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AN EXAMINATION OF THE FLORIDA LINKING INDIVIDUALS NEEDING CARE  
COORDINATION PROGRAM FOR RACIAL AND ETHNIC MINORITY FEMALES

by

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A dissertation submitted in partial fulfillment of the requirements  
for the degree of Doctor of Philosophy  
in the Doctoral Program in Public Affairs  
in the College of Community Innovation and Education  
at the University of Central Florida  
Orlando, Florida

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## ABSTRACT

Suicide accounts for close to 800,000 deaths each year, making it one of the leading causes of death in the United States. In the state of Florida, suicide is the 10<sup>th</sup> leading cause of death. Currently, it is the 2<sup>nd</sup> leading cause of death among young people ages 15-29, claiming more lives than homicide. Among Black and Hispanic youth (10 to 24), it is the 2<sup>nd</sup> and 3<sup>rd</sup> leading causes of death. This study aimed to examine the extent to which depression and suicidality outcomes change among racial and ethnic minority females (i.e., Black and African American, Hispanic) who participated in a care coordination intervention. These subpopulations were chosen due to limited suicide prevention research on at-risk racial and ethnic minority females and to address health disparities. To examine these outcomes, the study employed a one-group pretest-posttest design utilizing secondary data from 76 youth participants enrolled in the care coordination program from three crisis stabilization units (CSU) in Florida. Key findings included significant decreases in depression symptomology (54%) and suicidality (82%). Among participants enrolled in the program, 84% did not have a readmission to the CSU. Length of stay was a predictor of readmission in that a one unit (one day) increase lead to a 3% increase in odds of readmission to the CSU. Results of this study can help guide social work and mental health practitioners in designing and implementing community-based suicide prevention programs for racial and ethnic minority females.

*Keywords:* racial and ethnic minorities, females, health disparities, intersectionality, suicide prevention, care coordination, mental health

I dedicate this research and my degree to my angel baby. I chose you over this degree, but God  
had different plans for us.

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## **LIST OF ACRONYMS**

BIC	Brief Intervention and Contact
C-SSRS	Columbia Suicide Severity Risk Screening
CSU	Crisis Stabilization Unit
ED	Emergency Department
FL LINC	Florida Linking Individuals Needing Care
MANCOVA	Multivariate Analysis of Covariance
PHQ-9	Patient Health Questionnaire
SDT	Self Determination Theory
SAMHSA	Substance Abuse and Mental Health Services Association
SDT	Self Determination Theory
SESPM	Social Ecological Suicide Prevention Model
TAU	Treatment As Usual

## **CHAPTER ONE: INTRODUCTION**

Suicide rates are increasing in the United States (Centers for Disease Control and Prevention [CDC], 2017). Moreover, for every death by suicide, approximately 100-200 individuals attempt suicide (CDC, 2012; World Health Organization, 2018). Alarming, the number of deaths resulting from suicide for youth is also on the rise, with it being the second leading cause of death for ages 10-24 (CDC, 2018). Of youth who are at risk, it is expected that one-third develop a plan and attempt suicide within a year before their death (Nock et al., 2013).

In the state of Florida, suicide is the 10<sup>th</sup> leading cause of death for all residents. Compared to other states, Florida has the third highest number of suicide deaths in the country, (Florida Department of Health [FL DOH], 2017). Compared to the national youth suicide death rate (9.16), over 50% of counties in Florida have higher rates (FL DOH, 2017). Unfortunately, many youth suicide attempts go untreated and unreported indicating that these rates are much higher than what is reported (e.g., reported rates of attempts is 7.6%).

Youth suicide is a major public health concern making detection and treatment a high priority for behavioral health professionals. To improve services to help identify and treat those at risk of suicide, the Joint Commission (2016) disseminated best practice recommendations to guide inpatient and outpatient healthcare organizations. As a result of this call to action, the Florida Linking Individuals Needing Care (FL LINC) Project was developed to address behavioral health service system disparities among youth at elevated risk for suicide in the state of Florida. These gaps included inadequate access to mental health and substance abuse services, lack of aftercare for those discharged from inpatient care, and limited promotion and integration of evidence-based (EB) suicide prevention programs within communities and organizations. One

primary component of the FL LINC project was a comprehensive care coordination program, an intervention designed to monitor suicide risk via the use of engagement and empowerment strategies. This program connected youth to behavioral (i.e., mental health screening, medication management, individual and family therapy) as well as non-behavioral health services (i.e., faith-based, social, and recreational) and provided follow-up contacts (i.e., phone or in-person) over 90 days to monitor suicide risk and keep youth engaged in services.

During 2016-2018, the FL LINC care coordination program was implemented in three Crisis Stabilization Units (CSU) located in the northeast, central, and southeast regions of Florida. Enrollment into the program was voluntary for all youth between the ages of 10 and 18 who met the following criteria: (a) admission to the CSU (i.e., inpatient hospitalization used to stabilize and redirect clients to the most appropriate and least restrictive community setting available); (b) endorsement of suicidal ideation, suicide attempts, and/or significant suicide risk factors (i.e., depression, history of self-harm, physical and sexual abuse, substance use); and, (c) need for intensive support and assistance due to recurrent psychiatric hospitalizations and/or past mental health or suicide history (e.g., prior suicidal ideation/suicide attempts).

### **Statement of the Problem**

Suicide impacts youth, ages 10 to 24, of all races, ethnicities, genders, sexual orientation, and socioeconomic backgrounds. However, some populations are at greater risk than others for engaging in suicidal behaviors, such as those involved in the juvenile justice and child welfare systems (National Action Alliance, 2014). These subpopulations are at heightened risk due to a combination of factors (i.e., individual, relationship, community and societal), as well as disparities in meeting diverse service needs (FL DOH, 2012). More specifically, there is a growing concern over the rising rates of suicide for racial and ethnic minority youth. For



instance, between 1993 and 2012, the suicide rate doubled for African American youth while the rate significantly decreased for Caucasian youth (Bridge et al., 2018; Bridge et al., 2015). In examining suicide rates specific to minority females (i.e., Black and African American), rates increased dramatically since 1993 (Bridge et al., 2018; Bridge et al., 2015; Griffith-Fennell & Williams, 2006). Suicide risk for Hispanics has also increased in the last ten years, especially among youth and females (Blumentritt, 2007; Silva & Van Orden, 2018). As of 2016, suicide was the 3<sup>rd</sup> leading cause of death for African American youth and the 2<sup>nd</sup> leading cause of death for Hispanic youth (CDC, 2017). Furthermore, suicide is the 2<sup>nd</sup> leading cause of death for all females, between the ages 15 to 24.

The heightened risk among racial and ethnic minority females has led to this subpopulation being of particular interest in this study, with two main components supporting this focus. The first being limited research available on at-risk racial and ethnic minorities (Joe, Banks & Belue, 2016; Musci et al., 2016). The second is the fact these subpopulations are already at heightened risk due to being a vulnerable and marginalized group in society (Bostwick et al., 2014; Bowleg, 2012; Umberson et al., 2014). Black females appear to be at a higher risk for engaging in suicidal behaviors, are younger, and have greater exposure to discrimination, victimization, and violence compared to white females (Assari & Caldwell, 2017; Griffith-Fennell & Williams, 2006; Musci et al., 2016; Walker et al., 2016). Hispanic females also experience higher rates of depression than White females and report higher rates of alcohol use compared to Black females, which may contribute to high suicide ideation and attempt rates (Langhinrichsen-Rohling, Friend, & Powell, 2009; CDC, 2004). Similar to Black females, Hispanics experience discrimination and encounter disparities in identification, treatment, and overall access to care. Although suicide-related outcomes for racial and ethnic minorities are not

well understood, culture (e.g., values, beliefs and practices) may explain these differences (Kann, McManys, & Harris, et al., 2016; Wong, Maffini, & Shin, 2014).

### **Significance of the Study**

In order to address health disparities, this study focused on a subpopulation of clients (i.e., racial and ethnic minority female youth, ages 10 to 18) who were enrolled in the FL LINC care coordination program between July 2016 to November 2018. Specifically, this study examined the extent to which outcomes related to depression and suicidality changed during participation in the program. Additionally, the study examined the frequency of re-admissions to the CSUs for youth enrolled in the program. Furthermore, attention was given to the impact of age and length of stay on treatment outcomes.

Although there is a growing interest in youth suicidal behavior and risk research, there are limited studies focused on ethnic minority populations, especially females (Joe, Banks & Belue, 2016). This study builds upon existing research by examining whether participation in care coordination services helps to reduce suicide risk among marginalized youth, addressing a gap in suicide prevention literature. Also, the subpopulations included in this study are considered a vulnerable and marginalized group in society, which can be explained by the “double-disadvantage perspective.” This perspective explains that people are at-risk because of possessing multiple marginalized identities (i.e., being Black and African American or Hispanic and female) and these consequences lead to disparities in physical health, mental health and criminal justice outcomes (Bostwick et al., 2014; Bowleg, 2012; Umberson et al., 2014). Thus, findings from this study can be used to provide recommendations for social work and mental health practitioners, future research, and prevention programming. As such, findings from this

study can guide the implementation of community-based suicide prevention programs for marginalized youth populations, specifically racial and ethnic minority female youth.

