QUALITY OF LIFE IN COLLEGE STUDENTS WITH A CHRONIC HEALTH CONDITION: THE ROLE OF PERCEIVED MATURITY, TRANSITION READINESS, AND GRIT

By

TAYLOR LYNN MORGAN

Bachelor of Arts in Psychology

Oklahoma State University

Stillwater, Oklahoma

2016

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
May 2022

QUALITY OF LIFE IN COLLEGE STUDENTS WITH A CHRONIC HEALTH CONDITION: THE ROLE OF PERCEIVED MATURITY, TRANSITION READINESS, AND GRIT

Thesis Approved:

Dr. Larry L. Mullins

Thesis Adviser

Dr. Ashley Clawson

Dr. John Chaney

Name: TAYLOR LYNN MORGAN

Date of Degree: MAY, 2022

Title of Study: QUALITY OF LIFE IN COLLEGE STUDENTS WITH A CHRONIC HEALTH CONDITION: THE ROLE OF PERCEIVED MATURITY, TRANSITION READINESS, AND GRIT

Major Field: CLINICAL PSYCHOLOGY

Abstract

Purpose: Adolescents and young adults (AYA) with a chronic medical condition (CMC) who are pursuing higher education must also learn to independently manage their own healthcare (i.e., transition readiness). Additionally, levels of maturity and grit, have been previously linked to positive outcomes in AYAs (i.e., life satisfaction). Previous research has also established a positive relationship between transition readiness and quality of life. In this manner, it may be that transition readiness is a mediator of maturity and quality of life. Thus, the current study aimed to examine a mediation model of *perceived maturity → transition readiness → mental and physical quality of life.*

Design and methods: College students ($N = 84$) with a chronic medical condition completed self-report questionnaires.

Results: Moderated mediation results did not demonstrate a significant moderation for grit on the overall mediation *perceived maturity → transition readiness → mental quality of life or physical quality of life.*

Conclusions: First, our results showed a strong, positive association between maturity and transition readiness, supporting the notion that these two constructs are related. Additionally, transition readiness appears to be one potential mechanism by which maturity results in enhanced quality of life in AYAs with a CMC.

Practice Implications: Our findings highlight that the value of enhancing strengths such as maturity to promote AYA independence/autonomy. Future research should continue to explore promotive factors that could bolster AYAs' skills in transitioning to adult care and ultimately improve their quality of life.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Overview

Key developmental tasks for adolescents and young adults (AYAs) during emerging and young adulthood may include focusing on future ambitions and goals, living independently, and pursuing higher education (Arnett, 2000; Arnett & Tanner, 2006; Erdmann et al., 2020; Maslow et al., 2011). Success in these developmental milestones are arguably important steps towards maturity and adulthood (Dattilo et al., 2021; Wood et al., 2018). The transition into the context of higher education, specifically, is designed for identity exploration and increased autonomy (Arnett, 2015; Azmitia et al., 2013; Baete Kenyon & Silverberg Koerner, 2009; Kennedy & Winkle-Wagner, 2014; Syed & Azmitia, 2009; Zhou et al., 2019). For those with a chronic medical condition (CMC), these responsibilities are exacerbated by independently having to manage their health condition. Importantly, approximately 6.4% of all college students in the US have been diagnosed with a CMC (American College Health Association, 2019), equating to approximately 11,000 individuals. This rate is steadily increasing, as recent diagnostic and treatment advances in medical care have led to lower rates of mortality and morbidity for AYAs, thus making attending college more manageable and achievable

(Compas et al., 2012; Pai & Schwartz, 2011; Pinzon et al., 2006). Further, according to the American College Health Association, approximately 19% of AYAs reported seeking help from a healthcare professional in the past month for allergies and 9% for asthma, highlighting the prevalent use of healthcare (ACHA, 2019). Further, AYAs with a CMC are at higher risk than peers without a CMC for a host of negative psychosocial outcomes, including anxiety and depression (Herts et al., 2014a; Sharkey et al., 2018; Wodka & Barakat, 2007), as well as diminished quality of life (Fedele et al., 2009; Traino et al., 2019). AYAs with a chronic health condition who attend college remain an understudied and unique group, and thus more research is needed to understand how to improve outcomes for these individuals during this critical developmental period.

Although specific risk factors associated with negative health outcomes in AYAs with a CMC have been identified in the literature (Daniel et al., 2017; Murphy et al., 2006; Patrick & Maggs, 2009), less attention has focused on potential promotive factors. Further, there is also limited research on positive factors that relate to better healthcare management skills and consequently better health outcomes. Hilliard et al. (2012) used resilience theory to develop a model of risk and protection in the context of Type 1 Diabetes among youth (see Figure 1; Hilliard et al., 2012; Yates et al., 2015; Yates & Masten, 2004). This particular model suggests that the relationship between risk and assets and health outcomes is enhanced by specific promotive processes (e.g., adaptive coping skills, optimism, hopefulness) that are then linked to positive outcomes. Within this model, resilience refers to achievement of one or more positive outcomes despite exposure to significant risk or adversity. On the other hand, risk factors may include having a CMC, adverse life experiences (e.g., abuse, trauma), or lower socioeconomic

status (Hilliard et al., 2012). Further, advances in the resilience theory have shown that attaining resilient outcomes at one developmental stage can cascade into additional promotive processes that promote future resilience (Masten, 2011; Yates et al., 2015). Thus, more research on promotive factors relevant to AYAs with a CMC is warranted, particularly considering that emerging and young adulthood is marked by significant change and growth that will likely define individuals as adults. One such novel variable that has putatively been linked to positive outcomes is that of maturity.

Maturity is a unique construct that has been defined as engaging in self-management broadly, having the ability to make independent decisions, evidencing identity formation, and demonstrating autonomy (Mackie et al., 2016). Milestones of maturity, including forming meaningful friendships, romantic relationships, and getting married, tend to be markers of development that individuals use to rate their success and happiness (Arnett, 2014). Although these transitions may be perceived as highly meaningful to the individual, they may also be quite challenging, particularly for AYAs with a CMC (Lewis et al., 2013). Currently, there is little research on self-perception of maturity in AYAs with a CMC, and how those perceptions relate to adjustment outcomes. Indeed, it may be that AYAs who are more mature may be more prepared for key developmental tasks (e.g., healthcare management skills) than peers who do not perceive themselves as mature. Interestingly, research shows survivors of childhood cancer feel like they grew up faster and feel more mature than peers (Belpame et al., 2019; Dattilo, T. M., n.d.; Nightingale et al., 2011; Zebrack et al., 2012). At the same time, survivors also report challenges in early maturity, such as feeling different from others and/or having difficulties connecting to their peers (Belpame et al., 2019; Dattilo,

T. M., n.d.; Nightingale et al., 2011; Zebrack et al., 2012). Arguably, maturity may serve as a *promotive factor* for youth with a CMC, as higher levels of maturity have been found to be associated with better mental health and quality of life among youth with congenital heart disease and heart transplant (Mackie et al., 2016). Thus, for AYAs with a CMC, maturity may be a promotive factor and lead to improved quality of life; however, this has yet to have been examined.

An additional positive promotive factor may be grit, which is best described as an intrapersonal characteristic of "passion and perseverance for long-term goals" (Duckworth et al., 2007; Duckworth & Quinn, 2009; Sharkey et al., 2018). Sharkey and colleagues (2018) suggest success in the context of having a CMC may be the ability to manage one's illness and to thrive throughout life (i.e., having higher grit), in the face of burdensome or life-threatening medical conditions. Recently, grit has been linked to better healthcare management skills and thus is an important promotive construct to examine in relation to transition readiness skills. Sharkey and colleagues (2017) recently found that transition readiness mediated the relationship between grit and health-related quality of life in AYAs without a CMC which has been replicated in those with a CMC diagnosis (see Figure 2; Traino et al., 2019). Findings from these studies suggest that AYAs with higher levels of grit had better healthcare management skills and greater overall quality of life (Sharkey et al., 2017; Traino et al., 2019). Thus, maturity and grit may both serve as promotive factors for independent healthcare management and quality of life outcomes; however, these relationships have yet to be examined together.

In addition to the challenges of traditional developmental milestones, AYAs with a CMC pursuing higher education must also learn to independently manage their own

healthcare. The skills needed to independently manage healthcare, often referred to as transition readiness, may include symptom monitoring and management, medication adherence, and securing doctor appointments (Reed-Knight et al., 2014; Sansom-Daly et al., 2012). These skills have important implications for mental and physical health, as AYAs with CMCs who have better transition readiness also report higher levels of quality of life than AYAs without a CMC (Sharkey et al., 2017; Traino et al., 2019; Uzark et al., 2019). However, no research has examined how perceptions of maturity influence transition readiness, or the relationship between AYAs' transition readiness and quality of life. It may be that AYAs with a CMC who perceive themselves as more mature also have higher levels of grit and both positive factors may aid in success in transition readiness. This may be because AYAs who are more mature with higher levels of grit are self-managing their CMC more effectively, successfully transitioning to adult care, and overall have better quality of life.

The Current Study

The goal of the current study is to examine how maturity and grit play a role in transition readiness and ultimately in the quality of life in AYAs with a CMC (see Figures 3 and 4). The primary aims of the current study are as follows:

1) To examine differences in maturity between AYAs with and without a CMC.
2) To examine a moderated mediation model that assessed the roles of maturity, transition readiness, and grit in relation to quality of life in AYAs

with a CMC, specifically *perceived maturity → transition readiness → quality of life, moderated by grit.*

For Aim 1, we expected that AYAs with a CMC would report feeling more mature than their peers (i.e., demonstrate significantly higher levels of maturity). For Aim 2, we expected that AYAs with a CMC who perceived themselves as more mature would be more likely to have higher levels of transition readiness and also report higher levels of quality of life, particularly under conditions of higher levels of grit (i.e., moderation). There was also one exploratory aim in the current study:

1) To conduct analyses to identify differences in maturity related to demographic and medical characteristics such as gender/sex, race/ethnicity, and specific diagnoses.

For exploratory aim 1, we expected AYAs who are from marginalized communities (e.g., Black/African American, Hispanic/Latinx) will perceive themselves as less mature potentially due to systemic barriers (Copeland, 2005; Feagin & Bennefield, 2014; Romanelli & Hudson, 2017; Stepanikova & Oates, 2017).

CHAPTER II

METHODOLOGY

Participants and Procedures

Eighty-four college students (M_{age} = 19.61 years, SD = 1.45) with a self-reported chronic illness were recruited from a large Midwestern university via an online survey system. Students consented to the study and filled out all questionnaires online, including measures of demographic characteristics, perceived maturity, grit, transition readiness, and quality of life. Given the timing of research participation (August 2020 – May 2021), we also assessed the perceived impact and exposure of the COVID-19 pandemic. All students who completed questionnaires were compensated with course credit. The study was approved by the Institutional Review Board and all procedures adhered to the American Psychological Association's ethical guidelines.

