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### Medical and Parental Predictors of Self-Efficacy in Pediatric Chronic Illness

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LOMA LINDA UNIVERSITY  
School of Behavioral Health  
in conjunction with the  
Department of Psychology

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Medical and Parental Predictors of Self-Efficacy in Pediatric Chronic Illness

by

Naina Mahtani

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A Project submitted in partial satisfaction of  
the requirements for the degree  
Doctor of Psychology

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September 2020

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Each person whose signature appears below certifies that this doctoral project in his/her opinion is adequate, in scope and quality, as a doctoral project for the degree Doctor of Psychology.

\_\_\_\_\_, Chairperson  
Adam L. Arechiga, Associate Professor of Psychology

\_\_\_\_\_  
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## ABSTRACT OF THE DOCTORAL PROJECT

Medical and Parental Predictors of Self-Efficacy in Pediatric Chronic Illness

by

Naina Mahtani

Doctor of Psychology, Graduate Program in Psychology

Loma Linda University, September 2020

Dr. Adam Arechiga, Chairperson

Self-efficacy, defined as the belief in one's ability to succeed, is particularly important in youth struggling with chronic illness (CI) given its association with poorer adherence and worse prognosis. Parental factors such as income and marital status, and youth factors such as number of hospitalizations have been examined as contributing to self-efficacy in children. The aim of the current study was to assess the extent to which these variables predict self-efficacy in a sample of youth 8-17 suffering from CI. Data were collected from 217 families with a child with a CI aged 8-17, being seen by a medical provider within the Loma Linda University Health System. Parent participants provided demographic information, while youth participants completed a depression self-report measure and the Pediatric Rating of Chronic Illness Self-Efficacy (PRCISE), a validated 15-item self-report measure for self-efficacy in pediatric CI. A CI was defined as a physical or mental health condition that has lasted or is expected to last at least six months, and interferes with daily activities. The optimal linear combination of parental income, parental marital status, and number of hospitalizations accounted for 10% of the variance in PRCISE total scores,  $F(3, 153) = 6.87, p < .001$ . Having parents that earned less than \$25,000 ( $b = -16.3, = -.23, 95\% \text{ CI } [-27.76, -4.84], sr^2 = .05, p < .05$ ), and having a single parent ( $b = -15.9, = -.2, 95\% \text{ CI } [-28.53, -3.35], sr^2 = .04, p < .05$ )

predicted lower self-efficacy. Number of hospitalizations did not significantly predict self-efficacy scores ( $r^2 = .0$ ,  $p > .05$ ). Youth with parents who had a low income, as well as those from single parent households exhibited lower self-efficacy. This study is unique in finding that parental socioeconomic factors and family structure may impact patient-level self-efficacy. Future research should explore whether additional family variables and health prognosis impact the relationship between chronic illness and self-efficacy in pediatric populations.

# CHAPTER ONE

## LITERATURE REVIEW

### **Self-Efficacy Defined**

Self-efficacy is defined as the belief in one's ability to succeed in various facets of life. Bandura describes self-efficacy as an aspect influencing health behaviors through its' influence on goals, goal setting and outcomes (Bandura, 2004). Self-efficacy specifically has a role in directly influencing health outcomes through the effects of effort and perceived facilitators of success. Therefore, self-efficacy is crucial in understanding health behaviors and the influence of self-efficacy in an overall disease model. Self-efficacy plays an overall impact in moderating and mediating health behavior change. Self-efficacy within health behavior change provides individuals with a sense of accountability and control in their health, thus influence health behavior changes. Bandura's proposed model of self-efficacy has been highly regarded and considered in several aspects of health behavior.

### ***Psychological Processes of Self-Efficacy***

Self-efficacy beliefs generally work through four psychological processes influence performance, including the following: cognitive processes, motivational processes, affective processes, and selection processes (Tsang, et. al, 2012). These processes are explained further.

## **Cognitive Processes**

Cognitive processes is defined in a general sense as one's own self-appraisal of skills, resources and capabilities. Individual goal setting and belief of one's perceived success is influenced by cognitive process of self-appraisal. Therefore, individuals who have a higher sense of self-efficacy may believe in greater outcomes of success and are likely to perform in accordance with a higher sense of achievement. Individuals with a lower sense of self-efficacy can therefore be considered to engage in more irrational, detrimental thought, setting lower aspirational goals and therefore, lowering overall performance accomplishments. Deducting from this reasoning, a resistant, resilient sense of self-efficacy is vital in greater performance and accomplishment, as well as robust and effective goal setting. Through a three stage process, individuals who possess an internal locus of control and higher self-efficacy are likely to attributed to higher motivation and self-esteem when compared with the contrast.

## **Motivational Processes**

Motivation is primarily driven by cognition, such that, individual motivation is formed through beliefs of individual ability. Self-efficacy, therefore, affects individuals' motivation in general and self-regulation of behaviors. Motivators can be broadly defines as, attributors based upon attribution-value theory, value of expected outcomes based upon expectancy-value theory, and clarity and value of goals based upon goal theory (Tsang, et. al, 2011). Attribution theory posits that individual attribution influences motivation and is influenced through self-efficacy. Expectancy-value theory posits that behaviors and choices are motivated through individual expectations for success along

with value. The theory states that individuals who value and expect to succeed at tasks are more likely to engage in that task. Goal theory posits that individuals with higher self-efficacy are likely to set more specific, challenging goals that ultimately lead to a higher rate of successful performance.

### **Affective Processes**

Affective processes as it affects self-efficacy, is the belief in one's abilities to cope or exercise control within emotional contexts. Coping efficacy, a cluster of self-efficacy, is naturally, the perceived ability to cope and exercise control over emotionally salient or disturbing thoughts. As such, individuals with lower perceived coping efficacy have less motivation in taking on tasks that may be emotionally strenuous or involving themselves in emotionally strenuous activities/experiences.

### **Selection Processes**

Selection processes simply state that self-efficacy influences choice individuals make may based upon self-appraisal of knowledge, control, perceived success and ability to cope. Therefore, broadly speaking, higher self-efficacy leads to a greater range of opportunities based upon a greater perceived ability to regulate control and achieve success.

### ***Sources of Self-Efficacy***

Self-efficacy, is developed through four sources as defined by Bandura, which include the following: performance accomplishments, vicarious experience, verbal

persuasion, and physiological state (Strecher et. al, 1986). These sources are explained further.

### **Performance Accomplishments**

Performance accomplishments is defined as a mastery of skills leading to an increase in self-efficacy. For example, an individual who learns skills required for completing a task may experience a rise in self-efficacy based on the level of competency and achievement in being able to complete the task. With regard to performance accomplishments, Lane, et. al notes that performance accomplishments can be influenced by individuals' perceived success, which consequently influences efficacy (Lane, et. al, 2004). As Bandura notes in his model of self-efficacy, perceived success is more likely to influence self-efficacy when the success can be attributed to internal rather than external forces; examples of internal forces include one's perception of their ability or level of effort rather than external factors such as chance.