### **Research Questions**

This study examined five research questions:

RQ<sub>1</sub>: Is there a difference in depression symptomology (PHQ-9) scores from pre-test to post-test for racial and ethnic minority females participating in the care coordination program?

RQ<sub>2</sub>: Is there a difference in suicidality (C-SSRS scores) from pre-test to post-test for racial and ethnic minority females participating in the care coordination program.

RQ<sub>3</sub>: What is the percentage of racial and ethnic minority females who are re-admitted to the CSU within 90 days of enrollment in the care coordination program?

RQ<sub>4</sub>: How does age and length of stay in the care coordination program impact treatment outcomes (depression symptomology, suicidality) for racial and ethnic minority females participating in the care coordination program?

RQ<sub>5</sub>: What is the relationship between age and length of stay on re-admission to the CSU?

### **Context of this Study**

The FL LINC project was designed to enhance and expand existing statewide suicide prevention efforts for at-risk youth (ages 10-24), especially those from high-risk populations (e.g., minorities, LGBTQ, youth living in rural areas). The care coordination program, one component of the FL LINC project, was an innovative behavioral health youth suicide prevention program that was implemented in CSUs in the northeast, central, and southeast regions of Florida. This study used secondary data collected from three sites offering the program, with a specific focus on racial and ethnic minority female participants aged 10 to 18

(Note: CSUs admit youth up to the age of 18, therefore young adults ages 19-25 were excluded from this study). A total of 76 racial and ethnic minority female youth were enrolled in the program. To examine changes in depression symptomology, suicide risk, and re-admission rates, the dependent variables in this study, an analysis of the data was conducted utilizing descriptive and bivariate statistics (e.g., paired sample *t*-tests). Further analyses were conducted using multivariate analysis of covariance (MANCOVA) and logistic regression to examine if age and length of stay influenced treatment outcomes.

## **CHAPTER TWO: LITERATURE REVIEW**

The literature review chapter illustrates the magnitude of suicide rates in the state of Florida and highlights pertinent risk factors for youth suicide and service gaps in youth suicide prevention. Suicide rates, risk factors and service gaps relevant to racial and ethnic minority youth are also introduced. Next, the chapter addresses critical race theory and the intersectionality perspective as it relates to suicide outcomes for Black and Hispanic female youth. Lastly, behavioral health and suicide prevention efforts in the state of Florida are introduced along with an overview of the FL LINC care coordination program.

### **Suicide Prevalence in the State of Florida**

Each year, approximately 3,100 Floridians die by suicide, averaging about nine deaths per day (America Foundation for Suicide Prevention [AFSP], 2017; FL DOH, 2016). As of 2016, the CDC reported that suicide claimed twice as many lives than homicides among all individuals in Florida. Among youth, ages 10 to 24 years old, suicide was the 2<sup>nd</sup> leading cause of death (CDC, 2016). Alarming, in 2016, more than 50% or one-half of all of the counties in Florida (out of 67) had a higher youth suicide death rate than the national average (FL DOH, 2016).

During 2016-2017, 38 youth ages 10 to 14 and nearly 550 youth ages 15 to 24 died by suicide. Data from the 2017 Youth Risk Behavior Survey (YRBS) further indicated that 13.8% of Florida's high school youth seriously considered suicide, 10.7% made a plan to kill themselves, and 7.6% attempted suicide one or more times during the 12-month survey period. Results also revealed that middle school students (ages 11 to 14) were at a higher risk for suicide than high school students, in that 11.6% made a plan to kill themselves, 9% attempted suicide, and 2.4% required medical attention after attempting suicide. Nearly, 28% of high school students also experienced daily sadness or hopelessness and 14.3% were bullied while attending

school (FL DOH, 2018). Moreover, between 2016 and 2017, 83,004 of Florida's youth were served by a mental health program. Of these youth receiving care, 53,095 had serious emotional disturbances (Florida Department of Children and Families, 2018).

### **Suicide Risk Factors**

Understanding risk factors associated with suicidality is vital for developing evidence-based prevention and treatment programs. Suicide risk factors are defined as “the presence of any factor empirically shown to correlate with suicidality” (Hendin, Malstberger, Lipschitz, Haas & Kyle, 2001). Risk factors associated with suicide can comprise a combination of psychological symptoms (e.g., depression, anxiety, and disruptive behaviors), interpersonal influences (e.g., problematic relationships with parents and peers) and adverse childhood experiences (e.g., physical and sexual abuse, exposure to substance abuse, violence in home; Brodsky & Biggs, 2012; Johnson et al., 2009). Among youth, common predictors of suicide risk include depression, anxiety, hopelessness (Choate, 2018; Essau & Chang, 2009; Nock et al., 2010; Shain, 2016), bullying victimization (Hertz, Donato, & Wright, 2013; Messias, Kindrick, & Castro, 2014; Perez, Jennings, Piqueoro, & Baglivio, 2016), and exposure to physical and/or sexual abuse during childhood (Brodsky & Biggs, 2012; O’Leary et al., 2006).

### **Adolescent Mental Illness**

Two of the most common mental illnesses associated with suicide risk are depression and anxiety. Adolescent depression has been found to be strongly associated with suicidal ideation and behavior (Choate, 2018; Nock et al., 2010; Shain, 2016). In fact, youth experiencing depression are five times more likely to have a history of suicide attempts than non-depressed peers (Essau & Chang, 2009). Nock and colleagues (2010) found a six-fold increase in suicide attempts by adolescents experiencing depression. Research suggests that depressed youth tend to

display limited problem solving and emotional coping abilities. Such deficits may increase the utilization of maladaptive coping strategies. According to Horwitz, Hill, and King (2011) youth who engage in maladaptive strategies, such as denial, self-blame, and withdrawing from social situations also experience depression (Piquet & Wagner, 2003; Horwitz, Hill, & King, 2011). As such, this may increase the risk of thinking about suicide and engaging in self-harm behavior (Czyz et al., 2016; Horwitz, Czyz, Berona, Yeguez, & King, 2017; Horwitz, Hill, & King, 2011).

Anxiety and other anxiety-related disorders (e.g., panic disorder, social anxiety, post-traumatic stress disorder) have also been found to significantly predict suicide ideation and suicide-related behaviors (Bentley et al., 2016; Kleiman, Fox, & Nock, 2016; Nepon et al., 2010; Nock et al., 2009; Nock, Hwang, Sampson, & Kessler, 2010a). In a longitudinal epidemiologic study examining the relationship between anxiety disorders and lifetime suicide attempts, Nepon et al. (2010) found that over 70% of individuals who made a suicide attempt had at least one anxiety disorder. Additionally, their analyses revealed individuals experiencing comorbidity of disorders (i.e., combination of mood disorder and anxiety disorder) were significantly more likely to attempt suicide than individuals with one disorder alone. Their findings support existing research that has found strong associations between anxiety-related disorders and lifetime suicide attempts (Sareen et al., 2005; Weismann, Klerman, Markowitz, & Ouelette, 1989). Utilizing a large population-based sample, Sareen et al. (2005) found the existence of at least one anxiety disorder in approximately 64% of respondents who reported lifetime suicide attempts and ideation.

### **Interpersonal Influences**

Additional difficulties present during adolescence which place youth at elevated risk for suicide. Specifically, familial and peer relationship problems have been found to be significant

psychosocial risk factors (Connor & Reuter, 2006; Johnson et al., 2002; Kidd et al., 2006; King & Merchant, 2008). Several studies have examined family relationship factors (i.e., family attachment, perceived family or parental support, parent-adolescent communication, parent-child conflict) and their association with suicide ideation and behavior (Connor & Reuter, 2006; Johnson et al., 2002; O'Donnell, Steuve, & Wardlaw, 2003). In particular, Johnson et al. (2002) found that maladaptive parenting, such as harsh parental punishment, maternal verbal abuse, and low maternal involvement during adolescence increased the risk for suicide attempts. Similarly, O'Donnell, Steuve, and Wardlaw (2003) found that low perceived family support increased the risk for suicidal ideation and behavior. Conversely, in a longitudinal study conducted by Kidd et al. (2006), adolescents who reported greater satisfaction with the quality of their relationships with their parents were less likely to engage in suicidal behavior. These findings support earlier studies indicating that parental connectedness/involvement may be a key protective factor against suicidality (Brent, 1995; Borosky, Ireland, & Resnick, 2001).

During adolescence, the impact of peer relations on identity development increases. If peer relationships are non-existent or strained, youth may not develop a positive sense of self. These youth may also have underdeveloped socialization skills and may not develop positive coping skills. In turn, youth who are rejected by peers may feel isolated and disconnected. Several studies have found an association between depression, suicidality, and social isolation/low peer support (Kidd et al., 2006; Perkins & Hartless, 2002; Printstein, Boergers, Spirito, Little, & Grapentine, 2000).