Materials

Demographic Characteristics. Demographic information such as age, gender/sex, race/ethnicity, first-generation college student status, annual family income, single parent household, rural vs. urban background, level of education, self-reported type of CMC (e.g., asthma, diabetes), number of CMCs, and perceived illness severity and controllability were collected. Perceived illness severity and illness controllability were assessed on scales from 1 (mild/uncontrollable) to 7 (very severe/controllable). Due to our sample size and our statistical analyses, race/ethnicity was dichotomized into Non-Latinx, White vs. Black, Indigenous, and people of color (BIPOC) for all analyses and education was collapsed into a dichotomized variable (i.e., underclassmen, which refers to freshmen and sophomores, and upperclassmen, which refers to juniors and seniors). Race/ethnicity were conceptualized as social constructs that reflect likely exposure to racism. Racial and ethnic differences arising from system-level inequities were not directly evaluated by analyses due to our small sample size and the need to dichotomize this variable for analyses purposes.

Maturity Questionnaire. The *Maturity Questionnaire* is a 10-item questionnaire based on the Adult Identity Profiles (Benson & Elder Jr, 2011). It yields an overall maturity score, as well as including three subscales: financial maturity, personal maturity, and social maturity. The *financial* maturity subscale includes three items assessing how young adults felt about their financial independence, school/job competency, and managing their own responsibilities (e.g., bills, insurance). The *personal* maturity subscale includes four items assessing how young adults felt regarding their emotional stability, autonomy, managing their own health, and ambitions/goals for the future. The *social* maturity

subscale includes three items: assessing friendships/social relationships, dating/romantic relationships, and family planning. All items are answered on a 5-point scale from "*not at all"* to "*very adult/mature*." Mean scores are calculated with higher scores indicating greater perceived maturity. Internal consistency has been shown to be excellent for the total score (α = .90). One previous study demonstrated good reliability in young adult survivors of childhood cancer (Dattilo et al., 2021). Internal consistency for the total score for AYAs with a CMC in the current study was good (α = .83).

Short Grit Scale. The *Short Grit Scale* is an 8-item self-report Likert scale questionnaire that measures an individual's ability to persevere and sustain passion for long-term goals (Duckworth & Quinn, 2009). An example item is, "*Setbacks don't discourage me.*" Participants endorse their responses on a Likert scale (1= *Very much like me* to 5= *Not like me at all*). An average of the items is calculated for the overall grit score, with higher scores indicating higher levels of grittiness. Previous studies have demonstrated good reliability in various populations, including college students with a CMC (e.g., Gonzalez et al., 2019; Sharkey et al., 2018). Internal consistency for AYAs with a CMC in the present study was fair (α = .47).

Transition Readiness Assessment Questionnaire. The *Transition Readiness Assessment Questionnaire* (TRAQ) is a 20-item self-report questionnaire measuring skills related to managing health conditions and readiness for the transition from pediatric to adult healthcare (Sawicki et al., 2011). An example item includes "*Do you take medications correctly and on your own*?" Participants endorse their current ability or skill level for each item on a Likert scale (1 = *No, I do not know how* to 5 = *Yes, I always do this when I need to*). Overall transition readiness scores were averaged, with higher scores indicating

greater healthcare management skills. The TRAQ has demonstrated good validity and reliability in college students with a CMC (e.g., Espeleta et al., 2019; Sharkey et al., 2017; Traino et al., 2019). Internal reliability for AYAs with a CMC in the present study was very good to excellent (α = .92).

RAND 36-Item Short Form Survey. The *RAND 36-Item Short Form Survey* is a 36-item self-report questionnaire measuring physical and emotional health-related quality of life, and status of overall general health (SF-36, Hays et al., 1993). The SF-36 includes eight different domains which are combined into a mental health composite score and a physical health composite score including: 1) physical functioning, 2) role limitation owing to physical health, 3) role limitation owing to emotional problems, 4) energy/fatigue (vitality), 5) emotional well-being, 6) social functioning, 7) pain, and 8) general health. An example item of mental health quality of life is "*How much time, during the past four weeks, did you feel worn out?*" and physical quality of life is "*Does your health now limit you in these activities? If so, how much?"* Ex: "*Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.*" Total scores were averaged with higher scores on the SF-36 indicating better health-related quality of life. Previous studies have demonstrated good validity and internal consistency of the SF-36 in college students with a CMC (e.g., Espeleta et al., 2019; Sharkey et al., 2017; Traino et al., 2019). Internal consistency for AYAs with a CMC in the current study was very good to excellent for the total score for physical quality of life (α = .90) and mental quality of life (α = .92).

COVID-19 Exposure and Family Impact Survey-Impact Subscale for Adolescents and Young Adults (CEFIS). The CEFIS Impact Subscale was used to assess the self-reported

perception of the COVID-19 pandemic impact on adolescent and young adults' lives and experiences (Kazak et al., 2020). The CEFIS for AYAs is composed of 12 items (e.g., "*In general, how has the COVID-19 pandemic affected your physical wellbeing – exercise?"*) with 10 items measured on a 4-point Likert scale from 1 "*Made it a lot better*" to 4 "*Made it a lot worse*" to assess impact on the participant and family's life, and 2 items on a 10-item Likert scale from 1 "*No Distress*" to 10 "*Extreme*" to assess COVID-19 related distress. Total scores are calculated by summing the items. The psychometric properties of the CEFIS for adolescent and young adults have yet to be reported, but the CEFIS Impact subscale showed good internal consistency for AYAs with a CMC in the current study (α = .89).

The 28-item Exposure subscale of the CEFIS for AYAs measures participant exposure to COVID-19 and its related events on a dichotomous (yes/no) scale (e.g., *"I was unable to visit or care for a family member," "I/we had difficulty getting health care when we needed it."*). The Exposure score is summed total of "yes" responses. The psychometric properties of the CEFIS for adolescent and young adults have yet to be reported, but the CEFIS Exposure subscale showed poor internal consistency for AYAs with a CMC in the current study (α = .69).

Data Analytic Plan

Prior to primary analyses, preliminary analyses were conducted in SPSS version 27 to evaluate the relationships between our variables of interest and demographic characteristics. Independent samples *t*-tests, analyses of variance (ANOVAs), and bivariate correlations were conducted. Race was dichotomized into Non-Hispanic, White

vs. Black, Indigenous, and people of color (BIPOC) for all analyses due to limited sample diversity. Additionally, education level was dichotomized to include lowerclassmen (i.e., freshman and sophomores) and upperclassman (i.e., juniors and seniors).

Aim 1: To address Aim 1, independent samples *t*-tests were conducted to examine differences in maturity between AYA with a CMC to a matched sample of similar, college students without a CMC via Case Control Matching by matching relevant variables for AYA including sex, age, and race.

***Aim 2*:** For Aim 2, we utilized a moderated mediation analysis to assess the direct and indirect effects of transition readiness on perceived maturity and quality of life, and the conditional or moderating influence of grit in this relationship (i.e., *perceived maturity* → *transition readiness* → *quality of life* mediation path). Hayes' PROCESS Version 3.5 for SPSS was used to conduct analyses using 95% confidence intervals yielded from 5,000 boot-strapped resampling draws with replacement (Hayes, 2018).

Exploratory Aim: Bivariate correlations, independent samples *t*-tests, and ANOVAs were used to examine demographic factors (i.e., dichotomized race, first-generation college student status, annual family income, single parent household, rural vs. urban background) significantly associated with perceived maturity among AYAs with a CMC.

CHAPTER III

RESULTS

The present sample of AYAs with a CMC was primarily Non-Latinx/White (79%), female (80%), and in their sophomore year of college (35%). Perceived COVID-19 impact was negatively associated with mental quality of life (r = -.37, p = .001) and physical quality of life (r = -.35, p = .001). Perceived COVID-19 exposure was negatively correlated with physical quality of life (r = -.24, p = .04). Illness controllability was positively associated with mental quality of life (r = .24, p = .03). Males reported higher levels of physical quality of life, M = 48.60, t(82)= 2.09, p = 0.012, than females (M = 43.32) and mental quality of life, M = 41.88, t(82)= 2.16, p = 0.033, than females (M = 35.04). Thus, illness controllability, perceived COVID-19 impact, and sex were used as covariates in the primary analyses for the mental quality of life model. Finally, perceived COVID-19 impact, perceived COVID-19 exposure, and sex were used as covariates in the primary analyses for the physical quality of life model.

Analyses revealed no other significant associations for disease or demographic variables (i.e., age, race, illness severity) with mental and physical quality of life (all *p*'s > .05). Demographic characteristics of the current sample are presented in Table 1 and bivariate correlations, means, and standard deviations for variables of interest are presented in Table 2.

Primary Analyses

Aim 1

Our final sample for Aim 1 included 82 participants with a CMC and 82 without a CMC. For the purpose of this aim, two participants with a CMC from the larger sample were unable to be matched and excluded from analyses. Results of the independent samples *t*-test comparing perceived maturity based on CMC status showed no significant differences in maturity for participants with a CMC ($M = 3.58$, $SD = 0.08$) than without a CMC ($M = 3.68$, $SD = 0.77$), $t(162) = 0.88$, $p = .38$.

Aim 2: Physical Quality of Life

Simple Mediation Analyses. With sex, perceived COVID-19 impact and perceived COVID-19 exposure included in the model, simple mediation results demonstrated a significant path for *perceived maturity* → *transition readiness* ($a = 0.52$, 95% CI = 0.35 to 0.68) but not for *transition readiness* → *physical quality of life* ($b = 0.98$, 95% CI = -2.78 to 4.75). However, the direct effect for *perceived maturity* → *physical quality of li*fe was not significant ($c' = -0.63$, 95% CI = -3.96 to 2.70). The *perceived maturity* → *transition readiness* → *physical quality of life* indirect path was also not significant ($ab = .51$, 95% CI = -1.46 to 2.89).

Moderated mediation analyses. Moderated mediation results did not indicate significant direct effects for *perceived maturity* → *transition readiness* (*a* = 0.59, 95% CI = -0.03 to 1.20), nor for *transition readiness* → *physical quality of life* (*b* = 1.18, 95% CI = -2.62 to 4.97). The direct effect of *perceived maturity* → *physical quality of life* was not significant (*c*' = -0.57, 95% CI = -3.90 to 2.76). Moderated mediation results did not demonstrate a significant moderation effect for grit on the overall mediation *perceived maturity* → *transition readiness* → *physical quality of life* (index of moderated mediation = -0.04, 95% CI = -0.88 to 1.03). Further, there was no significant focal interaction at high levels of grit (effect = 0.52, 95% CI = -1.19 to 3.54), medium levels of grit (effect = 0.56, 95% CI = -1.30 to 2.87), and low levels of grit (effect = 0.59, 95% CI = -1.45 to 2.68).

Mental Quality of Life

Simple Mediation Analyses. Simple mediation results demonstrated a significant path for *perceived maturity* → *transition readiness* (*a* = 0.55, 95% CI = 0.39 to 0.71) and *transition readiness* → *mental quality of life* (*b* = 5.84, 95% CI = 1.60 to 10.08). With sex, COVID-19 impact and illness controllability included in the model, the direct effect was not significant (*c*' = -1.74, 95% CI = -5.56 to 2.08). However, the *perceived maturity* → *transition readiness* → *mental quality of life* indirect path was significant (*ab* = 3.21, 95% CI = 1.11 to 6.03).