### **Vicarious Experience**

Vicarious experience constitutes the second source of self-efficacy. Vicarious experience refers to the idea that learning occurs through modeling and observation. Individuals may learn or develop opinions or feelings about concepts through the observation. An individual who is determined to lose weight may observe a friend who has achieved their goal weight, which may consequently improve self-efficacy in the individual with a desire to lose weight. She may believe that if her friend can achieve this goal, then the goal may be attainable to her as well.

A study examining the appropriateness of Bandura's four source model in a population of intellectual disabilities self-managing comorbid diabetes found that some individuals benefit in an enhancement in self-efficacy through vicarious experience. The study aimed to examine the experiences of such individuals through the lens of Bandura's Four sources of self-efficacy model. The study found that this population of individuals in particular posed a difficulty in providing an appropriated social modeling opportunity, however, when the opportunity is present, individuals found it helpful to learn from others.

The study also suggests that while vicarious experiences from similar individuals may play a role in enhancing self-efficacy, social modeling provided by caregivers and "higher value" people may be particularly helpful in individuals with an intellectual disability (Maine et al., 2017). While this study examined individuals with intellectual disabilities in particular, the same notion or concept may very well be translated in individuals with other health related needs or concerns.

### **Verbal Persuasion**

The third source is known as verbal persuasion. This is simply described as the act of inducing change through motivational talk. This may include assessing one's motivation to change, assessing factors that influence resistance, and inducing positive factors contributing to motivation. Verbal persuasion differs with regard to specific verbal messages; for example, evidently positive rather than negative verbal talk is helpful in increasing self-efficacy. Similarly, a study examining the effects of verbal persuasion type on self-efficacy in a populations of adolescents who are depressed found

that verbal persuasion focusing on ability rather than effort is more strongly associated with higher self-efficacy (Kablach, 1997). This concept aligns with performance accomplishments, implying that addressing one's abilities rather than external factors even with regard to motivational talk may play a tremendous role in influencing overall self-efficacy.

In another aspect, self-efficacy through verbal persuasion can also be affected by gender. To clarify this point, researchers examined the effects of verbal persuasion as it affects self-efficacy in a population of union workers in attempt to highlight gender disparities. The study found that workers who received verbal persuasion from an individual of the same gender had higher rates of self-efficacy, with women having higher overall rates of self-efficacy compared to men (Mellor, et. al, 2006). While specific gender differences may be exclusive within the population of the research conducted, the article highlights that verbal persuasion may be better received and play a stronger impact in self-efficacy when delivered from an individual of the same gender.

### **Physiological State**

The fourth, and final source is known as physiological state. This refers to one's physiological state during a time of performance. Physiological state may be measured through heart rate variability or level of arousal as such. Through determining physiological state, individuals can similarly interpret the arousal as a measure of their interpretation of a situation. As such, individuals who experience high levels of physiological arousal may experience or interpret the arousal with having lower or higher self-efficacy. To highlight this concept, research examine athlete's (shooters)

physiological state prior to performance through the measure of heart rate variability. Heart rate variability is an accurate predictor of the flexibility of the autonomic nervous system, hence serving as an indicator of an individual's emotional responses. The study found that heart rate variability was positively correlated with self-efficacy, where advanced shooters were seen to have lower heart rate prior to their performance compared to more beginner level athletes (Ortega and Wang, 2018).

Advanced level athletes were also found to use techniques such as relaxation and self-talk, potentially contributed to lower arousal states. Through regulation of physiological state, individual's may then consequently affect their overall self-efficacy, such that decreasing high levels of physiological arousal may increase self-efficacy. The perception of the increased heart rate variability can influence individuals' self-efficacy, such that individuals may perceive this increase as stress related to a particular situation or attribute it more negatively versus positively. When interpreted negatively, individuals may then perceive their own abilities in a more negative light, which may consequently impact overall performance or perception. Therefore, this is an important factor to consider, when considering health behavior change, considering that an individual's interpretation of their physiological state may influence their self-efficacy.

Bandura also argues that self-efficacy plays an impact on influencing behavior through four separate processes, which include cognitive processes, emotional/affective processes, motivational processes, and selection processes (Bandura, 1993). Self-efficacy influences cognitive processes such that the way in which an individual views the world, and the cognitive beliefs they develop of situations influence their self-efficacy which then influence behavior (Riggio, 2012). In terms of motivational processes, individuals

who show a higher perceived self-efficacy are more likely to possess a higher motivation in completing tasks or pursuing goals. In terms of emotional/affective processes, our experiences of emotional responses to situations or tasks serve to either improve or lower our self-efficacy. For example, individuals who respond to failure in a maladaptive way, such as feeling apprehensive about engaging in a similar task in the future, may experience a lower perceived self-efficacy as compared to an individual who experiences success.

Finally, self-efficacy affects selection processes in that individuals may select goals or activities based on their self-efficacy. Individuals who have a higher perceived self-efficacy may seek out more challenging tasks, whereas those with lower perceived self-efficacy are likely to seek out less challenging tasks (Riggio, 2012). These processes are important to consider in understanding the effects of self-efficacy on influencing behaviors, as well as the effects of behaviors on influencing self-efficacy.

### ***Self-Efficacy in School and Performance***

While Bandura's research in self-efficacy has been primarily regarded, researchers have built upon his work, primarily in the realm of education. These concepts however, can be easily applied to various concepts such as health and health behaviors. With regards to self-efficacy, individuals who had higher levels of self-efficacy were more willing and eager to take on more challenging tasks as compared to individuals who had lower levels of self-efficacy. Schunk and Bandura found that in mathematical tasks, students' self-efficacy beliefs of math were predictive of their choice of participation in mathematical problems, such that students who had higher self-efficacy had a higher

tendency to choose to engage in mathematical problem than in a different type of task (Bandura and Schunk, 1981).

Pajares examined similar concepts of self-efficacy, specifically looking at self-efficacy judgements and problem solving in middle school students. Pajares found that girls showed lower confidence when performance scores did and did not warrant it, suggesting that there may be other factors influencing self-efficacy in this population of girls (Pajares, 1996). Zimmerman, whose work primarily examines aspects of achievement within self-efficacy found that higher self-efficacy and goal setting were associated in an increase in predicting final grades in a sample of college students in a writing course (Zimmerman and Bandura, 1994).

In a general sense, self-efficacy can influence a multitude of factors even beyond health behaviors, such as work performance, and job motivation. In meta-analysis study examining the relationship between self-efficacy and its effects on employee motivation and work performance was evaluated (Cherian and Jacob, 2013). The study found that positive or higher levels of self-efficacy is associated with higher work performance. While self-efficacy is an important mediator in terms of health behaviors and health status, it evidently plays an impact on overall work status, asserting the impact that self-efficacy plays within overall performance. In another study examining the contribution of self-efficacy upon work performance, researchers found that self-efficacy was found to be a predictor of work performance only when the task was low in complexity.

Researchers also found that self-efficacy predicted task performance but not overall job performance, suggesting that individual differences such as personality factors may play a mediating role in this relationship (Judge, et. al., 2007). With regard to self-

efficacy, this implies that self-efficacy in correlation with personality factors may play an overall role in performance. With regard to generalizing such a statement, aspects other than work performance may be affected by an individual's sense of self-efficacy in conjunction with personality factors, such as Big Five traits. The study's findings illustrate this idea, explaining that when moderator variables are taken into account, such as Big 5 traits, the predictive validity of self-efficacy alone reduces, implying that individual differences should be heavily considered with regard to performance.