Bullying behaviors (i.e., verbal, social/relational and physical) are also prevalent among youth; studies suggests that up to 56% of adolescents are bullied each year, and this type of victimization has been found to increase the risk for depression, suicide ideation and attempts



(Hertz, Donato, & Wright, 2013; Holt-Lundstand, et al., 2015; Klomeck et al., 2009; Messias, Kindrick, & Castro, 2014). Specifically, students who are bullied have been found to be three to five times more likely to report suicidal ideation and/or attempt suicide (Borowsky, Taliaferro, & McMorris, 2012), and seven times more likely to be depressed than non-bullied youth (Klomeck et al., 2009).

### **Adverse Childhood Experiences**

Adverse childhood experiences include exposure to negative life events during childhood that range from neglect, physical or sexual abuse, and trauma as a result of domestic violence or dysfunction in the home environment. Dysfunction in the home environment may include the witnessing of criminal behavior or incarceration of a household member, and the presence of mental illness and/or substance abuse in the home (Felitti, et al., 1998; Perez, Jennings, Piqueoro, & Baglivio, 2016); whereas exposure to domestic violence may include acts of physical or sexual violence, stalking, and/or psychological aggression against a parent or family member (CDC, 2018). Early research findings began to show the link between parental neglect and physical or sexual victimization and youth suicidality. For example, Brown et al. (1999) noted that adolescents who experienced some form of maltreatment, whether neglect or abuse were three times more likely to be suicidal; youth who were sexually abused, in particular, were found to be eight times more likely to attempt suicide. Recent research findings continue to show an association between child maltreatment and suicidal risk. Being a victim of child abuse increases risk (Joe, Banks, & Belue, 2016), as does exposure to multiple childhood adversities (e.g., abuse and dysfunctional home environment). For instance, in a study that examined the impact of multiple childhood adversities, Perez et al. (2016) found that the likelihood of engaging in suicidal behaviors increased with greater exposure to adverse events. In a similar study, Dube et

al. (2001) found that adolescents who were exposed to multiple adversities had a suicide rate of more than double compared to those without exposure.

In addition to the risk factors described above, several barriers to receiving care also exist for youth experiencing suicidal ideation and behavior. These include lack of risk identification, inadequate access to mental health care, and lack of aftercare services. Regarding identifying a need for mental health services among suicidal youth, Wu and colleagues (2010) conducted a study with a nationally representative sample of 877 adolescents, ages 12 to 17, who reported a suicide attempt and found that less than half received mental health treatment. Similarly, Husky and colleagues (2012) examined mental health service use for suicidal ideation, plan and attempts among a nationally representative sample of 10,123 adolescents, ages 13 to 18. Alarming, they found 67.3% who reported ideation, 54.4% of those with a plan, and 56.9% who attempted suicide had not seen a mental health provider within the past year. These findings indicate an evident lack in knowledge regarding youth suicide risk factors and warning signs by families, schools, and communities, and further supports the need to increase identification and detection of suicide in all settings.

Access to mental health care is associated with economic costs, lack of evidence-based care, and poor quality of care (Asarnow & Miranda, 2014). Despite the enactment of the Affordable Care Act, access to treatment for mental health disorders remains limited (Rotheram-Borus, Swendeman, & Chorpita, 2012). Studies suggest that even when suicidal youth receive care, they are less likely to receive evidence-based treatment options, which often requires multiple treatment sessions (Asarnow & Miranda, 2014; Husky et al., 2012; Weisz et al., 2013). One explanation for this may be due to one's socioeconomic background as youth from lower backgrounds are more likely to receive care from general medical practitioners than from

specialized mental health clinicians (Husky et al., 2012). Specialized mental health care is likely to be less affordable and more time-intensive than general medical care. In fact, Husky et al. found in culturally diverse sample of 10,123 youth, approximately 70% with thoughts of suicide, and half of them with a suicide plan or suicide attempt did not receive specialized mental health services within the past year. Specialized mental health services included outpatient services provided by a psychiatrist, psychologist, social worker, or family counselor, inpatient hospitalization, or community mental health programs (Husky et al., 2012).

Numerous studies have also found there is inadequate coordination and follow-up from high levels of care (emergency services/acute care setting) to outpatient treatment services (Asarnow & Miranda, 2014; Asarnow et al., 2011; Rotheram-Borus et al., 2000; Wu, Katic, Liu, Fan, & Fuller, 2010). Several studies have found that suicidal youth referred to services are often unlikely to follow through on referrals, and up to 80% of deaths by suicide involve untreated mental illness (Hom, Stanley, & Joiner, 2015; Michelmore & Hindley, 2012). To illustrate this point further, Asarnow et al. (2011) conducted a randomized controlled trial to examine post-discharge outcomes among suicidal youth admitted to an emergency department (ED). Their study revealed that youth discharged from the ED without an enhanced mental health intervention, which included follow-up contacts and linkages to care were less likely to attend outpatient treatment compared to those who did receive the mental health intervention. These youth were also more likely to report having thoughts of suicide and engaging in actions to kill themselves. Furthermore, there was one youth from the control group who died by suicide versus no reported incidents of suicide deaths in the treatment group. There is also further evidence that death by suicide increases during the time of discharge from EDs and inpatient psychiatric units (Huisman, Kerkhof, & Robbem, 2011; Olfson et al., 2016), specially during the

first week after discharge with risk remaining high during the first year (Joint Commission, 2016; Suicide Prevention Resource Center, 2013). These findings point to the need to focus on implementing follow-up care, such as care coordination.

### **Racial and Ethnic Minority Youth**

Changes in suicide rates for racial and ethnic minority youth is of growing concern and has gained the attention of researchers interested in understanding associated risk factors with this subpopulation (Bridge et al., 2018; Bridge et al., 2015; Joe, Banks, & Belue, 2016; Walker et al., 2017). This section addresses terminology, prevalence rates, suicide risk factors and service gaps for racial and ethnic minority youth. Due to the sample population of this study, comprising of racial and ethnic minority females only, the use of critical race theory and the intersectionality framework is presented to aid in the understanding of how race and gender impact suicide risk and health disparities.

### **Terminology**

The United States Census Bureau (2018) recognizes race and ethnicity as distinctive categories. Race is defined as “a person’s self-identification with one or more social groups.” An individual can identify as White, Black or African American, Asian, American Indian and/or Alaska Native, Native Hawaiian and/or Other Pacific Islander, or some other race not specified above. Ethnicity is defined as “determining whether a person is of Hispanic origin. It is identified using two categories, Hispanic or Latino and Not Hispanic or Latino. Therefore, Hispanics may identify with one or multiple races.”

When considering racial classifications, there are nuances to identifying as Black or African American. According to the United States Census Bureau (2011), Black or African American is combined into one racial category and is used interchangeably to refer individuals

with origins “in any of the Black racial groups of Africa. It also includes respondents who reported entries such Sub-Saharan African, such as Kenyan and Nigerian; and Afro-Caribbean entries, such as Haitian and Jamaican” (p. 2). Similarly, someone identifying of Hispanic or Latino ethnicity can report as being “a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture” (United States Census Bureau, 2018). Since Florida has a diverse racial and ethnic population, consisting of those who may identify as African American or Caribbean Black American, this study combined these two racial identities to reflect inclusivity. The terms ‘Black’ and ‘Hispanic’ were used when referencing individuals unless when referring to another author’s work.

### **Suicide Rates, Risk Factors and Service Gaps for Racial and Ethnic Minority Youth**

Suicide rates have increasingly grown among racial and ethnic minority youth in the last 20 years, nearly doubling between 1993 and 2015, thereby making it the 3rd leading cause of death for Blacks and the 2<sup>nd</sup> leading cause of death for Hispanics (CDC, 2018; Walker et al., 2017). In the state of Florida, 180 Black youth and 67 Hispanic youth, ages 10 to 24, died by suicide in 2017 (FL DOH, 2018). Further, nearly 9% of Black and 10% of Hispanic high school students reported having thoughts of suicide (compared to 6.3% of Caucasian students; CDC, 2017).

Suicide risk factors often appear in the literature as if they are consistent across race and ethnicity. However, several studies have challenged this perception. Black youth, in general, who die by suicide are often younger than their non-minority peers (Abe, Mertz, Powell, & Hanzlick, 2006; Garlow, Purselle, & Heninger, 2005; Willis, Coombs, Drentea, & Cockerham, 2003). One developmental implication for this difference is that Black youth reach puberty before White youth, allowing earlier experiences with risk taking behaviors (i.e., sexual intercourse, substance

use). The literature also suggests cultural-specific risk factors for suicidality in adolescents from diverse ethnic backgrounds (Goldston et al., 2008; Fortuna et al., 2007; Langhinrichsen-Rohling, Friend, & Powell, 2009; Wong, Maffini, & Shin, 2014). For instance, Latino youth are affected by acculturation stressors, gender role differences, and family responsibilities. Meanwhile, African American youth are often affected by poverty, delinquency, and the breakdown in the family system.