Moderated mediation analyses. Moderated mediation results did not indicate significant direct effects for *perceived maturity* → *transition readiness* (path *a* = 0.60, 95% CI = -0.02 to 1.22), but did indicate significant direct effects for *transition readiness*

→ *mental quality of life* (path *b* = 5.68, 95% CI = 1.39 to 9.97). The direct effect of *perceived maturity* → *mental quality of life* was not significant (path *c*' = -1.77, 95% CI = -5.61 to 2.07). Moderated mediation results did not demonstrate a significant moderation for grit on the overall mediation *perceived maturity* → *transition readiness* → *mental quality of life* (index of moderated mediation = -0.19, 95% CI = -2.42 to 1.97). However, there was a significant focal interaction at high levels of grit (effect = 2.65, 95% CI = 0.14 to 6.75), medium levels of grit (effect = 2.84, 95% CI = 0.94 to 5.47), and low levels of grit (effect = 2.99, 95% CI = 0.84 to 5.79).

Exploratory Aim

The average score for overall perceived maturity was high (*M* = 3.57, *SD* = 0.73) with similar scores across the three subscales: financial (*M* = 3.32, *SD* = 0.95), social (*M* = 3.62, *SD* = 1.01), and personal maturity (*M* = 3.78, *SD* = 0.81). Further, highest mean scores were reported for ambitions/goals for the future and friendships/social relationships, and lowest scores were reported for financial independence and managing own responsibilities (e.g., bills, insurance). Based on freuquences, sixty-eight percent of AYAs with a CMC (*n* = 57) felt they grew up faster than their same aged peers, while only 6% (*n* = 5) reported that they felt they grew up slower. Seventy-five percent (*n* = 63) felt more mature than their peers, while 4% (*n* = 3) felt less mature. First generation college student status was significantly associated with lower personal maturity, M = 3.28; *t*(82)= -3.13, *p* = .002. Identifying as BIPOC was associated with greater financial maturity, M = 3.87; *t*(82)= -2.88, *p* = .005, but not social and personal maturity (*p*'s > .05). Age, sex, education-level, single parent household, rural vs. urban background, and

perceived illness severity and controllability were not significantly associated with perceived maturity (*p*'s > .05).

CHAPTER IV

DISCUSSION

The present study aimed to examine how perceived maturity and grit play a role in transition readiness and ultimately in the quality of life in AYAs with a CMC. The mediation analyses showed a significant indirect path, which supports the idea that perceived maturity is associated with mental quality of life through transition readiness. Our findings suggest that perceived maturity is related to better mental quality of life through the impact of better (i.e, higher levels of) healthcare management skills. As such, transition readiness appears to be one potential behavioral mechanism by which maturity impacts quality of life in AYAs with a CMC. These findings are consistent and extends research with congenital heart disease/heart transplant survivors and youth with Type 1 Diabetes demonstrating that greater maturity is associated with higher quality of life (Mackie et al., 2016), and increased life satisfaction in young adult survivors of childhood cancer (Dattilo et al., 2021).

This finding is also consistent with previous research demonstrating higher levels of healthcare management skills are associated with increased quality of life (Sharkey et al., 2017; Traino, Fisher, et al., 2021; Traino, Sharkey, et al., 2021; Uzark et al., 2015). However, the current assessment expands these findings by examining how maturity may also influence this relationship. In contrast to prediction, our results did *not* show a significant direct association between maturity and physical quality of life. Further, our findings did not support the hypothesized relationship between these two constructs through the influence of better healthcare management skills. This may be in part be due to participants in the current study reporting relatively high overall levels of physical quality life. Potentially, this limited variability in physical quality of life may have impacted our ability to detect a relationship between maturity and physical quality of life. Such findings may also be due to the conceptualization of maturity in the current study's measure. Presently, maturity is conceptualized as a psychosocial construct, which may be more pertinent to mental quality of life. Further, it is possible that *perceived* maturity, rather than objective indices of maturity (e.g., holding a job, obtaining education), are more strongly related to mental components quality of life vs. physical components. In contrast, objective components of maturity, may be more directly related to physical quality of life, as engagement in health-promoting behaviors, such as sleep, diet, and physical activity, can require planning and organization. Additional research should examine these factors while further exploring the relationship between maturity and aspects of quality of life as it relates to healthcare management skills.

In addition to the mediation model, we evaluated a more complex, moderated mediation model (i.e., *perceived maturity* → *transition readiness* → *quality of life*,

moderated by grit). Our findings did not show a significant moderated mediation model for physical quality of life. Thus, our hypothesis that AYAs who perceive themselves as more mature are more likely to have higher levels of transition readiness and also report higher levels of quality of life, specifically under conditions of higher levels of grit, was not supported. Although there was a significant moderated mediation model for mental quality of life, grit was significant at all three levels, suggesting there is not a true moderating effect. There may be a number of explanations for these findings. It may be that our model was not significant potentially due to multi-collinearity between variables, or, there was possibly truncated variance in grit as demonstrated by the restricted variance and standard deviations in grit scores. Addtionally, it may be that we were statistically underpowered due to our sample size and and our measure of grit had poor reliability. It could also be that AYAs with a CMC in the college setting are generally more "gritty" than AYA without a CMC in college and therefore there is little variability. However, future research should examine additional other potential moderators pertinent to transition readiness and quality of life that may better fit Hilliard's resilience model (Hilliard et al., 2012).

Further, our exploratory aim sought to examine differences in perceived maturity based on demographic and medical characteristics. Notably, our results demonstrated no differences in maturity between matched AYAs with and without a CMC. Interestingly, our results suggested that having a CMC appears to have a relationship to self-perceived development, as a large majority of AYAs with a CMC report "feeling like they grew up faster than their peers". These results align with research showing that some aspects of childhood adversity or health challenges may lead AYAs to feel older than peers

(Johnson & Mollborn, 2009). For AYAs with a CMC, specifically, it may be that the experience of having a medical condition facilitates or fosters more rapid psychosocial development and thus increasing feelings of maturity. However, it could also be that AYAs may overestimate their level of maturity in comparison to their peers. Further, it could be that increased focus or responsibility on managing one's healthcare, particularly for AYAs with a severe CMC leads to increased maturity in very specific ways or domains of their lives (i.e., increased ability to manage healthcare bills and insurance, but not increased social maturity potentially due to time spent managing the CMC or attending medical appointments). Future research is needed to specifically examine these domains (i.e., social vs. financial) among AYAs with a CMC in order to pinpoint potential areas for growth.

Interestingly, AYAs with a CMC reported highest maturity mean scores for items assessing "ambitions/goals for the future" and "friendships/social relationships" and reported the lowest mean scores for "financial independence and family planning." Such findings warrant additional research with a larger sample and more extensive assessment of these domains, however these results suggest AYAs with a CMC may benefit from additional resources in the University context to foster financial independence. Interestingly, first-generation college student status was associated with lower personal maturity. Additionally, despite the existence of systemic barriers (e.g., racism; Barber, 2020; Cabrera, 2014; Vaughn & Elam, 2021) disproportionally experienced by BIPOC communities that could lead to an increased sense of maturity, the participants from minoritized backgrounds in the current study did not report feeling more mature than other subgroups, except for reporting greater financial maturity. These preliminary results

suggest that it could be that AYAs within marginalized communities experience system-based barriers that lead to having increased sense of financial independence at a younger age as demonstrated my previous research (Quane et al., 2015).

From a clinical perspective, this study has a number of implications for AYAs with a CMC during this critical developmental period. First, the present findings should encourage university-level efforts to develop wellness programs that promote transition readiness skills for students with a CMC, such as enhancing health and financial literacy. Importantly, research has found that positive healthcare provider-patient communication, adequate timing of transition to adult care, and increased perceived self-efficacy as important targets for intervention to improve transition readiness (Gumidyala et al., 2018; Jensen et al., 2017; Uzark et al., 2015). Taken together, it may be important for nurses and other healthcare providers to target maturity (i.e., support developmental milestones) and healthcare transition readiness during medical visits throughout adolescence in preparation for emerging adulthood, as well as during emerging adulthood. It may also be useful to use the Maturity Questionnaire as a brief screener to quickly and efficiently identify strengths and weaknesses of AYA that may need more support during the transition to adulthood and managing their own health. Indeed, it is important to reinforce strengths in maturity to promote independence and autonomy as maturity may be a promotive factor for AYA with a CMC. Although the present study identified maturity and healthcare management skills as important contributors to mental quality of life, gaps remain in our understanding of promotive factors that could bolster independent healthcare management skills and quality of life among AYAs with a wide range of CMCs.

Limitations

This study should be considered within the context of several limitations. This study was cross-sectional in nature, limiting our ability to infer causal relationships. The present findings may also have limited generalizability, as the current sample of AYAs was not sociodemographically diverse and included disproportionately more females than males. Additionally, the current study design prevented us from confirming the self-reported diagnoses with medical record reviews and included a wide range of diagnoses (i.e., asthma or irritable bowel syndrome) potentially limiting our findings. Additionally, certain subgroup comparisons (e.g., race and ethnicity) were potentially underpowered due to our sample size.

Further, perceptions of maturity were self-reported and may differ from how other informants (e.g., parents, friends) may perceive maturity. Due to a lack of established, standardized measures to assess maturity in AYAs with a CMC, this study used a newly developed Maturity Questionnaire (Dattilo et al., 2021). Although previous research utilizing this particular maturity measure has reported high internal reliability (Dattilo et al., 2021), there is the need for validation in future research. Specifically, it would be helpful to explore the factor structure of the maturity measure to support its use as a screening tool in emerging adult populations. Importantly, our measure of grit showed very poor reliability which warrants further examiniation of the utility of this measure. Further, recruitment took place during the COVID-19 pandemic, thus, we believed it important to assess for COVID-19 impact and exposure which were then included as covariates. Despite these limitations, the presented findings are an important preliminary step in understanding the relationship between resiliency factors including perceived

maturity, grit, transition readiness, and physical and mental health-related quality of life in understudied AYAs with a CMC during this critical developmental period.

Conclusions

In sum, the current study is among the first to examine the constructs of maturity and grit in relation to physical and mental quality of life among AYAs with a CMC. The current study results suggest that perceived maturity is related to better healthcare management skills and, in turn, higher levels of mental quality of life. However, grit was not a significant moderator in the relationship between perceived maturity, transition readiness, and quality of life. Overall, AYAs with a CMC may perceive themselves as more mature and feel as though they grew up faster than their peers, an experience that is associated with better mental quality of life. Thus, it stands to reason that there are additional, understudied resiliency factors that may be important to overall adjustment. As such, more research is needed to examine constructs that potentially protect against reduced quality of life.

APPENDIX

EXTENDED LITERATURE REVIEW

In addition to the challenges of traditional developmental milestones, adolescent and young adults (AYAs) with a chronic medical condition (CMC) pursuing higher education must learn to independently manage their own healthcare. Maturity and grit may serve as promotive factors for transition readiness and quality of life outcomes; however, no research to date has examined these interrelationships. The goal of the current study is to examine how maturity and grit play a role in transition readiness and ultimately in the quality of life in AYAs with a CMC. The following chapter includes a review of the literature for the current study.