### ***Self-Efficacy and Health***

Self-efficacy can influence health behaviors in various ways. Specifically, it can help mediate, moderate, or predict health behavior change (Schwarzer, 2008). Studies have shown that individuals with higher perceived self-efficacy are likely to optimize available treatment through engagement in preventive care measures, and seek out early treatment opportunities (Gecas, 1989). Bandura explains that individuals with lower perceived self-efficacy are less likely to maintain health behaviors such as routinely exercising, as well as less likely to stop negative behaviors such as smoking or drug use (Bandura, 1992).

A study exploring the relationship between self-efficacy and physical activity for adults with visual impairments found that self-efficacy toward physical activity was significantly related to physical activity (Haegle, et. al., 2016). Individuals who engaged in physical activity had greater self-efficacy about physical activity in general, despite their visual impairments. This is suggestive of the idea that individuals with a medical disability can be significantly impacted through their self-efficacy beliefs, emphasizing

the importance of health behavior, and interventions aiming at addressing health behaviors.

Another article exploring the relationship between self-efficacy and health related quality of life found through a meta-analysis that a higher level of self-efficacy was associated with an overall higher health-related quality of life among individuals with a cardiovascular disease (Banik, et. al, 2018). To elaborate further, the analysis found that exercise self-efficacy in specific had the strongest association with quality of life, highlighting the idea that individuals' ability with regard to exercise plays a vital role in the context of illness and disease. It also helps highlight the idea of the importance that therapies within a rehabilitation setting can make. Individuals who rate their quality of life higher may in turn feel more confident in their abilities to succeed in rehabilitation therapies or exercise in general. Through addressing quality of life factors, self-efficacy factors may also be influenced.

Within a chronic illness sample, specifically a sample of individuals with morbid obesity and chronic obstructive pulmonary diseases (COPD), researchers examined factors such as social support, physical activity, and illness perception with regard to self-efficacy (Bonsaksen et. al, 2012). Results found that high negative emotional arousal was correlated with low self-efficacy in an obesity sample, and that high physical activity and lower emotional response to illness were correlated to higher self-efficacy. With regard to individuals with COPD, the research showed that more social support, fewer perceived consequences from their illness, and a more clear understanding of the illness were correlated with higher self-efficacy. As the research suggests, self-efficacy can be influenced by different factors among different disease types, however, support whether

emotional or social are highly prevalent with regard to self-efficacy within a healthcare population. In addition, adaptive coping strategies and physical stimulation may also play a significant role and may be considered.

In addition to research done by Bandura, researchers have also examined self-efficacy expectations in relation to health behavior outcome expectations. From this research, it has been found that adults who have higher self-efficacy expectations were more likely to carry out positive health behaviors and in turn were likely to have fewer physician visits, lower depression ratings, and higher ratings of health as noted by self-report measures (Grembowski et. al, 1993). As noted, self-efficacy evidently plays a vital role within health care, and specifically management of health care, confirming the importance of the construct within an illness population.

In regards to body image, physical activity seems to influence self-efficacy, and therefore affects body attractiveness, strength, and physical condition (McAuley et al., 2005). As increases in self-efficacy were noted, an increase in physical self-worth through physical activity was also seen. As seen through previous supporting research, the impact of self-efficacy on health behaviors and overall health is evident and quite significant.

Specific health related behaviors are also shown to be influenced by self-efficacy. For example, in regards to oral care, self-efficacy and self-monitoring play a role in mediating flossing behaviors. The study led a self-regulatory intervention, of which self-efficacy was introduced, and found that after a ten-minute intervention, self-efficacy in regards to flossing was noted, and as a result, an increase in the amount of dental flossing in the sample was noted (Schwarzer et al., 2015). This further proves the point that self-

efficacy based interventions, and the construct of self-efficacy in general play a role in mediating health behaviors.

Health behavior change can have an impact on self-efficacy. When introducing health coaching in the context of obesity and weight management, research found that weight management self-efficacy increased (Valentin, 2020). A 8-week health coaching intervention was introduced to obese individuals in Puerto Rico. Following the intervention, individuals exhibited higher overall weight-management self-efficacy, meaning these individuals felt more confident in their ability to manage and control their obesity through health related behavior changes. This is especially important in the context of health, because it highlights the point that health behavior change has a lasting impact on self-efficacy. By inducing behavior change, individuals may rightly increase their self-efficacy, which can then consequently impact their overall health. In the context of this study, individuals who found an increase in the weight management self-efficacy felt confidence in their ability to manage their obesity, thus creating a positive impact on their overall health. This is an important concept to consider especially because clinicians may work on health behavior change as a means of improving self-efficacy and improving overall health among individuals with health related concerns.

Self-efficacy can have a lasting impact upon well-being and especially in the context of suicidality. In one study, researchers examined the effect of health-related self-efficacy on lifetime suicidal thoughts and attempts. The study found that lower levels of health-related self-efficacy were more closely associated with suicidality (Isaac, et al., 2018). To highlight this point in a deeper sense, the study explains that individuals who have lower health-self efficacy which was defined as poor self-reported mental health and

physical health was correlated with suicidality which was defined as behaviors such as attempting suicide or future suicide intent. Moreover, the results of the research highlighted the point that women, individuals with lower education, and individuals living alone or separated, and with a history of psychiatric or substance use disorders were associated with suicidality. This study emphasizes the idea that self-efficacy is especially important with regards to mental and physical health and overall well-being. The influence of self-efficacy on health and vice versa highlight the importance of this factor itself within health. Individuals with higher self-efficacy may very well have stronger outcomes with regard to physical and mental health. This idea is especially important in understanding the importance of self-efficacy, and its relevance within a health context, and becomes even more important when examining a youth population of individuals.

In regards to physical health, self-efficacy is addressed through the health belief model. This model states that adherence is influenced by four factors: interest, perception of susceptibility, perception of severity, and consideration of advantages and disadvantages (Becker, 1974). Level of interest refers to the level of interest one has in their own health or health condition. Perception of susceptibility refers to an individual's belief of how vulnerable they may be in terms of getting an illness or recovering from an illness. Perception of severity refers to an individual's perception of the severity of the illness and the consequences associated with the severity. Finally, consideration refers to the considerations of the advantages and disadvantages of engagement in adherence type behaviors or prevention behaviors. Through intervention, and providing knowledge on the illness type, beliefs and overall efficacy in relation to the health condition is increased

(Noble, 1998). In addition, through a discussion of what the patient believes about his or her condition, information can be provided more accurately to help improve overall beliefs and adherence (Noble, 1998).