The literature also posits that racial discrimination places adolescent minorities at a greater risk for attempting suicide (Asarri, Moghani-Lankarani, & Caldwell, 2017; Bridge et al., 2015; Gomez, Miranda, & Polanco, 2011; Polanco-Roman & Miranda, 2013; Walker et al., 2016; Wong, Maffini, & Shin, 2010). Previous research indicates that a majority of African American youth perceive themselves to have been discriminated against (Seaton, et al., 2008; Gibbons et al., 2004). In fact, Gibbons et al. found that in a sample of 694 African American youth (ages 10 to 12), approximately 90% reported experiencing at least one discriminatory event (e.g., others having low expectations of them and being treated unfairly due to race or ethnicity) in their lifetime. Racial discrimination, especially during adolescence can increase symptoms of depression by decreasing the individual's self-esteem and coping abilities (Brody et al., 2006; Greene, Way & Pahl, 2006).

There are also several complexities around identification and treatment of mental health concerns. Researchers have addressed barriers ranging from negative cultural influences about mental health to availability and access of adequate care (Cummings & Druss, 2011; Dalton et al., 2009; Fredenthal, 2007; Lee, Goodkind, & Shook, 2017; Langhinrichsen-Rohling, Friend, & Powell, 2009; Wu et al., 2010). Cultural influences of how racial and ethnic minorities should cope with mental illness and suicide-related outcomes, such as deflating from problems, dealing

with issues in isolation, and seeking out spiritual guidance may provide insight into low rates of service use (Wong, Maffini, & Shin, 2014). More so, the level of stigma associated with mental health issues contributes to hesitation in disclosing suicide ideation and seeking help. For example, Dalton and colleagues (2009) found that Black youth are less likely than their S peers to seek help for depression, suicidal ideation, and attempts. Differences between help seeking behaviors between Black and White youth may be due to fear of treatment (e.g., hospitalization) and lack of trust in the medical profession (Mays et al., 2017). Freedenthal (2007) further posits that inequities due to race as well as economic (e.g. income) and health care disparities (e.g., lack of private health insurance, lack of available care) may explain differences in mental health service use. This study found that Black and Hispanic youth who reported suicide ideation and behavior were 50% to 65% less likely than White youth to use mental health services.

Other studies further assert that race and ethnicity have a negative correlation with access to mental health care. For instance, Nestor, Cheek, and Liu (2016) found that Hispanic adolescents who attempted suicide were significantly less likely to receive inpatient care, and Black adolescents were significantly less likely to receive outpatient care compared to White adolescents. Similarly, Kataoka, Stein, Leiberhan, and Wong (2003) found that at-risk Latino high school students were less likely to be referred to crisis intervention services compared to White students. Furthermore, Yeh et al. (2003) reported Black and Hispanic youth who needed mental health care were approximately 20% less likely to receive care compared to White youth. These differences may be explained by racial disparities in access to care, which include the lack of identification of need, referral of services, and treatment. Moreover, Hispanic youth are more likely to face difficulty accessing care due to language (Bridges, Andrews, & Deen, 2012; Kim et al, 2011; Merianos, Vidourek, & King, 2017). Kim et al. (2011) reported that Hispanics with

limited English proficiency are less likely to trust health professionals and communicate health needs and are more likely to misunderstand their need for treatment.

An important implication from these findings is the presence of possible racial/ethnic biases in access, assessment and treatment for minority youth, which may further contribute to racial and ethnic disparities in care and increasing the likelihood of unmet mental health needs (Lee, Goodkind, & Shook, 2017). For instance, White youth tend to receive treatment for psychological issues through mental health systems while minority youth are more likely to be funneled to the juvenile justice system (Dalton et al., 2009; Lee, Goodkind, & Shook, 2017; Wu et al., 2010). This is significant because a large percentage of minority youth who enter the juvenile justice system meet the criteria for mental health diagnoses, yet do not obtain adequate mental health care, which in turn puts them at risk for suicide (Abram et al., 2014).

### **Female Youth**

In terms of gender and suicide risk, females have substantially higher rates of suicidal ideation and attempts than males (Canetto, 2008). Adolescent females are more likely than their male counterparts to suffer from depression, have thoughts and act upon thoughts about suicide, and experience bullying (Choate, 2018; Klomek et al., 2009; Nock et al., 2013). Research suggests females are more genetically predisposed to depression and more vulnerable to stressful life events (Kendler et al., 2003; Piccinelli & Wilkinson, 2000). Thus, increasing their risk of suicide ideation and behavior. This increased risk can be explained by gender differences in coping strategies, as well as type and frequency of victimization. For instance, females are susceptible to relational victimization (i.e. constant teasing by peers) whereas males often experience physical victimization (i.e. fighting) (Cullerton-Sen & Krick, 2005; Klomek et al.,



2008). Consequently, relational victimization is associated with depression, loneliness, and isolation, which are known risk factors associated with suicide risk.

### **Critical Race Theory and Mental Health Disparities**

Critical Race Theory offers the mental health profession a paradigm for examining the root causes of health disparities for ethnic minorities (Ford & Airhihenbuwa, 2010). CRT can be used “to analyze, deconstruct, and transform for the better the relationship among race, racism, and power” (Abrams & Moio, 2009, p. 250; Delgado & Stefancic, 2001). Furthermore, CRT can be used to analyze the ways in which risk factors (e.g. discrimination) directly and indirectly impact mental health and mental health issues (Brown, 2003; Yosso 2005).

### **The Intersection of Race and Gender on Suicide Risk**

Intersectionality is a framework which can be used to analyze how intersecting oppressions such as race, ethnicity and gender manifest simultaneously in the lives of women and people of color (Crenshaw, 1989; 1991). Intersectionality explores issues of how race and gender identities are critically related to structures of oppression. Race and gender are risk factors for engaging in suicidal behaviors (Banks & Belue, 2016; Bridge et al., 2015) and are strong predictors of mental health service needs (Lee, Goodkind, & Shook, 2017; Dalton et al., 2009; Wu et al., 2010). An intersectional perspective asserts that race and gender constitute each other such that one identity alone (e.g. gender) cannot explain the unequal or disparate outcomes without the intersection of the other identity (e.g. race). Understanding the multiple layers of oppression that exist for racial and ethnic minority females is critical in identifying suicide risk factors and reducing racial and ethnic disparities in the implementation of mental health services. (Mattson, 2014; Wong, Maffini, & Shin, 2014).

Despite limited research exploring the influence of gender and race on suicide outcomes for Black and Hispanic female youth, findings suggest that there is a relationship between racism and increased suicidal ideation for Black female youth. For instance, Walker et al. (2016) found a significant relationship between experiencing racism and symptoms of depression in Black females. Youth who experience discrimination report low self-esteem and high rates of stress, which increases the vulnerability of psychiatric disorders, especially affective disorders. Another study conducted by Asarri, Moghani-Lankarani, and Caldwell (2017) yielded similar results and found, in a sample of African American and Caribbean Black female youth, a strong association between perceived discrimination and suicidal ideation. These youth reported experiencing discrimination such as, “being followed around in stores”, “receiving poorer service than other people at restaurants”, and “being called names or insulted” (p.3). The youth in this sample were more prone to higher levels of stress and depression and reported higher suicide ideation rates. Psychosocial risk factors, such as stress, low self-esteem and certain psychiatric disorders (e.g., major depressive disorder, bipolar disorder) were found to increase suicidality.

Suicide-related literature specific to the Latina population examined the intersection of gender and ethnicity and culture on suicide outcomes (Goldston et al., 2008; Langhinrichsen-Rohling, Friend, & Powell, 2009; Wong, Maffini, & Shin, 2014). Langhinrichsen-Rohling and colleagues posited that high rates of suicidal behavior for Latina adolescents are influenced by the conflict they experience managing the relationship between cultural norms and developing their own identity. For instance, Latina youth struggle with finding a balance between their autonomy and sense of belonging to family. Strong familial ties are paramount in Latino culture. Thus, conflict arises which is a threat to family order (Zayas, 2005). As a result of this conflict,

these youth may be more likely to disengage from the family, which in turn can lead to social isolation, academic difficulties, and self-destructive behaviors (Gulbas & Zayas, 2015).

Goldston et al. (2008) found that Latina youth also experience pressure relating to strong gender roles. There is a disparity in gender roles for Latina females in that they are held to be *marianismo*. In this, Latinas are raised to assume the role of a passive nurturer or caregiver and not the role of assertive protector. Consequently, female youth who depart from the traditional gender role are met with resistance. This invites conflict between the identity of self and the identity that the family prescribes. These struggles are strongly associated with suicide-related behaviors.

### **Service Gaps in Youth Suicide Prevention**

When examining suicide prevention research and service gaps, the lack of integrated and coordinated care for youth with a history of suicidality have been identified. Significant areas of concern include lack of suicide risk identification, inadequate access to mental health, and limited aftercare services for those discharged from inpatient care (Hom, Stanley, & Joiner, 2015; Husky et al., 2012; Lee, Goodkind, & Shook, 2017; Miller, Southam-Gerow, & Allin, 2008; Wu et al., 2010). These issues are heightened for females and minority youth as research demonstrates disparities in mental health service use (Asarnow & Miranda, 2014; Freedenthal, 2007; Gudino, Martinez, & Lau, 2012; Husky, 2012; Lee, Goodkind & Shook, 2017; Wu et al., 2010).

### **Approaches to Address Service Gaps**

This section focuses on two approaches that have been used in health and behavioral health settings to address suicide. These approaches are the foundation of the FL LINC care coordination program, combining strategies used in case management with a distinctive focus on

the quality of interactions between client and care coordinator, engagement and connectedness with service providers, and ongoing assessment of suicide risk.