College Students with Chronic Medical Conditions

Medical innovations in the last three decades have increased the survival rates and quality of life of AYAs with a CMC (Compas et al., 2012; Pai & Schwartz, 2011; Pinzon et al., 2006). Nevertheless, medical self-management can be challenging and AYAs with a CMC transition to adulthood with the burden of learning to independently manage their healthcare. The transition to college is normatively associated with multiple stressors, including relocation, increased academic expectations and responsibilities, and changes in social support, all of which may be exacerbated by the responsibility of managing a CMC (Brougham et al., 2009; Dancey et al., 2002; Devins, 2010; Dusselier et al., 2005; Ferro et al., 2015; Lee et al., 2014; Orzech et al., 2011). It is well established that college students with a CMC report worse overall psychosocial functioning as compared to college students without a CMC (e.g., Carpentier et al., 2007; Ferro et al., 2015; Herts et al., 2014). In fact, an alarming number of college students with a CMC endorse clinically significant depressive symptoms (Bakula et al., 2019; Dattilo et al., n.d.). Further, college students often report high levels of stress (Baghurst & Kelley, 2014; Misra et al., 2000; Saleh et al., 2017) and students who experience stress are less likely to engage in positive health behaviors (Britz & Pappas, 2010; Choi, 2020; Hudd et al., 2000). Increased stress has also been linked to negative mental health outcomes and negative health behaviors and outcomes (Dalton & Hammen, 2018; Largo-Wight et al., 2005; Pedersen, 2012). Particularly for AYAs with a CMC, this stress may be increased due to the added responsibility of learning to *independently* manage their healthcare needs. However, more research is needed to be able to aid AYAs in their transition to adult healthcare within a theoretical framework of risk and resilience.

A Model of Risk and Protection

Although a number of models of risk and resilience have been set forth, a recent model proposed by Hilliard in the context of Type 1 diabetes appears particularly relevant to AYAs with a chronic health condition. Based on resiliency theory, Hilliard and colleagues (2012) define resilience as "the achievement of one or more positive outcomes despite exposure to significant risk or adversity." While there have been several emerging conceptual theories of risk and resilience in pediatric psychology (Haase, 2004; Hauser et al.,1985; Koinis-Mitchell et al., 2012; Koinis Mitchell et al., 2004; Rolland & Walsh, 2006; Wallander et al., 1989; Wells & Schwebel, 1987; Whittemore et al., 2010), Hilliard's and colleagues' model (2012) suggests that the relationship between risk and assets and health outcomes is improved by specific promotive factors (see Figure 1). In this model, "risk and assets" refer to the individual, family, and social/contextual characteristics and circumstances that are associated with both positive and negative outcomes. There are also two inter-related, yet distinct domains of resilient outcomes (e.g., HbA1c within target range) of youth with Type 1 Diabetes, including: 1) behavioral (e.g., frequent blood-glucose monitoring), and 2) health-related (e.g., in-range glycemic control) domains. Diabetes-specific promotive processes demonstrate the individual, family, and social/contextual processes in which youth overcome adversity. The model also includes non-diabetes specific general resilience outcomes, such as social and academic milestones (Hilliard et al., 2012).

Overall, this model specifies the risk and resilience pathways of youth with Type 1 Diabetes, however, future research is needed to apply it to other populations, such as college students with a CMC. The emphasis on both reduction of risk and promotion of

promotive processes in clinical care and research in this model could potentially promote a cascade of resilient behavioral and health-related outcomes. In the context of the current study, resilience and assets refers specifically to higher levels of perceived maturity and higher levels of grit that are suspected to be related to *positive* outcomes. The inter-correlated, distinct domains of resilient outcomes in the current study refers to transition readiness skills (e.g., independently booking doctor appointments or remembering to take prescribed medications) and higher levels of quality of life. Thus, using this risk and protection model in a sample of AYAs with a CMC is warranted. Arguably, it may be that maturity and grit are both promotive factors for poor transition readiness skills and ultimately lower levels of quality of life.

The Construct of Maturity

The majority of the research on psychosocial maturity was conducted over twenty years ago (Greenberger, 1984; Greenberger et al., 1975; Greenberger & Sørensen, 1974). Greenberger and colleagues (1974) developed a conceptual model that specifies measurable attributions and dispositions central to psychosocial maturity. Greenberger's model (1974) incorporates sociological and psychological views of the person with three critical domains in mind, including the capacity to: 1) function adequately on an individual basis, 2) interact adequately with others, and 3) contribute to social cohesion. In this manner, the psychosocial maturity inventory was first developed to fill a gap in tools in understanding the "nonacademic growth of students" or rather their growth as individuals and social beings (Greenberger et al., 1975). Specific subscales for this measure included self-reliance, work orientation, identity, communication skills, roles, enlightened trust, social commitment, tolerance, and openness to change (Greenberger et

al., 1975). Further, Greenberger examined if psychosocial maturity is developmental and valued by adolescents with two important aspects: autonomy and social responsibility (e.g., social commitment, open to sociopolitical change, tolerance of cultural differences, Greenberger, 1984). Findings from this study demonstrate higher quantity and better quality of familial relationships and an increase in involvement in school are associated with autonomy, and there is an association between academic achievement and social responsibility (Greenberger, 1984).

More recently, research has examined psychosocial maturity in the context of youth with diabetes and congenital heart disease/heart transplant. Researchers have found that greater maturity is associated with attaining trust, identity, and integrity through activity and involvement and leads to increased quality of life in these populations (Hörnsten et al., 2002; Mackie et al., 2016). Research also found that a lack of psychosocial maturity predicts patterns of poor metabolic control across AYAs (King et al., 2012). Notably, increased psychosocial maturity is predictive of treatment responsibility and management in Type 1 Diabetes (Silva & Miller, 2019). Recent research in young adult survivors of childhood cancer has also found that the childhood cancer experience may influence development with majority of survivors feeling like they grew up faster and are more mature than their peers (Dattilo, T. M., n.d.). Additionally, personal maturity (e.g., emotional stability, autonomy, managing their own health, and ambitions/goals for the future) was related to higher levels of life satisfaction (Dattilo, T. M., n.d.). Based on these findings, there is a clear need to assess the construct of maturity across different illness groups specifically in emerging adulthood.

Grit

Grit is an interpersonal characteristic often studied in the positive psychology literature and is defined by "passion and perseverance for long-term goals" (Duckworth, Peterson, Matthews, & Kelly, 2007). Grit is unique in that it is focused on the long-term interest in completing and perhaps surpassing the individual's overall desired goal which contributes to optimal functioning (Duckworth et al., 2005). By integrating grit into health psychology, it increases the understanding of psychological strength and flourishing, with the overall goal of integrating both psychology and medicine to manage CMCs (Sharkey et al., 2018).

Research has shown that grit is predictive of success in academics, workplace retention, and personal goals (Duckworth et al., 2007). Grit has also been shown to be promotive against negative distressing symptoms including suicidal ideation and is positively associated with mental wellbeing (Pennings et al., 2015; Vainio & Daukantaitė, 2016). More specifically, one study in college students found that higher levels of grit were related to higher levels of self-control, mental health, resilience, and growth-oriented mindset (Kannangara et al., 2018). Moreover, research has demonstrated that among college students *with a CMC*, grit is directly associated with a *decrease* in negative psychosocial outcomes (e.g., anxiety and depression; Sharkey et al., 2018). Importantly, research has also demonstrated that higher levels of grit are associated with increased healthcare management skills and ultimately higher levels of quality of life (Sharkey et al., 2017; Traino et al., 2019), improved exercise behaviors among healthy populations (Reed et al., 2013), and lower body mass index in adults with and without obesity (Thomas et al., 2015). Collectively, these findings suggest that grit may be an important target for interventions (Thomas et al., 2015; Reed et al., 2013; Sharkey et al.,

2017; Traino et al., 2019). Although research on grit is generally increasing, there remains a lack of research on grit as an interpersonal construct in the context of CMCs (Sharkey et al., 2018). In this manner, grit may be a particularly important factor in independent healthcare management and potential lack of perceived maturity.

Transition Readiness

Transition readiness refers to health care management skills utilized during the transition from child to adult healthcare systems (Reed-Knight et al., 2014; Sansom-Daly et al., 2012). AYAs who have a CMC are typically more equipped with transition readiness skills compared to their peers without a CMC (Eaton et al., 2017). However, there is little research on transition readiness in non-medically complex and healthy peers with limited research showing they experience just as much difficulty in transitioning as AYAs with a CMC (Leung et al., 2019; Sabbagh et al., 2018). Notably, healthcare workers are not well equipped to work independently with the AYA or parent in order to promote the transition to adult healthcare, and thus, AYAs with and without CMCs do not receive the transition guidance needed (Lebrun-Harris et al., 2018). Research suggests that parent guidance may be more valuable for AYAs in healthcare transition compared to their healthcare provider (Syverson et al., 2016), potentially due to time constraints and lack of training.

One vital factor that has been deemed important in a successful transition from pediatric to adult care is self-management (Sabbagh et al., 2018). Along these lines, timing of transition to adult care should not be dictated by age, but instead the individual's level of *maturity* and preparation of the AYA and parent (McDonagh, 2007).

Barriers to a successful transition have been identified as "getting along" with providers and not wanting to end relations with pediatric providers, insurance difficulties, negative cognitions about adult care, and a lack of healthcare knowledge and self-management skills (Gray et al., 2018; van Staa et al., 2011).

Schwartz and colleagues (2011) developed a social-ecological model (SMART) of transition readiness for AYAs with CMCs. The SMART model places a specific emphasis on inter-related constructs of patients, parents, and providers that can be targeted for potential intervention (Schwartz et al., 2011). This particular model places a large importance on the need for assessment of relevant stakeholders' perspectives of the patient's transition readiness. The measure of the SMART model can be completed by patients, parents, and providers to target specific areas ideal for intervention to facilitate and promote better transition readiness and development of independent healthcare management skills (Schwartz et al., 2011).

In addition to the SMART model, Betz and colleagues (2014) developed a theoretical framework to guide research development and incorporation of findings into improvement and delivery models. The Health Care Transition (HTC) model includes four domains: 1) individual, 2) family/social support, 3) environment, and 4) the healthcare system. This model recognizes that healthcare transition is a complex process that requires additional research to examine relationships between the four domains (Betz et al., 2014). In addition to Betz's model, Sharkey and colleagues (2017) demonstrated that higher levels of grit in generally healthy college students and mental quality of life are indirectly related through transition readiness skills (Sharkey et al., 2017). In order to expand on this finding, Traino and colleagues (2019) found that higher grit in college

students with a CMC was related to better transition readiness skills and increased quality of life (Traino et al., 2019). Thus, these findings suggest the importance of interventions targeting grit and transition readiness skills to improve quality of life.

Quality of Life

Health-related quality of life refers to individual functioning in addition to mental and physical well-being (Ferrans et al., 2005). Measuring quality of life in AYAs with a CMC is important as it is a multidimensional, comprehensive view of the individual's overall health (Siroux et al., 2008). Health-related quality of life refers to individual functioning in addition to mental and physical well-being (Ferrans et al., 2005; Siroux et al., 2008). Research has recently indicated that college students with a CMC are at higher risk for worse quality of life compared to their peers without a CMC (e.g., Fedele et al., 2009; Traino et al., 2019). Lower health-related quality of life in college students is associated with various adverse outcomes, such as worse academic functioning, mortality, obesity, and an increased risk of negative health behaviors (DeBerard et al., 2004; Herts et al., 2014b; Kanwal et al., 2009; Magid et al., 2004; Swallen et al., 2005; Zahran et al., 2007). College students with a CMC are at particular risk for lower levels of quality of life (Fedele et al., 2009; Herts et al., 2014b). In particular, sleep quality and healthcare utilization have been linked to quality of life in AYAs with a CMC (Molzon et al., 2013; Traino, Sharkey, et al., 2021). Additionally, previous research has shown that grit and transition readiness have been linked to increased quality of life (Sharkey et al., 2017; Traino et al., 2019). Thus, there is a need to identify additional modifiable factors, such as maturity, that could be promotive processes to improve overall health-related quality of life.