Additional models of health behavior change incorporate self-efficacy in various ways. Of these, include the Social Learning (Cognitive) Theory. This theory utilizes self-efficacy as a mediator between one's cognitions and behaviors, emphasizing an individual's external and internal social reinforcement (Elder et al., 1999). Developed by Albert Bandura, this theory explains that a person's past experiences can influence future behavioral action. Past experiences include factors such as reinforcements, individual and others' expectations, and outcome expectancies. These factors then influence an individual's likeliness of engaging in behavior and can provide reasoning for engagement or disengagement from behavior. Social Cognitive Theory includes five constructs, including reciprocal determinism, behavioral capability (individual's actual ability to perform behavior through knowledge and skill), observational learning (performing behavior through modeling of behavior by others), reinforcements (internal or external responses to behavior influencing continuation or discontinuation of behavior), expectations (anticipated outcomes of behavior) and self-efficacy (individual perceived confidence in their ability to perform a behavior). Self-efficacy in the context of this theory is highly influenced by the aforementioned factors included perceived barriers and enablers. Therefore, social context becomes vital within this theory in informing self-efficacy, providing general insight with regard to patient interaction. Through positive modeling, and previous positive attempts at managing chronic conditions, it may be assumed that individuals are likely to possess higher self-efficacy; the opposite however,

will be a point to address in clinical aspects of intervention.

Another commonly regarded model of health behavior change is Prochaska and DiClemente's Transtheoretical Model of Change. This model posits that individuals move through several stages of change based upon readiness for change; stages include: precontemplation (benefits of behavioral changes are not considered), contemplation (behaviors changes are being considered, however the individual has not begun to act), preparation (individual expresses readiness for behavior change and preparing to act), action (making steps toward behavior change) and maintenance (maintaining behavior change over time while effectively problem-solving barriers and challenges). In every aspect of this model, individuals' self-efficacy is highly regarded and motivational skills are utilized in assisting individuals toward an increased perceived confidence and ability model (Elder et al., 1999). Within this model, self-efficacy is noted to be particularly higher within the action and maintenance stages, suggesting that motivation is vital in maintaining self-efficacy (Ounpuu et al., 1999).

As previously mentioned, self-efficacy plays a significant role in moderating health behaviors and in influencing overall health status. It is a significant factor to examine when examining individuals who may have a chronic illness, as chronic illnesses require significant amounts of self-management, self-monitoring, self-medication in many cases, and behavioral change, including, but not limited to dietary changes, exercise regimens and medication adherence. As health behaviors are moderated through self-efficacy, it becomes an important factor in understanding why some individuals may adhere to certain medication or treatment regimens, and why others may not. Through interventions aimed at improving self-efficacy, individuals may in turn be

able to modify and improve health behaviors, ultimately leading to an improvement in overall health status. In practice, several studies have been conducted to illustrate such interventions and their effectiveness. In one study, the effectiveness of a lifetime wellness course in changing self-efficacy and wellness behavior in college students was examined. The study found that interventions such as education including weekly lectures providing information on physical fitness and development of a fitness program, and lab projects encouraging students to analyze their nutritional intake, increased physical and exercise self-efficacy and exercise behavior (Lockwood and Wohl, 2012).

In another study, researchers evaluated an intervention aimed at increasing self-efficacy for individual exercise in a cardiac rehabilitation population. The study found that through a self-efficacy coaching intervention led to overall increased exercise self-efficacy, and an increase in independent exercise minutes over the course of a week from 44.17 minutes to 95.50 minutes per week (Barkley and Fahrenwald, 2013). Another study aimed to determine the efficacy of a brief, behavioral intervention to increase physical activity levels in older adults with type 2 diabetes. The intervention included an eight week long regimen including on-site walking, group workshops, independent aerobic exercise, and home workout logs. Each session incorporated goal-setting, problem-solving strategies and confidence building strategies. The study found partially supported data, nothing increased self-efficacy and exercise behavior in the first two months of the intervention, and a drop by the sixth month. The study also found that overall, exercise behavior improved when compared with a control (Olson and McAuley, 2015). This highlights in particular, the importance of continued self-efficacy especially within a chronic illness population.

Through the conducted research work, it becomes clear that interventions improving self-efficacy play a likely significant role in health-behavior change and overall health within various populations. Therefore, examining self-efficacy within a health behavior model and particularly within a chronic illness population is crucial in determining appropriate gaps in intervention and developing interventions aimed at filling these potential gaps.

### *Self-Efficacy in Children and Adolescents*

The development of self-efficacy begins early in an individual's lifespan, as early as infancy (Schunk and Pajares, 2005). While many factors of childhood are influenced through social environments, self-efficacy is initially developed through parental roles and factors. Schunk and Pajares discussed that parental factors play a role in developing self-efficacy within children, such that, parental attenuation and responsiveness foster positive self-efficacy (Schunk and Pajares, 2005). Specifically, parents who are responsive and warm enforce and foster positive cognitive development in children. Modeling is another method by which parental factors play an influence on self-efficacy. Parents who model high levels of self-efficacy, and show confidence and an ability to face and overcome challenges, influence children's own self-efficacy (Schunk and Pajares, 2005).

As children continue to develop, peer influences may also shape their self-efficacy. Several factors contribute to the development of self-efficacy in school-aged children, and may contribute to a growth or decline of self-efficacy, which include the following: peer network, school involvement, and transitions within the natural school

environment (Schunk and Pajares, 2005). Peer network groups can highly impact self-efficacy development, such that, the group of friends and individual connects with may either serve to improve their self-efficacy, or worsen their self-efficacy. Individuals who are influenced through a peer network of high-achieving friends versus a peer network of low-achieving friends are likely to appraise their own sense of achievement accordingly.

Children's beliefs of whether they "fit in" within a school environment, or within school groups is another contributing factor of self-efficacy. Individuals who feel as though they are supported and "fit in" well within their school environment are likely to have higher self-efficacy, as compared to individuals who may not feel as well adjusted within their school setting. Finally, in regards to transitions within school, as children progress throughout school, self-efficacy is likely to decline based on the idea that there are higher demands placed on the child with less feedback in return, as well as a higher emphasis placed on grades, inducing a sense of competitiveness within peers.

In adolescence, individuals are forming more complex, but stable world views. As children continue to grow, their beliefs about success and competence begin to decline (Eccles, Wigfield & Schiefele, 1998). This is based on the idea that individuals are facing increased demands and challenges, while still developing, creating an overall sense of incompetence and inability to keep up or meet expectations. In terms of self-efficacy, individuals who have a higher sense of self-efficacy developed throughout childhood are likely to put forth more effort in terms of achievement and academic performance.

Adolescence serves a time of great change, however, research shows that as self-efficacy may remain stable, competency beliefs decline (Wigfield and Wagner, 2005). This indicates that adolescents who have relatively high self-efficacy during the transition

from childhood to adolescence will likely still have relatively high self-efficacy, however, they may still experience somewhat of a decline, although not as detrimental. In comparison, individuals who have relatively lower self-efficacy are likely to experience an even lower decline in the transition from childhood to adolescence in terms of self-efficacy (Wigfield and Wagner, 2005).

Overall, self-efficacy is a construct that plays a vital role in both childhood and adolescence and can have implications for academic and social performance as well as influencing behaviors. As children continue to develop through adolescence, self-efficacy may decline, causing poorer performance, and lower levels of adherence to medical regimes, which will be further discussed.