### **Case Management**

Due to the lack of treatment adherence and retention among suicidal youth, the integration of case management services may be one way to ensure mental health services are established and maintained over time (Gryglewicz et al., 2012; Miller, Southam-Gerow, & Allin, 2008; Ziguras & Stuart, 2000). According to Bender, Kapp, and Hahn (2011), “case management appears to offer a promising practical tool for increasing participation in other supportive mental health services [and serves] as a catalyst for engaging youth more deeply in the ongoing delivery of mental health services” (p. 137). Research suggests case management is a promising modality to enhance participation in services, facilitate mental health referrals (Gryglewicz et al., 2012; Kazdin & Nook, 2003; Kernan, Griswold, & Wagner, 2003).

The practice of case management exists to safeguard individuals from the consequences of fragmented and uncoordinated systems of care (Gryglewicz et al., 2012; Woods & Hollis, 2000). Case management is generally defined as a “collaborative process of assessment, planning, facilitation, care coordination, evaluation, and advocacy for options and services to meet an individual’s and family’s comprehensive health needs through communication and available resources to promote quality cost-effective outcomes” (Case Management Society of America [CMSA], 2011, p. 8). Case management has various delivery methods (e.g., brokerage of services, education) and includes intensive comprehensive care models (e.g., assertive community treatment). The overarching goal of case management service is to improve overall functioning and well-being (National Association of Social Workers [NASW], 2013); these

services have been also found to reduce hospital readmissions and enhance engagement in mental health services (Gryglewicz et al., 2012; Trask, Fawley-King, Garland, & Aarons, 2016).

### **Care Coordination**

Care coordination is recognized as an important model to improving healthcare outcomes. Schultz and McDonald (2014) developed a working definition of care coordination in efforts to streamline the identification of care coordination activities. Care coordination is defined as “the deliberate organization of patient care activities between two or more participants (including the patient) involved in a patient’s care to facilitate the appropriate delivery of health care services. It involves the marshalling of personnel and other resources needed to carry out all required patient care activities and is often managed by the exchange of information among participants responsible for different aspects of care” (Schultz & McDonald, 2014, p. 19).

Care coordination interventions are delivered using various service delivery approaches. Brief interventions (i.e., frequent and short contacts) is one approach used in behavioral health settings. Studies have shown that brief interventions aimed at sustaining long-term contact with individuals can reduce suicidal attempts (Fleischmann et al., 2008; Lizardi & Stanley, 2010; Luxton, June, & Comtois, 2013; Milner et al., 2015). For instance, Fleischmann et al. (2008) conducted a multi-site randomized controlled trial evaluation comparing suicide outcomes for patients discharged from psychiatric hospitals. Patients enrolled in the study were assigned to either treatment as usual (TAU) or treatment as usual plus brief intervention and contact (BIC), which included patient education at discharge and nine follow-up contacts (phone calls or visits, as appropriate) up until 18 months. The results of the study showed that patients in the TAU group were more likely to attempt suicide than those in the BIC group. Also, there were significantly fewer deaths from suicide for patients in the BIC group.

Additionally, Milner et al. (2015) conducted a meta-analysis of 11 randomized control trials that utilized brief contact interventions (phone calls, letters, and postcards) for reducing self-harm, suicide attempts, and death by suicide. The results suggested those receiving the brief contact intervention were less likely to engage in self-harm behavior or attempt suicide compared to those in the control group. Furthermore, there was an overall reduction in suicide deaths among those receiving the intervention. Due to the high risk for suicidal events to occur within the first 30 days of an individual's discharge from a psychiatric facility, intense engagement is needed to reduce suicide attempts and improve mental health outcomes (Huisman, Kerkhof, & Robben, 2011; Luxton, June, & Comtois, 2013).

### **Youth Suicide Prevention in Florida**

Over the past decade, several suicide prevention efforts were launched in the state of Florida to increase awareness of suicide. In 2008, the University of South Florida (USF), in partnership with the Statewide Office of Suicide Prevention, was awarded funding through the Substance Abuse and Mental Health Services Association (SAMHSA) to pilot test the Florida Adolescent Suicide Awareness and Prevention project, a multi-component youth suicide prevention program. Additional funding was obtained over the years to expand piloted efforts. The goal of the most recent project, Florida Linking Individuals Needing Care (FL LINC) was to reduce suicide-related behavior (attempts and deaths) by improving training, outreach, and service delivery standards for families and professionals who work with at-risk youth and their families (Gryglewicz et al., 2017).

A care coordination model of care (the primary aim of the project) was designed to identify youth at-risk of suicide, link youth to services, and provide follow-up care to keep youth engaged in care. In this project, care coordination services were aimed to promote “healing and

hope” through ongoing connections to services using key care coordination strategies (Gryglewicz et al., 2017). These included assessing for suicide risk and strengths, making referrals and facilitating linkages, developing and refining safety plans (e.g., safety plans are initially developed before discharge and changed over time), and engaging in other strategies (i.e., psychoeducation, advocacy, problem-solving) to provide support and reinforce caring messages. For example, care coordinators used a warm hand-off approach when referring and linking clients to needed services. Warm hand-offs included intentional interactions, such as contacting service providers, scheduling appointments, attending appointments with clients, introducing clients to new service providers, and following up with clients and providers to maintain continuity of care (Gryglewicz et al., 2017).

The goal of the FL LINC care coordination program was designed to increase referrals for mental health and other supportive services across systems of care and improve long-term follow-up care of identified at-risk youth and families (Gryglewicz et al., 2017). Additionally, another goal was to obtain and maintain placement in the least restrictive community environment reducing the need for crisis stabilization and psychiatric hospitalization. Moreover, the program focused on engagement and forming alliances between youth, their families, and service providers. It is the desired outcome that individuals served by the program receive sufficient treatment, education, and support to enhance psychological well-being and overall functioning (Gryglewicz et al., 2017).

The FL LINC care coordination program combined existing strategies used in the case management approach with a distinctive focus on quality of interactions, engagement, and ongoing assessment of suicide risk. Before beginning care coordination, care coordinators received intensive, behavioral skills-based training to learn how to identify suicide risk and

monitor risk over time, enhance engagement and rapport building skills, develop strategies to motivate and empower clients (i.e., motivational interviewing, reinforcing supportive behaviors). Emphasis was placed on building community partnerships with service providers to enhance continuity of care and quality of interactions.



## **CHAPTER THREE: THEORETICAL FRAMEWORK**

This chapter focuses on the development of a theoretical framework based on Bronfenbrenner's (1977) ecological systems theory and Deci and Ryan's (2000) self-determination theory to explain the conceptual relationship between the intervention (the care coordination program) and the outcome variables (depression, suicidality, and readmission rates) in this study. As this is an exploratory study in nature, these frameworks guided the researcher in understanding the impact of ecological (i.e., individual, interpersonal, and environmental factors) and internal influences (i.e., self-determination and self-motivation) on participation in treatment and treatment outcomes.

### **Ecological Systems Theory**

The ecological systems theory provides reasoning for the inclusion of more than one of the five systems of influence on individual behavior (Bronfenbrenner, 1994, 1977). The five systems of influence are the microsystem, mesosystem, exosystem, macrosystem, and chronosystem. The three systems that influenced this study were the microsystem (i.e., individual), mesosystem (i.e., interpersonal), and macrosystem (i.e., environmental and societal), as illustrated in Figure 1 below. These interrelated systems contain factors that can increase the likelihood of adolescent suicidality.