Summary

In sum, AYAs with a CMC are having to meet important developmental milestones that set the stage for adulthood with the added responsibility of learning to independently manage their medical responsibilities. Due to the previously established relationship between transition readiness and quality of life in AYAs, additional resilience factors need to be identified to bolster AYAs' skills in transitioning to adult care and ultimately improving their quality of life. Two such constructs are that of perceived maturity and grit. It is suspected that AYAs with higher levels of maturity *and* higher levels of grit will have better transition readiness skills which will subsequently improve quality of life. Thus, it may be that AYAs who feel more mature and are grittier (e.g., persevere) have better transition readiness and higher levels of quality of life.

REFERENCES

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469.

Arnett, J. J. (2014). *Emerging adulthood: The winding road from the late teens through the twenties*. Oxford University Press.

Arnett, J. J. (2015). Identity development from adolescence to emerging adulthood: What we know and (especially) don't know. *The Oxford Handbook of Identity Development*, 53–64.

Arnett, J. J., & Tanner, J. L. (2006). *Emerging adults in America: Coming of age in the 21st century*. Citeseer.

Association, A. C. H. (2018). American College Health Association-National College Health Assessment II: Graduate/professional student reference group executive summary Spring, 2018. *Hanover, MD: American College Health Association*.

Azmitia, M., Syed, M., & Radmacher, K. (2013). Finding your niche: Identity and emotional support in emerging adults' adjustment to the transition to college.

Journal of Research on Adolescence, *23*(4), 744–761.

Baete Kenyon, D., & Silverberg Koerner, S. (2009). Examining emerging-adults' and parents' expectations about autonomy during the transition to college. *Journal of Adolescent Research*, *24*(3), 293–320.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469.

Arnett, J. J. (2014). *Emerging adulthood: The winding road from the late teens through the twenties*. Oxford University Press.

Arnett, J. J. (2015). Identity development from adolescence to emerging adulthood: What we know and (especially) don't know. *The Oxford Handbook of Identity Development*, 53–64.

Arnett, J. J., & Tanner, J. L. (2006). *Emerging adults in America: Coming of age in the 21st century*. Citeseer.

Association, A. C. H. (2018). American College Health Association-National College Health Assessment II: Graduate/professional student reference group executive summary Spring, 2018. *Hanover, MD: American College Health Association*.

Azmitia, M., Syed, M., & Radmacher, K. (2013). Finding your niche: Identity and emotional support in emerging adults' adjustment to the transition to college. *Journal of Research on Adolescence*, *23*(4), 744–761.

Baete Kenyon, D., & Silverberg Koerner, S. (2009). Examining emerging-adults' and parents' expectations about autonomy during the transition to college. *Journal of*

Adolescent Research, *24*(3), 293–320.

Baghurst, T., & Kelley, B. C. (2014). An examination of stress in college students over the course of a semester. *Health Promotion Practice*, *15*(3), 438–447.

Bakula, D. M., Sharkey, C. M., Perez, M. N., Espeleta, H. C., Hawkins, M., Chaney, J. M., & Mullins, L. L. (2019). The Role of Stigma in the Relationship Between Illness Intrusiveness and Adjustment in Adolescents and Young Adults: A Path Model. *Journal of Pediatric Psychology*, *44*(5), 611–619. https://doi.org/10.1093/jpepsy/jsz004

Barber, P. H. (2020). *Systemic racism in higher education [Letter to the Editor]*.

Belpame, N., Kars, M. C., Deslypere, E., Rober, P., Van Hecke, A., & Verhaeghe, S. (2019). Living as a cancer survivor: A qualitative study on the experiences of Belgian adolescents and young adults (AYAs) after childhood cancer. *Journal of Pediatric Nursing*, *49*, e29–e35.

Benson, J. E., & Elder Jr, G. H. (2011). Young adult identities and their pathways: A developmental and life course model. *Developmental Psychology*, *47*(6), 1646.

Betz, C. L., Ferris, M. E., Woodward, J. F., Okumura, M. J., Jan, S., & Wood, D. L. (2014). The health care transition research consortium health care transition model: a framework for research and practice. *Journal of Pediatric Rehabilitation Medicine*, *7*(1), 3–15.

Britz, J., & Pappas, E. (2010). Sources and outlets of stress among university students: Correlations between stress and unhealthy habits. *Undergraduate Research Journal*

for the Human Sciences, *9*(1).

Brougham, R. R., Zail, C. M., Mendoza, C. M., & Miller, J. R. (2009). Stress, sex differences, and coping strategies among college students. *Current Psychology*, *28*(2), 85–97.

Cabrera, N. L. (2014). Exposing whiteness in higher education: White male college students minimizing racism, claiming victimization, and recreating white supremacy. *Race Ethnicity and Education*, *17*(1), 30–55.

Carpentier, M. Y., Mullins, L. L., & Van Pelt, J. C. (2007). Psychological, academic, and work functioning in college students with childhood-onset asthma. *Journal of Asthma*, *44*(2), 119–124. https://doi.org/10.1080/02770900601182418

Choi, J. (2020). Impact of stress levels on eating behaviors among college students. *Nutrients*, *12*(5), 1241.

Compas, B. E., Jaser, S. S., Dunn, M. J., & Rodriguez, E. M. (2012). Coping with chronic illness in childhood and adolescence. *Annual Review of Clinical Psychology*, *8*, 455–480. https://doi.org/10.1146/annurev-clinpsy-032511-143108

Copeland, V. C. (2005). African Americans: Disparities in health care access and utilization. *Health & Social Work*, *30*(3), 265–270.

Dalton, E. D., & Hammen, C. L. (2018). Independent and relative effects of stress, depressive symptoms, and affect on college students' daily health behaviors. *Journal of Behavioral Medicine*, *41*(6), 863–874.

Dancey, C. P., Hutton-Young, S. A., Moye, S., & Devins, G. M. (2002). Perceived

stigma, illness intrusiveness and quality of life in men and women with irritable bowel syndrome. *Psychology, Health & Medicine*, *7*(4), 381–395.

Daniel, L. C., Aggarwal, R., & Schwartz, L. A. (2017). Sleep in adolescents and young adults in the year after cancer treatment. *Journal of Adolescent and Young Adult Oncology*, *6*(4), 560–567.

Dattilo, T. M., Olshefski, R. S., Nahata, L., Hansen-Moore, J. A., Gerhardt, C. A., Lehmann, V. . (n.d.). Growing Up after Childhood Cancer: Maturity and Life Satisfaction in Young Adulthood. *Supportive Care in Cancer*.

Dattilo, T. M., Olshefski, R. S., Nahata, L., Hansen-Moore, J. A., Gerhardt, C. A., & Lehmann, V. (2021). Growing up after childhood cancer: maturity and life satisfaction in young adulthood. *Supportive Care in Cancer*, 1–8.

DeBerard, M. S., Spielmans, G. I., & Julka, D. L. (2004). Predictors of academic achievement and retention among college freshmen: A longitudinal study. *College Student Journal*, *38*(1), 66–81.

Devins, G. M. (2010). Using the illness intrusiveness ratings scale to understand health-related quality of life in chronic disease. *Journal of Psychosomatic Research*, *68*(6), 591–602.

Duckworth, Angela L, Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*, *92*(6), 1087.

Duckworth, Angela Lee, & Quinn, P. D. (2009). Development and validation of the Short

Grit Scale (GRIT–S). *Journal of Personality Assessment*, *91*(2), 166–174.

Dusselier, L., Dunn, B., Wang, Y., Shelley iI, M. C., & Whalen, D. F. (2005). Personal, health, academic, and environmental predictors of stress for residence hall students. *Journal of American College Health*, *54*(1), 15–24.

Eaton, C. K., Davis, M. F., Gutierrez-Colina, A. M., LaMotte, J., Blount, R. L., & Suveg, C. (2017). Different demands, same goal: promoting transition readiness in adolescents and young adults with and without medical conditions. *Journal of Adolescent Health*, *60*(6), 727–733.

Erdmann, F., Frederiksen, L. E., Bonaventure, A., Mader, L., Hasle, H., Robison, L. L., & Winther, J. F. (2020). Childhood cancer: Survival, treatment modalities, late effects and improvements over time. *Cancer Epidemiology*, *November 2019*, 101733. https://doi.org/10.1016/j.canep.2020.101733

Espeleta, H. C., Bakula, D. M., Delozier, A. M., Perez, M. N., Sharkey, C. M., & Mullins, L. L. (2019). Transition readiness: The linkage between adverse childhood experiences (ACEs) and health-related quality of life. *Translational Behavioral Medicine*, *9*(3), 533–540.

Feagin, J., & Bennefield, Z. (2014). Systemic racism and US health care. *Social Science & Medicine*, *103*, 7–14.

Fedele, D. A., Mullins, L. L., Eddington, A. R., Ryan, J. L., Junghans, A. N., & Hullmann, S. E. (2009). Health-related quality of life in college students with and without childhood-onset asthma. *Journal of Asthma*, *46*(8), 835–840.

Ferrans, C. E., Zerwic, J. J., Wilbur, J. E., & Larson, J. L. (2005). Conceptual model of health□related quality of life. *Journal of Nursing Scholarship*, *37*(4), 336–342.

Ferro, M. A., Gorter, J. W., & Boyle, M. H. (2015). Trajectories of depressive symptoms during the transition to young adulthood: The role of chronic illness. *Journal of Affective Disorders*, *174*, 594–601. https://doi.org/10.1016/j.jad.2014.12.014

Gonzalez, O., Canning, J. R., Smyth, H., & MacKinnon, D. P. (2019). A psychometric evaluation of the Short Grit Scale. *European Journal of Psychological Assessment*.

Graham Thomas, J., Seiden, A., Koffarnus, M. N., Bickel, W. K., & Wing, R. R. (2015). Delayed reward discounting and grit in men and women with and without obesity. *Obesity Science & Practice*, *1*(2), 131–135.

Gray, W. N., Schaefer, M. R., Resmini-Rawlinson, A., & Wagoner, S. T. (2018). Barriers to transition from pediatric to adult care: a systematic review. *Journal of Pediatric Psychology*, *43*(5), 488–502.

Greenberger, E. (1984). Defining psychosocial maturity in adolescence. *Advances in Child Behavioral Analysis & Therapy*.

Greenberger, E., Josselson, R., Knerr, C., & Knerr, B. (1975). The measurement and structure of psychosocial maturity. *Journal of Youth and Adolescence*, *4*(2), 127–143.

Greenberger, E., & Sørensen, A. B. (1974). Toward a concept of psychosocial maturity. *Journal of Youth and Adolescence*, *3*(4), 329–358.

