoretical perspective of Interpretivism and Symbolic Interactionism. My philosophical perspective supports Grounded Theory as the chosen methodology used to investigate predominant concepts involved with the psycho-social aspects of perceptions of exercise as described by the school aged child with asthma.

Proposed Conceptual Framework

Conceptual frameworks are developed to help guide the research process by proposing important concepts and possible relationships to assist in explaining the behavior of interest (Rodgers, 2005). Theory itself often begins with proposed concepts or statements along with the proposition of linkages or influences among the statements (Walker & Avant, 2005). My conceptual model included possible concepts involved with perceptions of exercise among school aged children with asthma. Knowledge of what is known relevant to one's interest area provides ideas about what might be identified through a Grounded theory approach (Munhall, 2007). Although it is imperative in grounded theory to not allow the literature to bias or solidify predominant concepts or theoretical ideas prior to the study, conceptual frameworks do provide excellent guides in development of areas to explore through open ended interviewing techniques (Munhall). Predominant concepts should then emerge from the data leading to theory development. Potential areas influencing perceptions of exercise have been identified through an extensive literature review of general perception theories, asthma and exercise, and the incorporation of Bandura's (1977, 1986) Social Cognitive Theory (SCT).

The Proposed Perceptions of Exercise Framework was developed around three central areas relevant to school aged children with asthma (see Figure 1). The three areas included: SCT, asthma/exercise/children literature, and theories of perception literature. SCT incorporates important developmental issues relevant to school aged children and how they place meaning on, or perceive events (such as exercising)

(Bandura, 1977, 1986). According to SCT, choice or “freedom” in behavioral decision making comes from multiple factors including perceptions or judgments of one’s environment and personal characteristics (Bandura, 1986, p. 38). Self-belief in one’s ability and environmental influences effect perceptions of options or choices and eventually effect behavioral choices made (Bandura). In addition, common concepts found in the literature focusing on children, exercise, and asthma were also threaded into the development of the proposed framework. Incorporation of perception theory literature was also included to strengthen the credibility of the framework. All three central areas overlap and provide a comprehensive approach to initial interview questionnaire development for exploration of perceptions of exercise among school aged children with asthma.

The proposed perceptions of exercise framework was used as the initial approach in this grounded theory driven exploration of perceptions of exercise among school aged children with asthma (Figure 1). Again, it is important to point out that the identified concepts were only used as a starting point in this grounded theory study and as new leads emerged through the data they were explored with an open mind through further theoretical sampling. Predominant concepts included in the proposed Perceptions of Exercise Framework include: interactions with the environment, cognitive characteristics, affective characteristics, and representation (Bandura, 1977, 1986; Baranowski et al., 2002; Benjamin, 2007; Chian, Huang & Fu, 2006; Dilworth, 2005; Doring, 2007; Elder, Ayala, Zabinski, Prochaska & Gehrman, 2001; Givner, 1992; Kiviniemi, Voss-Humke & Seifert, 2007; Meyer, Kroner-Herwig & Sporkel,

1990; Panditi & Silverman, 2003; Pianosi & Davis, 2004; Raftopoulos, 2001;
Rietveld & Prins, 1998; Shanahan, 2005; Weir, 2004; Welsh et al., 2004).

Proposed Perceptions of Exercise Framework

Figure 1

Social Cognitive Theory

The overarching assumption of the proposed framework is SCT's central construct of reciprocal determinism (Bandura, 1977, 1986). Reciprocal determinism incorporates the three predominant concepts of SCT, including: personal characteristics of an individual, the environment, and their behavior (Bandura; Baranowski et al., 2002; Elder et al., 2001). Bandura believes school aged children learn through reciprocal determinism, meaning there is an ongoing process in which personal factors, environmental factors, and human behavior simultaneously influence one another, ultimately effecting behavior.

Environmental factors particularly important to this age group would include role models such as; teachers, parents, coaches, health care providers, siblings, and peers (Connors, Bednar & Klammer, 2001; Fereday, MacDougall, Spizzo, Darbyshire & Schiller, 2009). Parents play a strong role in exercise behavior among school aged children through role modeling and mentoring (Fereday et al. 2009; Dzewaltowski et al., 2007). Contextual considerations of the school aged child's physical environment would also fall under the environment label. Physical environmental aspects would include contextual details such as the surrounding neighborhood, home atmosphere, socio-economic status, and safety issues. Environment includes factors external to the individual as well as the situation or the person's perception of the environment (Baranowski et al., 2002).

Personal characteristic considerations would include the child's cognitive and affective characteristics, while behavioral considerations of the school aged child

with asthma would include prior behavioral choices related to exercise. Prior knowledge and experience both effect cognitive characteristic development (Bandura, 1977, 1986). Cognitive abilities are gained through observational/experiential learning involving role models (Bandura, 1977, 1986). These previous observations of behavior assist in future behavioral decision making choices. According to SCT, previous exercise behavior would then effect future behavior. Beliefs and emotions (affective characteristics) may effect new perception development and are influenced by past perceptions and experiences (Baranowski et al., 2002). Personal characteristics and prior behavior of the school aged child with asthma would both effect exercise behavior.

Self-efficacy or an individual's belief in their abilities to successfully engage in exercise is another predominant factor of SCT and would fall under both the cognitive and affective characteristics components of the proposed framework (Bandura, 1997). SCT is holistic in nature because it incorporates the interplay of an individual's cognitive and emotional traits as well as the environmental setting and previous behavior (Bandura, 1977, 1986). Bandura believes individual choice or behavioral decision making is influenced by both environmental factors and personal characteristics (1986). "Freedom," or "self-influence," goes into choosing a particular activity and is effected by the varying degrees of personal and environmental resources one has available (Bandura, p. 39). If an individual has a high level of self-efficacy, ultimately they have a greater number of choices than an individual lacking belief in their abilities (Bandura). An individual's choice to participate in exercise or

physical activity is impacted by several factors including: self-influence, self-efficacy, environment, and personal characteristics (Bandura). The proposed framework incorporates SCT's overarching assumption that personal characteristics, behavior, and environmental factors constantly influence one another, thus a change in one area creates change in the other areas effecting exercise perceptions and behavioral choices among school aged children with exercise (Bandura, 1977, 1986).

Theories of Perception

In order to explain and support the proposed framework, the concept of perception will be reviewed and clarified through summarizing literature findings. The two general theories of perception found throughout the literature are the bottom-up and top-down processes of perception. The bottom-up process describes perception as a sensory analysis occurring in one direction through the visual system (Raftopoulos, 2001). This approach suggests perception as an act of visualization of an object or event for what it is without the inclusion of subjective input or evaluation (Benjamin, 2007; Dilworth, 2005; Givner, 1992; Raftopoulos; Weir, 2004). Perception from this viewpoint can be thought of as the basic representation the perceiver places on the interaction with their environment, in other words, what you see is what you get (Dilworth). In relation to the proposed framework and perceptions of exercise among school aged children, this step in the perception process would include the visualization of exercise.

By contrast, the top-down process of perception involves interpretation of the observation (Raftopoulos, 2001; Shanahan, 2005). This inference about the

visualization of the object or event is molded by subjectively unique input based on prior knowledge and experiences (Benjamin, 2007; Dilworth, 2005; Givner, 2008; Raftopoulous; Weir, 2004). Each individual perceives subjectively, dependent upon various aspects of the experience such as the visualization and interpretation of the content (Givner; Raftopoulous; Weir). The top-down theory of perception focuses on hypothesizing or thinking about one's interaction with the environment through incorporation of what one knows. This means as the school aged child with asthma visualizes or participates in exercise additional input also comes from the child's cognitive characteristics in the formation of exercise perceptions.

In the majority of the current perception literature there is a mix or integration of top-down and bottom-up ideology. According to Doring (2007), perception incorporates to some degree, both types of processes with sensory perception involving visualization and affective perception involving emotion. Perceptions involve emotions, both possessing intentional, subjective, and phenomenological characteristics (Doring). Perception involves interaction with the environment and incorporation of one's emotions into placing representation on the experience or object (Doring; Barsalou, 2008). Both sensory and affective perception share similarities with the concept of belief in that once you visualize something you also believe it to be so (Doring). Our beliefs and emotions intertwine in the perception process leading us to make judgments (Doring). Affective perception can be defined as the synthesis of sensory analysis along with emotional input leading to the subjective judgment of the content witnessed. This would mean that perceptions of

exercise among school aged children with asthma are influenced by their unique interaction with the environment (exercise visualization or participation), cognitive and affective characteristics, and prior perceptions (Doring).

Perception also involves the act of judgment (Benjamin, 2007; Doring, 2007). As we visualize and experience an event an evaluation occurs based on how the content is taken in. This evaluation is synonymous with judgment. Thus, perceiving involves a process of recognition or forming an identity to a newly experienced perception based on input from previously developed perceptions (repetition) (Benjamin). This means that as we perceive we cannot help but judge. Exercise perceptions therefore involve a sensory interaction with our environment (either via an object or event) incorporating an integration of our beliefs, emotions, and judgment, all of which affect our conceptualization of the representation of the exercise experience.

Proposed Framework Summary

The proposed perceptions of exercise framework encompasses the components of perception theories discussed above including: the interaction with one's environment (either visualizing or participating in exercise), prior knowledge and experiences, emotions, beliefs, judgments, and representation, all of which are involved with the process of perceiving exercising. The development of the framework included the integration of these components along with the applicable SCT concepts discussed above, and included incorporation of literature relevant to asthma and exercise. Consideration of the child's environment (situation, roles, & models), personal factors (cognitive & affective traits), and behavior (skill, complexity & duration)

were all important areas for further exploration to help identify possible key concepts involved with asthmatic school aged children's perceptions of exercise (Baranowski et al.). Although the theoretical and empirical literature provide excellent ideas for exploration, a gap remains in the provision of an adequate theory clearly explaining and/or predicting perceptions of exercise among school aged children with asthma. This framework is intended to assist the researcher in explicating key concepts involved with perceptions of exercise among school aged children with asthma through a grounded theory approach with the goal of theory development.

Chapter Summary

Asthma diagnoses and severity continue to rise among school aged children with asthma. This is a national concern due to the impact asthma has on the health and well being of these children. As discussed in the introduction, exercise can improve asthma symptoms and severity while also improving the quality of life of this population. Perceptions of exercise among school aged children with asthma are complex areas with multi-factorial influences. Listening to school aged children's stories of exercise perceptions and asthma allows new nursing knowledge to surface through the identification of predominant concepts involved in perceptions of exercise. Chosen philosophical and theoretical perspectives were identified and reviewed throughout this chapter. The perspectives presented serve as a guide for the research process involved in this study. Background was provided, explained, and integrated in the development of the proposed framework. In Chapter Two a review of current and pertinent literature will be presented.

CHAPTER TWO: REVIEW OF THE LITERATURE

A comprehensive literature search of CINAHL, PubMed, Web of Science, and Ovid Medline was performed. Search terms included ‘perception,’ ‘perception theories,’ ‘attitude toward health,’ ‘health behaviors,’ ‘asthma,’ ‘exercise,’ ‘physical activity,’ ‘children,’ and ‘adolescents.’ Further investigation included scanning the references of applicable articles for identification of other relevant literature. Both quantitative and qualitative methods were included. Studies were excluded if abstracts were the only available format.

General Perception & Health Behavior Literature

Perceptions

Perception is relevant to health behaviors because it strongly influences decision making in many areas of health and illness (Flensner, Ek, Landtblom & Soderhamn, 2007; Frey, 1996; Luszczynska & Tryburcy, 2008; Ohm & Aaronson, 2006; Williams, Powell, Hoskins & Neville, 2008). Empirical evidence supports perceptions role in health decision making in areas such as: exercise, treatment adherence, diet, weight loss, sexual behaviors, hand washing, and symptom perception (Gillison, Standage & Skevington, 2006; Kiviniemi et al., 2007; Ohm & Aaronson). Several empirical studies will be discussed below in regards to how perception relates to health behaviors.

Self-Efficacy

Luszczynska and Tryburcy (2008) investigated the effects of a self-efficacy enhancing intervention program on health behaviors. This particular study utilized

two control groups, one with adults (18-60 years old) experiencing chronic vascular disease (CVD) and diabetes (n=17), and the other without CVD and diabetes (n=83), compared to two experimental groups (n=17, CVD/diabetes, n=83, non CVD/diabetes). The experimental groups received individually tailored, self-efficacy enhancing internet based interventions, while the control group received information on the general benefits of exercise involvement (no focus on self-efficacy). Exercise levels were measured prior to the intervention and then again six months later. Both experimental groups demonstrated increased exercise participation at the six month follow up. Interestingly, the CVD/diabetic experimental group displayed significantly higher levels of improvement in exercise participation compared to both control groups ($p<.05$).

The findings presented by Luszczynska and Tryburcy (2008) support the importance of perception considerations when looking at health behaviors because self-efficacy incorporates perception concepts discussed prior in this paper such as the focus on individual's beliefs (affective characteristics) which influence one's judgment in their capabilities to successfully complete the behavior or task (Bandura, 1994). Perception in one's ability (self-efficacy) positively affects exercise participation levels (Luszczynska & Tryburcy). These findings are similar to the majority of literature supporting the importance of self-efficacy in health behaviors (Keats, Culos-Reed, Courneya & McBride, 2007; Mancuso et al., 2006; Shields et al., 2008).

In addition, this study would also support the prior knowledge concept (cognitive characteristics) involved with perception. Although this area was not described in detail in the above study, the experimental groups received more education and reinforcement in regards to the importance of self-efficacy and exercise involvement (Luszczynska & Tryburcy, 2008). This prior knowledge and positive reinforcement may have positively influenced self-efficacy (affective characteristics), ultimately affecting perceptions of health behaviors (exercise participation). The important role of prior knowledge (cognitive characteristic) in health behavior decision making is a common finding throughout health behavior literature (Barrett & Randle, 2008; Gail et al., 2008).

Perception of Exercise & Asthma Literature

Concepts involved with perceptions of exercise are just beginning to be studied in the area of school aged children with asthma. Participation in exercise, although once discouraged among asthmatics, is now encouraged as part of the asthma treatment plan to help decrease incidence and severity of the disease, improve psycho-social development and overall satisfaction with one's quality of life (Veldhoven et al., 2001; Welsh et al., 2005; Wirrell et al., 2006). Interestingly, most school aged children and adolescents with asthma continue to perceive that they are unable to fully and successfully participate in exercise (Chadwick, 1996; Welsh et al.; Wirrell et al.). This is concerning because the majority of the literature suggests that most asthmatics, even those with severe asthma, can indeed participate in exercise activities (Welsh et al.).

Physical & Social Impact of Asthma

Adolescents with asthma often perceive the disease as having a large impact on their physical abilities (Wirrell et al., 2006). Teens with and without chronic disease were interviewed in regards to their perception of the physical and social impact of asthma in comparison to other adolescent chronic diseases (Wirrell et al.). Structured interviews included questionnaires measuring physical impact, social impact of disease in comparison to healthy teens, and likelihood of making friends with a peer diagnosed with each of the chronic conditions (asthma, epilepsy, diabetes, arthritis, migraine, Down's syndrome, leukemia, and HIV). Study findings revealed that over half (63%) of the asthmatic adolescents (n=38) perceived their physical functioning abilities as limited, thus leading to decreased involvement in activities and a greater sense of physical disability because of their chronic condition (Wirrell et al.). Some of the interviews were done with parents present, which may have altered the child's responses (Wirrell et al.). Future studies should focus on in-depth exploration of asthmatic children's perceptions (without parental influence) of exercise to identify areas for intervention development. Educating school aged children with asthma related to their potential to successfully participate in exercise may modify these negative perceptions.

Benefits of Exercise among Children with Asthma

In a comprehensive review article by Welsh et al., (2005), the majority of the literature strongly suggests children with asthma can and should participate in exercise which offers many positive health benefits for asthmatic children. The

authors propose a needed change in the current misperceptions related to limiting or excluding exercise participation among children and adolescents with asthma. Future research and current practice should focus on changing perceptions of exercise through increasing knowledge awareness of the positive attributes of exercise participation for this asthmatic population.

Affective & Cognitive Characteristics as Exercise Predictors

Affective associations with activity behavior and cognitive beliefs about physical activity based on the Health Belief Model and the Theory of Planned Behavior, were hypothesized to predict exercise patterns among participants (n=433) (Kiviniemi et al., 2007). Although this study utilized an adult population (n=433, age range 17-50) the inclusion of affective associations (emotions), attitudes, and beliefs link the content to the perception process involved with exercise. Findings suggest increased positive affective associations with exercise lead to increased amount of activity involvement reported (Kiviniemi et al.). Cognitive beliefs along with affective associations are proposed as variables to help in predicting decisions to exercise or participate in physical activity (Kiviniemi et al.). Affective associations or the emotions one places on exercising need to be considered as areas for future research and intervention development in hopes of increasing exercise involvement. Modifying views among school aged children with asthma, related to how they perceive exercise may encourage such positive behavioral change.

Negative Emotions Influence on Exercise

Negative emotions have been linked to decreased involvement in exercise along with increased symptom reporting among school aged children with asthma (Meyer, Kroner-Herwig & Sporkel, 1990; Panditi & Silverman, 2003; Pianosi & Davis, 2004; Rietveld & Prins, 1998). The more negative the child perceives the situation (such as exercise) the higher the likelihood they will report subjective symptoms such as increased breathlessness and fatigue (Panditi & Silverman; Rietveld & Prins). When presented with an unfamiliar task or situation such as participating in an exercise event, children with asthma may perceive the situation as anxiety provoking, thus leading to increased sensation of shortness of breath. This perception of discomfort associated with exercise may discourage physical activity among children with asthma (Welsh et al., 2004). In addition, negative past experiences with exercise may result in unpleasant perceptions of physical activity involvement, leading to a vicious cycle of sedentary habits (Pianosi & Davis, 2004).

Determinants of Fitness

In a study investigating determinants of physical fitness behavior in asthmatic children, Pianosi and Davis (2004) explored relationships among asthma severity, physical activity (perceived limitations, competence in, and attitudes toward), weight, and aerobic fitness. The psychological measures of attitudes toward physical activity and perceived competence at physical activity both significantly correlated to the amount of habitual activity (Pianosi & Davis). In order to increase the understanding

of why children with asthma exercise less, future studies should incorporate the factors of emotion, negative past experiences, and perceptions related to exercise.

Physical Activity & Physical Self-Concept

In a cross-sectional survey design study, physical activity and physical self-concept were compared between children with (n=120) and without asthma (n=309) (Chian, Huang & Fu, 2006). Although perception of exercise was not a category of its own, it is most likely similar to or influenced by physical self-concept because both would be affected by one's prior exercise experience and knowledge. Measurement of physical self-concept is suggested throughout the literature as a means to further explore perceptions involved with physical activity (Chian et al.; Welk, Corbin, Dowell & Harris, 1997). Physical self-concept measured the child's perceived physical competence in areas of flexibility, endurance, agility, obesity, appearance, and strength. Interestingly, there was no significant difference found between non-asthmatic and asthmatic children's physical self-perception scores. Children with asthma were found to participate less in vigorous physical activity than their healthy peers, but both groups participated similarly in moderate to vigorous physical activity.

In both groups, boys had higher physical self-perception ratings for obesity, strength, and endurance when compared to the girls (Chian, Huang & Fu, 2006). This gender difference may be an important area to consider when investigating exercise perceptions among school aged children with asthma. Longitudinal and interventional studies were called for to thoroughly exam differences between non-asthmatic and

asthmatic children's exercise behaviors. Nurses in all pediatric settings are encouraged to provide accurate information and advice regarding the importance of exercising with asthma.

Chapter Summary

The majority of studies reviewed demonstrated perceptions related to exercise effect exercise behaviors. Although there is literature supporting the benefits of exercise among school aged children with asthma, the misperception of exercise as a negative activity seems to remain prevalent from the child's perspective (Welsh et al., 2005). Children with asthma continue to perceive exercise and physical activity as something they are unable to successfully or fully participate in. Review of the literature suggests school aged children with asthma are indeed less likely to participate in exercise when compared to their healthy peers, despite their strong desire to lead normal lives through participation in physical activity and exercise (Chadwick, 1996; Kieckhefer, 1988; Rydstrom, Englund & Sandman, 1999).

As the available research has shown, the majority of the literature focuses on perceptions of physical functioning abilities, physical self-concept, misperceptions of exercise, emotions affecting exercise, and attitudes towards exercise (Kiviniemi et al., 2007; Meyer et al., 1990; Panditi & Silverman, 2003; Pianosi & Davis, 2004; Rietveld & Prins, 1998; Welsh et al., 2005; Wirrell et al., 2006). However, very few articles were identified specifically focusing on perception of exercise from the perspective of the school aged child with asthma.

Children's ability to reliably self-report issues relevant to their asthma disease such as: cough, wheeze, trouble breathing, and exercise related symptoms, have been well documented throughout the asthma literature (Chadwick, 1996; Panditi & Silverman, 2003; Yawn et al., 2006). In order to gain an accurate and detailed description of the key concepts involved with perceptions of exercise, information should be obtained directly from the school aged child living with asthma. This grounded theory driven study provides rich descriptions from the perspective of the school aged child with asthma. Predominant concepts involved with the psycho-social process of exercise perceptions will be identified with the goal of theory development to guide future nursing research and intervention development.

Chapter two reviewed literature pertinent to perceptions of exercise among school aged children with asthma and identified gaps requiring further researcher. This study is aimed at increasing nursing knowledge in this important area. Chapter three will cover the methodology utilized throughout this study.

CHAPTER THREE: METHODOLOGY

Purpose Statement and Research Questions

The purpose of this study is to explicate predominant concepts in perception of exercise among school-aged children with asthma, and describe potential relationships among predominant concepts in order to develop an explanatory theory. Grounded Theory is the chosen method of inquiry guiding the study. When using Grounded Theory methodology, research questions should be framed in a general way (if used at all) and will change as data is collected and new leads emerge (Corbin & Strauss, 2008). Initial research questions derived from the proposed perception of exercise framework include:

1. What are the predominant psycho-social concepts involved with the process of perceiving exercise among school-aged children with asthma?
2. How do environmental influences effect perceptions of exercise?
3. How does prior knowledge and experience influence perceptions of exercise?
4. How do beliefs and emotions effect perceptions of exercise?