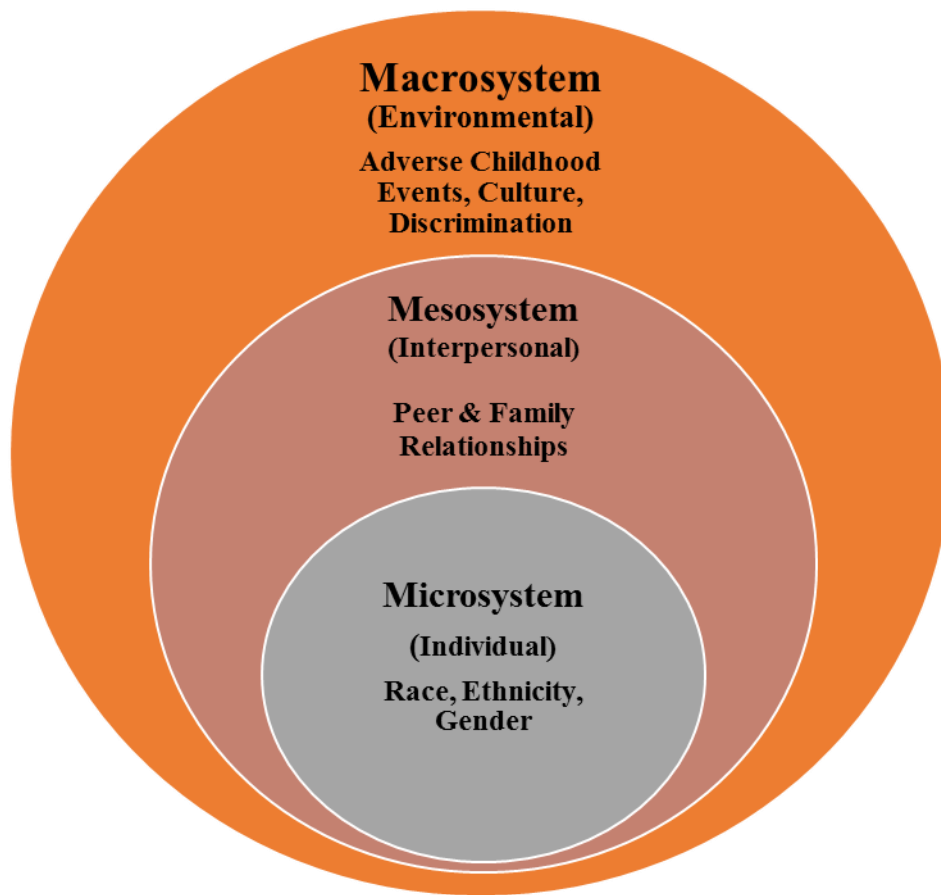


Figure 1. Ecological Systems Theory

The microsystem represents factors that have a direct influence on individual behavior. Bronfenbrenner (1994, 1977) describes microsystem level interactions as occurrences, activities, and relationships experienced by the individual that guides engagement with the immediate environment. Furthermore, microsystem level interactions continuously impact the individual and their social situations. Relevant microsystem level factors can include individual characteristics (e.g., race, ethnicity, and gender), family support, peer relationships, and school.

The mesosystem comprises of the relationships between two or more microsystem interactions or settings in which the individual is situated. The mesosystem level represents how the interactions between various microsystems impact individual experiences (Bronfenbrenner, 1994, 1977). Family and peer relationships are the primary contexts where interactions often

occur. Examples of mesosystem level interactions include an individual's connection with their peer group and interactions between the family system and other social systems (e.g., schools, communities). Experiences in one microsystem, such as peer group interactions may influence one's experiences in their school environment and vice versa.

The macrosystem involves the broader social environment of the individual.

Bronfenbrenner (1994) refers to this level as a *cultural blueprint* that may impact social activities and behavior that occur at the microsystem and mesosystem. Factors influencing the macrosystem level include cultural norms, beliefs, and practices. Individual behaviors are rooted within larger cultural systems versus solely within the individual alone.

### **Evolution of the Ecological Systems Theory**

Although the ecological systems theory originated in the fields of psychology and human development, it was later introduced into the public health arena as a framework that emphasizes the importance of understanding the influence of various levels within a person's environment on individual health behavior (Bronfenbrenner, 1994; Garbarino, 1985). Initially, this framework was applied to understand factors associated with child abuse (Garbarino, 1978) and then to youth violence (Krug, Mercy, Dahlberg, & Zwi, 2002), interpersonal violence (Heise, 1998), and elder abuse (Schiamberg & Gans, 1999). More recently, this theory has been used to aid in the understanding of *self-directed* violence, such as suicide (World Health Organization, 2014). Due to the framework's utility in explaining how individual, interpersonal, and environmental factors (and the relationship between these factors) may influence suicide behavior, the CDC has utilized this model to develop preventative approaches (CDC, 2017; Cramer & Kapusta, 2017).

Suicide is complex and may occur because of multiple factors interacting with each other, often over time. In the realm of suicide prevention and intervention research, the ecological

systems theory lends itself as a means to identify factors that can lead to suicidality. For example, the theory offers insight into how the influence of family, peers, school, the media, ethnic and cultural forces can increase one's vulnerability to engage in suicidal behaviors (Ayash-Abdo, 2002). More specifically, the underlying premise of the theory moves beyond individualistic explanations to focus more on a holistic understanding of suicide. Ayash-Abdo (2002) asserts, "it is crucial to understand that any suicidal outcome is a complex, multidomain, interactive effect of many factors" (p.470).

As such, research has utilized the ecological model to examine adolescent suicidality (Ayash-Abdo, 2002; Henry, Stephenson, Hansen, & Hargett, 1993; Hong & Espalage, 2012; Kidd et al., 2006; Perkins & Hartless, 2002). Among the most studied are the relationships between microsystem and mezzo influences (e.g., parent, peer, and school relations). As previously discussed, negative peer and familial relationship factors have been found to significantly influence suicide risk (Holt-Lundstad, et al., 2015; Kidd et al., 2006). For example, Perkins and Hartless (2002) explored three levels of risk factors (i.e., individual, family, extra-familial) and their relation to suicidal ideation and behavior in both White and African American male and female adolescents. They found the presence of risk factors at all three levels for female adolescents. This illustrates that at the individual, family, and extra-familial levels, the cumulative impact of these factors played a significant role in explaining self-harm behavior (suicide attempts) for females. In examining factors related to suicidal thinking, individual and family factors played a significant role, whereas, extra-familial level risk factors (i.e., lack of friends, school climate, and involvement in extra-curricular activities) had limited influence. Significant micro-level factors including age, physical and sexual abuse, alcohol and hard drug use were all predictors of suicide ideation in females. It is worth noting that the relationship

between alcohol use and suicide ideation and attempts were significantly greater for females than males. Furthermore, compared to Whites, there was a significantly greater association between hard drug use and suicide ideation for African American males and females. Findings from these studies reinforce the utility of using the ecological systems theory in understanding suicide behavior.

Cultural and racial factors are also linked to suicidality in adolescents. As previously discussed, barriers to health care access, stigma about mental health treatment, and exposure to discrimination are all macrosystem level factors associated with suicide in racial and ethnic minority youth (Asarri, Moghani-Lankarani, & Caldwell, 2017; Nestor, Cheek, & Liu, 2016; Wong, 2014). Nestor and colleagues posit that discrimination (e.g., referral bias from providers) may lead to poor mental health outcomes for minority youth. They infer that it may be that certain health professionals are less likely to provide treatment or for make referrals for services due to the race of their patient. In turn, it may be that these same influences undermine the need for treatment, further contributing to disparities in suicide risk identification and referring behaviors. These examples illustrate that macrosystem factors may interfere with the availability and quality of behavioral health care services provided to racial and ethnic minorities. Fundamentally, Cramer and Kapusta (2017) expressed the need to utilize a Social-Ecological Suicide Prevention Model (SESPM) in expanding suicide assessment and prevention efforts. Specifically, in shifting from heavily focusing on the microsystem perspective to encompassing a perspective integrating multi-level factors and their influence on understanding and addressing youth suicide.

## **Self-Determination Theory**

Rooted in psychology, Self-Determination Theory (SDT) is an elaboration of earlier theories that addressed the role of intrinsic and extrinsic motivation on an individual's behavior (Deci & Ryan, 2013). Since the inception of SDT over 40 years ago, the theory continues to evolve and is used to inform clinical practice across a variety of disciplines (Vansteenkiste, Niemiec, & Soenens, 2010). The tenets of SDT focus on human motivation, emotion, and personality, and the assumption that people have an innate motivation to engage in behaviors that promote change (Markland, Ryan, Tobin, & Rollnick, 2005). Therefore, SDT places emphasis on increasing self-motivation and self-determination by focusing on psychological needs (i.e., competence, autonomy, and connectedness) as the foundation for improving engagement in treatment and influencing behavioral change (Deci & Ryan, 2000). SDT considers individual and socio-environmental influences on human behavior and serves as a framework for understanding the relationship between clients' motivation and participation in treatment (Britton, Williams, & Conner, 2008; Jones, Corrigan, James, & Parker, 2013).

Particularly important is the emphasis on autonomy support, which appears to be a critical component of treatment for clients with acute suicidal ideation (Britton, Williams, & Conner, 2007). In fact, research examining the relationship between SDT tenets and mental health outcomes found that psychiatric patients who displayed increased levels of optimism and intrinsic motivation had improved mental health functioning (i.e., decreased symptoms of depression and anxiety) and were less likely to engage in suicidal behaviors (Michalak, Klappheck, & Kosfelder, 2004). Furthermore, patients who were actively involved in treatment, such as those showing higher levels of goal-oriented behavior reported more favorable outcomes with treatment sessions. Zuroff et al. (2007) also examined the importance of autonomous

motivation on therapeutic outcomes for adults being treated for major depression. In this study, patients who perceived receiving positive autonomy support were more likely to demonstrate autonomous motivation for treatment, which in turn resulted in a reduction in depression.

Strategies of SDT include identifying individual strengths (e.g., aspirations, competencies, confidence) and promoting self-efficacy through assessing coping resources/skills and protective factors (Deci & Ryan, 2002). The emphasis of SDT on the individual (their goals and values) makes it a valuable approach for diverse and underserved clients. Mainly, for minority youth who may be hesitant to engage in treatment due to lack of trust and stigma (macro-level factors) associated with mental health. When working with suicidal clients, treatment providers can implement approaches of SDT or strategies closely aligned, such as motivational interviewing to increase engagement in services and improve treatment outcomes (Britton, Patrick, Wenzel, & Williams, 2011). By supporting clients' autonomy, competence, and relatedness, clinicians may help activate clients' intrinsic motivation, which may increase treatment engagement and improve treatment outcomes.