It is increasingly important to examine self-efficacy within adolescence as mentioned, due to it being a time of transition and change. Increasing or maintaining self-efficacy within adolescence is vital in ensuring a “proper” sense of self. As previously noted, adolescents are likely to experience a decline in self-efficacy in the transition from childhood to adolescence, and therefore, in a population of adolescents with chronic illnesses, it becomes especially important to develop methods in which to better manage self-efficacy “declines,” because of an added component. By adding an illness factor among adolescents, there may be a likely further decline, although the extent of such a decline may not be understood.

### ***Self-Efficacy and Income***

Research on self-efficacy as associated with income addresses various factors. With regard to the correlation among the two, some research has found that individuals

with low self-efficacy were associated with being less likely to save money as compared to individuals who had higher self-efficacy (Lown, et. al, 2015). The research from this exploratory study found that in general, saving behavior was correlated with self-efficacy, and individuals rating higher in self-efficacy have more saving behaviors in a population of middle and low income families, highlighting the idea that self-efficacy plays a role with regard to income to some extent.

Self-efficacy and income are researched primarily from the aspect of low-income contexts. Another article examining self-efficacy within a low-income population found that through incorporation of individual strengths can help students in overall academic outcomes. More specifically, through the use of strength-based interventions to help improve student self-efficacy in a sample of low-income first generation students, academic outcomes are simultaneously also improved (Lee Jr., 2017). This highlights the idea that even in low-income populations, self-efficacy can play a significant role in impacting outcomes, and can be an important factor to examine within the context of health.

### *Self-Efficacy and Chronic Illness*

A chronic illness is defined as an illness type in which a long duration or lack of cure exists. Chronic illnesses include, but are not limited to diabetes, cystic fibrosis, lupus, cardiovascular disease, and cancer. While chronic illnesses can often be debilitating, they almost always require a sense of self-management, in which an individual must regularly adhere to some type of treatment, medication, or an altogether lifestyle change (Schulman-Green et al., 2012).

Schulman-Green highlights that self-management specifically refers to one's ability in being able to manage or control factors within their illness, through the help or in collaboration with their medical providers, family, and other means of social support. Chronic illnesses in particular are different from normal illnesses in the sense that because of its' requirement for self-management and ongoing care, the individual diagnosed with the illness most often becomes highly educated in their disease, and is continuously seeking out knowledge in relation to their illness (Holman and Lorig, 2014). It seems beneficial for an individual diagnosed with a chronic illness to not only possess an extensive understanding of their own illness, but to also have some sense of ongoing self-efficacy to adhere to treatment regimens. Therefore, increasing self-management skills, which consequently involve self-efficacy, would be most beneficial in promoting adherence (Ryan and Sawin, 2009).

To increase self-management skills, particularly self-efficacy, interventions may address specific facets which include enhancing overall knowledge and beliefs, regulating skills and abilities, and facilitating support. In terms of enhancing knowledge and beliefs, this is focused in in aligning individuals with knowledge about their illness, and assessing their beliefs of treatment outcomes as well as disease outcomes. Regulation of skills and abilities focuses on effective goal setting, planning, decision making, and routine self-evaluation. Finally, social facilitation focuses on creating a network of support within the individual through collaboration. As all these factors tie together, an individual is able to engage in effective self-management, thus causing positive "control" in terms of their chronic illness. Thus, an individual may have an increase in self-efficacy, based on the belief that they are in control or can control at least some aspects of

their illness. In addition, individuals may believe that they have resources for coping with negative aspects of their illness, or resources for overall support in relation to their illness, also increasing self-efficacy (Ryan and Sawin, 2009).

To sum up, the management of chronic illness requires some sense of self-efficacy, as chronic illnesses are ongoing. As with any lifestyle behavior, chronic illness populations must adhere to ongoing regulation and management. To assess the level at which an individual may be able to adhere to treatment, assessing for level of self-efficacy seems valid. Through assessment of self-efficacy, interventions may address individuals with lower self-efficacy to facilitate better management of their illness.

As chronic illnesses are ongoing and require continued care, self-efficacy plays an evidently vital role in this context. Adequate self-efficacy appears to be a valid requirement in managing chronic illness, especially in the context of medication management, diet and behavior change, and overall mental well-being. Thus far, it appears as though through increasing self-efficacy and addressing this factor, chronic illnesses may be better managed or individuals may be more emotionally regulated in their ability to manage their chronic illness over time. In addition, adequate management of chronic illnesses may also subsequently affect self-efficacy. Individuals who are able to manage their chronic illnesses appropriately may find themselves with an increased perception of self-efficacy, suggesting that this relationship may be bidirectional. It is thus vital to examine this relationship further and understand the role and relationship each factor plays in overall health.

## **Adolescence and Chronic Illness**

As previously discussed, adolescence is a period of rapid growth and change. Within the United States, almost two million adolescents are diagnosed with a chronic illness that impedes daily functioning or has even caused some sort of disability. In addition to their medical diagnoses, many adolescents are also faced with comorbid mental health concerns related not only with the transition associated with adolescent development in general, but an addition of a debilitating health condition (Neinstein, 2001).

Neinstein also elaborates that protective factors within adolescent chronic illness populations include keeping a positive attitude, high intelligence levels, social competence, and positive and supportive familial relationships. Because chronic illnesses within this population in specific can often be increasingly debilitating, self-efficacy interventions may be extremely beneficial and necessary to prevent further decline both in terms of health and mental well-being. In addition, self-efficacy interventions in collaboration with positive support may be especially beneficial and predictive of overall well-being in this population.

In terms of gender differences, it has been noted that a greater number of female adolescents with chronic illness experience comorbid mental health and/or emotional problems related to their illness (Suris, Parera, and Puig, 1995). In addition, chronic illness was shown to be associated with higher levels of suicidal ideation among females, although this was not shown to be true for males. This signifies the importance of identifying adolescents who may be at risk of serious consequences regarding their mental or physical health, and illustrates the importance of early interventions in

increasing self-efficacy. Through increasing self-efficacy, individuals experience emotional concerns related to their chronic illness may find ways in which to cope or feel in control of their own health.

In conclusion, adolescence marks a period of rapid growth and transition, one in which individuals often experience lower general self-efficacy. Within chronic illness populations self-management becomes increasingly important, of which self-efficacy plays a vital role. In adolescent populations diagnosed with a chronic illness, a higher prevalence of comorbid mental health concerns may be prevalent, therefore illustrating the importance of early intervention within this population. For early intervention to occur, early detection of low self-efficacy and contributing emotional health concerns is necessary, further proving the importance of developing accurate measures of self-efficacy across chronic disease populations in a pediatric sample.

### ***Hospitalizations Within Adolescent Chronic Illness***

It is important to note the prevalence of hospitalizations in relation to chronic illness within an adolescent/pediatric population. One study found that of the twenty-seven children admitted to a hospital for their chronic illness, eighteen had psychosocial issues greatly contributing to their admission (Kelly and Hewson, 2000). The study examined adolescents admitted to the children's ward at the Geelong Hospital in Australia and found that psychosocial issues of concern were medical or psychological concerns impacting their family members, lack of knowledge in regards to medication and treatment adherence, and confusion and controversy in terms of best practice of management of their illness. The article suggests that awareness and training in terms of

resources aimed at addressing these issues be implicated (Kelly and Hewson, 2000). Providing patients with resources specifically aimed at medication management, knowledge about their particular illness, and addressing any confusion about their illness would in turn help better manage their concerns and self-efficacy. It may be especially beneficial to provide information and resources in a manner that is clear and understandable to children and adolescents, rather than to overwhelm them with information that is ambiguous or containing complex verbiage.