Initial research questions in Grounded Theory are used only as a starting point to help guide the development of beginning interview questions and to offer ideas for data analysis focus (Corbin & Strauss, 2008). As the research progressed and analysis continued, questions asked of the data were revised and made more specific dependent upon emergent themes (Corbin & Strauss). Data may provide emergent categories and concepts similar to the initial research questions or the data may take the researcher to new areas of inquiry (Corbin & Strauss). New research questions emerged throughout the study based on the discovery of leads identified in the data. These leads also assisted in

the ongoing revision of interview questions. The focus of inquiry for each interview built upon previously analyzed interview data. The answers to the questions are presented by describing the process identified in the emergent grounded theory (Corbin & Strauss).

Qualitative Methods Perspective

Qualitative research focuses on subjects' stories and descriptions with the goal of gaining descriptive meaning of experiences from the participants' perspective (Munhall, 2007; Corbin & Strauss, 2008). The researcher is the instrument in qualitative methodology as data is gathered through interviews or observations (Munhall). This human to human relationship allows "co-construction" of new knowledge between nurse researcher and participants (Corbin & Strauss, p.10). Subjects' stories provide rich description which in turn leads to the identification of themes and key concepts by the researcher. Qualitative research is best suited when the purpose of the study focuses on the discovery of descriptions of experience from the participants' viewpoint (Corbin & Strauss; Speziale & Carpenter, 2003). The use of qualitative methodology is an excellent fit for exploring how school aged children with asthma perceive exercise. Qualitative methods allowed the subjective meaning of exercise perceptions to be thoroughly explored among school aged children with asthma.

As the researcher I used qualitative inquiry as I interviewed school age children with asthma about environmental influences involved in the development of their exercise perceptions. As discussed earlier, environmental and contextual details were thoroughly explored. This was accomplished by focusing the initial interviews on the predominant concepts explained in the proposed perceptions of exercise framework. Specifically, I

asked school aged children with asthma who and what they consider to be the primary environmental influences effecting their exercise perceptions. The initial interview guide and parental questionnaire was developed from the proposed perceptions of exercise framework (see Appendix E). Using the proposed framework as a guide, I asked about prior experiences, knowledge related to exercise, as well as inquiry about the child's beliefs and emotions involved with physical activity and exercise. Similar to a grounded theory study incorporating SCT done by Connors, Bednar, and Klammer (2007), I interviewed school aged children in regards to possible environmental influences effecting behavior. I inquired about environmental influences through the unique perspective of the school aged child with asthma. In order to gain a thorough understanding of how school aged children with asthma perceive exercise, I hoped to find out who predominantly influences perceptions of exercise among school aged children with asthma, and what strategies are effective in influencing perceptions in this age group. I hoped to answer these types of questions by gaining detailed and rich stories directly from the school aged child with asthma about these environmental influences. As proposed in the perception of exercise framework, the main areas included in the initial interview questions are: environmental aspects, cognitive and affective characteristics, and contextual details involved with perceptions of exercise among school aged children with asthma.

In addition to gathering data directly from the school aged child with asthma, I also planned to add to the richness of the data by exploring parental input relevant to their child's perceptions of exercise. Parents completed a short, two-page, open-ended health

history questionnaire focusing on the parents' exercise perceptions as well as the parents' thoughts and beliefs related to exercise involvement and their school aged child with asthma. This information added another important dimension to the study because parents of school aged children often influence their child's exercise behavior (Dzewaltowski et al., 2008; Fereday et al., 2009; Lau, Lee, & Ransdell, 2007). Qualitative methods allowed the subjective meaning of exercise perceptions to be thoroughly explored among school aged children with asthma.

Grounded Theory Defined

Grounded Theory is a qualitative method developed by Glaser and Strauss (1967) for deriving theory emergent from the data (Corbin & Strauss, 2008). Corbin and Strauss explain Grounded Theory in a more generalized fashion focusing on theoretical concepts identified through a variety of qualitative analysis techniques. This study incorporates Corbin and Strauss's suggested Grounded Theory procedures. Corbin and Strauss believe Grounded Theory can be used to gain rich description of participants' understanding of their experiences. Theory may then be developed through iterative analysis of the rich descriptions found in the data. According to Corbin and Strauss, Grounded Theory focuses on the human processes of experience, including: human actions, interactions, and consequences. Actions involve emotions, intertwined and inseparable, both involved in interactions and meanings (Corbin & Strauss). Grounded Theory attempts to explain the meaning placed on participants' experiences by identifying key concepts as they emerge from data, exploring conceptual relationships, and finally developing an explanatory theory.

Suitability of Grounded Theory

Grounded Theory methodology provided this researcher with rich descriptions of exercise perceptions from school aged children with asthma leading to identification of predominant concepts involved with the perception of exercise process. Exploration of important components involved with exercise perception directly from school aged children with asthma points to applicable areas for further nursing research. In addition, areas for development of nursing interventions can be identified in the emergent explanatory grounded theory. Allowing school aged children with asthma to share their stories in relation to their perceptions of exercise provides first hand descriptions of the process involved with exercising while living with the chronic illness of asthma.

Grounded Theory is an excellent fit because research focusing on perceptions of exercise among school aged children is very limited and grounded theory methodology allows the researcher to identify predominant explanatory concepts and their relationships as they emerge from the data provided by the participants (Corbin & Strauss, 2008; Munhall, 2007). This methodology guided the study in the identification of predominant concepts involved with exercise perceptions among school aged children with asthma. The emergent explanatory theory identified in this study can be used by nurses to develop future interventions aimed at increasing exercise involvement among asthmatic children.

Protection of Human Subjects

Children as a Vulnerable Population

Participants of this study were considered a vulnerable population because the sample included 8-12 year old children. Steps were taken throughout the study to protect the

child participants and their rights. The study was verbally explained in an easy to understand manner to the children and their parents. The children were informed of their rights to not participate or to stop participating in the study at any time during the research process without any repercussions. Assent was obtained from all of the study participants (see Appendix B). Privacy and confidentiality was kept throughout the study and explained to the study participants.

Because the researcher was an adult in the nurse researcher position and the participants included children, the primary investigator may have been viewed as someone in a powerful position. To safeguard from influencing or coercing the participants this researcher explained she was in no way in an authoritative role during this study. Children were repeatedly reminded of their rights to choose not to participate or to withdraw from the study at any time and for any reason without any negative consequences. The nurse researcher dressed in an informal manner and used non-medical language when interacting with the children participants to try and decrease the likelihood the children would feel intimidated or coerced.

Human Protection Procedures

The study was described in detail to the parent or legal guardian of the child and then again in a basic manner to the child participant. Copies of the informed consent and assent forms were either emailed or mailed to potential participants (see Appendix B). The researcher offered follow up phone calls to discuss the forms or the study prior to the scheduled interview dates. During the scheduled meeting the consent and assent forms were reviewed and discussed to the participants by the nurse researcher. Questions

related to the study and the forms were encouraged and answered. If the participants remained interested in participating in the study the consent and assent forms were then signed and collected. If either the parent or child participants requested additional time to think about participating in the study they were encouraged to take an additional week to consider and discuss participation. Signed assent and consent forms were kept in a separate locked cabinet in the researcher's home. Original assent and consent forms were turned into the Office of Research at the University of Arizona's College of Nursing per university protocol.

All identifiable participant information was de-identified, assigned codes, and kept in a safe and secure locked cabinet in the researcher's home. This included the parental health history questionnaires, audio tapes, interview transcripts, field notes, and memos. Both parent and child participants were reminded throughout the study of their right to not participate or to stop participating in the study at any time without consequences of any kind. The University of Arizona's Institutional Review Board granted Human Subject Protection approval for this research study (see Appendix A).

Recruitment

Recruitment began in a large asthma and allergy clinic in Spokane, Washington. Flyers were placed in the waiting room and reception area of the clinic. Recruitment flyers contained a brief description of the study and nurse researcher contact information (see Appendix D). Once potential participants' parents contacted the researcher the study was explained in more detail over the phone through the use of a phone script (see Appendix C). Further discussion and clarification was encouraged during this initial

phone conversation. If still interested, the potential participants and the researcher set a date and time for the initial interview.

Sample and Setting

Purposeful Sampling

Purposeful sampling was used initially to recruit participants who had knowledge or experience with the phenomena of interest (Sandelowski, 2000; Speziale & Carpenter, 2003). Children had varying demographics, disease characteristics, and exercise experiences, allowing the researcher to explore the common characteristics of the interest area with maximum variation of the sample (Sandelowski).

Inclusion Criteria

1. School aged children (8-12 year olds) and their parent/s or legal guardian
2. School aged children must have Asthma
3. English speaking

Rationale for Age of Sample

The rationale for utilizing this particular subject sample was supported by the lack of research completed among 8-12 year old children with asthma focusing on perceptions of exercise. From a developmental perspective, this was also an appropriate age group to successfully participate in a qualitative study. According to Piaget's Cognitive Developmental Theory, this age group is in the concrete operational stage meaning the child is starting to view the world more objectively and realistically (Piaget & Inhelder, 1969; Pontious, 1982; Thies & Tracers, 2001). Children are beginning to have the capability of understanding other's views and they can now combine these with their

own. Thinking is still concrete but the child can incorporate the past with the present and some thought is directed at the future (Piaget & Inhelder). Experiences can be classified and described by a variety of characteristics (Pontious, 1982; Thies & Tracers, 2001). The ability to reason is beginning and language is used to communicate the child's thoughts to others.

For example, Connors and colleagues (2001) used grounded theory to explore factors influencing milk-drinking behaviors among school aged children, ages 6-11. This particular study interviewed the children with a focus on environmental factors influencing their milk drinking habits (Connors, Bednar & Klammer). Children shared their detailed stories with a variety of descriptive characteristics such as milk flavors, specific cafeteria rules, and packaging details (Connors et al.). School aged children were able to provide rich data to the researchers that led to a grounded theory describing environmental and personal factors influencing milk drinking behavior (Connors et al.). This study supports Piaget's premise that school aged children have the ability to provide great detail related to their experiences (Piaget & Inhelder, 1969).

In addition, according to Erikson's Theory of Psychosocial Development, this age group still wants to please and learn from adults (Green, 1989). This age group should be able to successfully participate in interviews and provide details about their perceptions of exercise. For example, in a study done by Fereday and colleagues (2009) incorporating phenomenology, study participants ranged in age from 4-16 years old. This particular study focused on management of physical activity among children with chronic illness. Similar to Erikson's theory, these researchers found the children very cooperative and

willing to share their stories (Fereday et al.). The study findings included thorough and rich data describing the children's perspectives related to physical activity (Fereday et al.). This study demonstrated school aged children can successfully share detailed information important for future nursing intervention development (Fereday et al.). School aged children with asthma represent an important population requiring further qualitative inquiry to gain an accurate depiction of perceptions of exercise from their view. Gaining this information is an important step for nurses to understand how to best help these children improve their overall health status.

Data Collection

Theoretical Sampling

As the study progressed, theoretical sampling was used as the data collection method. This method is used in Grounded Theory with the purpose of collecting further data based on emergent leads identified from previously gathered interview data (Corbin & Strauss, 2008). More data was collected either from new participants and/or from follow up interviews or observations. New interview questions were derived as new ideas surfaced with the goal of collecting deeper descriptions to further develop concepts and conceptual relationships (Corbin & Strauss). Theoretical sampling guided the choice of other participants after the initial purposeful sampling.

Theoretical saturation means all possible concepts or categories have been explored and identified from the data (Corbin & Strauss). Saturation also entails deep descriptions and understanding of themes and possible conceptual relationships. Depth is required for saturation to truly be met (Corbin & Strauss). Each emerging theme is explored in great

detail with an open mind throughout the entire research process. On the other hand, it is important to “stay focused” during theoretical sampling to avoid unnecessary detours and becoming buried by the vast amount of data (Corbin & Strauss, p. 150). Theoretical saturation was reached with the eighth interview. Saturation was determined based on the amount and depth of the acquired data supporting the four predominate categories and lower level concepts. By interview eight, no new themes were emerging and the general purpose of the study had been addressed through the identified Grounded Theory. The properties and dimensions of the emergent categories and the lower level concepts had been strongly supported consistently throughout the data. All eight of the children interviewed up to this point had shared numerous examples supporting the four predominant categories. In addition, by the eighth interview, all of the participants had provided stories supporting nine of the twelve emergent concepts. The concepts of health and parents had been richly described by seven of the eight children. Five of the participants shared stories discussing the concept of health care providers.

As data was analyzed, theoretical sampling was guided by the concepts as they emerged from the data. Theoretical sampling provided rich descriptions further supporting the properties and dimensions of already identified predominant concepts. Predominant concepts then lead to the development of the explanatory theory describing perceptions of exercise among school aged children with asthma.

Interviewing

One of the best strategies to gain thorough and rich data in qualitative studies is to use excellent interviewing techniques (Irwin & Johnson, 2005; Munhall, 2007). Participant

responses were not inappropriately influenced by the researcher by self-identifying and bracketing (setting aside) bias (personal beliefs or assumptions) prior to the interview process (Onwuegbuzie & Leech, 2007). According to Morse and Field (1996) there are several characteristics of good interviewers. Strategies utilized include: listening carefully, being present in the moment, taking time without rushing the participants, constant critiquing, avoiding professional talk, and avoiding leading of the participants (Morse & Field). Interview questions (unstructured or semi-structured) were developed based off of the purpose of the study and in a way that allowed the school aged participant to share their stories without being led by the researcher (Morse & Field; Irwin & Johnson). Incorporation of the suggested interview strategies helped ensure adequate amounts of rich (detailed) data.

Allowing the school-age child to participate in some decisions regarding the setting of the interview helped put the child at ease leading to the sharing of more in-depth data (Irwin & Johnson, 2005). Building rapport was another important technique accomplished by taking time before the interviews began to share some personal information with the child (Irwin & Johnson). I also included ideas for rapport building as part of the interview guide. Rapport building opening questions included allowing the child to discuss some of their favorite subjects, foods, and/or hobbies. Encouraging play or drawing also enhanced the comfort level of the child in hopes of easing the storytelling process to gain credible data (Irwin & Johnson; Kortessluoma et al., 2003). Some of the younger children were encouraged to draw a picture of their favorite physical activity and describe it to the researcher to illicit further description. According to current literature,

interviews with children may need to be shorter (20-30 minutes) and follow ups may also need to be considered in hopes of gaining rich and credible accounts from the school age child (Irwin & Johnson). Children were given the choice of having two shorter interviews if they became bored or fatigued. Taking steps to help the school aged child feel safe and comfortable assisted in the interview process.

Data was gathered through semi-structured interviews until saturation of themes (Speziale & Carpenter, 2003). The researcher used open-ended and clarifying questions without leading the subjects (Speziale & Carpenter). Interviews were flexible and open to change throughout the study depending upon the event and the data with the overall goal of enhancing the understanding of the area of interest (Irwin & Johnson, 2005; Docherty & Sandelowski, 1999). Children often use scripts when recreating experiences and this type of data was gained through the use of “what happens when” or “what usually happens during” type of questions (Docherty & Sandelowski). With age and experience children’s scripts become increasingly complex and detailed (Docherty & Sandelowski). Interviewing children may also start with, “tell me a story about...” (Irwin & Johnson, p.824).

When appropriate the child was allowed to choose the location of the interview to help the child feel comfortable and safe (Irwin & Johnson). Participants helped chose a quiet, appropriate area within the home for the interview to be conducted. All interviews were conducted without input from the parents to accurately gain the subjective description directly from the school aged child with asthma. When interviewing children it is recommended to start the interview with a recall type question then move on to a few

direct questions and then follow again with another open-ended question, all with the goal of gaining a personal account of the experience (Irwin & Johnson; Docherty & Sandelowski).

Tape recordings and hand written memos were a part of the interview process to keep accurate record of the data as well as a mechanism for the researcher to document ideas and conceptual thoughts as they occurred throughout analysis (Corbin & Strauss, 2008). Procedures included: tape recording, taking notes, and then transcribing each interview verbatim personally throughout the research study. Notes were taken on contextual features of the surrounding environment where the interviews took place. Contextual considerations included areas such as the home environment; surrounding neighborhood; and any other contextual features present that added depth to the study. Tape recordings were transcribed verbatim by the researcher as quickly as possible following interviews. Transcription was randomly checked against the tape recordings to maintain accuracy of the data.

Data Analysis

Data analysis in Grounded Theory is an iterative process beginning as interview data is gathered and continuing through theory development as concepts emerge from the data (Corbin & Strauss, 2008). Analysis was guided by Corbin and Strauss's suggested strategies which focus on deconstructing data in search of predominant concepts and conceptual relationships to "determine what the parts tell us about the whole" (p.64). Immersion in the data began as collection occurred. The researcher incorporated reflexivity (self-reflection) into the research process to avoid biasing analysis through

separation of personal beliefs and preconceived hypotheses from data analysis (Corbin & Strauss)). Data analysis included: beginning coding, comparative analysis, open coding, theoretical integration, and theory refinement.

Process Explained

According to Corbin and Strauss (2008) process must be explored and explained when using Grounded Theory methods if the researcher's goal is theory development. The main purpose of data analysis in Grounded Theory is to identify the predominant categories and concepts grounded in the data in relation to the process under study (Corbin & Strauss). Investigation into process, or how things work, allows for the identification of common themes and their relationships (Corbin & Strauss). Process is an ongoing occurrence commonly described as sequential steps or phases (Corbin & Strauss). Corbin and Strauss also emphasize how all processes differ, some being progressive and moving through stages, while others may be random or non-directional. Process is ongoing and involves interaction, action, and emotional responses among participants and variables effecting the outcomes or goal under study (Corbin & Strauss). Process is found within the compilations of rich descriptions of participants' experiences describing their responses to occurrences within their lives leading to a particular consequence. The process encompasses the whole picture of the phenomenon being explored by piecing together all of the categories and concepts. Throughout data analysis the researcher delves into the components of the process with the final goal of developing an explanatory theory based from the data.

Beginning Coding

After completion of the initial interview the researcher continued analysis by reading and re-reading the data present in the interview transcript. In the beginning of the study the researcher attempts to fill the participant's shoes through immersion in their stories. The goal of this phase of analysis is to try and gain some understanding of what it's like to live the experiences shared by the participants (Corbin & Strauss, 2008). Beginning coding followed the first initial interview. Full immersion begins at the start of the research process allowing the researcher to delve deep into the participant's rich descriptions providing a strong starting point for future analysis to build upon. Each part of the data involved with the first interview was closely examined and pondered over. Memos were used at this step to reflect on conceptual ideas and to identify biases. Beginning coding assigned conceptual labels to pieces of the data (Corbin & Strauss). Corbin suggests labeling every memo with a concept label. Researcher interpretation was reflected upon and used in the choice of each concept label (Corbin & Strauss). Memos include pieces of data followed by the researcher's interpretive thoughts, remaining questions, and identification of possible concepts along with their properties and dimensions (Corbin & Strauss). Beginning coding provided ideas for new or follow up interview questions as well as how to proceed with theoretical sampling of the next participant/s.

Open Coding

Open coding is the next step in Grounded Theory analysis which involves deconstructing the data to identify concepts (Corbin & Strauss, 2008). Each set of

interview data required deeper analysis and builds upon previously analyzed data. Open coding takes beginning coding further by incorporating prior analysis into the analysis of new data sets. This process allowed new data to be differentiated into concepts based on dimensions and properties within the data. Concepts could then be elaborated through the linking of several categories (Corbin & Strauss). Corbin suggests labeling (coding) each memo and then identifying the concepts and describing the conceptual relationships within the particular piece of data. This part of the process begins to present a picture of how all of the data fits together, including possible predominant concepts and how they may relate.

Comparative Analysis

As the analytic process continued, incidents found in the data were compared to other incidents to identify commonalities and contrasts (Corbin & Strauss, 2008). Those incidents or events found to be similar were grouped together under a “higher-level descriptive concept” (Corbin & Strauss, p. 73). An example relevant to the study focusing on school aged children with asthma and how they perceive exercise may be the identification of the concept of fear when comparing similar incidents found in the data. The process of comparison allows the researcher to identify different concepts based off of the specific dimensions and properties explored while comparing (Corbin & Strauss). Differences among incidents discovered through comparative analysis may be used to place incidents under separate conceptual labels or they may offer further description of the various properties or dimension within codes (Corbin & Strauss). As the analysis becomes more elaborate, each incident found to be similar to an already coded incident is

placed under that particular conceptual label. Incidents sharing similarities help strengthen the existent label through the addition of further description.

Theoretical Integration & the Core Category

Theoretical integration is the part of the analysis process when concepts can be clearly linked around an identified core category (Corbin & Strauss, 2008). The central or core category is identified either from the pre-existing predominant concepts or it may be developed based on review of all of the concepts (Corbin & Strauss). It is the overarching theme present in the data. Identification of the core category is an important part of the analysis process because all predominant concepts should relate to the core category.

The core category is at the highest hierarchical level with the predominant categories falling in line underneath along with their lower level concepts. According to Corbin and Strauss (2008) the core category serves as the umbrella category covering the idea of the area of research. All of the other predominant categories can be linked together through the core category. Core category criteria include: the ability of enough abstractness to cover and relate all other predominate categories to it, evidence of support should be found often in the data and in the relational statements linking categories, it should also be general enough to allow for the theory to be utilized in other lines of research (Corbin & Strauss). The core category is also an essential part of theory integration and development (Corbin & Strauss). In order for theory construction to occur, all predominant categories' relationships to the core category and to one another need to be explained and supported through the evidence found in the data.

In order for theory to be developed, concepts and relationships must be fully supported through rich description provided in the data. At this step in data analysis, relationships among predominant concepts are thoroughly explained in a logical manner through the use of clear relational statements (Corbin & Strauss). The researcher's analytical interpretation of the data is expressed through the use of relational statements that generalize the overall interrelationships of the predominant concepts applicable to all study participants. The researcher uses her own interpretation of the data during this step of the analysis process. Expression of the conceptual relationships is done in a "stylistic" manner and should provide a big picture of how the concepts relate in the proposed theory (Corbin & Strauss).