### **Combined Ecological Systems Theory and Self-Determination Theory**

The core tenets of both ecological systems and self-determination theory can be combined to create a conceptual model for understanding suicidal behaviors and the influence of factors on participation in the care coordination program, as shown in Figure 2. The ecological systems theory offers insight into the multiple facets and various levels of influence of an adolescent's environment on suicidality, while SDT provides reasoning to why an adolescent may engage and participate in the care coordination program.

Background factors (i.e., individual, interpersonal, and environmental) are risk factors associated with suicidality. Additionally, these factors may also impact participation (e.g.,

motivation and engagement) in the program, as well as client behaviors. Individual background factors, such as gender, race, and ethnicity impact the level of suicide risk, as well as access to care. Interpersonal factors (i.e., bullying, victimization) can influence suicidal ideation and behaviors and may also impact the ability to form a therapeutic alliance which may affect motivation and engagement in the program. Environmental factors, (i.e., racism, cultural influences, child welfare and juvenile justice involvement,) also impact access to care, engagement in treatment, and suicide risk. The LINC care coordination program was developed to address micro, mezzo and macro-level risk factors that may impact treatment outcomes. The program incorporates strategies to increase clients' motivation to live and overcome challenges by empowering clients to rely on strengths and positive coping resources. Motivational interviewing strategies are used within the care coordination program to foster a sense of connectedness from engagement to termination of services. Although background factors (i.e., individual, interpersonal, environmental) are important in examining vulnerability to suicide, in this study, these variables were not the primary focus. It should be noted that these factors may play a role in the outcomes of the study and are important variables to further examine in future research.



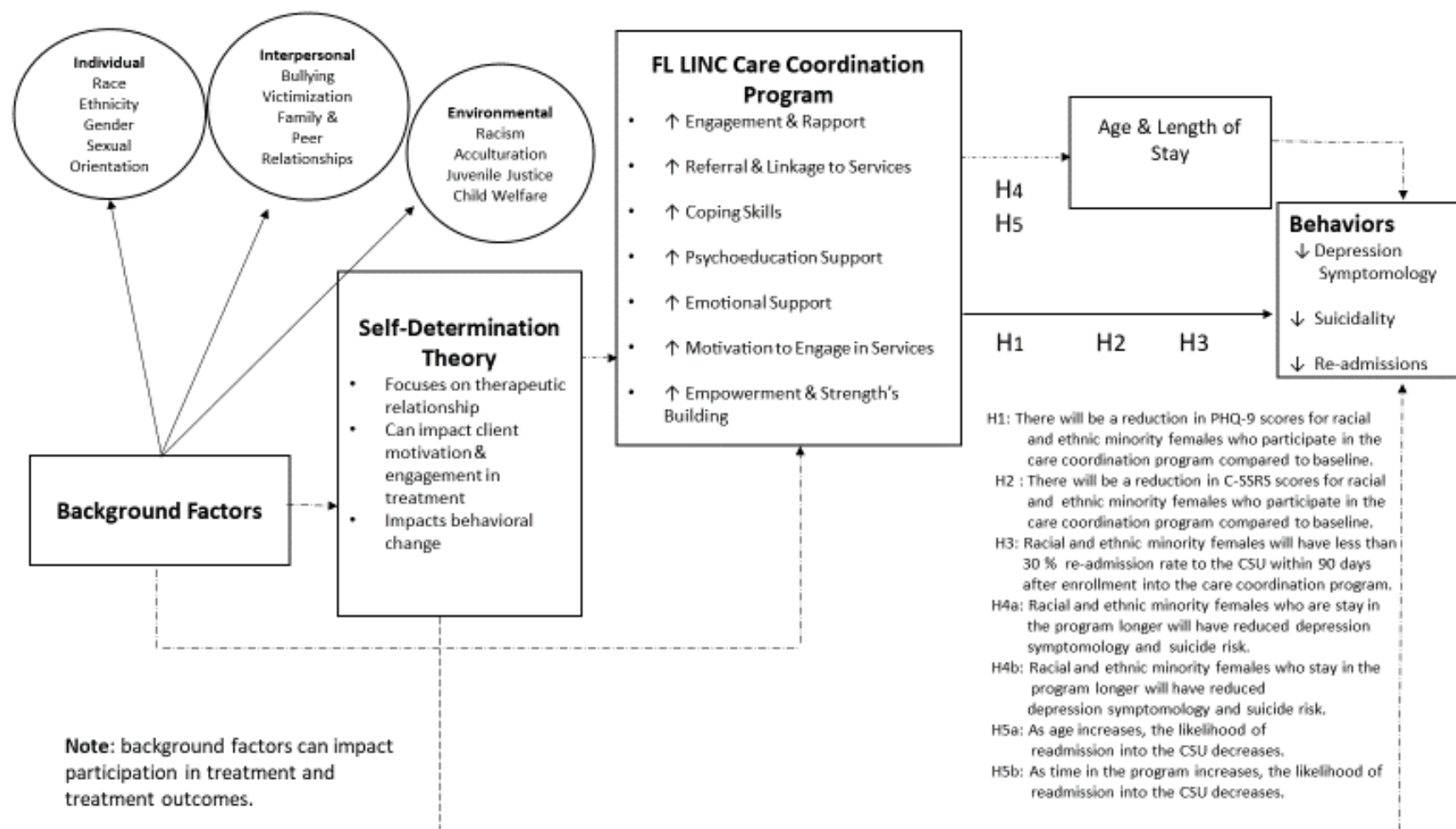


Figure 2. Theoretical Components Guiding the Florida Linking Individual Needing Care Intervention

## CHAPTER FOUR: METHODOLOGY

This chapter details the methodology used in this study and describes the research design, sample selection, data collection, identification of variables, instrumentation/measurement of the variables, and analytical strategy used to answer the study's research questions and hypotheses.

### Research Questions and Hypotheses

This study examined if participation in the care coordination program for racial and ethnic minority females changes depression symptomology and suicidality. This study also assessed whether participation in the care coordination program reduces re-admission rates to inpatient hospitalization (also referred to as crisis stabilization units; see Figure 2). The research questions and corresponding hypotheses included:

**Research Question 1:** Is there a difference in depression symptomology (PHQ-9) scores from pre-test to post-test for racial and ethnic minority females participating in the care coordination program?

**Hypothesis 1:** There will be a reduction in PHQ-9 scores for racial and ethnic minority females compared to baseline.

**Research Question 2:** Is there a difference in suicidality (C-SSRS) scores from pre-test to post-test for racial and ethnic minority females participating in the care coordination program?

**Hypothesis 2:** There will be a reduction in C-SSRS scores for racial and ethnic minority females who participate in the care coordination program compared to baseline.

**Research Question 3:** What is the percentage of racial and ethnic minority females who were re-admitted to the CSU within 90 days of enrollment in the care coordination program?

**Hypothesis 3:** Racial and ethnic minority females will have less than a 30% re-admission rate to the CSU within 90 days after enrollment in the care coordination program.

**Research Question 4:** How does age and length of stay in the care coordination program impact treatment outcomes (depression symptomology and suicidality) for racial and ethnic minority females participating in the care coordination program?

**Hypothesis 4a:** Racial and ethnic minority females who stay in the program longer will have reduced depression symptomology and suicidality.

**Hypothesis 4b:** Racial and ethnic minority females who are younger will have reduced depression symptomology and suicidality.

**Research Question 5:** What is the relationship between age and length of stay on readmission to the CSU for racial and ethnic minority females participating in the care coordination program?

**Hypothesis 5a:** As age increases, the likelihood of readmission into the CSU will decrease.

**Hypothesis 5b:** As time in the program increases, the likelihood of readmission into the CSU decreases.

### **Research Design**

This study was conducted using a non-experimental, longitudinal design (Creswell, 2012; Babbie & Rubin, 2008; Trochim, 2006). This design does not include random assignment, use of control group, or multiple measures (Trochim, 2006). The longitudinal component was determined due to data collection occurring over two points in time (Salkind, 2010; Shanahan, 2010). More specifically, the study utilized a one-group pretest-posttest design, which is represented by the following:

$$O_1 \times O_2$$

The baseline measure (pre-test) ( $O_1$ ) captured patient symptomology before admission into the care coordination program and consisted of scores from the Patient Health Questionnaire (PHQ-

9) and the abbreviated Columbia-Suicide Severity Rating Scale (C-SSRS). The PHQ-9 is a standardized assessment tool containing nine items that screen for depressive symptomology (Kroenke, Spritzer, & Williams, 2001). The C-SSRS is a standardized assessment tool that measures the severity and frequency of suicidal ideation and behavior (Posner et al., 2010). The care coordination program (X) is the intervention.