Another study examining adolescent's views on their chronic illness found that within a sample of twenty-three adolescents diagnosed with a range of chronic illnesses, individuals noted that their illness caused a great amount of restriction, effort, and pain, causing worrying-type behavior in relation to their illness (Woodgate, 1998). In general, the study noted that chronic illness negatively impacted adolescent's well-being, making life more difficult. This is important in understanding how chronic illness affects adolescents' well-being.

As previously mentioned, as adolescence serves to be a time of turmoil, change and transition. Therefore, adolescents who are diagnosed with chronic illness face the challenge of transitioning from what may be considered a "normal" lifestyle, to managing such an illness. Depending on the illness type and perhaps prognosis, adolescents may face difficulty with regard to their well-being as previously established. Therefore, considering this knowledge, implementing methods in which to increase self-efficacy within this particular population becomes imperative in order to ensure somewhat of a "normal" transition. In addition, addressing particular worries is important in ensuring that adolescents have appropriate knowledge and information regarding their illness,

prognosis, and what to expect. Providing such information and addressing “worry behavior,” may serve a beneficial outcome for patients with a chronic illness. Addressing ways in which restrictions may be better managed may also be beneficial within this population. For example, adolescents who are diagnosed with a chronic illness face the challenge of transitioning from a “normal” lifestyle to adjusting to a new illness; therefore the restrictions placed upon them whether physically, dietary, or behaviorally may impact their overall sense of well-being. Ensuring that these factors are addressed appropriately can help adolescents transition into their chronic illness better able to manage these restrictions.

Based on the research conducted, a common trend has been noted: adolescents impacted by their chronic illness have difficulty in management of their illness, causing psychosocial distress. Lack of knowledge regarding their illness, as well as belief of inability of control can greatly contribute to psychosocial distress. Consequently, it is imperative to examine self-efficacy through valid measures, to educate intervention methods.

## **CHAPTER TWO**

### **AIMS AND HYPOTHESES**

This project will explore whether the number of hospitalizations predicts level of self-efficacy within a pediatric population. It will also attempt to explore whether parental marital status, as well as parental income is associated with level of self-efficacy in a pediatric population.

#### **Aim 1**

Determine whether number of hospitalizations are associated with or predict overall self-efficacy within pediatric chronic illness populations. As the noncompliance rate for adolescents diagnosed with a chronic medical condition continues to increase throughout the United States, the rate of hospitalizations also continues to increase. Therefore, hospitalization may play a crucial role in predicting self-efficacy within a pediatric population of individuals with chronic illness. This may be especially important in screening for self-efficacy in individuals who have an increased number of hospitalizations, and to help build self-efficacy, in the case that an increased number of hospitalizations predicts decreased self-efficacy. Hypothesis: We predict that a greater number of hospitalizations will be associated with a decrease in perceived self-efficacy within pediatric chronic illness populations. Null Hypothesis: We predict that a greater number of hospitalizations will not be associated with a decrease in perceived self-efficacy within pediatric chronic illness populations.

## **Aim 2**

Determine whether marital status of parent is associated with or predicts overall self-efficacy within pediatric chronic illness populations. Hypothesis: We predict that children whose parents are still married or in a domestic relationship will have higher self-efficacy as compared to children of parents who are divorced, single, or widowed. Null Hypothesis: We predict that children whose parents are still married or in a domestic relationship will not have higher self-efficacy as compared to children of parents who are divorced, single, or widowed.

## **Aim 3**

Determine whether parental income is associated with or predicts overall self-efficacy within pediatric chronic illness populations. Hypothesis: We predict that higher parental income will be associated with an increase in overall self-efficacy within pediatric chronic illness populations. Null Hypothesis: We predict that higher parental income will not be associated with an increase in overall self-efficacy within pediatric chronic illness populations.

## **CHAPTER THREE**

### **SIGNIFICANCE AND ANALYSIS**

#### **Clinical Significance**

Self-efficacy is a concept that plays a significant role in terms of mediating health care behaviors and outcomes. Self-efficacy specifically helps predict adherence to treatment and medication, and health behaviors within illnesses. Within chronic illness populations, a level of self-efficacy is required to ensure proper medication adherence and overall treatment adherence. Therefore, a low level of perceived self-efficacy can greatly impact treatment outcomes. Among chronic illness patients, self-efficacy based interventions have shown to improve adherence to medications, increase health knowledge, and increase overall positive health behaviors (Anderson, 2010).

Adolescence has been defined as a predictor of medical nonadherence, for which poor time management, and risky behavior may help explain this relationship (Fiese & Everhart, 2006). Thus, medical adherence, treatment adherence, and complications, such as hospitalizations, within illnesses are more common among adolescents, and more specifically, among children with a chronic illness (Brown, Daly, & Rickel, 2007).

The increasing amount of pediatric populations that have been affected by chronic illnesses, and engage in some type of nonadherence indicates a great necessity in examining this area of health in greater detail. Through the development of the Pediatric Rating Chronic Illness Scale (PRCISE), a broad population of adolescents with chronic illnesses have been targeted, rather than a narrower focus.

Through evaluation of the relationship between hospitalizations and self-efficacy,

we may be able to better predict if an individual's number of visits to a hospital over time affects self-efficacy. Thus, we may be able to intervene earlier if a relationship shows that an increase in number of hospitalizations decreases self-efficacy. By assessing for this relationship, early interventions may be developed, allowing for an increase in self-efficacy, eventually increasing medical adherence and overall treatment outcomes for this populations. In addition, within clinical practice, assessing for number of hospitalizations, or medical complications in general, may give clinicians greater insight in terms of treatment goals, which may include enhancing self-efficacy.

By assessing the relationship between the number of hospitalization and self-efficacy, we are better able to recognize whether the number of hospitalizations a patient experiences impacts self-efficacy, which in turn affects overall functioning. We are aware that many hospitalizations related to chronic illness have an underlying psychosocial factor impacting the hospitalization. Using this information, and the reason of hospitalization from our data, we can examine whether there decreases in self-efficacy as the number of hospitalizations increase. If this is found, we can inform interventions for improving self-efficacy after the first hospitalization for example, to confirm better overall health outcomes.

From a clinical perspective, self-efficacy in general is an extremely important factor in the context of health, especially chronic illness. In clinical work with patients diagnosed with a chronic illness, a sense of empowerment and agency is vital in helping modify health factors and continuing to modify them. This sense of empowerment and agency is a major component of self-efficacy and overall well-being. Therefore, through the research and further understanding of factors impacting self-efficacy, we can then

further examine clinical implications and tailor clinical interventions to best address self-efficacy in the context of one's health and well-being. This research can help inform and address clinical interventions specifically in low-income populations, in which patients may not have access to quality healthcare, or in patient who perhaps lack family support or structure. Through understanding what factors play a role in self-efficacy, we hope to address patient's need and instill a sense of control in their own health.