Theory Refinement

Theory refinement is done at the end of the analysis process. Refinement involves taking a last look at the proposed theory. The researcher reviews the identified core category and the predominant concepts for logical consistency (Corbin & Strauss, 2008). Categories should be richly supported through the data analyzed in the memos. The proposed theory provides an easy to follow picture of the conceptual relationships based around the core category. If categories are not clearly supported, the researcher completes further review of the memos for clarification of properties and dimensions (Corbin & Strauss). Identification of researcher bias or pre-conceived hypotheses is also important at this step in the analysis process in order to clearly focus on the words and meanings the participants are describing in the data (Corbin & Strauss). By reviewing the data and/or

checking it with the study participants, the researcher validates the fit of the proposed theory.

Maintaining Credibility

Credibility or quality of this Grounded Theory research study was maintained by using Corbin's quality research criteria (2008). Although the findings of Grounded Theory research studies should "speak for themselves" Corbin offers criteria to follow for the Grounded Theory procedures suggested in her text (p.305). The ten criteria include: 1) fit, 2) applicability, 3) concepts, 4) contextualization of concepts, 5) logic, 6) depth, 7) variation, 8) creativity, 9) sensitivity, and 10) evidence of memos (Corbin & Strauss). These credibility criteria were used throughout this Grounded Theory research study.

Fit

Fit was evaluated by review of the findings in relation to how well they represent the stories told by the participants (Corbin & Strauss, 2008). The findings should also fit with the researcher's experience and background. Participants should feel their stories were represented well in the findings. Fit is assessed by member checking, or going back to some of the study participants to verify the researcher's descriptions of the informant's experiences (Munhall, 2007; Onwuegbuzie & Leech, 2007). The emergent theory is presented to the school aged participants and their parents to check for fit in relation to the children's stories (Corbin & Strauss). According to Corbin, it is important to remind study participants that findings are a summary of all participants' stories, not necessarily a complete replication of what each participant presented. On the other hand, findings should be presented in a general enough style that participants can relate to and agree

with the results (Corbin & Strauss). Member checking strengthens the credibility of the study by affirming the researcher's findings through the participants themselves.

Applicability, Concepts, & Contextualization of Concepts

Applicability is evaluated through the usefulness and practicality of the findings (Corbin & Strauss, 2008). Clearly defined and supported concepts add to the applicability of findings because concepts can offer general explanations or terms to be used in professional dialogue as well as in further research and discovery (Corbin & Strauss). Contextualization of the concepts occurs through provision of contextual details. During the interview process, contextual details are jotted down in the form of hand written memos. Contextual features may include such details as: the home environment, yard, surrounding neighborhood, safety issues, noted health behaviors/status of family members, socio-economic details, etc. Findings are presented within the context of the study's events. Ease of use of the findings is dependent upon strong predominant concepts supported heavily in the data and explained within the context of surroundings and events occurring throughout the study process.

Logic

Findings should flow in a logical manner to provide a clear picture to the audience. The readers should be able to decipher what the researcher is trying to convey through the findings. Logic is strengthened by developing a diagram to depict the emergent theory. Diagrams help explain predominant conceptual relationships and how they fit around the core category (Corbin & Strauss, 2008). Decisions made throughout the research process are clearly explained and described so their appropriateness is apparent

(Corbin & Strauss). This is accomplished through thoroughly documenting in the form of memos as described in the interview process details.

Depth

Rich descriptions add to the credibility of the research by providing support for chosen concepts and the core category. Deep and thorough detail helps develop and support the proposed theory. Depth is ensured by acquiring detailed interview data, immersion into the data during analysis, further reviewing of memos, and refinement of the proposed theory.

Data immersion is a strategy used to gain an accurate understanding of what the data represents (Morse & Field, 1996; Munhall, 2007). In grounded theory studies data collection and analyses occur simultaneously. This means data immersion begins with initial data collection and continues on throughout the entire analysis process. Immersion is an iterative process beginning with the initial interviews and continuing throughout as I listened to the audio-tapes, transcribed, continued with follow up interviews, and began coding. Immersion also includes reaching theoretical saturation, and then finally ending with theory development. When done properly, data immersion allows total familiarity with the data providing accurate and thorough accounts of the concepts as described by the study participants (Ayres, 2007; Sandelowski, 1998).

Variation & Creativity

Variation refers to identifying experiences falling out of the ordinary findings (Corbin & Strauss, 2008). Discussion of variations is included in the study to demonstrate variability in the findings. Inclusion of variation demonstrates the realness of the

participants and the uniqueness involved with life (Corbin & Strauss). Life is not simple and by discussing some of the variation found throughout the study the credibility of the findings will be strengthened. Further research of other populations would strengthen variation and creativity of the findings of this study.

Sensitivity & Evidence of Memos

Sensitivity is met by setting aside personal biases and attempting to genuinely present meanings as described by the participants (Corbin & Strauss, 2008). The data guides choices made throughout the study, such as theoretical sampling and interview questions. Proof of memos is included by threading components of the memos throughout the discussion of data analysis and reporting of study findings. According to Corbin, memos are a required part of the analysis process involved with grounded theory in order to ensure credibility of the study. Memos break transcript data up (usually 1-2 paragraphs) for analysis purposes. They also provide documentation or proof of all decisions made throughout the research process. Although hand written notes were taken during and after the actual interviews, memos were typed and saved on the researcher's computer. Labels are placed at the top of each memo with a descriptive label covering the content. Each memo includes my ideas related to possible concepts, what I planned to look for in the next interview, and any remaining questions or thoughts that arose. Memos also include personal biases as they occurred. This allowed biases to be identified and separated from the analysis process, allowing the researcher to remain sensitive to the data (Corbin & Strauss).

Chapter Summary

Chapter three reviewed the methodology used throughout this study. The beginning of the chapter restated the purpose statement and research questions of the study. Qualitative methods and grounded theory were then discussed. Suitability of grounded theory and the use of Corbin and Strauss's methods were presented in relation to how they fit with this study of perceptions of exercise among school aged children with asthma. The remainder of this chapter focused on the procedures used in the study. These included: protection of human subjects, recruitment, sample, setting, data collection, data analysis, and maintaining credibility. The next chapter will begin with descriptions of the study participants and context of the interview settings, with the remainder of the chapter focusing on study findings.

CHAPTER FOUR: RESULTS

Research findings of the study will be presented throughout this chapter. The chapter will begin with an overview of the participants and context of the study, with the remainder of the chapter focusing on the presentation of the identified theory: The Process of Creating Perceptions of Exercise. Required components of an emergent theory include identifying the overall process occurring, and describing the core category, predominant categories, and concepts (or subcategories), as well as their relationships (Corbin & Strauss, 2008). All of the components of an emergent theory suggested by Corbin and Strauss will be explained and discussed throughout the chapter to clearly present the explanatory theory. Data bits in the form of italicized participant quotations will be integrated throughout the chapter to support discussion of the findings. Credibility of study results will be discussed towards the end of the chapter. The chapter will conclude with a summary of findings.

Overview of Participants and Context

Descriptions of participants' backgrounds along with contextual details of the interview settings will be presented in this part of the chapter. Each participant and their home environment will be portrayed. All interviews took place within the child's home and describing these settings adds contextual depth to the study. To protect the privacy of the participants all names have been changed to pseudonyms chosen by the researcher. Discussion of findings will include an overview of the emergent theory including the core category, predominant categories, and their relationships. Direct quotes taken from the data will be embedded throughout the discussion to add credibility to the findings.

The participants' willingness to share their experiences with living with asthma and exercising varied dependent upon the child's age and their unique characteristics. All of the school aged children with asthma expressed excitement with the interview process and often commented it was their first interview experience. Ten school aged children participated in the study. Each interview was transcribed and analyzed before the next interview took place. A total of thirteen interviews were completed for this study. Initially, ten interviews were completed for data analysis. In addition, three follow up interviews were done as part of the validation process to assess for fit of the emergent theory. Assessing for fit involved member checking, or returning to the participants to obtain their input related to the emergent theory and their perspectives.

Theoretical saturation was met by interview eight, meaning the data clearly supported all of the identified categories and concepts and that no new concepts were emerging (Corbin & Strauss, 2008). Theoretical saturation is supported throughout the chapter as categories and concepts are richly described by integrating data bits presented in the form of participant quotations. Theoretical saturation was determined when all of the identified categories were clearly supported and explained through consistent findings evident in the data (Corbin & Strauss). Theoretical saturation is not determined by the number of subjects or by the number of responses but instead is considered to be met when the details and relationships of the categories have been well developed (Corbin & Strauss).

Once theoretical saturation was met interviews continued to assess for appropriate fit of the emergent theory. Interviews 7 through 10 began with initial guiding questions and concluded with probes focusing on member checking or assessing accuracy of the

emergent theory. As discussed above, three previously interviewed participants (for a total of 13 interviews) agreed to a follow up interview as part of the member checking process. All participants were interviewed in a comfortable place within their home agreed upon by the child, parent, and researcher. Sample description and demographics will be presented along with a section focusing on detailed portraits and study context. Participant portraits will be discussed through the use of pseudonyms' chosen by the researcher to protect participant confidentiality.

Sample Description and Demographics

Ten school aged children participated in interviews for this study. In addition, nine parents of the school aged children participants also partook in this study by filling out a healthy history questionnaire while their child was interviewed (2 participants were brothers). The children ranged in age from eight to eleven. The sample consisted of five boys and five girls. Asthma severity varied from intermittent to severe-persistent. Family income ranged from less than twenty thousand per year, up to greater than sixty thousand per year. Eight mothers (2 participants were brothers) and one father answered the health history questionnaires. All of the parents had completed a minimum of some type of college level education. Ethnic diversity was categorized by the parents' descriptions. Eight of the school aged children participants were described by their parents as Caucasian, with one child described as half Caucasian and half Chinese, and another participant described as half Caucasian and half African American. All of the children were enrolled in school, ranging from second grade through seventh grade. Table 1

summarizes the demographic information of the study participants. Further background information and study context will be presented in the following section of this chapter.

Table 1. Participant Demographics

Gender	Age	Grade	Asthma Severity	Parental Marital Status	Family Income
Male	12	7 th	Moderate Persistent	Married	>60,000
Female	8	2 nd	Mild Persistent	Married	>60,000
Female	12	6 th	Mild Persistent	Married	>60,000
Male	8	2 nd	Intermittent	Married	>60,000
Male	11	6 th	Intermittent	Married	>60,000
Female	10	4 th	Moderate Persistent	Married	<20,000
Female	10	4 th	Severe Persistent	Divorced	<20,000
Male	9	3 rd	Mild Persistent	Married	50-60,000
Female	12	7 th	Moderate Persistent	Divorced	40-50,000
Male	10	4 th	Mild Persistent	Married	>60,000

Participant Descriptions & Study Context

Carmen

Carmen is a blond haired, blue eyed, 8 year old Caucasian female. She is quite shy and reserved upon first introduction. This participant lives at the top of a cul-de-sac, in an upscale neighborhood. Her parents have been married for nearly 20 years and both work full time outside of the home. The family reports their income to be greater than \$60,000 per year. Carmen has one older brother (9 year old) who also complains of symptoms of asthma. The family pet is a vivacious golden-doodle dog named Odis (pseudonym). Carmen adores Odis and plays with him whenever she is home. Accordingly, Odis seems to prefer Carmen over the other family members and does not hold back when it comes to displaying affection and appreciation towards her. This participant enjoys many physical activities including: soccer, running, swimming, and playing cops and robbers.

Carmen's mom is also very active and enjoys exercising. Interestingly, this mom also has asthma but considers herself to be in good health. She reports exercising 4-6 days per week, for roughly 30 minutes of aerobic activity. Mom also participates in resistance exercises twice a week. Mom's history includes running track and cross-country in high school and during her college years. Dad also enjoys physical activity and plays with the children often. This mother feels exercise is beneficial for Carmen as long as she is not having a flare up. In addition, mom believes she influences Carmen's exercise choices along with other kids who are involved in sports. The family has easy access to a local health club within a ten minute drive. Carmen's mom identified having enough time to

take the family to the YMCA as one of the greatest barriers to getting her child to stay active.

This participant enjoys playing outside with her brother, Odis, and the many neighbor children who live close to her home. Her street is a very safe and long cul-de-sac, excellent for a variety of outdoor activities. There are many children close to her age up and down her street and they are often outside riding bikes, playing tag, or playing with the numerous neighborhood dogs. It seems all of the neighborhood parents know one another as well as all of the children. The home environment includes a large, fenced back yard with a designated play area and swing set. Carmen is currently in second grade and has had asthma for as long as she can remember. Her mother classifies her asthma as mild-persistent. The participant takes an albuterol inhaler as needed prior to and during exercise such as soccer. Her asthma seems to flare up whenever she becomes ill with a cold. When her asthma flares up due to a respiratory or sinus type of virus or infection she often times has to use a nebulizer to help clear her symptoms. Carmen's mom stated to the researcher her daughter's asthma is fairly well controlled currently but seems to flare with vigorous exercise such as soccer or other running focused activities.

Evan

Evan is an extremely active and outgoing 12 year old Caucasian boy who is currently in the seventh grade. He has active parents who enjoy biking and running. Mom works at the nearby YMCA athletic club. Evan's parents are married and have both grown up being active. This family's income is greater than \$60,000 per year. Evan lives in a safe cul-de-sac with many other school aged neighbors. The neighborhood includes a large

park within walking distance of the participant's home. Beautiful surroundings include wild turkeys, peasannts, and deer. Evan also has one dog and one cat. This is an interesting finding considering Evan is allergic to both animals and his allergy/asthma doctor would prefer he give them up. He adores his pets and at this point would not consider getting rid of them despite his allergies. This participant has many allergies including: dogs, cats, all grasses, and "almost everything except peanuts." His parents state his asthma is more severe in spring and summer and they believe this is due to his intense grass allergy.

Evan's mom describes her own health as good, but "slightly overweight." She believes exercise is an important part of overall well being. She reported exercising 4-5 times per week for bouts of 90 minutes. In addition, this mom believes it's important for her asthmatic child to "stay active but prepared." She identified herself and her husband as the biggest influences in her child's exercise choices. These parents encourage their son to be involved in school sports, organized soccer, and at the local YMCA athletic club. Mom did not believe there were any barriers involved with getting her son to exercise; instead she describes him as "very active."

Dad believes he passed down his genetics to his son because he also has many allergies and severe exercise induced asthma. Evan has had allergies for as long as he can remember but his asthma was just diagnosed over a year ago. At first the participant thought his allergies were just acting up during soccer. He visited his allergy doctor who then diagnosed Evan with asthma. Evan's asthma is classified as moderate-persistent. His daily medications include: singulair, zyrtec, flonase, and an albuterol inhaler as needed.

He experiences night time cough often and asthma exacerbations with quick bursts of running.

Rachael

Rachael is a quiet, well mannered 12 year old Caucasian girl. She is tall but quite thin and lanky with long brown hair and big brown eyes. Rachael lives directly across the street from the largest high school in the city. This gives the family access to open fields and a track. Her home environment consists of a well maintained, split level home, in a quiet cul-de-sac located in an older part of town. The neighborhood houses many middle class families with numerous school aged children close to the participant's age. Mom and dad have been married for many years and they identify their family's income as greater than \$60,000.

During the interview, the participant's mom pointed out her daughter's dark circles under her eyes, stating she has a hard recovery after a lot of activity. The participant had basketball and soccer practice the night before the interview and her mom believes the dark circles are a result of the "lay over" that occurs due to her daughter's asthma.

Rachael was a bit reserved at the beginning of the interview but really opened up and shared valuable information as the interview progressed. This participant has two siblings, an 18 year old brother and an 8 year old sister. All of the children are involved in numerous physical activities and sports.

Rachael's mom works in the medical field and believes in the importance of exercise and the benefits it brings. Mom states she feels Rachael's asthma is fairly managed because of how active her daughter is. She believes physical activity "exercises" her

daughter's lungs, thus improving asthma severity. This particular mom is very active and engages in cardio activity 3-4 times per week for 30-45 minutes. She describes her own health as very healthy and her weight/height as appropriate. Rachael's mother also identified herself and her husband as influencing her daughter's exercise choices. Both parents influence participation in physical activity by encouraging Rachael to be involved in activities she enjoys, and by being positive exercise role models. Mom identified asthma's side effects leading to missed activities as the greatest barrier to keeping her asthmatic daughter active.

Rachael enjoys school and is currently in the sixth grade. This participant is very social and gets along well with her teachers, friends, and coaches. Her family values physical activity and they all belong to a local gym where they often go as a family. As the interview progressed Rachael opened up and offered excellent rich data about physical activity and asthma. Her mom stayed close by during the interview but allowed Rachael to answer the interview questions.

Zach & William

Zach and William are brothers who both have asthma. Zach recently turned 8 years old and is in the second grade. This participant is a bit more hesitant and reserved than his very outgoing older brother William. William is an eleven year old boy currently in the sixth grade. Both boys are Caucasian, extremely bright, and excelling in school. The brothers both enjoy playing hard outside. One of their favorite outside activities is playing cops and robbers with the neighbor kids for hours on end. Their type of cops and robbers involves a lot of running and hiding. Their home is situated at the top of a cul-de-

sac in a very upscale neighborhood. Family income was described as greater than \$60,000. Both boys are quite active and involved in soccer and other physical activities. Their parents believe in the importance of exercising and do not believe asthma should stand in the way of their boys being active. The family enjoys being active together by hiking, snowmobiling, and spending a lot time outdoors at the lake during the summer time.

Mom describes herself as healthy and is involved in cardio and weights. She tries to exercise for at least an hour, roughly three times per week. She states she is “an active skier and walker.” She feels exercise is okay for her asthmatic sons as long as they don’t have problems breathing. She identified herself and teachers as the having the greatest influence on her sons’ exercise choices. This mom believes her children are encouraged to participate in physical activity through involvement in organized sports, limiting television and video games to encourage active play, and involvement in family activities such as skiing and snowboarding. This family also belongs to the local YMCA health club facility which is a short 5 minute drive from their home. No exercise barriers were identified by this mom. She described her sons as “very active.”

The boys’ asthma has been fairly well controlled since moving to the area two years ago. Prior to the move, the participants’ asthma required several medications and seemed to be affecting the boys more severely. Just recently, the brothers have complained of shortness of breath during P.E. class. They told their mom they had to go to the health room to rest. Mom believes they need to be reevaluated to assess their asthma severity

but currently classifies them as intermittent. They were not taking any medications for their asthma at the time of the interview.

Zach and William were interviewed separately at their home. Zach was quite shy and quiet throughout the interview. On the other hand, his older brother William was forthcoming and provided excellent rich data without much probing. Both boys were extremely gracious and polite and stated they enjoyed being interviewed. William hoped the information would help other kids with asthma get involved and do the activities they desire to do. The participants' mom stayed close by during Zach's interview but allowed William to be interviewed without her presence. She encouraged both of the boys to answer the questions on their own.

Penny

Penny is a petite 10 year old female who is in the fourth grade. She describes herself as half Chinese and half white. She has dark brown hair and huge deep brown eyes. This participant is a sweet, timid, and polite child. During the interview she was initially reserved but as we continued she seemed to relax and opened up a bit more in her answers offering more details. Her mom and two of her siblings stayed near during the interview. Penny's mom encouraged her several times throughout the interview to answer the questions on her own, giving occasional prompts to assist her.

Her home is located in a small rural town. There is only one elementary school in the town. She is quite active and involved in several sports. She enjoys playing outside of her home with her siblings and neighbors. She has three sisters (and another sibling on the way), ages: 4, 11, and 15 years old. Her favorite activities at home include playing

basketball in her driveway and tag with her siblings and neighbor friends. There is also a park within walking distance from her house. Penny's home is an old 1920's, two-story brick house. The participant's mom states the home needs a lot of fixing up, in particular the very old carpet throughout the home. Despite the house being almost 100 years old, the home environment is clean and tidy. Family income was described as less than \$20,000 per year. Penny's mom discussed how they hope to move to a newer home after she finishes her schooling and begins work. Mom is working hard towards her four-year college degree and her father works in a restaurant within walking distance to their home. The participant's grandmother lives close by and often helps with the children. Penny's mother, siblings, and several relatives also have asthma.

This participant's mother believes exercise is important for her daughter despite her asthma. Mom listed her own asthma as a health concern which she tries to control under a doctor's supervision. Penny's mom discussed being active when she is not enrolled in school. She enjoys running 2-3 miles per day but states "when in school I do not exercise a great deal. I occasionally go walking." She hopes to return to exercising 5-6 days per week for an hour at a time after she graduates. Mom identified herself, her husband, and Penny's siblings as having the biggest influence on exercise choices. Penny is encouraged by her parents to play outdoors and to participate in sports activities. The rural setting does not offer any programs or facilities for the family to be active together. The family occasionally takes walks and bike rides together during the warmer months but mom and dad are currently not very active. Her mom states Penny's common respiratory illnesses are her biggest barrier to being active.

Penny's asthma is fairly well controlled except when she exercises and/or when she is experiencing any type of respiratory illness. She was diagnosed with asthma around 2 years of age. This participant has numerous allergies including: pets, pollen, and food allergies (garlic and rice). Penny visits an allergy and asthma specialist for her asthma management. When Penny is ill her asthma flares up and she is not able to participate in any physical activity until she is well.

Brenda

Brenda is a 10 year old female participant who was absolutely full of personality. She is half African American and half Caucasian with the most beautiful sparkling eyes. She is in fourth grade with an extremely outgoing and bubbly personality. Brenda was thrilled to be interviewed. She was talkative and humorous throughout the entire interview, often requiring the researcher to redirect her attention back to the interview questions. She lives with her mother, her 3 year old brother, and mom's boyfriend, in a small, brick, older, apartment complex a few miles out of town. The family income was described as less than \$20,000 per year. Although the apartment complex was quite old and run down, the inside was clean and well kept. The apartment complex was located at the end of a cul-de-sac in a safe neighborhood. The area appeared safe enough to get out and ride a bike or to play. The participant did state her bike was at her cousin's house. Brenda's mother is divorced from the participant's father but lives with her boyfriend. They are expecting a baby in late spring. The participant's mother does not work. Brenda is not active and describes herself as "lazy."