Gumidyala, A. P., Greenley, R. N., Plevinsky, J. M., Poulopoulos, N., Cabrera, J., Lerner,

D., Noe, J. D., Walkiewicz, D., Werlin, S., & Kahn, S. A. (2018). Moving on: transition readiness in adolescents and young adults with IBD. *Inflammatory Bowel Diseases*, *24*(3), 482–489.

Haase, J. E. (2004). The adolescent resilience model as a guide to interventions. *Journal of Pediatric Oncology Nursing*, *21*(5), 289–299.

Hauser, S. T., Vieyra, M. A. B., Jacobson, A. M., & Wertlieb, D. (1985). Vulnerability and resilience in adolescence: Views from the family. *The Journal of Early Adolescence*, *5*(1), 81–100.

Hays, R. D., Sherbourne, C. D., & Mazel, R. M. (1993). The rand 36□item health survey 1.0. *Health Economics*, *2*(3), 217–227.

Herts, K. L., Wallis, E., & Maslow, G. (2014a). College freshmen with chronic illness: A comparison with healthy first-year students. *Journal of College Student Development*, *55*(5), 475–480. https://doi.org/10.1353/csd.2014.0052

Herts, K. L., Wallis, E., & Maslow, G. (2014b). College freshmen with chronic illness: A comparison with healthy first-year students. *Journal of College Student Development*, *55*(5), 475–480.

Hilliard, M. E., Harris, M. A., & Weissberg-Benchell, J. (2012). Diabetes resilience: A model of risk and protection in type 1 diabetes. *Current Diabetes Reports*, *12*(6), 739–748.

Hörnsten, Å., Norberg, A., & Lundman, B. (2002). Psychosocial maturity among people with diabetes mellitus. *Journal of Clinical Nursing*, *11*(6), 777–784.

Hudd, S. S., Dumlao, J., Erdmann-Sager, D., Murray, D., Phan, E., Soukas, N., & Yokozuka, N. (2000). Stress at college: effects on health habits, health status and self-esteem. *College Student Journal*, *34*(2).

Jensen, P. T., Paul, G. V, LaCount, S., Peng, J., Spencer, C. H., Higgins, G. C., Boyle, B., Kamboj, M., Smallwood, C., & Ardoin, S. P. (2017). Assessment of transition readiness in adolescents and young adults with chronic health conditions. *Pediatric Rheumatology*, *15*(1), 70.

Johnson, M. K., & Mollborn, S. (2009). Growing up faster, feeling older: Hardship in childhood and adolescence. *Social Psychology Quarterly*, *72*(1), 39–60.

Kannangara, C. S., Allen, R. E., Waugh, G., Nahar, N., Khan, S. Z. N., Rogerson, S., & Carson, J. (2018). All that glitters is not grit: Three studies of grit in university students. *Frontiers in Psychology*, *9*, 1539.

Kanwal, F., Gralnek, I. M., Hays, R. D., Zeringue, A., Durazo, F., Han, S. B., Saab, S., Bolus, R., & Spiegel, B. M. R. (2009). Health-related quality of life predicts mortality in patients with advanced chronic liver disease. *Clinical Gastroenterology and Hepatology*, *7*(7), 793–799.

Kazak, A., Canter, K., Phan-Vo, T. L., McDonnell, G., Hildenbrand, A., Alderfer, M., & Deatrick, J. (2020). *COVID-19 Exposure and Family Impact Survey (CEFIS)*.

Kennedy, S., & Winkle-Wagner, R. (2014). Earning autonomy while maintaining family ties: Black women's reflections on the transition into college. *NASPA Journal about Women in Higher Education*, *7*(2), 133–152.

King, P. S., Berg, C. A., Butner, J., Drew, L. M., Foster, C., Donaldson, D., Murray, M., Swinyard, M., & Wiebe, D. J. (2012). Longitudinal trajectories of metabolic control across adolescence: Associations with parental involvement, adolescents' psychosocial maturity, and health care utilization. *Journal of Adolescent Health*, *50*(5), 491–496.

Koinis-Mitchell, D., McQuaid, E. L., Jandasek, B., Kopel, S. J., Seifer, R., Klein, R. B., Potter, C., & Fritz, G. K. (2012). Identifying individual, cultural and asthma-related risk and protective factors associated with resilient asthma outcomes in urban children and families. *Journal of Pediatric Psychology*, *37*(4), 424–437.

Koinis Mitchell, D., Klein Murdock, K., & McQuaid, E. L. (2004). Risk and resilience in urban children with asthma: A conceptual model and exploratory study. *Children's Health Care*, *33*(4), 275–297.

Largo-Wight, E., Peterson, P. M., & Chen, W. W. (2005). Perceived problem solving, stress, and health among college students. *American Journal of Health Behavior*, *29*(4), 360–370.

Lebrun-Harris, L. A., McManus, M. A., Ilango, S. M., Cyr, M., McLellan, S. B., Mann, M. Y., & White, P. H. (2018). Transition planning among US youth with and without special health care needs. *Pediatrics*, *142*(4). https://doi.org/10.1542/peds.2018-0194

Lee, C., Dickson, D. A., Conley, C. S., & Holmbeck, G. N. (2014). A closer look at self-esteem, perceived social support, and coping strategy: a prospective study of depressive symptomatology across the transition to college. *Journal of Social and*

Clinical Psychology, *33*(6), 560–585.

Lee Duckworth, A., Steen, T. A., & Seligman, M. E. P. (2005). Positive psychology in clinical practice. *Annu. Rev. Clin. Psychol.*, *1*, 629–651.

Leung, S., Walgrave, M., & Mennito, S. (2019). Improving Transitions of Care for Healthy Adolescents and Young Adults. *Southern Medical Journal*, *112*(10), 501–511.

Lewis, P., Jordens, C. F. C., Mooney-Somers, J., Smith, K., & Kerridge, I. (2013). Growing up with cancer: accommodating the effects of cancer into young people's social lives. *Journal of Pediatric Oncology Nursing*, *30*(6), 311–319.

Mackie, A. S., Rempel, G. R., Islam, S., Rankin, K., McCurdy, C., Vonder Muhll, I., Magill□Evans, J., Nicholas, D., & Kovacs, A. H. (2016). Psychosocial maturity, autonomy, and transition readiness among young adults with congenital heart disease or a heart transplant. *Congenital Heart Disease*, *11*(2), 136–143.

Magid, D. J., Houry, D., Ellis, J., Lyons, E., & Rumsfeld, J. S. (2004). Health-related quality of life predicts emergency department utilization for patients with asthma. *Annals of Emergency Medicine*, *43*(5), 551–557.

Maslow, G. R., Haydon, A., McRee, A. L., Ford, C. A., & Halpern, C. T. (2011). Growing up with a chronic illness: Social success, educational/vocational distress. *Journal of Adolescent Health*, *49*(2), 206–212. https://doi.org/10.1016/j.jadohealth.2010.12.001

Masten, A. S. (2011). Resilience in children threatened by extreme adversity:

Frameworks for research, practice, and translational synergy. *Development and Psychopathology*, *23*(2), 493–506.

McDonagh, J. E. (2007). Transition of care from paediatric to adult rheumatology. *Archives of Disease in Childhood*, *92*(9), 802–807.

Misra, R., McKean, M., West, S., & Russo, T. (2000). Academic stress of college students: Comparison of student and faculty perceptions. *College Student Journal*, *34*(2).

Molzon, E. S., Bonner, M. S., Hullmann, S. E., Ramsey, R. R., Suorsa, K. I., Chaney, J. M., & Mullins, L. L. (2013). Differences in sleep quality and health-related quality of life in young adults with allergies and asthma and their healthy peers. *Journal of American College Health*, *61*(8), 484–489. https://doi.org/10.1080/07448481.2013.838566

Murphy, J. G., Hoyme, C. K., Colby, S. M., & Borsari, B. (2006). Alcohol consumption, alcohol-related problems, and quality of life among college students. *Journal of College Student Development*, *47*(1), 110–121.

Nightingale, C. L., Quinn, G. P., Shenkman, E. A., Curbow, B. A., Zebrack, B. J., Krull, K. R., & Huang, I.-C. (2011). Health-related quality of life of young adult survivors of childhood cancer: a review of qualitative studies. *Journal of Adolescent and Young Adult Oncology*, *1*(3), 124–132.

Orzech, K. M., Salafsky, D. B., & Hamilton, L. A. (2011). The state of sleep among college students at a large public university. *Journal of American College Health*,

59(7), 612–619.

Pai, A. L. H., & Schwartz, L. A. (2011). Introduction to the special section: Health care transitions of adolescents and young adults with pediatric chronic conditions. *Journal of Pediatric Psychology*, *36*(2), 129–133. https://doi.org/10.1093/jpepsy/jsq100

Patrick, M. E., & Maggs, J. L. (2009). Does drinking lead to sex? Daily alcohol–sex behaviors and expectancies among college students. *Psychology of Addictive Behaviors*, *23*(3), 472.

Pedersen, D. (2012). Stress carry-over and college student health outcomes. *College Student Journal*, *46*(3), 620–627.

Pennings, S. M., Law, K. C., Green, B. A., & Anestis, M. D. (2015). The impact of grit on the relationship between hopelessness and suicidality. *International Journal of Cognitive Therapy*, *8*(2), 130–142.

Pinzon, J., Harvey, J., Society, C. P., & Committee, A. H. (2006). Care of adolescents with chronic conditions. *Paediatrics & Child Health*, *11*(1), 43–48. https://doi.org/10.1093/pch/11.1.43

Quane, J. M., Wilson, W. J., & Hwang, J. (2015). Black men and the struggle for work: Social and economic barriers persist. *Education Next*, *15*(2), 22–30.

Reed-Knight, B., Blount, R. L., & Gilleland, J. (2014). The transition of health care responsibility from parents to youth diagnosed with chronic illness: A developmental systems perspective. *Families, Systems, & Health*, *32*(2), 219.

Reed, J., Pritschet, B. L., & Cutton, D. M. (2013). Grit, conscientiousness, and the transtheoretical model of change for exercise behavior. *Journal of Health Psychology*, *18*(5), 612–619.

Rolland, J. S., & Walsh, F. (2006). Facilitating family resilience with childhood illness and disability. *Current Opinion in Pediatrics*, *18*(5), 527–538.

Romanelli, M., & Hudson, K. D. (2017). Individual and systemic barriers to health care: Perspectives of lesbian, gay, bisexual, and transgender adults. *American Journal of Orthopsychiatry*, *87*(6), 714.

Sabbagh, S., Ronis, T., & White, P. H. (2018). Pediatric rheumatology: addressing the transition to adult-orientated health care. *Open Access Rheumatology: Research and Reviews*, *10*, 83.

Saleh, D., Camart, N., & Romo, L. (2017). Predictors of stress in college students. *Frontiers in Psychology*, *8*, 19.

Sansom-Daly, U. M., Peate, M., Wakefield, C. E., Bryant, R. A., & Cohn, R. J. (2012). A systematic review of psychological interventions for adolescents and young adults living with chronic illness. *Health Psychology*, *31*(3), 380.