### **Analysis**

A multiple linear regression analysis was used to examine whether number of hospitalizations impacts overall level of self-efficacy, whether marital status of parents impacts overall self-efficacy, and whether parental income impacts overall self-efficacy. To test this relationship, we ran this analysis in SPSS software by testing number of hospitalizations and regressing this onto self-efficacy using the PRCISE scale as one variable. We checked four assumptions associated with this analysis, specifically, outliers, homoscedasticity, normality, and independence through obtaining plots in SPSS. We evaluated R square values ( $R^2$ ), to indicate the amount of total variance explained. We also evaluated significance as determined in the ANOVA section of our output, through significance values. If our value was less than .05, we deemed that the model was significant, and we could then assume that hospitalizations is significant in predicting self-efficacy. Based on G Power analysis, recommended sample size states as 107, however, since we used data collected from survey packets, we will had more than sufficient data based on this number, actual power=0.95, critical  $X^2=11.07$ .

## **CHAPTER FOUR**

### **METHODS AND RESULTS**

Data were collected from 217 families with a child with a CI aged 8-17, being seen by a medical provider within the Loma Linda University Health System. Parent participants provided demographic information, while youth participants completed a depression self-report measure and the Pediatric Rating of Chronic Illness Self-Efficacy (PRCISE), a validated 15-item self-report measure for self-efficacy in pediatric CI. Youth had a mean self-efficacy score of 114.32 [*SD*: 31.58] out of a possible 150. A CI was defined as a physical or mental health condition that has lasted or is expected to last at least six months, and interferes with daily activities.

#### **Data Analysis**

A hierarchical multiple linear regression analysis was used to examine predictors of self-efficacy, regressing the PRCISE total score on parental income, parental marital status, and number of hospitalizations. Parent income was measured using six categories: “less than \$15,000”, “less than \$25,000,” “less than \$60,000,” “less than \$80,000,” “less than \$100,000,” and “more than \$100,000.” The variable was then dummy coded using the most common income level as the reference group: less than \$60,000. Marital status was measured using five categories: “single,” “married,” “separated,” “divorced,” and “widowed.” Marital status was dummy coded using the most common status as the reference group: married Number of hospitalizations was centered on the mean.

## Results

The optimal linear combination of parental income, parental marital status, and number of hospitalizations accounted for 10% of the variance in PRCISE total scores,  $F(3, 153) = 6.87, p < .001$ . Having parents that earned less than \$25,000 ( $b = -16.3, \beta = -.23, 95\% \text{ CI } [-27.76, -4.84], sr^2 = .05, p < .05$ ), and having a single parent ( $b = -15.9, \beta = -.2, 95\% \text{ CI } [-28.53, -3.35], sr^2 = .04, p < .05$ ) predicted lower self-efficacy. Number of hospitalizations did not significantly predict self-efficacy scores ( $sr^2 = .0, p > .05$ ).

## CHAPTER FIVE

### DISCUSSION

#### **Clinical Implications**

The goal of this project was to investigate predictors of self-efficacy in pediatric chronic illness. Through our analyses, we found that youth with parents who had a low income, as well as those from single parent households exhibited lower self-efficacy. While number of hospitalizations was found insignificant in predicting self-efficacy scores, this provides as valuable information with regard to clinical implications. The clinical implications of our findings can be further discussed.

#### *Parental Income Status*

As previously discussed, income status plays a significant role in regards to self-efficacy in a general population sense. Within a chronic illness population, this factor plays a significant role in predicting self-efficacy among youth. In applying this in a clinical sense, we can assume that children whose families are low-income may have more negative beliefs about their general health, but more importantly, in their ability to manage their health and health related behaviors. Thus, clinicians working with individuals with a chronic illness may benefit their patients by providing them with space to not only discuss the way in which income may affect their illness, but to help individuals in finding a sense of agency despite income. To do so, clinicians may consider using interventions focused in cognitive-behavioral theories, focusing on the idea that while the individual may be unable to change their situation, they may be able to

better manage their beliefs about it. For example, patients exhibiting lower self-efficacy with regards to income may find difficulty in their beliefs of their own ability to manage their health condition due to the idea that their families may not have the resources to continue to provide care for their illness; however, they may benefit from mindfulness-based relaxation strategies in which the patient engages in stress relieving technique to manage the stress that may accompany the perceived inability to manage their illness.

Including problem-solving techniques to address perceived inability may facilitate a higher level of self-efficacy. These problem-solving techniques may include addressing creative ways of addressing income status, including developing programs to incorporate local healthcare agencies to aid in providing additional care for individuals in management of their illness. For example, locally held clinics and exercise programs and food banks would benefit youth who have difficulty managing diet, medication and regular exercise that may accompany management of an illness due to income status.

Additionally, clinicians may benefit from providing and seeking out resources as an advocate for patient care; more specifically, clinicians may help patients by providing them with resources regarding insurance, or free support groups, to further help build a sense of agency among patients. While income remains a factor that may not necessarily be changed, individuals may change their perceptions about the impact income has upon their ability to better manage their illness, regardless of medical care required. As often seen in chronic illness, individuals benefit significantly from health behavior change, and therefore, building a sense of power and agency in this realm is important in helping build self-efficacy in general.

In addition to providing resources and education to youth with chronic illness of

low-income families, providing strength-based interventions may also be beneficial. By targeting adolescent's strengths, clinicians may help build a stronger sense of self-efficacy, by targeting trait based factors. For example, helping individuals pull strengths such as optimism despite their illness or parental income, individuals may then be able to use their optimism as a continued coping mechanism, thus building a stronger sense of self-efficacy. Using trait based strengths, and allowing youth to build upon these preexistent strengths can be vital in regards to their self-efficacy and overall health.

### *Parental Marital Status*

As the findings of the conducted analyses showed, youth from single parent households showed lower self-efficacy as compared to their counterparts. This information provides us with a context to further explore why this may be. Explanations may include that perhaps youth from divorced or separated parents may have been exposed to conflict, which in turn may have an effect on their self-efficacy. In addition, youth from single parent households may exhibit lower self-efficacy due to lower amounts of support and/or structure. In the context of chronic illnesses, youth and individuals in general who are exposed to some sort of stress or conflict, may have more difficulty managing their own illness or may have skewed perceptions about their ability to manage illness over a sustained period of time. With youth populations specifically, individuals may have lower self-efficacy due to the idea that they may feel unable to rely on parents due to previous conflict, and therefore, as previously mentioned, a lack of support in this sense may help further decrease perceived self-efficacy.

With regard to clinical care, there are various clinical implications. For one,

individuals receiving care from clinicians may significantly benefit from the therapeutic experience in general. To explain further, if a lack of support serves as an explanation for lower self-efficacy, then interaction with a clinician as a source of support would be a beneficial method in helping increase self-efficacy in a chronic illness population. Extended support over time may be especially beneficial, as youth or individuals in general may develop a sense of continued support upon which to build confidence and a sense of power and agency, as previously discussed. The therapeutic experience and alliance in itself may serve as a strong intervention of support in helping build self-efficacy.