Brenda's mom listed asthma when asked to describe her own health. This mom reported on the health history questionnaire her belief in the importance of keeping active and stated she exercises for an hour per day. Interestingly, she did not discuss being active or provide any exercise or physical activity examples prior to or following her daughter's interview. Mom recognizes Brenda as different from the other kids when she stated, "I hope we can come up with something that would make her be able to play like the other kids." She identified herself and her sister as the biggest influence on Brenda's exercise choices. Mom stated she believes her daughter is encouraged to participate in physical activity but she does not "push too hard because she has a hard time breathing." Although Brenda and her mom discussed limited amounts of outdoor play, mom stated on the questionnaire that she encourages playing outside and walking. Mom identified the lack of control over Brenda's asthma as the greatest barrier to getting her active and exercising.

Mom states her daughter's asthma has been out of control her entire life. She explained that the doctors continue to try and manage it but goes on to say her daughter cannot exercise without fairly severe symptoms. This participant has had asthma her "whole life" and is on several daily medications including: Asmanex Twisthaler, Serevent Diskus, and Montelukast. She also takes Albuterol through an inhaler and/or small volume nebulizer as needed. Mom classifies her daughter's asthma as severe-persistent. Interestingly, the participant does not take her Albuterol inhaler prior to physical activity (the common treatment recommendation). Brenda visits the office at school almost every time she has P.E. According to the participant's mom, Brenda cannot

play tag inside of the apartment without wheezing. Mom did not mention the importance of having Brenda participate in exercise or to be physically active during the interview process. The participant on the other hand, discussed enjoying playing soccer and basketball when she's with her cousins. She does not play outside of her apartment and there are no parks or play areas within walking distance. Brenda does not play with any neighborhood children at her apartment complex or near to her home. This participant stated her parents have not taught her anything about physical activity or exercise. The family does not exercise or participate in physical activities together. Brenda's mom explained how the doctors do not want Brenda to be active right now because of her asthma. Mom also has asthma along with Brenda's 3 year old brother and cousins. This participant definitely associates exercise as a trigger to her asthma. She did not share any successful exercise experience stories and seems to view exercise in a negative light, especially in comparison to the other participants. Brenda was more than willing to share excellent data from start to finish of the interview. Her story and point of view were important additional pieces to this study because she offered different perspectives from the other participants.

Rick

Rick is a very sweet and outgoing 9 year old boy. He lives in an older, well kept neighborhood in a quiet part of town. Rick has a nice big backyard that is fenced in with a basketball hoop. Mom and dad have been married for several years and report the family income as \$50-60,000 per year. This is a safe, tucked away, charming neighborhood. The participant has two good friends who live in the neighborhood. They

all play outside together often. He loves to run and describes himself as quite fast. Rick participates in soccer in the spring and fall and he also enjoys playing outside with his 11 year old brother. This participant has a dog and a new cat just adopted from the local humane society. His mom encourages him to play and be active despite his asthma. She hopes he will be able to self manage and remain active as he gets older. She complimented him on his ability to do so now, although she feels he is sometimes not aware of possible triggers such as a minor cough or exposure to allergens. On the other hand, she was impressed with the interview when he shared his plan for how he deals with symptoms when away from mom and dad. Rick has never been officially tested for allergies but his mom shared how certain animals seem to cause a flare up. He currently sees a general practice doctor for his asthma management. Both mom and dad also have asthma. Rick's mom has exercise induced asthma and his dad has severe asthma.

Rick's mom classified herself as overall healthy but somewhat overweight. She also complained of lower back problems. She believes exercise is important and would like to be active 3-4 times per week. Currently, she exercises 1-2 times a week for 10-15 minutes. She also reported biking or walking for 30-60 minutes roughly twice a month. She desires more consistency with her exercise schedule but finds it difficult to maintain. She believes in the importance of Rick forming good exercise habits and is, "very pleased that his asthma does not prevent him from exercising or participating in sports." Mom identified parents and other kids as the greatest exercise influence in Rick's life. She believes he is encouraged to be physically active through participation in fall and spring sports, involvement in summer activities, family bike rides/walks, encouraging outdoor

play with friends, and talking positively about sports and health. Mom identified family schedules, and allowing Rick to independently participate in activities as the biggest barriers to his involvement with exercise and physical activity.

Mom classified Rick's asthma as mild-persistent. His medications include: flovent twice per day during the winter and once per day during the rest of the year, as well as Albuterol as needed per inhaler or small volume nebulizer. He enthusiastically showed me how he uses his spacer to make sure he takes his medications properly. Rick feels he can still be active even when having symptoms as long as he follows his plan. He also believes kids with asthma should be able to do whatever they want despite their asthma diagnoses.

Kendra

Kendra is a vivacious, 12 year old, female seventh grader. She has beautiful, bright green-blue eyes and a contagious laugh. She remembers learning of her asthma around age 5 or so. Her mom and dad are divorced and she has one 10 year old sister. Kendra's parents share custody equally. Her father identified family income as \$40-50,000 per year. Her father's home is located in a newer housing development with large sidewalks and close to both an elementary school and a large high school. She has a large, open, grassed back yard. Kendra and her sister often play soccer or Frisbee in the backyard. The safe neighborhood is an excellent location for bike rides and outdoor play with the numerous neighborhood children and her sister.

Kendra's asthma was classified by her father as moderate persistent. She is on daily singulair, zyrtec, flonase, and an Albuterol inhaler as needed. This participant is allergic

to cats, pollen, dust, and grasses. Her asthma symptoms increase when she is experiencing respiratory or sinus illnesses and when she exercises. Dad states her primary care doctor manages her asthma.

Kendra's father was present during the interview but allowed the participant to answer all of the questions on her own. He describes her as quite active and he believes she should participate in whatever she wants despite her asthma. He does not believe asthma should be a barrier of any sort in Kendra's life. Dad encourages Kendra to play outside and he has her enrolled in several sports as well. She enjoys basketball and soccer and loves to play with the neighbor kids. This participant likes to ride bikes or go on a jog with her dad and sister. They also enjoy camping and swimming in the summer time.

Dad is active and believes it's important to be a positive role model and demonstrate a healthy lifestyle for his daughters. He plays soccer, runs, and lifts weights often to stay in shape. He describes himself as, "healthier than most." Dad exercises 5 times per week for at least an hour. He believes Kendra should participate in an exercise or physical activity she is interested in despite her asthma. He identified himself as the biggest influence on Kendra's exercise choices. He also feels she is encouraged to participate in activities and exercise through involvement in organized sports, school sports, and outdoor play. Dad stated the family does have access to local health clubs but he prefers to encourage outdoor activities for Kendra. No barriers were identified on the health history questionnaire in regards to involving Kendra in exercise. Kendra's dad described her as, "extremely active and energetic."

Kendra seemed to really enjoy the interview process and commented she was grateful to help other kids with asthma. She answered the interview questions with great depth and richness. She also agreed with the emergent theory and added even more detail to help with credibility of findings.

Cooper

Cooper is an outgoing 10 year old boy. He is currently attending fourth grade in a private school setting. He comes from a large family including four other siblings. He has two sisters and two brothers, ranging in age from 12-20. Cooper's family has a strong Irish-Catholic background. Mom and dad have been married for over 20 years. Cooper lives in a safe neighborhood where many children enjoy riding bikes and playing outside. The 2-story home is roughly 30 years old but very well maintained and updated. His home has a large fenced in back yard and a basketball hoop in his driveway. Traffic is minimal in this quaint neighborhood. His family has lived in the same house throughout his childhood. Family income was described as greater than \$60,000 per year. He is quite an active child, participating in soccer and "lots of outdoor fun." His mom and dad both encourage Cooper to participate in exercise and play. His entire family is full of good humor and positive attitudes. The interview was quite comical and Cooper was more than eager to share information related to exercise and asthma.

Cooper's mom completed the health history questionnaire and described herself as fairly healthy. She participates in 30-40 minutes of aerobic activity 3-4 times per week. She believes in the importance of Cooper's involvement in exercise and activity despite his asthma. This mom does not feel asthma should hold her son back from participating

in exercise. Mom identified herself and Cooper's siblings as having the greatest influence on his exercise choices. Cooper's parents encourage him to be involved in school sports and activities, and outdoor play with friends. No barriers were identified in involving Cooper in activities and exercise. Cooper's mom described him, as "competitive and really active."

Cooper's asthma severity is mild-persistent, with most symptoms occurring with increased activity or allergies. He uses an Albuterol inhaler as needed prior to and during exercise. He also takes singulair by mouth every day. Similar to the other study participants, Cooper's asthma symptoms increase when he has any type of respiratory illness. He believes he can do just about any activity despite his asthma. He enjoyed the interview process and was able to provide rich feedback in relation to the emergent theory.

Summary of Participant Portraits and Context

Participant descriptions and the study context were presented in the above section. Providing background information and contextual details gives deeper meaning to the stories the participants shared throughout the interview process in relation to exercise, physical activity, and their asthma. Contextual details relevant to the participants home and neighborhood environments also add further richness to the study. The emergent theory will be presented next.

The Process: Creating Perceptions of Exercise

The process identified in this study was Creating Perceptions of Exercise. School aged children with asthma interact with several issues leading to actions and emotional

responses eventually reaching an outcome or consequence. The process of Creating Perceptions of Exercise emerged from the commonly occurring predominant concepts (categories), found in the data. The categories (higher order concepts) and concepts (lower level subcategories) all depict areas of possible interactions, actions, and emotional responses occurring among school aged children with asthma and leading to an outcome or consequence. The outcome or consequence in the Creating Perceptions of Exercise Process is the child's perception of exercise.

The process identified in this study was not a step by step or progressive process but instead the categories and their concepts work in more of a circular, overlapping fashion. Each predominant category may influence the Process of Creating Perceptions of Exercise at different times or in various ways dependent upon the school age child with asthma and his or her unique characteristics as well as the contextual features involved. In addition, dependent upon the child and the situation the components of the process may occur simultaneously. For example, a child may experience a change in symptoms, an increase in parental influence, a new found love of basketball, and an increase in knowledge, all interacting and intertwining into the child's creation of his or her perceptions of exercise.

Although the initial research questions were revised and made more specific throughout the analysis process as leads emerged from the data, the general foci of the questions have been answered through the identification of the predominant categories and lower level concepts. Initial research questions included:

1. What are the predominant psycho-social concepts involved with the process of perceiving exercise among school aged children with asthma?
2. How do environmental influences effect perceptions of exercise?
3. How does prior knowledge and experience influence perceptions of exercise?
4. How do beliefs and emotions effect perceptions of exercise?

Predominant psycho-social concepts involved with the process of creating perceptions of exercise include all four of the predominant categories and concepts in the emergent theory. Environmental influences include the predominant category of exercise influences involving parents, P.E. teachers, and health care providers. In addition, the predominant category of perceived benefits was also an identified environmental influence involved in perception development. Prior knowledge and experience were identified as the predominant category of perceived benefits including the concepts of fun, friends, and health. The participants' beliefs and emotions were expressed in various ways through all four of the predominant categories. The answers to the initial research questions will be explored throughout the chapter as each identified predominant category and lower level concepts are explained.

To help explain the findings as they are discussed and integrated throughout this chapter, and to depict the Process of Creating Perceptions of Exercise, findings of the study including all components of the theory are summarized in Figure 2. The core category is bolded in the center of the diagram with the predominant categories in bold located in the outer four interconnected circles. Lower level concepts are listed with each predominant category. The following section will explain these areas in greater detail.

Figure 2. The Process of Creating Perceptions of Exercise

Emergent Core Category: Ongoing Creation of Perceptions of Exercise

The core category identified consistently throughout the data is labeled the ongoing creation of perceptions of exercise. The researcher uses the core category to help clearly explain the overarching story of the participants' experiences. It is "something larger than the sum of all its individual parts" (Corbin & Strauss, p. 104). Throughout this chapter all categories and concepts will be underlined to assist with discussion and clarification of the findings. This category helps explain the continuous process and all of the components involved with how school aged children with asthma create their perceptions

of exercise. The ongoing creation of perceptions of exercise can be defined as the continuous development of the beliefs, values, and feelings school aged children with asthma form towards exercise. Figure 2 illustrates how all of the identified predominant categories and concepts feed into the core category of ongoing creation of perceptions of exercise. Notice how the edges of the four outer circles representing the predominant categories and concepts are somewhat transparent and merge with the core category. This transparency depicts the overlapping relationships among the predominant categories and the core category, as well as the interconnectedness of all of the categories and concepts.

School aged children with asthma have several areas of their lives effecting how perceptions are created. The core category of ongoing creation of exercise perceptions is influenced by the predominant categories including: perceived benefits, striving for normalcy, exercise influences, and asthma's influence. The predominant categories and concepts will be explained in more depth in the upcoming sections. The following quote from Evan demonstrates his ongoing creation of perceptions of exercise:

Um people with asthma usually stay home and stay on the couch thinking I have asthma, I can't do anything and where others are out there doing what they can, and that's fun.

Evan's words depict his feelings and ideas related to exercise. Even though he has asthma he believes everyone with asthma should be active doing what they are capable of because it is enjoyable. Kendra also summarizes her thoughts and beliefs involved with her creation of exercise perceptions in the following quote:

Everyone with asthma learns things they can and cannot do, just like

someone who has a broken arm knows what they can and cannot do. You learn how to calm your breathing down and how to relax when you feel an asthma attack coming on. You learn your limits of when you need to stop and when you can continue going, umm I think that someone with asthma can do anything they want as long as they understand their limit. If it hurts stop, if you can't breathe stop, I just listen to my body, because if you overdo it you can end up hurting yourself for a longer period of time then just sitting out for the day.

Kendra's words give us an idea of where she is in her process of the creation of perceptions of exercise. She feels strongly that people with asthma can be active and exercise as long as they can identify their own limits. The core category of ongoing creation of perceptions of exercise will be further supported as the chapter progresses and discussion of findings in relation to the predominant categories and their concepts ensue.

Predominant Categories

Perceived benefits, striving for normalcy, exercise influences, and asthma's influence are the four predominant categories present throughout the Creating Perceptions of Exercise Process. The predominant categories emerged from the data early on in the data analysis process. Perceived benefits include the commonly identified positive aspects of involvement in exercise or physical activity as described by the school aged child with asthma. Striving for normalcy is the school aged child's attempt to appear and function in an accepted manner, also referred to as "not being different" in relation to their asthma and involvement in exercise. Exercise Influences refer to the sources emergent in the data who effect the process of creating exercise perceptions among school aged children with

asthma. Asthma's influence is a contextual category referring to aspects of the disease which influence the process. The four predominant categories may work together simultaneously in the process or each area may influence the creation of perceptions of exercise at various times throughout the child's life. There is a reflexive interplay among all of the predominant categories and the core category of ongoing creations of perceptions of exercise. The process is not sequential or phase like, instead the predominant categories are interconnected in a dynamic manner throughout the ongoing creation of perceptions of exercise among school aged children with asthma.

Each predominant category will be explained in depth in the following section of the chapter. The concepts (or subcategories) of all four predominant categories will also be presented and discussed. All of the concepts will be underlined throughout this section to ease and clarify the discussion. Data bits will be threaded throughout the chapter in the form of italicized quotations. Quotes provide evidence for the identification of the predominant categories and their less abstract concepts. Refer back to Figure 2 for a summary of the core category, predominant categories, and the lower level concepts.

Predominant Category: Perceived Benefits

Perceived benefits refer to the identified benefits of participating in exercise or physical activity. This predominant category was evident by the end of the third interview. I began to notice all of the children had identified positives associated with being active. As the interviews progressed the category was further supported by the participants' sharing their beliefs related to the "good" things about exercise. The participants reported enjoying physical activities and through their stories they also

expressed the benefits of staying healthy and increasing their fitness levels. In addition, participants described being able to spend time with their friends as a social benefit of participating in exercise. The concepts involved with the predominant category of perceived benefits include: fun, friends, and health. When discussing the benefits associated with exercise Rachael touched on all three areas.

Exercising is usually were people meet a lot of friends and you're doing something good for you and having fun with a friend. It's a key step to stay healthy and live longer because if you don't you're gonna be out of shape....

The quote depicts the benefits of exercise for this particular participant. Rachael's words provide evidence supporting the benefits of fun, health, and time with friends, when exercising. Each concept related to the category of benefits of exercise will be discussed next with the integration of participant quotes to demonstrate evidence emergent from the data.

Fun

All of the participants discussed beliefs of exercising and physical activity as things that should be "fun" and enjoyable. Although each child described their favorite activities in various ways, all of them mentioned having fun. School aged children with asthma were asked to share what they believed to be good about physical activity and to describe their favorite activities. These types of open-ended interview questions were often answered with mention of fun or enjoyment. Children shared stories of how exercising is fun and why. Brenda even mentioned her dislike of an activity because it was not fun.

She stated, *“Running is my least favorite way because it’s not fun, and I can’t breathe, and I’m really slow, and if you’re too slow you have to run again, you have to go all the way to the back.”* Many of the school aged children with asthma shared stories of playing “fun” games or engaging in “fun” activities with their friends, family members, or on a team. The concept of fun refers to the enjoyment or amusement children experience while exercising or engaging in physical activity. Twelve year old Evan describes his favorite activity as:

Um, I would say running is my favorite because uh it’s just fun to go out there and run...its fun...there is no bad.

Rachael also described enjoying activity through her following description of participation in sports.

Um, I would say basketball or soccer are my favorites because it’s just fun and I like all of the people I do it with, and um it’s pretty much the same thing except their opposites, so it’s fun, I like it.

Zach and his 11 year old brother William both discussed the amusement involved with their favorite play activity. Zach described their physical activity adventures in the following depiction.

Cops and robbers are my favorite things, its fun! Yes, I especially like playing cops and robbers, it’s really fun jumping the fences.

Although Brenda described her participation in exercise and physical activity as limited, her description of enjoyable activity focused on fun.

The best thing about being active is its fun! I like to play games.

The concept of fun was one of the commonly identified areas perceived as a benefit of exercising by school aged children with asthma. Fun can be defined based on the individual child's descriptions with the overall meaning referring to the gaiety or enjoyment experienced by school aged children with asthma.

Friends

The concept of friends was described by all of the participants in various ways throughout the data as a social interaction benefit of participating in exercise or physical activity. Spending time with friends and meeting new friends sharing similar interests was reported frequently throughout the interviews. School aged children with asthma often enjoy social benefits from exercising in the form of interacting with their friends in a positive and healthy environment. Children mentioned the benefit of being able to see friends while exercising who they would not normally get to see at school. The concept of friends following under the predominant category of perceived benefits refers to the social enjoyment or happiness the children shared in relation to participating in physical activities providing opportunities to interact socially with their friends. Chloe shared a story of one of her favorite ways to exercise and how the activity allows her to also enjoy time with her friend during recess.

Um, yeah, I like to (exercise) with my friends, me and my friend Nikki at a bunch of the recesses we swing or go in the mud puddles.

Rachael also often mentioned the social benefit involved with physical activity.

I like all of the people I do it with, and um basketball and soccer are pretty much the same thing except there opposites, so, and its fun, I like it. And it's

fun to meet other people who have the same interests... Yeah, I get to see my friends, cause that's when like, when my friends on the soccer team don't go to my school, so I like to see them a lot.

William continuously brought up the enjoyment of interacting with friends while participating in exercise and physical activities.

I like to be active with my friends because instead of being at school with your friends and whisper, whisper in their ear, you get to be outside and play with them not during school but outside you keep playing with them... Well I think playing sports is a good way to exercise because you can play with your friends and it's a competition which I like. You're always active like basketball you're always moving.

The concept of friends is a subcategory of the predominant category of perceived benefits. Friends depict the social benefit experienced by school aged children with asthma when they are in an exercising environment. Exercise allowed the children opportunities to interact with their friends in a playful and informal way. The school aged children participants truly enjoy the social interactions involved in the activities they described.

Health

The perceived benefit of health was another concept commonly found throughout the data describing the positive health benefits involved with exercise among school aged children with asthma. Nine of the ten participants shared examples of the health benefits involved with exercise participation. When asked about the positive aspects of exercise

the children often shared information explaining thoughts related to the health benefits produced by exercise or physical activity. Examples ranged from Zach's statement, "it helps you lose weight!" to more detailed stories described next. Rachael was asked to discuss her perspective of what's good about exercising, she stated, *"Um, that it keeps you healthy, and um its fun, and um it teaches sportsmanship and it like it keeps me exercising, and like I said, healthy, and strong it helps me grow."* Most children shared several stories depicting their beliefs of the health benefits of being physically active and participating in exercise. When asked about the positive aspects involved with exercising, Evan identified the health benefit of fitness in his following comment.

Well it can keep you fit and give you muscles and if you do lots of exercise you can just stay healthy.

Rachael's comments also supported overall health as a benefit of exercise.

Um, that like its (exercise) fun and it keeps you healthy and like um fit and strong and it's a good thing to do with your time. And its fun to meet other kids who have the same interest.

Kendra also shared her perspective on the health benefits associated with exercise involvement. Interestingly, her outlook on exercise also included the health benefits associated with improving her asthma.

Umm, I just think exercise is important to stay healthy more so with asthma because if your body is not in shape than either is your asthma.

Similar to Kendra, Cooper also shared his understanding of how exercise can lead to an improvement in fitness and his asthma disease.

I think exercise is the best way to build stamina, helps with muscles, makes you stronger. It actually helps with my asthma.

School aged children with asthma shared a general knowledge base of the health benefits associated with involvement in exercise and physically activity. The children participants described exercise as important because it can help them remain healthy and active. The concept of health was described throughout the data as one area of perceived benefits of exercise.

The predominant category of perceived benefits includes the concepts of: fun, friends, and health. All of these areas influence the core category of the ongoing creation of perceptions of exercise. The actions, interactions, and emotions involved with the perceived benefits of fun, friends, and health among school aged child with asthma are all incorporated into the process of creating perceptions of exercise.