Sawicki, G. S., Lukens-Bull, K., Yin, X., Demars, N., Huang, I. C., Livingood, W., Reiss, J., & Wood, D. (2011). Measuring the transition readiness of youth with special healthcare needs: Validation of the TRAQ - Transition readiness assessment questionnaire. *Journal of Pediatric Psychology*, *36*(2), 160–171. https://doi.org/10.1093/jpepsy/jsp128

Schwartz, L. A., Tuchman, L. K., Hobbie, W. L., & Ginsberg, J. P. (2011). A social□ ecological model of readiness for transition to adult□oriented care for adolescents and young adults with chronic health conditions. *Child: Care, Health and Development*, *37*(6), 883–895.

Sharkey, C. M., Bakula, D. M., Baraldi, A. N., Perez, M. N., Suorsa, K. I., Chaney, J. M., & Mullins, L. L. (2018). Grit, illness-related distress, and psychosocial outcomes in college students with a chronic medical condition: A path analysis. *Journal of Pediatric Psychology*, *43*(5), 552–560. https://doi.org/10.1093/jpepsy/jsx145

Sharkey, C. M., Bakula, D. M., Gamwell, K. L., Mullins, A. J., Chaney, J. M., & Mullins, L. L. (2017). The role of grit in college student health care management skills and health-related quality of life. *Journal of Pediatric Psychology*, *42*(9), 952–961.

Silva, K., & Miller, V. A. (2019). The role of cognitive and psychosocial maturity in type 1 diabetes management. *Journal of Adolescent Health*, *64*(5), 622–630.

Siroux, V., Boudier, A., Anto, J. M., Cazzoletti, L., Accordini, S., Alonso, J., Cerveri, I., Corsico, A., Gulsvik, A., & Jarvis, D. (2008). Quality□of□life and asthma□severity in general population asthmatics: results of the ECRHS II study. *Allergy*, *63*(5), 547–554.

Stepanikova, I., & Oates, G. R. (2017). Perceived discrimination and privilege in health care: the role of socioeconomic status and race. *American Journal of Preventive Medicine*, *52*(1), S86–S94.

Swallen, K. C., Reither, E. N., Haas, S. A., & Meier, A. M. (2005). Overweight, obesity,

and health-related quality of life among adolescents: the National Longitudinal Study of Adolescent Health. *Pediatrics*, *115*(2), 340–347.

Syed, M., & Azmitia, M. (2009). Longitudinal trajectories of ethnic identity during the college years. *Journal of Research on Adolescence*, *19*(4), 601–624.

Syverson, E. P., McCarter, R., He, J., D'Angelo, L., & Tuchman, L. K. (2016). Adolescents' perceptions of transition importance, readiness, and likelihood of future success: the role of anticipatory guidance. *Clinical Pediatrics*, *55*(11), 1020–1025.

Traino, K. A., Bakula, D. M., Sharkey, C. M., Roberts, C. M., Ruppe, N. M., Chaney, J. M., & Mullins, L. L. (2019). The role of grit in health care management skills and health-related quality of life in college students with chronic medical conditions. *Journal of Pediatric Nursing*, *46*, 72–77.

Traino, K. A., Fisher, R. S., Basile, N. L., Edwards, C. S., Bakula, D. M., Chaney, J. M., & Mullins, L. L. (2021). Transition readiness and quality of life in emerging adult college students. *Journal of American College Health*, 1–8.

Traino, K. A., Sharkey, C. M., Perez, M. N., Bakula, D. M., Roberts, C. M., Chaney, J. M., & Mullins, L. L. (2021). Health Care Utilization, Transition Readiness, and Quality of Life: A Latent Class Analysis. *Journal of Pediatric Psychology*, *46*(2), 197–207.

Uzark, K., Afton, K., Yu, S., Lowery, R., Smith, C., & Norris, M. D. (2019). Transition readiness in adolescents and young adults with heart disease: can we improve

quality of life? *The Journal of Pediatrics*, *212*, 73–78.

Uzark, K., Smith, C., Donohue, J., Yu, S., Afton, K., Norris, M., & Cotts, T. (2015). Assessment of transition readiness in adolescents and young adults with heart disease. *The Journal of Pediatrics*, *167*(6), 1233–1238.

Vainio, M. M., & Daukantaitė, D. (2016). Grit and different aspects of well-being: Direct and indirect relationships via sense of coherence and authenticity. *Journal of Happiness Studies*, *17*(5), 2119–2147.

van Staa, A., Jedeloo, S., van Meeteren, J., & Latour, J. M. (2011). Crossing the transition chasm: experiences and recommendations for improving transitional care of young adults, parents and providers. *Child: Care, Health and Development*, *37*(6), 821–832.

Vaughn, D., & Elam, A. (2021). Addressing structural racism: Towards an organization-theoretical approach: Organizational theory and Systemic Racism in Healthcare. *American Journal of Ophthalmology*.

Wallander, J. L., Varni, J. W., Babani, L., DeHaan, C. B., Wilcox, K. T., & Banis, H. T. (1989). The social environment and the adaptation of mothers of physically handicapped children. *Journal of Pediatric Psychology*, *14*(3), 371–387.

Wells, R. D., & Schwebel, A. I. (1987). Chronically ill children and their mothers: Predictors of resilience and vulnerability to hospitalization and surgical stress. *Journal of Developmental and Behavioral Pediatrics*.

Whittemore, R., Jaser, S., Guo, J., & Grey, M. (2010). A conceptual model of childhood

adaptation to type 1 diabetes. *Nursing Outlook*, *58*(5), 242–251.

Wodka, E. L., & Barakat, L. P. (2007). An exploratory study of the relationship of family support and coping with adjustment: Implications for college students with a chronic illness. *Journal of Adolescence*, *30*(3), 365–376.

Wood, D., Crapnell, T., Lau, L., Bennett, A., Lotstein, D., Ferris, M., & Kuo, A. (2018). Emerging adulthood as a critical stage in the life course. *Handbook of Life Course Health Development*, 123–143.

Yates, T. M., & Masten, A. S. (2004). *Fostering the future: Resilience theory and the practice of positive psychology.*

Yates, T. M., Tyrell, F. A., & Masten, A. S. (2015). Resilience theory and the practice of positive psychology from individuals to societies. *Positive Psychology in Practice: Promoting Human Flourishing in Work, Health, Education, and Everyday Life*, 773–788.

Zahran, H. S., Zack, M. M., Vernon-Smiley, M. E., & Hertz, M. F. (2007). Health-related quality of life and behaviors risky to health among adults aged 18–24 years in secondary or higher education—United States, 2003–2005. *Journal of Adolescent Health*, *41*(4), 389–397.

Zebrack, B. J., Stuber, M. L., Meeske, K. A., Phipps, S., Krull, K. R., Liu, Q., Yasui, Y., Parry, C., Hamilton, R., & Robison, L. L. (2012). Perceived positive impact of cancer among long□term survivors of childhood cancer: a report from the childhood cancer survivor study. *Psycho□oncology*, *21*(6), 630–639.

Zhou, X., Lee, R. M., & Syed, M. (2019). Ethnic identity developmental trajectories during the transition to college. *Developmental Psychology*, *55*(1), 157.

LIST OF TABLES

Table 1. Descriptive Statistics and Demographics ($N = 84$)

Variable	*M*	*SD*	Frequency	Percent
Age	19.61	1.45		
Sex				
Female			67	80
Male			17	20
Race/Ethnicity				
Caucasian			66	79
Native American			6	7
African American			3	4
Multi-Racial			7	8
Asian			1	1
Other			1	1
College Education Level				
Underclassmen			60	71
Upperclassmen			24	29
Self-Reported Chronic Illnesses				
Asthma			34	41
Allergies			28	33
Chronic Migraines			13	16
Thyroid Disease			8	10
Irritable Bowel Syndrome			7	8
Type 1 Diabetes			6	7
Polycystic Ovarian Syndrome			6	7
Endometriosis			6	7
Celiac Disease			5	6

Note. Frequency counts of CMC diagnoses do not add up to 84 because participants could report multiple diagnoses. Table 1 only includes the frequencies and prevalence of CMC diagnoses reported by *five or more* participants.

Table 2. Correlations and Descriptive Statistics for Key Study Variables ($N = 84$)

	1	2	3	4	5	6	7	8	*M*	*SD*
1. Illness Controllability	-								4.08	1.45
2. COVID-19 Impact	-.06	-							42.14	10.65
3. COVID-19 Exposure	-.09	.17	-						10.88	3.44
4. Maturity Questionnaire	-.04	-.03	.20	-					3.57	0.73
5. Short Grit Scale	.07	-.15	.18	.23*	-				3.11	0.74
6. Transition Readiness	.07	-.10	.27*	.60**	.33**	-			3.98	0.66
7. Physical Quality of Life	.19	-.35**	-.22*	.003	.40**	.02	-		44.39	9.48
8. Mental Quality of Life	.24*	-.37**	-.13	.14	.45**	.30**	.58**	-	36.42	11.91

*p<.05; **p<.01

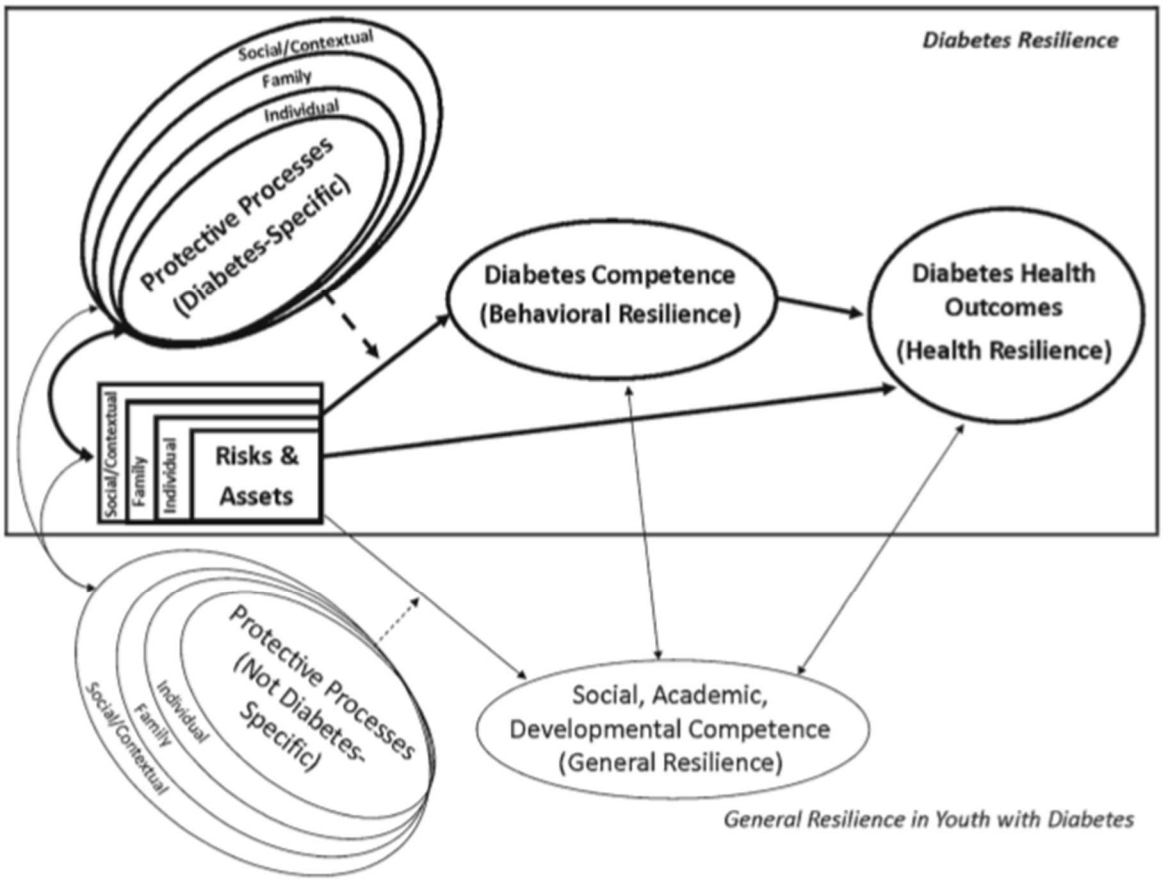

Figure 1. Hilliard and colleagues risk and resilience model in Type 1 Diabetes (Hilliard et al., 2012)