In addition to therapeutic support, individuals with low self-efficacy in a chronic illness population may specifically benefit from support groups and support from like peers. For example, an adolescent with a Lupus may very well benefit from attending a support group with other similar aged peers and meeting individually with peers with the same chronic illness. Sharing stories and experiences allow the individual to build upon their own experience and learn (perhaps vicariously) through their counterparts. Vicarious experience as determined from literature is an important concept in self-efficacy, and through observation of individuals in a similar situation and through similar experience, patients with a chronic illness can build self-efficacy despite parent marital status. Combining a therapeutic experience along with support from peers can be a vital intervention in helping build self-efficacy in youth with chronic illnesses.

### *Number of Hospitalizations*

While number of hospitalizations was not found to be a significant predictor with

regards to self-efficacy, this information is still relevant and helpful. Number of hospitalizations is not a significant predictor in regards to self-efficacy within a chronic illness population. Chronic illnesses often require hospital visits for various lengths of time, which can disrupt a normal lifestyle, especially in a youth population, where adolescents would be likely to be otherwise attending school. It is therefore important and beneficial to know that the number of hospitalizations does not affect or predict self-efficacy in this sample, as the number of hospitalizations in this population are elevated. Clinicians may benefit from following up with patients about their hospital visits in order to gain a better understanding of individual experiences regardless of the reported findings. Clinicians who regularly follow up with patients in this regard, are likely to gain information on coping mechanisms, both internal and external. In doing so, clinicians may be able to better understand likely sources of success in regard to coping. Examples include adequate social support and internal locus of control/high levels of self-efficacy. Clinicians may also address any difficulties in coping or adjustment to medical condition in general. An additional consideration of this factor within this study, is considering the non-bidirectional relationship of this variable. It may be noteworthy to mention that while this factor was not found to be a significant predictor with regards to self-efficacy, it may be considerable to examine this factor as an outcome of self-efficacy. This will be further discussed in 'Future Directions.'

### **Strengths and Weaknesses**

The strengths of this project lie in its attempt to examine specific factors among a chronic illness population. While previous research has attempted to examine other

factors among illness populations, this project is unique in examining its specific factors. In addition, the clinical application of the findings itself and the applicability of the results are a significant strength in its contribution to clinical research. Current and future clinicians may use such a clinical application of the research findings to ensure best practice for such a population.

In addition to the applicability of the research to a chronic illness population, an additional strength of this project lies in the analyses. The use of the PRCISE scale is innovative in nature, such that the scale is the first in assessing self-efficacy among several chronic illness populations. Looking at factors within this scale in this project allows us to view such factors across illness types, creating a broader range of generalizability.

This study is unique in finding that parental socioeconomic factors and family structure impact patient-level self-efficacy. While self-efficacy and socioeconomic factors along with family structure have been individually examined, this study's strength is significant in its' ability to examine these factors simultaneously to determine the effects and impact among pediatric populations.

The findings of this project inform not only clinicians, but a general population as well. The parental factors examined can help inform parents of children with chronic illnesses to help better understand their children's level of self-efficacy in a general sense. In doing so, while parental factors may not necessarily be changed, parents may be better informed of the influences on self-efficacy, and provide additional support. This serves as a major strength with regard to clinical outcomes.

While there are significant strengths within this project, several limitations and

weaknesses exist. A general weakness of this study is the inability to distinguish specific factors further. For example, while we know that youth of single parent households have lower self-efficacy among chronic illness populations, we are unable to make the determination of specific chronic illness types or further distinguish this analysis. Therefore, this is a limitation of the current study that may need further analysis.

Another weakness of this study is its limited population. This study examines youth aged 8-17, and therefore does not account for individuals beyond this age group. By limiting the age group of this study, we may not have been able to account for other age groups, which may have impacted our results in a different manner. However, while examining a broader age group may have been appropriate, examining a youth population allows us to get an in-depth view and perspective of the ways in which these specific factors affect self-efficacy. In addition, it allows us to inform clinical implications with a more specific, tailored approach.

There are several additional life changes that may occur specifically within this age group that accompany adolescence that may also contribute to the results of the study and have not been addressed as part of this study. Having accounted for these specific life changes may have skewed our results in a negative manner. More specifically, it is not necessary that all adolescents within our study experienced the “typical” changes appropriate for this age group, and therefore, placing emphasis on these changes may have skewed our results and interpretations of these results. While it is important to keep these changes within development in mind, it is important to understand that such changes are not generalizable and should be considered more independently on a case-by-case basis. While the limitations within the context of this study have been discussed, it is

important to note that the study appropriately examines parental factors and hospitalizations within chronic illnesses in the most feasible manner.

### **Future Directions**

Future research should aim to examine whether additional family variables and health prognosis impact the relationship between chronic illness and self-efficacy in pediatric populations. Specifically, there are several other contributing family variables that may be examined with regard to self-efficacy, such as family size, family support (siblings, extended family, etc.). In addition, looking at health prognosis with regard to self-efficacy and chronic illness would be highly valuable in informing clinical practice. Prognosis may have a significant impact upon how individuals view their ability to manage their illness or the way in which they perceive their illness in general. By examining prognosis, we may gain a better understanding as to whether individuals who have poorer prognoses are more likely to experience decreased ability or confidence in self-control, determining points of intervention and supportive work, for example, palliative care psychology interventions. This may also inform collaboration with other healthcare providers to help provide education to physicians and health care workers on ways to increase self-efficacy and ways to provide support overall. Therefore, this may be a highly valuable and impactful direction for future research.

Additionally, as previously mentioned, it may be noteworthy to examine non-significant variables as non-bidirectional in nature. Simply stated, it may be beneficial to consider the impact of self-efficacy on the number of hospitalizations in an adolescent population. While this study did not examine these variables in this model, doing so may

provide insight with regard to any potential influence of self-efficacy in hospitalizations in general. In addition, clarifying this relationship would provide specific insight with regard to necessary interventions from a clinical perspective. In determining variables as unidimensional, we may be able to better understand the difference between mediating and influencing variables; we can better understand if particular variables serve as mediating a relationship or causing a relationship to exist.

It is especially important to focus on intervention methods aimed at addressing self-efficacy and addressing factors influencing self-efficacy. Interventions may include module-based training, incorporating education and practice in instruction. Interventions may also include web-based modules, which may be particularly appealing within a chronic illness population to address potential difficulties with regard to transportation to clinics and mobility in general. Reviews of current interventions to influence development of specific interventions are suggestive future directions of clinical research.

As previously mentioned, adolescence in particular is a time of significant change, therefore, examining factors significant to this time in particular would be helpful in further understanding how such factors may influence this population in particular. Such factors may include the influence of development in general, such as the effect of puberty on self-efficacy. In addition, factors such as gender, race, and ethnicity are important to include in the discussion of examined factors. While these factors are likely to have previously been examined, the effect of these factors in conjunction with factors examined in this study will be important in determining next steps in intervention, taking into account a multitude of factors. While the current study's findings are significant in

impacting clinical practice, examining such factors would contribute to clinical outcomes and practice in an even greater sense.

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