Predominant Category: Striving for Normalcy

The predominant category of striving for normalcy refers to the strong desire expressed by the participants to fit in to his or her perceived standards related to exercise and physical activity. All ten of the children shared examples of wanting to avoid being different from others despite their asthma. Normal was viewed in various ways dependent upon the unique characteristics of the school aged child with asthma. While most of the participants were quite active and participated in many forms of exercise, others restricted their activity to avoid being different or “*slow*.” When asked if he believed kids with asthma are different from others, Rick commented, “*Well, um I’m thinking kids with asthma probably just want to be doing what their friends are doing and not just have*

to sit out because of their asthma.” School aged children with asthma shared several strategies to achieve a sense of normalcy. The predominant category of striving for normalcy includes the commonly identified strategies or concepts found throughout the data. The concepts discussed by school aged children with asthma focused on keeping their asthma diagnosis private, an internal planning process, and techniques for continuing with the activity or exercising event. The three concepts supporting the predominant category of striving for normalcy are labeled: keeping it private, making a plan, and continuing. The next section will explain each concept and integrate participant quotes to strengthen the discussion.

Keeping it Private

The concept of keeping it private refers to how the participants only share information of their asthma diagnosis and disease process with those who are closest and most trusted by the participant. Although all of the participants expressed a desire to keep their asthma information somewhat private, eight of the ten participants only shared detailed asthma information with their parents, siblings, and for a few with their best friends. None of the children discussed a detailed, clear exchange of asthma related information between the participant and their P.E. teachers, coaches, or other adults involved with exercise or physical activity. For example, Evan’s coach sometimes holds on to his inhaler for him but there has not been a formal discussion of Evan’s disease process or treatment plan. Evan states, “*only the coach of soccer knows, that’s the only time I’ve realized I had asthma.*” The P.E. teachers were often unaware of the school aged child’s asthma diagnosis, even though the school nurse or office personal had records of an asthma

treatment plan and kept control of the participant's inhaler. Several of the children kept their asthma diagnoses from their coaches for fear of being thought of as different or unable to achieve the same physical activity standards as the other children on the team. On the other hand, a few of the school aged children with asthma did report their asthma diagnosis to their coaches or teachers because they wanted to, “....*show them that I could do anything that a normal kid could do even with my asthma.*” Keeping it private was one strategy discussed often under the striving for normalcy category. The participants expressed a strong sense of resilience despite their asthma and by keeping their diagnosis close to those they trusted this in a sense helped them to be normal. Evan demonstrated how he keeps his asthma private by the following depiction.

Um, no they don't know because I don't need them. When I run the mile, I still don't need it (my inhaler). I run it in 7-minutes. My teammates do not know I have it.

Zane shared similar examples when discussing the school environment.

Um, nobody really knows I have asthma at school.

William expressed his desire for keeping his asthma diagnosis private quite clearly when he shared his perspective on striving for normalcy.

No, I don't tell anyone because I like to keep it just like private and stuff and like if I'm not running as fast people won't say it's only because he has asthma or stuff like that. No, my friends don't know.

Penny also shared her uncertainty in who knows about her asthma diagnosis at school.

I think the nurse knows but I don't know if the P.E. teacher knows.

The concept of keeping it private was described through the participants' shared stories found in the data. This concept was one strategy commonly used by the participants to help maintain a sense of normalcy in their lives despite their asthma diagnoses. School aged children with asthma discussed how keeping it private helped them avoid being different from their friends or others when exercising or participating in physical activities. The concept of keeping it private was explained and linked to the predominant category of striving for normalcy.

Planning

The school aged children participants' used planning as a means of developing and carrying out an internal plan of how to treat or prevent their asthma symptoms while they exercise or participate in physical activities. Planning is the internal planning process uniquely described by all ten of the participants as the recognition of their disease symptoms and the decision making that occurs as they exercise or participate in physical activity. This internal plan is another strategy in the predominant category of striving for normalcy. When asked about how she deals with asthma symptoms while exercising, Penny commented, *"It comes and goes...when it happens I rest...I take a rest on my own."* As the children shared their stories, it became evident this process is internalized, i.e. it is often not shared with anyone. The child processes the interaction among their disease and the activity and then devises an internal plan to assist in maintaining a sense of normalcy while engaged in physical activities or exercise. Rachael shared her plans on how she plans to deal with symptoms during exercise while at school or when involved in after school organized sports.

I just kind of breathe slow and catch my breath and drink water. If it was to get worse I would probably just go home...no one knows...sometimes like, like when I like if I know when I'm going to run I like just bring lots of water so I can like drink and just yeah.

William's plan begins even before the actual activity. His thought process begins when he becomes aware of an activity likely to spark asthma symptoms.

I start to think about it a little, like at first I know I'm going to do fine for the first 10 (laps) but then once it starts getting faster that's when I start thinking about it cause when it starts to get faster I don't want to like pass out or something. Like instead of going as high as I can I try and stay between 50 or 40 something. I kind of make a plan in my head.

Brenda's plan involves avoiding the activity and/or seeking out treatment in the form of her inhaler.

Like if we start a game like when I'm running, I can't play. Then sometimes I'm fine but I have to go to the office. I can take my inhaler. If it doesn't work I would wash it out and it would work again. If that didn't work I would probably go sit.

The concept of planning was described as another strategy in the striving for normalcy predominant category. The children who participated in the study described having a sense of when their symptoms will occur or how the symptoms may effect their activity. William stated, "*Well usually that's at the end so I just try to get my breath back and um and just try and relax in class.*" Planning is a mechanism utilized by the study

participants to self-treat their asthma symptoms as they strive for normalcy. Similar to the concept of keeping it private, the concept of planning is also an internal action occurring among the participants.

Continuing

Continuing can be thought of as a subcategory of planning. The concept of continuing refers to the thoughts and actions the school aged child with asthma described as strategies to continue exercising or participating in physical activity. All of the children participants shared stories discussing some means of continuing with their activities. When asked what she does when symptoms arise during exercise, Carmen stated, *“I ask if I can sit out...yeah, but um I can go back in because it goes away fast when I stop playing...the other kids don’t ever ask me (about her asthma).”* The participants all described various ways to continue exercising. Some continue on without taking any sort of break from the activity, while others discussed “subbing out,” or “sitting” for a short while and then being able to return to the activity. Many discussed going back to exercising rather quickly. Evan shared the following information related to his strategy for continuing.

Um, well I’m just saying I’m going to run my hardest and if I have to use my inhaler I’ll use it...if I have to I’ll use my inhaler again. If I’m playing on the side where coach is I just ask him to pass my inhaler (during the game) and then I use it. If I’m on the side where my mom is I just ask her if she can go get my inhaler... I only come out if I don’t have my inhaler, just for a little bit until I catch my breath.

William also shared his perspective on not quitting and how he continues with the activity or exercise.

Yeah, I'm going to try and prevent it but yeah I'm going to keep going.

Sometimes I just try really hard and try and get my asthma out of the way. I just keep going.

Brenda also shared her strategy of modifying the exercise situation so she can continue.

I could run fast. I can run really fast but then I have to slow down.

Cooper shared information related to continuing despite his asthma.

Having asthma slows you down sometimes but doesn't stop me from trying out new things and playing.

The concept of continuing involves the thoughts and actions the participants shared in relation to the steps they take to be able to continue exercising or participating in physical activity. Continuing is similar to the concept of planning but refers specifically to participants' shared belief in continuing as well as the steps taken to continue with the exercise event.

The predominant category of striving for normalcy includes the three concepts of keeping it private, planning, and continuing. The participants' strategies for striving for normalcy also influence the core category of the ongoing creation of perceptions of exercise. The process of creating perceptions of exercise is effected by how the participant strategizes and reacts in relation to their disease and the decisions made during exercise. Exercise perceptions may be created in either a positive or negative light

based off of the experiences of striving for normalcy as well as the concepts involved including: keeping it private, planning, and continuing.

Predominant Category: Exercise Influences

The predominant category of exercise influences refers to the people identified by the participants who play a part in influencing their exercise perceptions. The participants were asked to give examples of who in their lives has taught them things about exercise, as well as examples of what they have learned about being physically active. The three identified concepts or influential groups include: parental, physical education teachers, and health care providers. These influential people were described as impacting the core category of the ongoing creation of exercise. Participants shared numerous stories of how parents, P.E. teachers, and health care providers have taught them things about exercise. The knowledge, beliefs, and values passed on to the participants through teaching and role modeling influences the process of creating perceptions of exercise. What the participants see and hear from the influential people involved in their lives effects their own thoughts and feelings related to exercise, i.e. their ongoing creation of perceptions of exercise. The next section will explain the three concepts in depth.

Parental

The concept of parental influence refers to the part parents play in effecting exercise perceptions among school aged children with asthma. Nine of the ten participants shared information related to various ways their parents have influenced their exercise perceptions. Brenda could not recall her parents teaching her about exercise or physical activity and she did not mention observing her mom partake in exercise. Parents

obviously spend the most amount of time with their children in comparison to teachers, coaches, and health care providers. As the interview process continued it became very apparent to the researcher that parental beliefs are passed down to their school aged child with asthma. Parents who believed their child should be active had children who described numerous activities during the interviews. On the other hand, parents who described asthma as a barrier to their child participating in exercise had children who described their asthma in a similar manner. Parental influences effect the ongoing creation of perceptions of exercise among school aged children with asthma. Kendra shared her belief of the strong influence parents play in exercise behaviors.

My parents definitely helped me become active and now it's my lifestyle it's something I do every day of my life...Parents are the one thing that kids look up to, they are the kids' biggest role model. Just like little sisters look up to older sisters and so forth. If a girl or boy sees their dad or mom sitting on the couch all day and eating bad food they're gonna do the same thing because they think it's what they're suppose to and that's how everyone is. All I remember is my parents going to the gym and trying to teach me healthy things to eat, they were trying to help me have a good lifestyle until when I'm old enough to choose what I want to do with my life. No one else is going to teach your kid to get up and play sports with their friends or eat healthy or stay active it's the parents job. I don't think I would be active if my parents weren't, it's how we bond we all play or have played sports or exercise all week, we love to do it, its fun!

The participants frequently shared examples of what their parents or individual parent (mom or dad) taught them about exercise or being physically fit. Some of the children shared specific activities, while others discussed values or beliefs their parents had shared with them regarding the importance of exercising. Carmen commented, *“My mom has taught me, umm, she’s taught me different exercises, she’s taught me it before.”* William shared his mom’s beliefs when he stated, *“Yeah, uh my I think my mom usually says even though you have asthma you are still perfectly capable of doing everything else and still being fit like a kid that doesn’t have it.”* Evan discussed specific activities along with an overall sense of his parents influence in the following comment:

Um, my dad has taught me that when you ride you want to keep a steady cadence. When you ride a bike, so um when you’re going down a hill you should have it in a big gear and keep pedaling the same as when you were going up the hill. I ride my bike with my dad....My mom taught me how to run. My parents taught me it (physical activity) can make you fit and you can get stronger and you eat healthy.

Similar to the other examples above, Cooper shared his perspective on his parents’ influential role in his physical activity involvement.

My parents, especially my mom, encourages us to go on bike rides, play outside and play sports, so yes she influences me to be active. She makes me take my medicine.

The concept of parental influence frequently emerged from the data. This concept assists in the ongoing creation of perceptions of exercise among school aged children

with asthma. Parental influence is one aspect of the predominant category of exercise influences involved in the process of creating perceptions of exercise.

Physical Education Teachers

The concept of physical education (P.E.) teachers refers to the influence P.E. teachers have on knowledge development and exercise beliefs among this sample of school aged children with asthma. When participants were asked opened ended questions focusing on who had taught them things about exercise, the most common initial answer was their P.E. teacher. Six of the ten participants first mentioned their P.E. teachers. All of the participants shared examples of exercise information gained from their P.E. teachers. When asked this question, Zach commented, *“Um, probably my P.E. teachers...they taught the right way to do pushups.”* A few of the children even shared specific stories about a P.E. teacher who had impacted their life. Evan recalled a P.E. teacher from a few years ago when he stated, *“My 5th grade P.E. teacher, um he gave us a test about being healthy. He taught us um, nutrition and that kind of stuff.”* Interestingly, most of the participants mentioned their P.E. teachers before their parents when discussing exercise knowledge. Children usually began their answers with mention of P.E. teachers, where as parents were often discussed after further probing from the researcher. Carmen stated, *“My P.E. teacher told me exercise like um, you have to be healthy and stuff.”* P.E. teachers interact frequently with school aged children and the data suggests they can influence the ongoing creation of perceptions of exercise among children with asthma. William described specifics in relation to his P.E. teachers and exercise in the following depiction.

Uh, like my uh my P.E. teachers that I've had, except for my first one, but my last two they've done the fitness test and tell us why it's important to be fit and stuff...so um to keep your bones strong so it's not going to be so in your future it's not going to be really hard to get around and stuff, and um yeah.

Rachael shared information of what she has learned about exercise from her P.E. teacher.

Like my P.E. teacher keeps me really active. Uh she's taught us how to eat healthy, and like you should stretch after your sports, and stretch before your sports, and like after you run you don't want to drink too much water because you'll like have an upset stomach, so you want to just take sips. And then later on drink lots of water, and then, that's pretty much it that's she taught me.

The concept of P.E. teachers as exercise influencers emerged often throughout the data. When asked what she had learned about how physical activity can help her health, Brenda shared, “Yes, she (P.E. teacher) said to exercise and stretch and stuff.” P.E. teachers are one component of the predominant category of exercise influences present in the process of creating perceptions of exercise.

Health Care Providers

The concept of health care providers includes the knowledge exchanged between the participant and his or her health care provider in relation to exercising or physical activity participation. Five of the participants shared information pertaining to information learned from their health care provider about exercising or physical activity. Although health care providers were mentioned less often and in less detail than parents and P.E. teachers, participants did share advice they had received from their doctors. On the other

hand, several participants could not remember if their providers had ever discussed the importance of exercise or physical activity. The researcher theorized this may be due to the limited time school aged children with asthma spend with their health care providers compared to time spent with parents and P.E. teachers. In addition, health care providers may be speaking more so to the parents than to the school aged child during office visits. Although this concept warrants further exploration to adequately meet theoretical saturation, the information found in the data adds to the study findings. The concept of health care providers is another component of exercise influencers among school aged children with asthma. The following quotation illustrates Evan's experience with his health care provider in relation to information gained about exercising and asthma. This demonstrates the health care providers influence on exercise perceptions.

Um my doctor here said before exercise, like running or playing soccer, I should use my inhaler...That even though I have asthma I should do what I can...I should use my inhaler again (if symptoms flare during activity).

Kendra shared similar information when discussing her perspective on the health care provider's influence on exercising and health.

Your doctor knows if you are treating your body healthy or not, and if you aren't then that's when they'll step in and tell you that you need to start exercising and eating healthy.

Similarly, Rachael discussed the advice her doctor gave her in regards to treating asthma symptoms during sports.

I go to my regular doctor... they have, yeah (talked about exercising)...

they like, like, if you start to feel that scratchy, in your throat, you need to like sit down, sit out for awhile in sports.

Health care providers were another identified group who may influence exercise perceptions among the participants. The concept of health care providers was discussed and supported by the data as another component involved in the predominant category of exercise influences. Health care providers' have the opportunity to influence the process of creating perceptions of exercise through the exchange of exercise and health information among provider, the school aged child with asthma, and their family.

The predominant category of exercise influences play a central part in the ongoing creation of perceptions of exercise among school aged children with asthma. The process of creating perceptions of exercise involves the reflexive interaction among the participants, their parents, P.E. teachers, and their health care providers. The ongoing creation of perceptions of exercise is dependent upon the messages and modeling the exercise influencers portray to the study participants.

Predominant Category: Asthma's Influence

Asthma's influence is a predominant contextual category effecting the core category of the ongoing creation of perceptions of exercise. Corbin and Strauss define context as a condition or situation effecting the process (2008). Contextual variables are part of the circular action/interaction/emotional responses involved in the process of creating perceptions of exercise. Context also influences outcomes or consequences in a reflexive fashion coming back around also effecting conditions. Aspects of the disease of asthma were identified throughout the data as influencing the ongoing creation of perceptions of

exercise among the participants. All of the participants described their symptoms associated with asthma and exercising. Symptom triggers were also commonly described. Many of the participants discussed their understanding of individually tolerated activities. Although the three concepts of symptoms, triggers, and tolerated activity level were uniquely described, all three areas generally influence the ongoing creation of perceptions of exercise. How asthma effects exercise is labeled asthma's influence (predominant category), along with the three specific concepts including: symptoms, triggers, and tolerated activity level. The three concepts under the predominant contextual category of asthma's influence will be described and explained in the following section of the chapter.

Symptoms

The concept of symptoms was described in various ways dependent upon the participant and the situation he or she was discussing. Every interview began with an opening question asking the participants to share a story about how they feel or what happens when they are physically active or exercising. This type of question led to numerous examples of symptoms the children experience while exercising or participating in physical activities. Usually the stories began with complaints of symptoms. Carmen replied, "I get side aches all of the time." Participants' descriptions of their symptoms are provided in Table 2.

Table 2. Description of Participants' Symptoms Experienced During Exercise

Carmen	<i>side aches all of the time, feelings, my knees, my shins, it used to hurt super bad and made me cry, my legs, like it feels like I can't move anymore, sore</i>
Evan	<i>my chest got all tight and I couldn't run anymore, when I'm done my legs feel really heavy</i>
Rachael	<i>my asthma hurts, when I breath it gets like kind of rough, sometimes I get light headed and my throat hurts sometimes, more tired and laid back, like the day after, I'm sore and I'm so tired</i>
William	<i>I get really, really, like (he coughs), I started um feeling it, I usually start to feel it and then um, but once I'm done I'm like wiped out, I have a really dizzy like um airhead when I'm done, my chest sort of feels a little really tired</i>
Zach	<i>I get tired, I hurt, harder to breathe in the cold</i>
Penny	<i>I sort of breath a little bit hard, it comes and goes</i>
Brenda	<i>I can't breathe as well, tired, my legs get tired, wheeze</i>
Rick	<i>it starts being really harder for me to breathe, it comes, it feels like I'm trying to breathe through a straw with milkshake in it, I cough, itchy throat</i>
Kendra	<i>I felt this really sharp pain in my chest and my throat felt like it was closing, umm it was really hard for me to breathe, I didn't have enough strength to get up, really tired, sore, breathing a lot harder than them</i>
Cooper	<i>my chest gets tight, hard to breathe, cough, sore throat</i>

The participants' symptoms are a part of their exercise experiences which influence the core category of the ongoing creation of perceptions of exercise. Participants described various symptoms dependent upon the activity they were engaging in. Symptoms associated with exercising are another piece effecting the process of creating perceptions of exercise.

Triggers

The concept of triggers refers to anything in the participants' lives that brings on their asthma symptoms. Triggers varied widely among each participant but all of the children were able to self-identify many of the irritants involved with sparking an asthma flare up. All ten of the children interviewed identified some form of exercise or physical activity as a symptom trigger. The school aged children with asthma who participated in the study were aware exercise often triggers their symptoms, effecting their exercise experiences. The ongoing creation of perceptions of exercise includes the consequences triggers produce in relation to exercise. Table 3 summarizes the triggers identified in the data.

Table 3. Summary of Symptom Triggers

Carmen	Vigorous exercise, Respiratory/sinus illnesses Pets with fur Bursts of running (often in soccer or when running a course)
Evan	Pets Allergic to all grasses and “almost everything” except peanuts Symptoms increased during spring & summer Bursts of running (often in soccer)
Rachael	Respiratory Illness Sprinting (during or immediately following) Softball
William	Respiratory Illness Bursts of running Indoor Activities
Zach	Respiratory Illness Exercise (running) Cold Air
Penny	Pets Pollen Garlic, rice, tomatoes Respiratory Illness Vigorous exercise (sports)
Brenda	Physical activity (indoor play, tag) Exercise (swimming, soccer, basketball, P.E.) Respiratory Illness Symptoms increase in summer
Rick	Vigorous exercise Pets Respiratory Illness
Kendra	Bursts of running Exercise (soccer & basketball) Respiratory Illness
Cooper	Respiratory Illness Vigorous running (track)

The concept of triggers is one component involved with the predominant category of asthma's influence on the core category of the ongoing creation of perceptions of exercise. Exercise and physical activity were self-identified by the school aged children participants as triggers of their asthma symptoms. Triggers bring on symptoms, both effecting the process of creating perceptions of exercise.

Tolerated Activity Level

The concept of tolerated activity level includes the participants' descriptions of the type and duration of activities or exercise they can successfully participate in. All of the participants shared stories of how their asthma effects their exercise tolerance level in various ways. In addition, exercise decisions (or tolerance) were somewhat dependent upon the type and severity of the symptoms reported. Carmen described the time frame involved in her tolerance level by stating, *"Yeah, like if I've been running for a long time, um, it takes a long time before I get it."* Carmen's description tells us she is able to tolerate a long duration of running before she begins to feel her asthma symptoms coming on. Another participant described her tolerated activity level as a modified version of what her classmates were participating in. Brenda states, *"When we run I just walk."* The difference among these two participants demonstrates the individualized idea of tolerated activity level among the school aged children with asthma who participated in the study. The belief in what is tolerated, for how long, and at what intensity, plays a part in how the participants create perceptions of exercise. While some children shared stories of several tolerated exercise experiences, others modified their activity at a decreased level

because they believed exercise would trigger symptoms. William shared his perspective on his tolerated activity level related to his asthma.

Well sometimes asthma keeps me from some things but I usually try and keep that out of the way and since it's not that big right now I usually do regular sports but when it's indoors there's not a lot of fresh air and I have a harder time...I play football and soccer mostly.

Penny also shared a story about her belief of not tolerating swimming due to a “wheeze.” Her words demonstrate quite a different perception of tolerance when compared to William’s perspective.

I was going to learn how to swim but I didn't because I had a wheeze.

Evan discussed how he can tolerate exercise as long as he has his inhaler.

I only have to come out if I don't have my inhaler...yeah, then I would come out

Rachael shared numerous examples of tolerated exercise activities and also discussed situations in which she has a harder time tolerating.