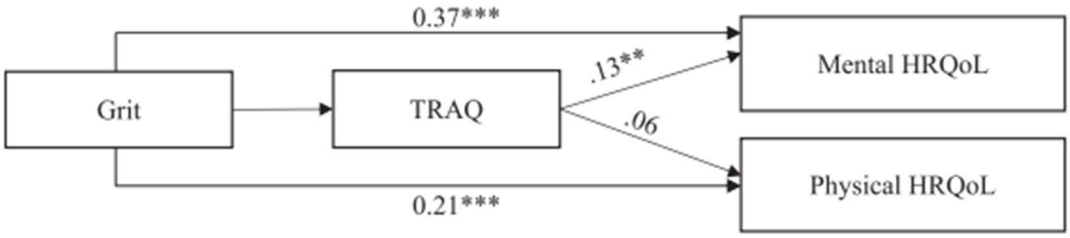

Figure 2. Traino and colleagues path analysis of grit, transition readiness, and mental and physical quality of life (Traino et al., 2019). ** = $p < .01$, *** = $p < .001$.

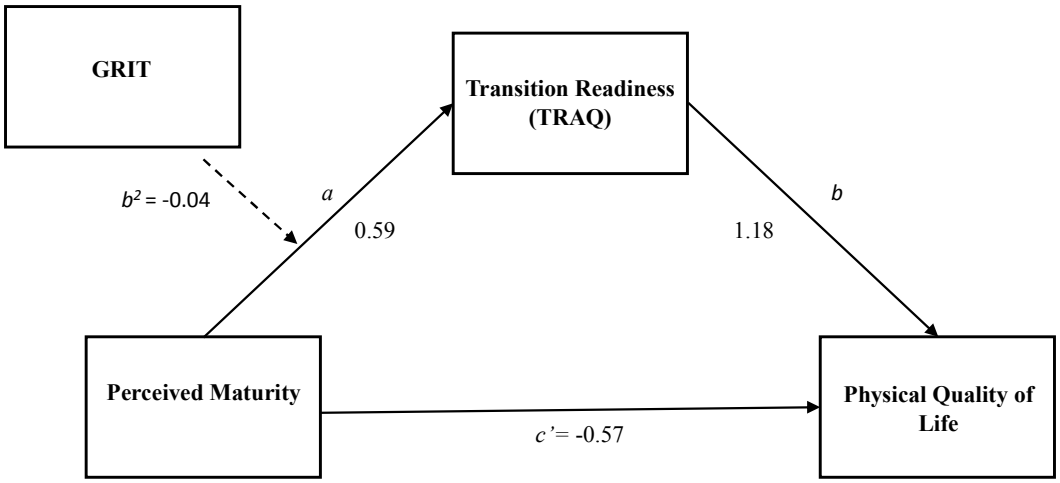

Figure 3. Analyses controlled for participant sex, COVID-19 impact and COVID-19 exposure

*$p < .05$

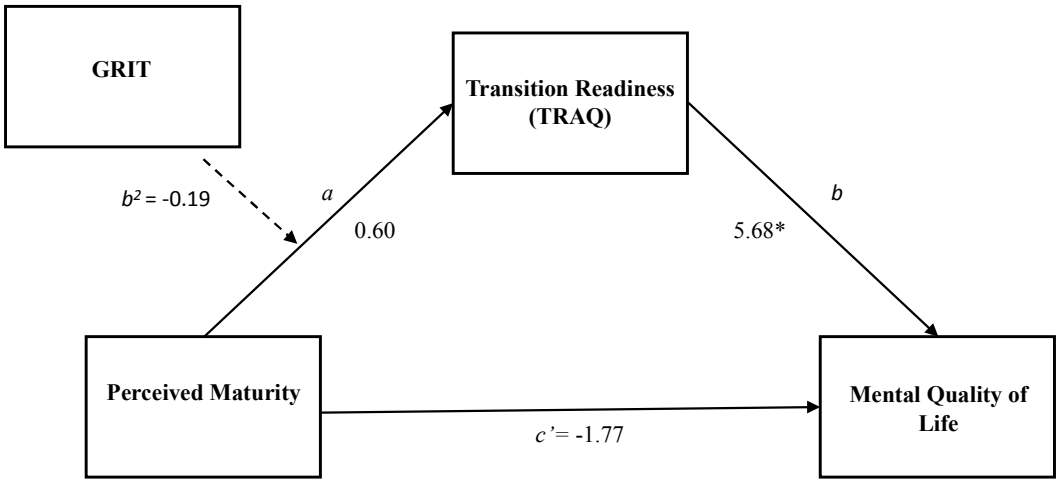

Figure 4. Analyses controlled for participant sex, COVID-19 impact and illness controllability

*$p < .05$

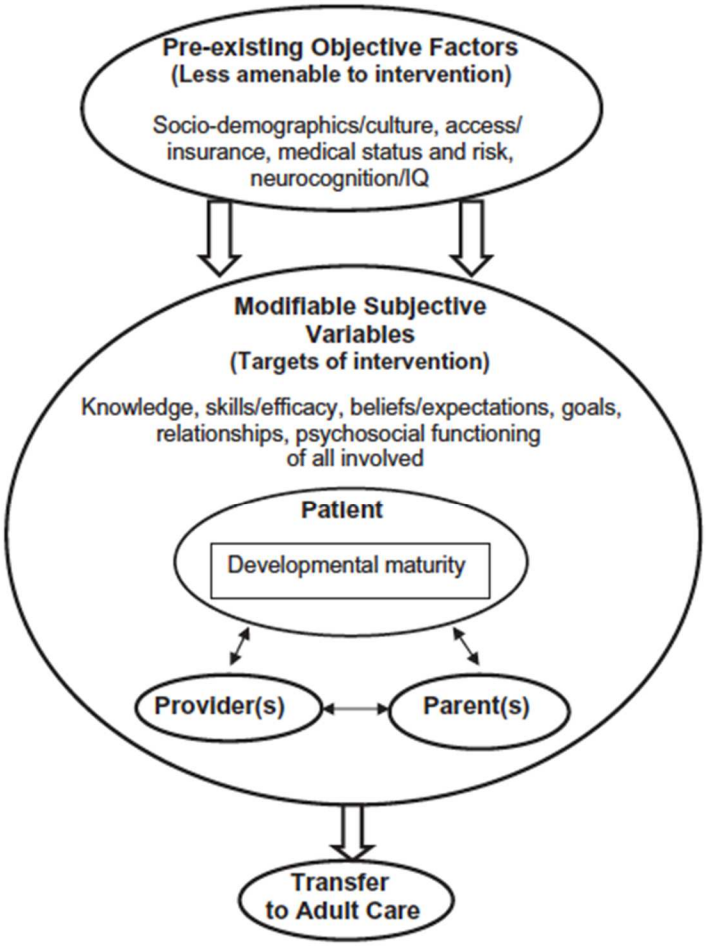

Figure 5. Social-ecological model of AYA readiness for transitio

Oklahoma State University Institutional Review Board

Application Number:	AS-19-89
Proposal Title:	An Examination of the Psychosocial Impact of Chronic Illness on College Students
Principal Investigator:	Larry Mullins, Ph.D
Co-Investigator(s):	
Faculty Adviser:	
Project Coordinator:	Katie Traino
Research Assistant(s):	

Status Recommended by Reviewer(s): Approved

Study Review Level:	Exempt
Modification Approval Date:	08/13/2020

The modification of the IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46. The original expiration date of the protocol has not changed.

Modifications Approved:

Modifications Approved: dd Taylor Morgan as a research assistant and remove Megan Perez

The following measures will be added: Maturity/Adulthood Measure (no citation available; received permission from survey developer, Dr. Cynthia Gerhardt), Dating Anxiety Scale for Adolescents (cited below), and COVID-19 Exposure and Family Impact Survey Adolescent and Young Adult Version (no citation available; freely available), and RAND 36-Item Health Survey 1.0 (cited below).

Dating Anxiety Scale for Adolescents (DAS-A) Glickman, A. R., & La Greca, A. M. (2004). The dating anxiety scale for adolescents: Scale development and associations with adolescent functioning. Journal of Clinical Child and Adolescent Psychology, 33(3), 566-578.

Hays, R. D., Sherbourne, C. D., & Mazel, R. M. (1993). The rand 36-item health survey 1.0. Health Economics, 2(3), 217–227.

The question “What do you consider yourself to be? -Lesbian, gay, or homosexual -Straight or heterosexual -Bisexual -Something else (please specify): -Not sure” will be added to the demographics. The following chronic illnesses will be added to the dropdown menu of conditions to select from: Chronic Migraines, Polycystic Ovarian Syndrome, Endometriosis, Postural Orthostatic Tachycardia Syndrome, and Thyroid Disease (e.g., Hypothyroidism, Hyperthyroidism).

The ACES Inventory measure will be removed.

The SF-36 Version 2 will be removed.

Updated the consent to accurately reflect the time to complete new set of surveys. Time to complete tested by research assistants.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved.
2. Submit a status report to the IRB when requested
3. Promptly report to the IRB any harm experienced by a participant that is both unanticipated and

related per IRB policy.

4. Maintain accurate and complete study records for evaluation by the OSU IRB and, if applicable, inspection by regulatory agencies and/or the study sponsor.
5. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Sincerely,

Oklahoma State University IRB

223 Scott Hall, Stillwater, OK 74078

Website: https://irb.okstate.edu/
Ph: 405-744-3377 | Fax: 405-744-4335| irb@okstate.edu

VITA

Taylor Lynn Morgan

Candidate for the Degree of

Master of Science

Thesis: QUALITY OF LIFE IN COLLEGE STUDENTS WITH A CHRONIC HEALTH CONDITION: THE ROLE OF PERCEIVED MATURITY, TRANSITION READINESS, AND GRIT

Major Field: Psychology

Biographical:

Education:

Completed the requirements for the Master of Science in Psychology

Oklahoma State University, Stillwater, Oklahoma in May, 2022.

Completed the requirements for the Bachelor of Arts in Psychology at

Oklahoma State University, Stillwater, Oklahoma in 2016.

Experience:

Graduate Research Assistant – Pediatric Health and Psychology Laboratory

Professional Memberships:

Society of Pediatric Psychology, APA Division 54

Society of Rehabilitation Psychology, APA Division 22

Psychology Graduate Student Association at Oklahoma State University