I've played, so I've done dance, softball, track, volleyball, basketball, soccer and gymnastics, and that's it...It happens a like a couple minutes after but then it wears off...Like when I sprint, like when I sprint, like its worse when I just sprint really fast and stop so like I don't like doing like softball because I think you sprint a lot and then that's really like the only sport I don't like to do.

Tolerated activity level was identified throughout the data as one of the three concepts involved with the predominant category of asthma's influence on the ongoing creation of perceptions of exercise. Tolerated activity level influences how the participants perceive what exercise they are able to successfully be a part of. This concept is another important influencer incorporated into the process of creating perceptions of exercise.

The predominant category of asthma's influence includes the concepts of symptoms, triggers, and tolerated activity level. All three concepts were thoroughly described and supported through the discussion and the data bits of the participants' words. Asthma's influence on the creation of exercise perceptions was presented here as another important component involved in the ongoing process. Symptoms, triggers, and tolerated activity level may influence the development of perceptions simultaneously or at various times dependent upon the participant and their unique characteristics and situation. Most participants describe the effects of these concepts in a fairly positive light, i.e. despite the issues described they were able to remain active and participate in exercises they enjoyed. On the other hand, a few of the children discussed decreasing their activity level to avoid triggering symptoms. Interestingly, all of the children shared positive beliefs towards exercise participation. Although all of the participants experienced symptoms, identified triggers, and realized their tolerance levels, they commonly shared joy in participating in unique exercise experiences. Asthma's influence was identified as another important piece in the process of creating perceptions of exercise.

Credibility of Findings

Credibility of the findings was assessed by returning to several of the participants to check for “fit” of the study findings (Corbin & Strauss, 2008). Fit was assessed through member checking which involves taking the findings back to the participants to see if the emergent ideas also adequately portray the members’ story (Munhall, 2007). The last three interviews concluded with a discussion focusing on the identified categories and concepts and their relationships. In addition, three other previously interviewed participants agreed to a brief, follow up interview to discuss the emergent theory in relation to their stories. All six of these participants were asked to share their thoughts and ideas related to the emergent findings. When assessing credibility, it is important to remember the findings should represent a general sense of the participants’ experiences but there may be minor variations (Corbin & Strauss, Munhall, 2007). The participants were reminded the theory represented the overall general ideas found throughout the study and that there may be slight variations compared to their own unique story. The data gathered from the member checking has been threaded throughout the chapter and will also be used here to summarize the participants’ perspective related to fit of the emergent theory: the process of creating perceptions of exercise. Cooper discussed how his enjoyment of spending time with friends and the fun this brings while exercising.

Yes, I agree because I like to exercise with my friends because it’s more fun!

Similarly, Rachael also confirmed the social benefit of exercising with her friends. She also shared how her and her friends have knowledge of the health benefit of exercise.

Yes, I agree because combining exercise and friendship is the best, the friends that I play sports with I am closest to. I spend a lot of my time with them and we all think sports and being healthy is important.

Evan confirmed the category of striving for normalcy as he discussed the concept of keeping it private.

Yes, I do agree I keep my asthma private because then people would treat me different if they knew and I don't want that, I want to be as normal as possible.

Similarly, Rachael also agreed with keeping asthma to herself, planning, and continuing, all a part of her strife for normalcy.

I do keep my asthma to myself because I don't want coaches or friends to treat me any different.

Kendra's agreement with the category of striving for normalcy is illustrated in the following quotation.

I guess knowing you have asthma makes you try and push a lot harder than most other kids... it's important not to use it as an excuse.

Evan clarified his take on exercise influences. He felt parents were stronger influences than P.E. teachers and he also pointed out the importance of health care providers.

Well I thought that my parents have taught me more about exercise than my P.E. teacher and my doctor has talked to me a lot about exercise.

Similarly, Kendra strongly supported the part parents play as influencing exercise perceptions.

Doctors aren't around kids 24-7 like parents are, and you even see your P.E. teacher 5 days out of the week when only seeing your doctor twice a year...um I feel like they leave it to the parents to teach the lifestyle of being healthy because they're the ones around them all the time.

Rachael confirmed parents and teachers as exercise influencers. She also shared information supporting the concept of planning by managing her breathing.

I spend most of my time with teachers and my parents. My doctor discussed asthma issues with me when I was younger but I have learned how to manage my breathing on my own according to what my body is telling me.

The following quote demonstrates Evan's agreement with parents influence on their children's exercise beliefs and behaviors.

I think that is completely true because most children with active parents are more fit and people without active parents aren't.

Similarly, Rachael confirmed parents influence on exercise perceptions among children with asthma.

When the parents are not active they don't encourage their kids to because they don't want to be active themselves. I agree that parents encourage their asthmatic kids to be active so it keeps their lungs healthy and they can grow.

Cooper supported the finding of tolerated activity level and planning.

Yes, I know what sports I can tolerate and I know how to treat it.

Rachael also agreed with the predominant category of asthma's influence. She agreed with the identified concepts of symptoms, triggers, and tolerated activity level. Her words also support striving for normalcy as she addresses planning and continuing in the following statement.

There are sports that asthma kids can do that can be tolerated, there are also some that they cannot do, like for me sprinting is hard. It doesn't give my lungs time to catch up. I know when my asthma is becoming a problem. It is time for me to take a rest without sitting down. I walk around with my hand on top of my head.

Evan agreed with the concept of health as a benefit of exercise involved with the ongoing creation of perceptions of exercise.

I believe that exercise can help build up the heart and, with asthma kids, can help stop the inflammation of the lungs.

The six children who participated in the member checking interviews all agreed with the general process of creating perceptions of exercise. Initially, the researcher questioned if P.E. teachers possibly had made a stronger impact than parents when referring to who had taught the children about the importance of exercise. After the member checking it became quite clear that although the participants frequently mentioned their P.E. teachers prior to their parents when discussing exercise knowledge, the participants strongly believed it was their parents who had the greatest influence on their exercise knowledge. The participants agreed with the predominant categories of

striving for normalcy, perceived benefits, exercise influences, and asthma's influence on their ongoing creation of perceptions of exercise.

Chapter Summary

The study findings presented in this chapter are summarized through the illustration of the process of creating perceptions of exercise depicted in Figure 2. The ongoing creation of perceptions of exercise is influenced by the four predominant categories: perceived benefits, striving for normalcy, exercise influences, and asthma's influence. Each predominant category's lower level concepts are also involved in the process of creating perceptions of exercise. All of the components of the process were presented throughout the chapter and supported by the data in the form of participant quotes. The ongoing creation of perceptions of exercise is the core category into which all of the other predominant categories and their concepts flow into. The ongoing creation of perceptions of exercise was the over arching focus of the study and refers to the interactive components involved with the continuous development of the beliefs, values, and thoughts, school aged children with asthma place on exercise experiences. Exercise perceptions may be positively or negatively influenced by the four predominant categories dependent upon various factors presented throughout the chapter. Participants generally agreed with the emergent theory of the process of creating perceptions of exercise.

The literature reviewed throughout the first three chapters and integrated into the proposed perceptions of exercise framework (refer back to Figure 1) guiding the study will be discussed next in relation to the interpretation of study findings (refer to Figure 2).

The guiding framework served as a “sensitizing concept” incorporating relevant perceptions of exercise concepts identified in previous literature (Charmaz, 1990). This sensitizing concept led to the development of the research questions, initial interview questions, and subtly influenced questions asked of the data throughout analysis (Charmaz; Corbin & Strauss, 2008). Previously reviewed literature provided general ideas of areas to probe or look for within the data (Corbin & Strauss). Chapter five will include an in depth discussion of the findings, comparisons of findings with previously reviewed literature, and concluding with recommendations and nursing implications.

CHAPTER FIVE: DISCUSSION & RECOMMENDATIONS

This chapter will include interpretive discussions of the findings as well as recommendations for future work. The emergent grounded theory: the process of creating perceptions of exercise will be reviewed and summarized. Initial research questions will be discussed in context to the identified theory. Study findings will be compared to the existing literature presented in chapters one through three. Integration of the literature will include identified congruencies and differences. Social cognitive theory will also be revisited in the discussion ensuing in this chapter to exemplify similarities between the theory and the study findings. In addition, the theoretical perspective used to guide methodology choices throughout this study will be reviewed in relation to the study results. The chapter will conclude with discussion of study limitations and nursing implications in the areas of: research, theory, education, and practice.

Grounded Theory Overview: The Process of Creating Perceptions of Exercise

The process of creating perceptions of exercise was the grounded theory that emerged from the data shared by the school aged children with asthma who participated in the study (see Figure 2). This process includes several influencing factors involved in the ongoing creation of perceptions of exercise. Exercise perceptions can be described as the values, beliefs, and thoughts the participants form towards exercise. Exercise perceptions may be created as a negative or positive outcome of the process dependent upon the various influencers involved in the life of the school aged child with asthma.

The four predominant categories of the theory that emerged from the data include: perceived benefits, striving for normalcy, exercise influences, and asthma's influence.

Because process is an ongoing occurrence, the four predominant categories may influence the creation of exercise perceptions simultaneously, or at different times and in various ways dependent upon the characteristics of the child and their unique situations and experiences (context). The participants shared numerous stories supporting the identification of the four predominant categories involved with the ongoing creation of perceptions of exercise. Perceived benefits, striving for normalcy, exercise influences, and asthma's influence are all categories involved in the interactions, actions, and consequences interwoven throughout the creation of perceptions of exercise process. Predominant categories help explain how exercise perceptions are developed from the participants' perspective.

The predominant category of perceived benefits refers to the positive aspects of exercise participation as identified by the school age children with asthma who participated in this study. The three main concepts commonly discussed in the data include: fun, friends, and health. Children with asthma enjoy the social benefit of spending time with their friends while exercising. All of the participants mentioned having fun as one of their favorite things about participating in exercise or physical activity. An overall knowledge of the health benefits involved with exercise was also shared by most participants. School aged children with asthma perceive fun, time with friends, and being healthy, as three perceived benefits involved with exercise. Children described exercise in a positive manner when referring to the perceived benefits. Perceived benefits of exercise can help explain variations in the ongoing creation of perceptions of exercise.

The predominant category of striving for normalcy refers to the ongoing attempt of the school aged child with asthma to meet the exercise or physical activity norms surrounding them. Keeping it private, planning, and continuing were the commonly identified concepts involved with this part of the process of creating perceptions of exercise. Participants reported a strong desire to keep their asthma diagnosis private in order to avoid being labeled or thought of as different. Most of the children only shared this information with their parents and their best friends. In addition, children with asthma shared stories of their internal planning process involved with the self-treatment of their asthma symptoms while exercising. As discussed previously, most of the participants reported being able to continue exercising despite their symptoms. In other words, the school aged children with asthma who participated in the study realized exercise may trigger symptoms but they were able to plan how to treat their symptoms with most successfully continuing on with the physical activity.

Exercise influences were another predominant categorical area involved in the emergent theory. Parents, physical education teachers, and health care providers were the three main groups identified by the participants as having played a major part in the development of their knowledge and beliefs on exercise and physical activity. These groups served as role models in the participants' lives by effecting the ongoing creation of perceptions of exercise. Participants shared stories of how these groups taught them about exercising and being physically active. The children reported learning specific exercise activities from the influencers, as well as knowledge of the numerous health benefits gained by exercising and participating in physical activities. Parents, P.E.

teachers, and healthcare providers all play pivotal roles in the process of creating perceptions of exercise.

Asthma's influence was the fourth predominant category included in the theory: the process of creating perceptions of exercise. The contextual aspects of the disease have significant impact on the ongoing creation of perceptions of exercise. Symptoms, triggers, and tolerated activity level are three contextual areas effecting the process. Severity of symptoms and triggers are conditions influencing how perceptions of exercise are created. Although exercise was commonly identified as triggering asthmatic symptoms, the majority of the participants reported enjoying and participating in numerous exercise activities. On the other hand, the school aged children who participated in the study had identified tolerated activities and those they tended to avoid. Variation in symptoms, triggers, and tolerated activity levels can help explain the complexity involved in the ongoing creation of perceptions of exercise.

In summary, the theory: the process of creating perceptions of exercise is a dynamic process including the interaction, action, and consequences occurring amongst categories and concepts in the development of exercise perceptions among school aged children with asthma. The process of creating perceptions of exercise is a continuous, circular, happening with the consequences leading to the creation of exercise perceptions. This process is never ending and continues throughout one's life. The context may constantly change but the overall process retains applicability to creating perceptions of exercise.

Integration of Initial Research Questions

Initial research questions were used as a starting point to approach this Grounded Theory driven study. The emergent theory: The Process of Creating Perceptions of Exercise will be discussed in relation to the guiding research questions. Research questions included:

1. What are the predominant psycho-social concepts involved with the process of perceiving exercise among school aged children with asthma?

Predominant psycho-social concepts involved with the process of creating perceptions of exercise were touched on in all four identified predominant categories. The category of perceived benefits included the participants' perception of positive aspects of exercise involvement. The lower level concepts of fun, friends, and health are all psycho-social factors involved with the ongoing creation of perceptions of exercise. Participants shared stories of enjoying the psycho-social benefits of spending time with friends, having fun, and improving their overall health through involvement in physical activity or exercise activities.

Exercise influences was another category involving psycho-social factors influencing the creation of perceptions of exercise among the participants. Parents, P.E. teachers, and health care providers interact with the children and effect their beliefs and emotions in relation to exercise perceptions and behavior. These influential people were mentioned often in the data as role models involved in the creation of exercise perceptions. The interactions among the influencers and the participants were identified throughout the data as important aspects of the development of perceptions of exercise.

The predominant categories of striving for normalcy and asthma's influence also involve psycho-social components effecting the identified process. The participants attempt to keep their asthma diagnoses private in order to avoid being different than their peers. This is a psycho-social factor involving the concepts of planning and continuing in the strife for normalcy. In addition, asthma's influence was identified by the participants as effecting their ability to tolerate certain exercise activities. Symptoms and triggers often influenced the child's perceived tolerated activity level. The predominant category of asthma's influence plays a part in the predominant category of striving for normalcy. Symptoms, triggers, and tolerated activity level effect participants' strife for normalcy. Keeping it private, planning, and continuing are somewhat dependent upon asthma's influence.

2. How do environmental influences effect perceptions of exercise?

Findings relevant to identified environmental influences include several of the concepts involved with the predominant categories of exercise influences and perceived benefits. Friends, parents, P.E. teachers, and health care providers were identified as playing important roles in the participants' environment through role modeling. The identified environmental influencers effect the creation of perceptions of exercise through teaching and role modeling. Influencers also positively impact exercise experiences through friendship and/or parent-child relationships. The participants shared numerous examples of enjoying exercising with their friends or parents. In addition, the children interviewed provided several stories of learning about exercise from their parents, P.E. teachers, and health care providers.

3. How does prior knowledge and experience influence perceptions of exercise?

The influence of prior knowledge and experience was explained through the identification of the predominant category of perceived benefits. The participants identified a general knowledge of the health benefits associated with exercising. Several of the children also identified exercise as positively influencing their asthma. The concepts of fun and friends were also found to positively effect the participants exercise experiences. Positive exercise experiences were shared by all of the participants. Prior knowledge and experiences influence the ongoing creation of perceptions of exercise. The participants identified the health benefit of exercising and they described exercising in a positive manner when able to share the experience with friends in a manner uniquely described as fun by the child.

4. How do beliefs and emotions effect perceptions of exercise?

Beliefs and emotions were factors involved with all four predominant categories. The predominant category of exercise influences (parental, P.E. teachers, health care providers) influence the participant's beliefs and emotions in relation to perceptions of exercise. Participants' all shared strong beliefs in maintaining a sense of normalcy in relation to exercising with their asthma. The children also shared their beliefs in relation to their individualized tolerated activity level. If they believed they could successfully complete or participate in the exercise activity they described exercise in a positive light. On the other hand, if the activity led to increased symptoms or if the child did not view the activity as fun, perceptions were negatively influenced. Thus, beliefs and emotions

may effect perceptions negatively or positively dependent upon the child's exercise experiences and contextual factors.

Integrating Existing Knowledge

The process of creating perceptions of exercise is the grounded theory that emerged from the data of this study. Four predominant categories involved in the ongoing creation of perceptions of exercise among school aged children with asthma were identified. In the next section study findings will be compared with the existing knowledge discussed in previous chapters. The comparison will focus on the integration of social cognitive theory (SCT), perceptions, self-efficacy, benefits of exercise, physical activity, and physical self concept.

Social Cognitive Theory

Study findings were consistent with SCT's central construct of reciprocal determinism (Bandura, 1977, 1986). Reciprocal determinism refers to the ongoing learning process involving simultaneous interactions of personal characteristics, environmental factors, and human behavior (Bandura; Baranowski et al., 2002). These concepts influence one another and ultimately effect behavior. The emergent theory: the process of creating perceptions of exercise incorporates predominant categories and concepts similar to the assumptions expressed in SCT.

Existing literature identifies predominant environmental factors among school aged children to include role models such as: parents, coaches, siblings, teachers, peers, and health care providers (Connors, Bednar & Klammer, 2001; Fereday, MacDougall, Spizzo, Darbyshire & Schiller, 2009). Study findings also demonstrated the important

role parents, P.E. teachers, and health care providers play in the ongoing creation of perceptions of exercise among school aged children with asthma. These role models serve as exercise influences by teaching school aged children with asthma about the importance of exercise as well as passing on their own perceptions of exercise to the children they interact with. Similar to current literature, study results identified parents as the strongest exercise influencer in the participants' lives (Fereday et al., 2009; Dzeqaltowski et al., 2008).

Although not necessarily described as role models, peers were mentioned often as positive aspects involved in exercise experiences by study participants. Spending time with friends and striving for normalcy among peers are two components involved in the emergent theory. This is similar to SCT because the theory assumes children learn through experiences and findings demonstrated exercising with friends provided positive exercise experiences among the participants (Bandura, 1977, 1986). Health Care providers were also identified as an exercise influence. In contrast to the literature, siblings and coaches were not commonly brought up by participants in the interviews, but may be an area for further research. Similar to existing knowledge, parents, P.E. teachers, and health care providers were the three groups of role models identified in the study findings.

Study findings were consistent with SCT's personal characteristic component as demonstrated by the identification of the predominant categories of asthma's influence and striving for normalcy. Asthma's influence includes personal disease characteristics as well as self-identified tolerated activity levels. Striving for normalcy includes the unique

strategies school aged children with asthma utilize in their strife for normalcy. Similar to SCT, study findings also demonstrated the interactions of personal characteristics, one's behavior, and environmental influences as predominant categories involved in the process of creating perceptions of exercise.

Self Efficacy

Study findings were consistent with research supporting the importance of self efficacy in health behaviors (Keats, Culos-Reed, Courneya & McBride, 2007; Mancuso et al., 2006; Shields et al., 2008). Self efficacy refers to an individual's belief in their capabilities to successfully participate in exercise. Nine of the ten study participants expressed belief in their abilities to successfully participate in specific exercise or physical activity despite their asthma diagnosis. The children described their beliefs in their abilities to participate in certain activities in relation to asthma's influence on their abilities (symptoms, triggers, tolerated activity level). One participant did describe herself as "lazy" and often described how she modified her activity level because of her prior negative exercise experiences. On the other hand, she discussed having fun while being active with her friends and her belief in her ability to participate in activities such as soccer and riding her bike. Interestingly, this participant's parent did not encourage involvement in physical activity. All participants described tolerated activity levels and exercise experiences they were able to successfully participate in.

Those participants who were encouraged by the role models in their lives expressed a strong sense of self-belief (self-efficacy) in their ability to exercise. Exercise influences identified in the data (parental, P.E. teachers, health care providers) effected self efficacy

beliefs of the participants. All ten participants shared information about how exercise influencers effected their exercise beliefs and knowledge involved in the ongoing creation of perceptions of exercise. This is similar to research supporting the importance of prior knowledge and positive reinforcement in self efficacy and health behavior decision making (Barrett & Randle, 2008; Gail et al., 2008; Luszczynska & Tryburcy, 2008). Self efficacy is similar to perception because both incorporate one's beliefs in their abilities based on influences including the areas identified in the process of creating perceptions of exercise.

Physical & Social Impact of Asthma

The current study findings shared similarities and differences to previous research focusing on the physical and social impacts of asthma (Wirrell et al., 2006). Wirrell and colleagues completed a study investigating perceptions of the physical and social impacts of asthma among teens with and without chronic disease. Over half (63%) of the adolescents with asthma interviewed perceived their physical functioning as limited leading to decreased involvement in physical activities (Wirrell). Although exercise participation and intensity was not formally assessed in this study, all of the children interviewed shared stories of their involvement in some form of physical activity. Current findings differed from Wirrell and colleagues study with nine of the ten children discussing involvement in at least one organized sporting activity such as basketball or soccer, as well as often engaging in outdoor play with friends, siblings, and parents. Similar to previous research, these participants did acknowledge their asthma symptoms effected their exercise involvement and performance. Many complained of fatigue,

soreness, shortness of breath, etc, while exercising. On the other hand, all of the participants believed they could be active in some way they found fun and enjoyable. Current findings revealed school aged children with asthma are effected by their symptoms while exercising but all were able to successfully exercise in ways tolerated by the individual.

Affective & Cognitive Characteristics as Exercise Predictors

Study findings were consistent with research focusing on affective and cognitive characteristics as exercise predictors (Kiviniemi et al., 2007). In a study done by Kiviniemi and colleagues, positive affective associations (emotions) towards exercise lead to increased amount of physical activity involvement among adult participants. Cognitive beliefs and affective associations are both involved with the perception process. Beliefs and emotions are interwoven throughout the categories and concepts identified in the emergent theory and involved in the ongoing creation of perceptions of exercise. Similar to research findings, participants of the current study identified fun activities with friends as their favorite forms of exercise. Beliefs exchanged among the participants and their parents, P.E. teachers, and health care providers also influence exercise perceptions. Affective associations and cognitive beliefs were both demonstrated as components involved in the theory: the process of creating perceptions of exercise.

Negative Emotions Influence on Exercise

Current findings of this study are congruent with several research studies linking negative emotions to decreased exercise involvement along with increased reporting of symptoms among school aged children with asthma (Meyer, Kroner-Herwig & Sporkel,

1990; Panditi & Silverman, 2003; Pianosi & Davis, 2004; Rietveld & Prins, 1998).

Children participants described certain physical activities as negative exercise experiences involving increased symptoms and symptom severity. The more negative the participants perceived the activity; the less likely they were to continue participating or to attempt the activity again. During the interview process it was difficult at times to decipher if the children did not enjoy the activity due to their asthma or if they were generally anxious about certain exercise opportunities. This is also congruent with findings stating the more negative a child perceives the situation the higher the likelihood they will increase reporting of subjective symptoms (Panditi & Silverman; Rietveld & Prins). The current findings generally supported the idea that perceptions of discomfort associated with exercise may decrease participation (Welsh et al., 2004). Further research formally assessing amount and duration of exercise participation is needed to add support to this area. Although all of the participants shared symptoms experienced during exercise, nine of the school aged children with asthma interviewed were active and involved in various forms of exercise. Perceived tolerated activity level played an important part in exercise behaviors among the participants. Similar to previous literature, if the participants had negative perceptions related to their tolerance they often avoided specific triggering activities or modified their behavior to better tolerate the exercise.

Determinants of Fitness

Study findings were consistent with study findings focusing on asthma severity, physical activity perceptions, and aerobic activity in a study done by Pianosi and Davis

(2004). Attitudes towards exercise and the asthmatic children's perceived physical activity competence correlated significantly to physical activity involvement (Pianosi & Davis). Participants in the study, who discussed strong beliefs towards the importance of exercise involvement and in their own ability to successfully exercise despite their asthma, shared more stories discussing their successful participation in various forms of exercise than those who expressed negative attitudes. Nine out of ten of the participants shared positive attitudes towards exercise and were able to provide numerous examples of successful exercise participation. The one participant who viewed exercise is somewhat of a negative light shared less examples of successful participation in physical activities. In addition, this participant shared many negative and/or unsuccessful exercise examples.

It was difficult to decipher if asthma severity played a role in exercise participation. Severity ranged from intermittent to severe-persistent. The participant who had the highest severity rating was able to exercise but she did describe limited involvement in exercise. On the other hand, the other participants with various asthma severities were all quite active and able to successfully exercise. How children feel towards exercise and their perceived exercise competence are influenced by the four identified predominant categories of the emergent grounded theory and are involved in the ongoing creation of perceptions of exercise.

Physical Activity & Physical Self-Concept

Chian and colleagues (2006) completed research focusing on physical activity and physical self-concept among non-asthmatic and asthmatic children's physical self-

perceptions scores. They found no significant differences among the two groups. Similarly, most children who participated in the current study felt they could successfully participate in many types of exercise and nine of the 10 children interviewed were involved in an at least one organized sport. The participants' involvement in sports (soccer, basketball, football, swimming) differs from Chian and colleagues findings demonstrating children with asthma were less likely to participate in vigorous physical activity. Despite participants' asthma, nine of the ten children seemed to possess positive physical self-concepts in relation to certain tolerated exercise activities. Eight of the ten participants believed there was nothing "bad" about exercise. Although the children identified various symptoms, triggers, and tolerated activity levels, they all shared unique positive exercise experiences. Participants' physical self-concept varied dependent upon the activity and context.

Chian and colleagues also found a gender difference with boys having higher physical self-perception ratings for obesity, strength, and endurance when compared to the girls. Although these areas were not specifically explored in the current study, no gender differences emerged in the grounded theory: the process of creating perceptions of exercise.

Summary of Integration of Existing Knowledge

Existing knowledge was integrated with the findings of the study. The general assumptions involved in social cognitive theory share similarities to the interaction, action, and emotional responses involved in the grounded theory: the process of creating perceptions of exercise. Components of the four identified predominant categories

(perceived benefits, exercise influences, striving for normalcy, and asthma's influence) were supported through the similarities reviewed with the integrated literature. Minor differences identified throughout the literature will also be discussed in relation to current study findings. The process of creating perceptions of exercise adds to the existing knowledge by providing a dynamic explanation of the various components involved in the ongoing creation of perceptions of exercise among school aged children with asthma.

Integration of Philosophical Perspectives

This grounded theory driven study was guided by the Primary Investigator's philosophical views including Constructionism as the chosen epistemology along with the theoretical perspective of Symbolic Interactionism. This researcher's theoretical perspectives served as a framework guiding methodological choices throughout the research process, including the interpretation of study findings. Constructionism assumes meaning is developed through interactions among people and their environments (Crotty, 2003). Interpretation of study findings focused on the interactions, actions, and emotional responses occurring in the process of creating perceptions of exercise among school aged children with asthma. The interactions involved with participants' and their social environment proved to be influential in the ongoing creation of perceptions of exercise. This is consistent with Constructionism due to the emphasis on social interactions involved in the process of knowledge development (Crotty). Constructionism focuses on social interaction and experience in the creation of meaning, both of which were central in the development of the emergent theory. Meaning of experiences is formed through one's interpretation of their reality (Crotty). Findings included the individualized

interpretations (data bits) of the participants in relation to their experiences with exercise and asthma. Although Constructionism assumes meanings may be interpreted differently, the emergent theory identified predominant categories generally involved with the process of creating perceptions of exercise among school aged children with asthma.

Symbolic Interactionism also helped guide the study and interpret study results. Social interaction influences, subjective meanings, and interpretations are the central focus involved with this perspective (Charmaz, 1990; Crotty, 2003; Reed, 2006). Gaining participant perspectives was accomplished by using the grounded theory method including the incorporation of open ended interview questions allowing the school aged children with asthma to share their stories. Member checking was also done to assess for fit of the theory by returning to the participants to ensure their stories were accurately depicted in the process of creating perceptions of exercise. The emergent theory: the process of creating perceptions of exercise demonstrates the participants' interpretation of factors involved in exercise perception development. Study findings supported the general assumptions of symbolic interaction including: the co-existence of child and their environment, interaction process creates meaning, and subjective meaning guide's behavior (Reed, 2006). The ongoing creation of perceptions of exercise is influenced by the social interactions and subjective meanings placed on exercise experiences by school aged children with asthma.

The researcher's philosophical perspectives of Constructionism and Symbolic Interactionism were integrated with study findings. Philosophical perspectives guided my choice of Grounded Theory methodology which allowed me to gain subjective

descriptions of predominant concepts involved in the creation of perceptions of exercise. The school aged children with asthma who participated in the study shared their unique interpretations of their lived experiences of exercising with asthma. The theory: the process of creating perceptions of exercise summarizes how exercise perceptions are created, i.e. how meaning is placed on exercise experiences.

Limitations of Study

The major limitation of the study was the lack of experience by the researcher in the area of grounded theory methodology. This was the first grounded theory driven research study completed by the researcher. Interviewing proved difficult at the start of the study but the skill of the researcher did improve as new tactics were learned and interview questions were revised to elicit rich data from participants. Instead of trying to answer for the participant during periods of silence, I learned to allow enough time for the participants to answer and share their own stories. Expert interviewing skills may have produced richer data from the beginning of the study. Ongoing discussion with committee members, colleagues, and Dr. Corbin, assisted in my theoretical decision making process as the theory emerged and predominant categories and concepts became supported by the data. As the analysis process continued I began to grasp the methods involved with grounded theory and I experienced increased clarity as immersion in the data took over my dreams and thoughts. After reviewing all of the memos and going back numerous times to the transcripts, the data lead the researcher in the discovery of the emergent theory. As Charmaz states, “the interaction between the researcher and the data

result in discovering,” (1990, p. 1165). It is hard to decipher how the researcher’s lack of experience effected study findings.

Another limitation of the study may be the population interviewed. Although exercise frequency and duration was not formally measured, most of the participants shared stories of involvement in many forms of exercise and physical activities. In addition, the population was 80% Caucasian and six families reported earned income greater than \$60,000 per year. Findings may differ among children with asthma who do not participate in exercise or physical activity, those from lower socio-economic status, and those from other ethnic groups. Location of home environment may also have effected findings. Nine out of ten participants resided inside city limits. The one participant who resided in a rural area was involved in numerous forms of exercise. It is unclear if rural versus urban settings would have changed study results.

Although theoretical saturation was met in the sense of strong supporting data for all identified predominant categories and their relationships, new leads emerged that warrant further inquiry. According to Corbin and Strauss (2008), theoretical saturation is decided upon by the researcher when the emergent categories and concepts have been richly described through the data in relation to the purpose of the study. On the other hand, every emergent lead cannot realistically be followed and this should be acknowledged as a study limitation (Corbin & Strauss). Increasing the sample size may have added additional leads or clarified information. Adding greater demographic variation into the sample may have produced additional findings. The purpose of the study was to identify predominant concepts involved with the process of perceptions of exercise. This was

accomplished through the identification of the theory: The Process of Creating Perceptions of Exercise. Study limitations support the need for further research in this area. Nursing implications and recommendations for future direction will be discussed in the next portion of the paper.

Strengths of Study

This study adds to the body of nursing knowledge through the identification of the emergent theory: The Process of Creating Perceptions of Exercise. The emergent theory helps fill the fatal gap in nursing knowledge relevant to perceptions of exercise among school aged children with asthma. The participants' stories provided rich and detailed evidence to support the predominant categories and concepts. This Grounded Theory driven study allowed the perspectives of the participants to be heard in relation to how perceptions of exercise are created. The study findings provide nurses with an explanatory theory allowing greater understanding of the factors involved with exercise perceptions. In addition, the categories and concepts involved with the theory add to the body of nursing knowledge by providing "language" to be used and further debated within the profession (Corbin & Strauss, 2008, p.ix). The predominant categories and lower level concepts help explain how school aged children with asthma form exercise perceptions. Understanding perceptions of exercise from the children's perspective is crucial because perceptions are involved with exercise behaviors. Exercise perception is particularly important among this population because increased exercise participation can positively impact the children's asthma disease, overall health, and quality of life. This discovery provides a building block for further discussion and exploration. Continued

inquiry will add additional knowledge to the nursing profession. Additional research questions sparked throughout the development of the theory will be presented at the end of this chapter.

Nursing Implications

The emergent grounded theory: the process of creating perceptions of exercise is an important addition to nursing knowledge because the participants' stories revealed predominant areas involved in the ongoing creation of perceptions of exercise among school aged children with asthma. This study allowed the experiences and perspectives of school aged children with asthma to be heard in regards to their beliefs, thoughts, and feelings interwoven in the process of creating perceptions of exercise. The theory provides a holistic explanation of the development of exercise perceptions from the subjective interpretation of the participants. Findings of this grounded theory driven study help address gaps in the literature by providing evidence of factors involved with perceptions of exercise directly from the school aged child with asthma. Emergent categories and concepts identified in the study provide important groundwork to nursing knowledge that can be incorporated into future research and practice. Nursing implications will be addressed next in the areas of theory, education, practice, and research.

Nursing Theory

Grounded theory methodology assists the nurse researcher in the discovery of theory emergent in the data. Gaining the participants' stories allows nurses in a variety of settings to begin to understand the exercise experiences of school aged children with

asthma. This methodology allowed categories and concepts to emerge from the data in the development of an explanatory theory. The study findings contribute to nursing science through the identification of the theory: the process of creating perceptions of exercise. The new explanatory theory can be used in future research to test the predominant categories and concepts to possibly refine and modify the theory in areas of other areas of interest. In addition, the emergent theory could be used in the future development of a substantive or middle range theory focusing on perceptions of exercise among school aged children with asthma. The identified theory can be incorporated in a variety of ways to improve the overall health and well being of school aged children with asthma.

Nursing Education

The study findings revealed several areas of focus for nursing education. Physical education teachers, parents, and health care providers were the three predominant groups identified as exercise influences in the process of creating perceptions of exercise. Nurses could target these groups in an effort to further their education on the importance of exercise among children with asthma. Nursing education should also focus on the mentoring role parents and P.E. teachers can play in positively influencing perceptions of exercise among school aged children with asthma. These would be important first steps because the findings suggested exercise knowledge and beliefs were exchanged between school aged children and their parents, P.E. teachers, and health care providers. Nurses in a variety of settings can also educate school aged children with asthma about the importance of exercise and how physical activity involvement can improve all areas of

the child's life. School nurses in particular, would be in ideal positions to educate and impact large populations of school aged children with asthma. The identified theory: the process of creating perceptions of exercise offers numerous areas for education interventions aimed at increasing exercise participation and success to improve the health of children.

Nursing Practice

Implications for nursing practice include the educational ideas discussed above as well as other opportunities for nurse practitioners working with school aged children with asthma. The process of creating perceptions of exercise theory can be used by nurse practitioners in their approach to patient education and in the treatment of asthma.

Commonly identified triggers and symptoms were discussed in the findings as well as the planning process children use to self-treat their symptoms during exercise. The categories and concepts of the theory provide several target areas for practitioners to touch on while caring for this population. Health care providers were also identified by the participants as exercise influencers who effect their ongoing creation of perceptions of exercise.

Nurse practitioners can encourage exercise participation as part of the asthma treatment plan for school aged children. Nurses practicing in other areas working with this population or working with those who may influence school aged children with asthma can plan nursing care with the incorporation of education focusing on the importance of exercise involvement for school aged children with asthma. Practicing nurses are in ideal positions to positively impact exercise behaviors among children. Incorporating identified

areas from the process of perceptions of exercise theory into practice could lead to improved exercise behaviors.

Nursing Research

This study focused on explicating the subjective perspective of what's involved with the development of exercise perceptions among school aged children with asthma. The process of creating perceptions of exercise is the grounded theory that emerged from the data. The theory provides several explanatory areas for future nursing research. The theory itself could be used in exercise perception research in various populations to add to the depth and richness of the categories and concepts. Less active school aged children with asthma could be studied for continued refinement of the theory. Intervention studies could include education programs for parents, P.E. teachers, health care providers, and school aged children with asthma. Compliance with inhaler use prior to exercise is another example of possible future nursing research. The dynamic flow of the categories and concepts throughout the process of creating perceptions of exercise provides numerous areas for further nursing research. Future areas for nursing research based from the study findings include:

- *Further testing of the theory among various populations (lower SES, various ethnic groups, and non-active children).

- *Further investigation among children who share their asthma diagnoses as a way to avoid exercise participation.

- *What have parents been taught about having their child with asthma exercise?

- *What have P.E. teachers been taught about asthma and exercise?

*How would a peer mentoring program effect exercise perceptions among school aged children with asthma?

*What effective educational strategies are being utilized by nurse practitioners to promote exercise participation among school aged children with asthma?

*What school or community based interventions would be effective in increasing exercise participation among school aged children with asthma?

*Are school aged children with asthma compliant with pre-exercise medication regimens?

Conclusion

This chapter summarized study findings and integrated existing literature. Similarities and variances of the study and previous research were discussed. The grounded theory: the process of creating perceptions of exercise was reviewed. Social Cognitive Theory's general assumptions were presented in congruence with study results. In addition, the researcher's philosophical perspectives were re-visited and applied to the interpretation of findings. Study limitations and nursing implications in the areas of: theory, education, practice, and research were discussed. The emergent grounded theory is an important addition to nursing knowledge because it gives the participants a voice to share the picture of the central areas (categories and concepts) involved in the ongoing creation of perceptions of exercise among school aged children with asthma. This new knowledge can be integrated in nursing practice and education. The subjective insight gained throughout the development of the theory: the creation of perceptions of exercise, gives

light to numerous areas for future nursing research in hopes of improving the overall quality of life among this population.

APPENDIX A:
UNIVERSITY OF ARIZONA IRB APPROVAL

Human Subjects
Protection Program

1618 E. Helen St.
P.O. Box 245137
Tucson, AZ 85724-5137
Tel: (520) 626-6721
<http://www.irb.arizona.edu>

HSPP Correspondence Form

Date: 10/23/09

Investigator: Michele Shaw, PhD Student

Department: Nurs

Project No./Title: 09-0941-02 Perceptions of Exercise among School Aged Children with Asthma

Current Period of Approval: 10/23/09 – 10/22/10

IRB Committee Information	
☒ IRB2 – IRB00001751 FWA Number: FWA00004218	☒ Expedited Review – 10/23/09
Nature of Submission	
☒ New Project	
Documents Reviewed Concurrently	Appr: Approved Ack: Acknowledged Rev: Reviewed
☒ Project Review Form (received 09/29/09)	Appr
☒ VOTF	Appr
☒ Consenting Instruments: Parental Participation and Child Permission Form Minor Assent Re-consent: ☐ All ☐ Current Only ☒ Not Required	Appr
☒ Recruitment Materials: Flyer, phone script	Appr
☒ Surveys/Questionnaires: Interview Questions Health History Questionnaire	Appr
☒ Site Authorization: Spokane Allergy and Asthma Clinic	Appr
Committee/Chair Determination	
☒ Approved as submitted effective 10/23/09	
Additional Determination(s)	

- **Expedite Approval (45 CFR 46.110 Category 6):** Collection of data from voice, video, digital, or image recordings made for research purposes.
- **Expedite Approval (45 CFR 46.110 Category 7):** Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.
- **Waiver of One Parental Signature (45 CFR 46.408(b)):** permission of one parent is sufficient as it is research involving not greater than minimal risk as defined in 45 CFR 46.404.

10/23/09

Elaine G. Jones, Ph.D.
Chair, IRB2 Committee
UA Institutional Review Board

Date

EGJ:mm
Cc: Departmental/College Review Committee

- Reminders:** Continuing Review materials should be submitted 30–45 days prior to the expiration date to obtain project re-approval
- Projects may be concluded or withdrawn at any time using the forms available at www.irb.arizona.edu.
 - No changes to a project may be made prior to IRB approval except to eliminate apparent immediate hazard to subjects.
 - Original signed consent forms must be stored in the designated departmental location determined by the Department Head.

APPENDIX B:
CONSENT & ASSENT FORMS

Permission for Child Participation & Parental Participation Form***PERCEPTIONS OF EXERCISE AMONG SCHOOL
AGED CHILDREN WITH ASTHMA*****Introduction**

You and your child are being invited to take part in a research study. The information in this form is provided to help you decide whether or not you and your child wish to take part. Study personnel will be available to answer your questions and provide additional information. If you decide to participate and allow your child to take part in the study, you will be asked to sign this consent form. A copy of this form will be given to you.

What is the purpose of this research study?

The purpose of this study is to investigate perceptions of exercise among school aged children with asthma.

Why is my child being asked to participate?

Your child is being invited to participate because he or she is a school aged child, ages 8-12, with asthma.

Why are you being asked to participate?

You are being invited because you are a parent of a child with asthma.

How many people will be asked to participate in this study?

Approximately 10 children and their parents will be asked to participate in this study.

What will happen during this study?

You will be asked to complete a health history questionnaire that asks about general information related to your family, as well as questions about your own health and exercise habits. Your child will be asked to participate in an interview with the study's Principal Investigator about their perceptions of exercise. The interview will take place at your home and will be conducted at a time that is convenient for you and your child. Your child's interview will last approximately 30-60 minutes. If your child prefers, he or she may request two interviews of shorter duration to minimize fatigue or boredom in order to fully answer the interview questions. The interviews will be tape-recorded. You and your child's names will not be associated with anything you say or complete in the study. Both you and your child's participation are completely voluntary and either one of you may stop participating in the study at any time without any consequences to either of you. The principal investigator will

also be taking hand written notes on observations made related to your neighborhood and home environment.

How long will my child be in this study?

About 30-60 minutes will be needed to complete the interview of the child. If your child prefers he or she may request two interviews of shorter duration to minimize fatigue or boredom in order to fully answer the interview questions.

How long will I be in this study?

The health history questionnaire will take you approximately 10 minutes to complete.

Are there any risks to my child?

Potential risks include the possibility your child may experience or complain of health problems related to their asthma during the interview. There is also the possibility he or she may become emotionally upset during the interview. If this occurs your child may stop participating immediately. If asthma symptoms occur during the research process your child would be encouraged to follow their asthma treatment plan prescribed by their doctor. Your child may also need to be referred to their primary care provider. If your child indicates feelings of suicide or experiences a severe asthma attack, he or she would be referred to an emergency department of your choice for evaluation.

Are there any risks to me?

Potential risks include the possibility you may become emotionally upset while completing the health history questionnaire. If this occurs you may stop participating immediately. If you indicate feelings of suicide you would be referred to an emergency department of your choice for evaluation.

Are there any benefits to my child?

There may not be any benefits to your child for participating in this study. Your child may enjoy discussing their personal experiences related to exercise and asthma. In addition, your child may feel benefit sharing information that may help other children with asthma.

Are there any benefits to me?

There may not be any benefits for your participation in this study. However, you may experience positive benefits from sharing information that may help other children with asthma.

What are the alternatives for participating in this study?

The alternative is not to participate in this study.

Will there be any costs to my child?

Aside from your time, there are no costs for taking part in the study.

Will we be paid to participate in the study?

Your family will be given a \$20 gift card after completion of the interview/s and health history questionnaire.

Will video or audio recordings be made of me during the study?

We will make an audio recording of your child's interview so that we can be certain that your child's responses are recorded accurately only if you check the first box below:

☐

I give my permission for audio recordings to be made of my child during participation in this research study.

☐

I do not give my permission for audio recordings to be made of my child during participation in this research study.

Will the information that is obtained from my child be kept confidential?

The Principal Investigator, Michele Shaw MN, RN, doctoral student, is the only person who will know your child participated in this study. Study records will be confidential.

Your child's records will be confidential. Your child will not be identified in any reports or publications resulting from the study. It is possible that representatives of the sponsor that supports the research study will want to come to The University of Arizona to review your information. Representatives of regulatory agencies including The University of Arizona Human Subjects Protection Program may access your records.

Will the information that is obtained from me be kept confidential?

The only persons who will know that you participated in this study will be the Principal Investigator, Michele Shaw, MN, RN, doctoral student.

Your records will be confidential. You will not be identified in any reports or publications resulting from the study. It is possible that representatives of the sponsor that supports the research study will want to come to The University of Arizona to review your information. Representatives of regulatory agencies including The University of Arizona Human Subjects Protection Program may access your records.

May I change my mind about my child participating?

Your child's participation in this study is voluntary. You may decide to not have your child begin or to stop your child's participation in the study at any time. Your refusing to have your child participate will have no negative consequences to you or your child.

May I change my mind about participating?

Your participation in this study is voluntary. You may decide to not begin or to stop the study at any time. Your refusing to participate will have no negative consequences to you.

Whom can I contact for additional information?

You can call the Principal Investigator to tell her about a concern or complaint about this research study. The Principal Investigator Michele Shaw, MN, RN, doctoral student, can be called at (509) 951-7066. If you have questions about your child's rights as a research subject you may call the University of Arizona Human Subjects Protection Program office at (520) 626-6721. If you have questions, complaints, or concerns about the research and cannot reach the Principal Investigator; or want to talk to someone other than the Investigator, you may call the University of Arizona Human Subjects Protection Program office. (If out of state use the toll-free number 1-866-278-1455.) If you would like to contact the Human Subjects Protection Program via the web (this can be anonymous), please visit <http://www.irb.arizona.edu/contact/>.

Your Signature

By signing this form, I affirm that I have read the information contained in the form, that the study has been explained to me, that my questions have been answered and that I agree to allow my child to take part in this study. I do not give up any of my legal rights by signing this form.

Child's Name (Printed)

Parent's Name (Printed)

Parent's Signature

Date signed

Statement by person obtaining consent

I certify that I have explained the research study to the person who has agreed to participate, and that he or she has been informed of the purpose, the procedures, the possible risks and potential benefits associated with participation in this study. Any questions raised have been answered to the participant's satisfaction.

Name of study personnel

Study personnel Signature

Date signed

MINOR'S ASSENT FORM

Title of Project: **PERCEPTIONS OF EXERCISE AMONG SCHOOL AGED CHILDREN WITH ASTHMA**

Your mother or father has said it's okay to interview you. We are trying to find out more about what kids with asthma have to say about exercise. The interview will take about an hour. If you feel tired or bored we can schedule two shorter interviews so we can answer all of the questions.

You do not have to be in this research study and you can stop at any time.

Do you have any questions? Is it OK?

Child's Name

Child's Signature

Date

Investigator's Signature

Date

APPENDIX C:
RECRUITMENT PHONE SCRIPT

RECRUITMENT PHONE SCRIPT

This script will be used by the PI to further explain the study when contacted by potential participants who are responding to the recruitment flyer.

Title of Project: Perceptions of Exercise among School Aged Children with Asthma

“You and your child are being invited to voluntarily participate in this study because your child has asthma. The purpose of this study is to describe perceptions of exercise among school aged children with asthma. The overall goal is to investigate the main factors involved with how your child perceives exercise. You and your child are eligible to participate because you have an 8-12 year old child with asthma.

If you agree to participate, you will be asked to complete a health history questionnaire focusing on general information related to your family, as well as questions about your own health and exercise habits. Your child will be asked to participate in an interview focusing on their perceptions of exercise. The interview will be completed at your home, by the study’s P.I., Michele R. Shaw, Registered Nurse and doctoral student. Your child’s interview will last approximately 30-60 minutes. If your child prefers, he or she may decide to have two shorter interviews to reduce boredom and/or fatigue to fully answer all of the interview questions. The interview will be audio-taped. The Principal Investigator will also be taking hand written notes of observations made related to your neighborhood and home environment. You and your child’s identifying information will be kept confidential.

The P.I. will gladly answer any questions you or your child may have. You and your child may withdraw from this study at any time. There are no anticipated risks involved from participating in the study. There are no direct benefits from participation. The only cost to you would be your time to participate.

Only the P.I. will have access to you and your child’s personal identifying information. The P.I. and her advisors will have access to the information provided by you and your child during this study. In order to keep you and your child’s information confidential, no identifying information will be revealed in any reports that result from this research study. All study information be kept in a locked cabinet in a safe and secure location.

Have all of your questions been answered? If you are still interested in participating I would like to mail you the consent forms for you to review prior to our first meeting. Can we schedule a meeting for the interview and completion of the health history questionnaire? What is a day/time that works best for you?

Please feel free to call me, Michele R. Shaw, the principal investigator with any further questions, etc. @ 509-951-7066. Thank you for your time.”

APPENDIX D:
RECRUITMENT FLYER

RESEARCH RECRUITMENT FLYER**DO YOU HAVE A CHILD**
AGED 8-12 WITH ASTHMA?

RESEARCH TITLE: “PERCEPTIONS OF EXERCISE AMONG SCHOOL AGED CHILDREN WITH ASTHMA”

PURPOSE: The purpose of this study is to investigate perceptions of exercise among school aged children with asthma.

WHO CAN PARTICIPATE: English speaking children ages 8-12 with asthma and their parents.

PARTICIPATION: Approximately 10 children and their parents are needed for this study. Your child will be interviewed in your home for approximately 1 hour. Parents will be asked to complete a short health survey.

BENEFITS: Information from this study may help other children with asthma.

RISKS: There are no anticipated risks involved with participating in the study.

COMPENSATION: Families will be compensated with a gift card after completion of the interview & questionnaire.

NURSE RESEARCHER: Call Michele Shaw, RN, MN, Doctoral Student, for more information:
509-951-7066 or mshaw@nursing.arizona.edu

APPENDIX E:
INITIAL INTERVIEW QUESTIONS

Initial Interview Questions

- I. First I will share some interesting things about myself. Then: Can you share with me some of your interests or things you like to do in your free time? What are your favorite subjects in school and what is your favorite food?
- II. General interview questions
 1. How do you feel about exercising with your asthma?
 - a. Can you share or tell me a story about how you feel and what happens when you are physically active?
 - b. What do you think about when you know you are going to be physical activity?
 - c. How about when you are actually doing it?
 - d. What does your body feel like to be physically active with asthma?
 - e. How about when you watch others exercise or be physically active, tell me about that.
 2. Share with me what you know and have learned about being physically active with asthma.
 - a. Tell me about the people in your life who have taught you things about being physically active?
 - b. What sorts of things have you learned from them? Please share some examples with me.
 - c. What about your parents? What have they taught you about participating in physical activity?
 - d. Are there any other sources or people you can think of that have helped you learn about physical activity? (Such as your parents, friends, teachers, coaches, doctors, etc?)
 - e. Can you share with me what you believe to be good about physical activity?
 - f. How about the negative or bad things about physical activity?
 - g. Is there anything else you would like to share with me?

APPENDIX F:

HEALTH HISTORY QUESTIONNAIRE

HEALTH HISTORY QUESTIONNAIRE

1. Parent Name_____
2. Age_____
3. Level of Education_____
4. Marital Status_____
5. Please list the age and sex of all of your children

6. Family Income
____ Less than \$20,000/year
____ \$20-30,000/year
____ \$30-40,000/year
____ \$40-50,000/year
____ \$50-60,000/year
____ Greater than 60,000/year
7. Name of Child with Asthma_____
8. Age of Child with Asthma _____
9. Severity of Asthma (Please ask for clarification if you are unsure)
____ Intermittent
____ Mild-Persistent
____ Moderate-Persistent
____ Severe-Persistent
10. Do any other children have asthma? _____
11. Please describe your own health

12. Can you describe your own personal exercise habits and beliefs?

13. How often and for how long do you exercise?

14. How do you feel about your child exercising with asthma?

15. Who do you feel has the biggest influence on your child's exercise choices?

16. Do you believe your child is encouraged to participate in physical activities? (if yes, please answer question #16)

____yes

____no

17. Do you and your child have easy access to facilities or programs where you both can be physically active?

18. What do you consider to be the greatest barriers involved with getting your child with asthma to exercise and be physically active?

19. Please discuss any other information you would like to share

REFERENCES

- American Lung Association. (2005). Asthma and children fact sheet. Retrieved January 4th, 2006 from: <http://www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=44352>
- Ayres, L. (2007). Qualitative research proposals: Rigor in data analysis. *Journal of Wound Ostomy Continence Nursing*, 34(5), 489-491.
- Bandura, A. (1997). Self-efficacy, the exercise of control. New York: W.H. Freeman and Company.
- Bandura, A. (1986). Social foundations of thought and action: a social cognitive theory. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1977). Social learning theory. Englewood Cliffs, NJ: Prentice Hall.
- Baranowski, T., Perry, C.L., & Parcel, G.S. (2002). How individuals, environments, and health behavior interact: Social cognitive theory. In K. Glanz, B.K. Rimer, & F.M. Lewis (Eds.), *Health behavior and health education: Theory, research, and practice* (3rd ed., pp. 165-184). San Francisco, CA: Jossey-Bass.
- Barrett, R. & Randle, J. (2008). Hand hygiene practices: nursing students' perceptions. *Journal of Clinical Nursing*, 17, 1851-1857.
- Barsalou, L.W. (2008). Cognitive and neural contributions to understanding the conceptual system. *Current Directions in Psychological Science*, 17(2), 91-95.
- Basaran, S., FuGuler-Uysal, F., Ergen, N., Seydaoglu, G., Bingol-Karakoc, G., & Altintas, D.U. (2006). Effects of physical exercise on quality of life, exercise capacity and pulmonary function in children with asthma. *Journal of Rehabilitation Medicine*, 38, 130-135.
- Benjamin, A. (2007). Perception, judgment and individuation: Towards metaphysics of particularity. *International Journal of Philosophical Studies*, 15(4), 481-500.
- Carper, B.A. (1978). Fundamental patterns of knowing in nursing. *Advances in Nursing Science*, 1(1), 13-23.
- Centers for Disease Control and Prevention. (2007). National Asthma Control Program: America Breathing Easier 2007. Retrieved February 19th, 2009 from http://www.cdc.gov/asthma/pdfs/breathing_easier_brochure.pdg

- Centers for Disease Control and Prevention. (2006). State of childhood asthma, United States: 1980-2005. Retrieved February 19th, 2009, from <http://www.cdc.gov/nchs/pressroom/06facts/asthma1980-2005.htm>
- Chadwick, S. (1996). The impact of asthma in an inner city general practice. *Child: Care, Health and Development*, 22(3), 175-186.
- Charmaz, K. (1990). Discovering chronic illness: using grounded theory. *Social Science Medicine*, 30(11), 1161-1172.
- Chian, L.C., Huang, J.L. & Fu, L.S. (2006). Physical activity and physical self-concept: comparison between children with and without asthma. *Journal of Advanced Nursing*, 54(6), 653-662.
- Chinn, P.L. & Kramer, M.K. (2004). Integrated knowledge development in nursing. Philadelphia, PA: Mosby
- Clayton, S. (2005). Pediatric asthma: overcoming barriers to an improved quality of life. *British Journal of Nursing*, 14(2), 80-85.
- Connors, P., Bednar, C. & Klammer, S. (2001). Cafeteria factors that influence milk-drinking behaviors of elementary school children: grounded theory approach. *Journal of Nutrition Education*, 33(1), 31-31.
- Corbin, J. & Strauss, A. (2008). Basics of qualitative research: techniques and procedures for developing grounded theory (3rd ed.). Thousand Oaks, CA: Sage Publications
- Crotty, M. (2003). The foundations of social research. Thousand Oaks, CA: Sage Publications
- Dilworth, J. (2005). The twofold orientational structure of perception. *Philosophical Psychology*, 18(2), 187-203.
- Docherty, S. & Sandelowski. (1999). Focus on qualitative methods: Interviewing Children. *Research in Nursing & Health*, 22, 177-185.
- Doring, S.A. (2007). Seeing what to do: Affective perception and rational motivation. *Dialectica*, 363-394.
- Dzewaltowski, D., Ryan, G. & Rosenkranz. (2008). Parental bonding may moderate the relationship between parent physical activity and youth physical activity after school. *Psychology of Sport and Exercise*, 9, 848-854.

- Elder, J.P., Ayala, G., Zabinski, M., Prochaska, J. & Gehrman, C. (2001). Theories, models, and methods of health promotion in rural settings. *Handbook of Rural Health*, 295-314.
- Engstrom, I., Fallstrom, K., Karlberg, E., Sten, G. & Bjure, J. (1991). Psychological and respiratory physiological effects of a physical exercise programme on boys with severe asthma. *Acta Paediatr Scand*, 80, 1058-1065.
- Fereday, J., MacDougall, C., Spizzo, M., Darbyshire, P. & Schiller, W. (2009). "There's nothing I can't do-I just put my mind to anything and I can do it": a qualitative analysis of how children with chronic disease and their parents account for and manage physical activity. *BioMed Central Pediatrics*, 9(1), 1-16.
- Flensner, G., Ek, A., Landtblom, A. & Soderhamn, O. (2007). Fatigue in relation to perceived health: people with multiple sclerosis compared with people in the general population. *Scandinavian Journal of Caring Science*, 22, 391-400.
- Frey, M. (1996). Behavioral correlates of health and illness in youths with chronic illness. *Applied Nursing Research*, 9(4), 167-176.
- Gail, Gaughan, J., Cross, R., Kashem, A., Petersen, S. & Bove, A. (2008). Cardiovascular disease knowledge and risk perception among underserved individuals at increased risk of cardiovascular disease. *Journal of Cardiovascular Nursing*, 23(4), 332-347.
- Gillison, F., Standage, M. & Skevington, S.M. (2006). Relationships among adolescents' weight perceptions, exercise goals, exercise motivation, quality of life and leisure-time exercise behavior: a self-determination theory approach. *Health Education Research*, 21(6), 836-847.
- Givner, D.A. (1992). The experience of perception and its physical basis as views of the relation between perceiver and world perceived. *Ecological Psychology*, 4(2), 97-120.
- Glaser, B. & Strauss, A. (1967). The discovery of grounded theory. Chicago: Aldine
- Green, M. (1989). *Theories of human development: A comparative approach*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Irwin, L. & Johnson, J. (2005). Interviewing young children: Explicating our practices and dilemmas. *Qualitative Health Research*, 15, 821-831.

- Keats, M.R., Culos-Reed, N., Courneya, K.S. & McBride, M. (2007). Understanding physical activity in adolescent cancer survivors: An application of the theory of planned behavior. *Psycho-Oncology*, 16, 448-457.
- Kieckhefer, G.M. (1988). The meaning of health to 9, 10, and 11-year old children with chronic asthma. *Journal of Asthma*, 25(6), 325-333.
- Kinter, E. K. (2004). Lack of relationship between acceptance and knowledge of asthma in school aged children and early adolescents. *Journal for Specialists in Pediatric Nursing*, 9(1), 5-14.
- Kiviniemi, M.T., Voss-Humke, A.M. & Seifert, A.L. (2007). How do I feel about the behavior? The interplay of affective associations with behaviors and cognitive beliefs as influences on physical activity behavior. *Health Psychology*, 26(2), 152-158.
- Kortesluoma, R., Hentinen, M. & Nikkonen, M. (2003). Conducting a qualitative child interview: methodological considerations. *Journal of Advanced Nursing*, 42(5), 434-441.
- Lang, D. M., Butz, A. M., Duggan, A. K., & Serwint, J. R. (2004). Physical activity in urban school aged children with asthma. *Pediatrics*, 113(4), 902-904.
- Lau, P., Lee, A. & Ransdell, L. (2007). Parenting style and cultural influences on overweight children's attraction to physical activity. *Obesity*, 15(9), 2293-2302.
- Lucas, S. R., & Platts-Mills, T. A. E. (2005). Physical activity and exercise in asthma: relevance to etiology and treatment. *Journal of Allergy Clinical Immunology*, 115(5), 928-934.
- Luszczynska, A. & Tryburcy, M. (2008). Effects of a self-efficacy intervention on exercise: the moderating role of diabetes and cardiovascular diseases. *Applied Psychology*, 57(4), 644-659.
- Mancuso, C.A., Sayles, W., Rovvins, L., Phillips, E.G., Ravenell, K., Duffy, C., Wenderoth, S. & Charlson, M.E. (2006). Barriers and facilitators to healthy physical activity in asthma patients. *Journal of Asthma*, 43, 137-143.
- Mansour, M. E., Lanphear, B. P., DeWitt, T. G. (2000). Barriers to asthma care in urban children: parent perspectives. *Pediatrics*, 106(3), 512-519.
- McCann, D., McWhirter, J., Coleman, H., Devall, I., Calvce, M. (2002). The prevalence and management of asthma in primary-aged school children in the south of England. *Health Education Research*, 17(2), 181-194.

- McConnell, R., Berhane, K., Gilliland, F., & London, S. (2002). Asthma in exercising children exposed to ozone: a cohort study. *The Lancet*, 359(9304), 386-392.
- Meyer, R., Kroner-Herwig, B. & Sporkel, H. (1990). The effect of exercise and induced expectations on visceral perception in asthmatic patients. *Journal of Psychosomatic Research*, 34(4), 455-460.
- Morse, J.M. & Field, P.A. (1996). *Nursing Research: The application of qualitative approaches* (2nd ed.). Cheltenham, United Kingdom: Nelson Thornes Ltd.
- Munhall, P.L. (2007). *Nursing research: A qualitative perspective* (4th ed.). Sudbury, MA: Jones and Bartlett.
- National Heart, Lung, and Blood Institute. *Guidelines for the Diagnosis and Management of Asthma (EPR-3). Full Report* October 2007. Retrieved, February 10th, 2008, from www.nhlbi.nih.gov/guidelines/asthma/.
- Ohm, R. & Aaronson, L. (2006). Symptom perception and adherence to asthma controller medications. *Journal of Nursing Scholarship*. 38(3), 292-297.
- Onwuegbuzie, A.J. & Leech, N.L. (2007). Validity and qualitative research: an oxymoron? *Quality and Quantity*, 41, 233-249.
- Panditi, S. & Silverman, M. (2003). Perception of exercise induced asthma by children and their parents. *Archives of Disease in Children*, 88, 807-811.
- Pastva, A., & Schwiebert, L. (2003). Exercise your asthma. *Cardiopulmonary Physical Therapy Journal*, 14(4), 22.
- Piaget, J. & Inhelder, B. (1969). *The psychology of the child*. New York, NY: Basic Books.
- Pianosi, P.T. & Davis, H.S. (2004). Determinants of physical fitness in children with asthma. *Pediatrics*, 113(3), 225-229.
- Pontious, S. (1982). Practical piaget: helping children understand. *American Journal of Nursing*, 82(1), 114-117.
- Raftopoulos, A. (2001). Is perception informationally encapsulated? The issue of the theory-ladenness of perception. *Cognitive Science: A Multidisciplinary Journal*, 25(3), 423-451.

- Reed, P. Pam's Notes. (2006). Nursing 705, Metatheory. Retrieved from University of Arizona's D2L @ www.nursing.arizona.edu
- Reed, P., Shearer, N.C., & Nicoll, L.H. (2004). Perspectives on Nursing Theory. Lippincott-Raven Publishers, Philadelphia, PA
- Rietveld, S. & Prins, P.J.M. (1998). The relationship between negative emotions and acute subjective and objective symptoms of childhood asthma. *Psychological Medicine*, 28, 407-415.
- Rodgers, B.L. (2005). Developing nursing knowledge. Philadelphia PA: Lippincott
- Rydstrom, I., Englund, A.D. & Sandman, P. (1999). Being a child with asthma. *Pediatric Nursing*, 25(6), 589-601.
- Sandelowski, M. (2000). Focus on research methods: Whatever happened to qualitative description? *Research in Nursing & Health*, 23, 334-340.
- Sandelowski, M. (1998). The call to experts in qualitative research. *Research in Nursing and Health*, 21, 467-471.
- Shanahan, M. (2005). Perception as abduction: Turning sensor data into meaningful representation. *Cognitive Science: A Multidisciplinary Journal*, 29(1), 103-134.
- Shields, C.A., Spink, K.S., Chad, K., Muhajarine, N., Humbert, L. & Odnokon, P. (2008). Youth and adolescent physical activity lapseders: examining self-efficacy as a mediator of the relationship between family social influence and physical activity. *Journal of Health Psychology*, 13, 121-130.
- Speziale, H.J. & Carpenter, D.R. (2003). *Qualitative research in nursing: Advancing the humanistic imperative* (3rd ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Taras, H., Wright, S., Brennan, J., Campana, J., & Lofgren, R. (2004). Impact of school nurse case management on students with asthma. *The Journal of School Health*, 74(6), 213-220.
- Thies, K. & Tracers, J. (2001). *Growth and development through the lifespan*. Thorafare, NJ: Slack Incorporated.
- Veldhoven, N., Vermeer, A., Bogaard, J.M., Hessels, M., Wijnroks, L., Colland, V.T. & Van, E. (2001). Children with asthma and physical exercise: effects of an exercise programme. *Clinical Rehabilitation*, 15, 360-370.

- Walker, L. & Avant, K. (2005). *Strategies for theory construction in nursing* (4th ed.) Upper Saddle River, NJ: Pearson Prentice Hall.
- Weir, A. (2004). An ultra-realist theory of perception. *International Journal of Philosophical Studies*, 12(2), 105-128.
- Weis, K.B., Sullivan, S.D., Lytle, C.S. (2000). Trends in the cost of illness for asthma in the United States, 1985-1994. *Journal of Allergy Clinical Immunology*, 106, 493-499.
- Welk, G.J., Corbin, C.B., Dowell, M.N. & Harris, H. (1997). The validity and reliability of two different versions of the children and youth physical self-perception profile. *Measurement in Physical Education and Exercise Science*, 1(3), 163-177.
- Welsh, L., Kemp, J.G. & Roberts, R. (2005). Effects of physical conditioning on children and adolescents with asthma. *Sports Medicine*, 35(2), 127-141.
- Williams, B., Powell, A., Hoskins, G. & Neville, R. (2008). Exploring and explaining low participation in physical activity among children and young people with asthma: a review. *BMC Family Practice*, 9, 40-51.
- Wirrell, E., Cheung, C. & Spier, S. (2006). How do teens view the physical and social Impact of asthma compared to other chronic diseases? *Journal of Asthma*, 43, 155-160.
- Yawn, B.P., Wollan, P., Kurland, M. & Bertram, S. (2006). Comparison of parent and student responses to asthma surveys: Students grades 3-12 and their parents from a suburban private school setting. *Journal of School Health*, 76(6), 241- 245.