The FL LINC care coordination program is a research-informed intervention that was designed to increase referrals for mental health and other supportive services across systems of care, improve long-term follow-up care of identified at-risk youth and families, and reduce suicide risk (Gryglewicz et al., 2017). The intervention was guided by three theoretical models including Karver's (2005) therapeutic alliance model, Miller and Rollnick's (2002) theory of motivation, and Deci and Ryan's (1985) self-determination theory. Thus, the intervention draws from these theories and includes the following core practice components: therapeutic alliance, engagement/motivation, and self-determination/empowering strengths. The program was delivered post-discharge from acute care facilities using follow-up contacts (i.e., in-person or phone calls) made by agency care coordinators that occurred at multiple points in time: 24-72 hours after discharge, weekly for 30 days, and at 60 and 90 days. During each contact, trained care coordinators assessed for suicide risk factors, warning signs and protective factors; reinforced the use of coping skills and strengths; evaluated types of services needed and made new referrals/linkages to care (mental or non-mental health); and utilized motivational and empowerment strategies to develop and strengthen the therapeutic alliance between care coordinator and client. During assessment of risk factors, warning signs, protective factors and coping skills, care coordinators used research-informed assessment tools developed specifically for the program (e.g., Suicide Risk Triage Form, My Wellness Toolkit & Crisis Action Plan, and

Care Monitoring Forms) to document care processes and client outcomes. Based on level of functioning and needs, care coordinators revised safety plans, reviewed and created a new “LINC to LIFE” statement (i.e., a statement developed based on asking the youth what has kept them alive so far and what they look forward to in the future), and made additional referrals as needed. In this study, site care coordinators were bachelor’s level professionals who were trained in suicide prevention and intervention strategies.

Once participants completed the care coordination program, the same measures, PHQ-9 and C-SSRS (O<sub>2</sub>) were collected again. The number of re-admissions were also collected. In summary, this design examined client outcomes regarding changes in depression symptomology and suicide risk for program participants. Specifically, this study sought to evaluate if there was an improvement in scores from pretest to posttest after participation in the care coordination intervention.

### **Agency Setting**

The care coordination program was implemented in CSUs housed in three large behavioral health organizations located within the northeast, central, and southeast regions of Florida. Table 1 displays estimated regional demographics by county, total population, and race. CSUs are defined as “public receiving facilities, receive state funding and provide a less intensive and less costly alternative to inpatient psychiatric hospitalizations for individuals presenting as acutely mentally ill” (s. 394.875, F. S.). The average inpatient stay lasts from 72 hours to two weeks, thus resulting in a discharge of the patient to their home, another placement setting (i.e., long-term facility), or alternative living arrangement (Agency for Health Care Administration, 2018). CSUs primary purpose is to assess, admit and stabilize people during a mental health crisis. The three CSU’s chosen for implementation of the care coordination

program did not provide any therapeutic treatment (e.g. cognitive behavioral therapy, mindfulness) to participants during their stay.

Table 1. 2018 Florida Regional Population and Demographic Data (Adult and Child Households)

Region	# of Counties	Total Population (per million)	White	Black or African American	Non-White
Northeast	7	1.7	1.1	.27	.39
Central	16	8.2	6.0	1.0	1.2
Southeast	6	7.8	5.0	1.3	1.5

Office of Economic and Demographic Research (2018).

## Population and Sample

The population consisted of all participants enrolled in the FL LINC care coordination program between July 2016 and November 2018. Participants were enrolled in the care coordination program after admission to the children's CSU. As outlined in Florida Statute, Chapter 394 addressing mental health, a client would have to meet the following criteria for admission into the CSU:

- A person under 18 years of age for whom voluntary application is made by his or her guardian, if such person is found to show evidence of mental illness and to be suitable for treatment, pursuant to s.394.462.
- A person under 18 years of age who may be taken to a receiving facility for involuntary examination, if there is reason to believe that he or she is mentally ill and because of his or her mental illness, pursuant to s. 394.463.
- Has refused voluntary examination after conscientious explanation and disclosure of the purpose of the examination; or is unable to determine for himself or herself whether examination is necessary.

- Without care or treatment is likely to suffer from neglect or refuse to care for himself or herself; such neglect or refusal poses a real and present threat of substantial harm to his or her well-being; and it is not apparent that such harm may be avoided through the help of willing family members or friends or the provision of other services.
- There is a substantial likelihood that without care or treatment he or she will cause serious bodily harm to himself or herself or others in the near future, as evidenced by recent behavior (Florida Mental Health Act, 2018).

To determine eligibility for the FL LINC program, the agency evaluator administered the PHQ-9 to potential participants. If the participant screened with a moderate to high score (10) and/or indicated a positive endorsement of suicide (item #9 on measure), then the C-SSRS was completed to assess suicidality. The participant's scores on the C-SSRS indicates whether they are considered at no to minimal, moderate, or high suicide risk. Thus, if a participant answered yes to any item included on the C-SSRS, then site care coordinators were notified of the admission into the unit (note: administration of these tools were part of standard care). The site care coordinator would then conduct a face-to-face meeting with potential participants within 24-48 hours of admission into the CSU. If this was not possible (e.g., admission occurred on the weekend), the care coordinator would then set up a follow-up appointment or phone call, within 72 hours of discharge.

The care coordination program was a voluntary intervention; therefore, it required consent from the parent or guardian of the youth prior to enrolling the youth into the program. once the participant met criteria for enrollment, the care coordinator obtained necessary consents for the program (e.g., contact between agency and the FL LINC project, HIPAA release of information forms for other providers). The care coordinator explained all aspects of the care

coordination intervention, to include care transitions (i.e., care monitoring contact schedule and well-checks when needed if contact was not made or returned). Figure 1 depicts a flowchart outlining enrollment into the care coordination program (see below).

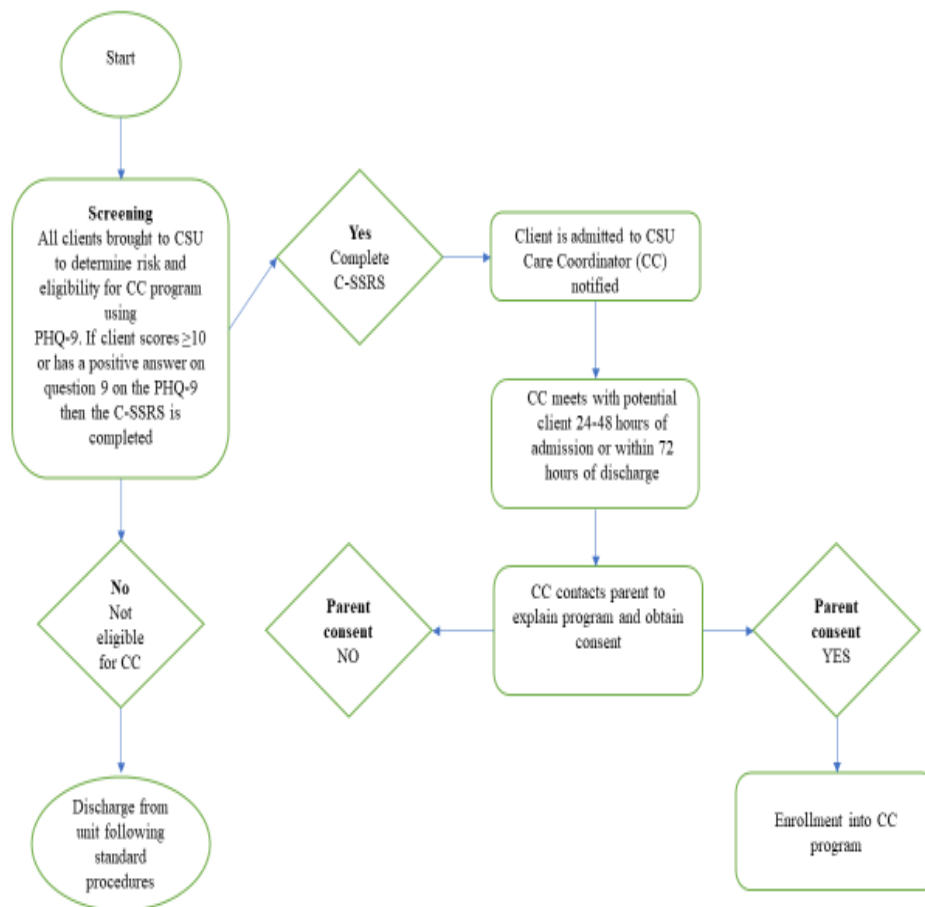


Figure 3. Participant flowchart for admission into the Care Coordination intervention

The sample for this study included 76 participants that identified as any racial and ethnic minority, including Black and African American (i.e., racial category to be inclusive of Black Americans of African descent and those of Caribbean descent), or Hispanic (i.e., person of Cuban, Mexican, Puerto Rican, South or Central American) between the ages of 10 to 18 who voluntarily enrolled in the care coordination program (See demographics table in Chapter 5: Results). Youth who were under 10 or over age 18, males, and females who did not identify as a racial and ethnic minority were excluded.



## **Data Collection**

This study used de-identified secondary data from existing case records collected between July 2016 and November 2018 from three CSUs located in the northeast, central, and southeast regions of Florida. The primary data was collected by researchers at the University of Central Florida and University of South Florida as part of a larger research study. A de-identified database was provided to this researcher only containing information on the population of focus consisting of participant demographics (race, ethnicity, age, and gender), client symptomology, dates of admission into the CSU, and dates of enrollment and discharge from the care coordination program. The primary researchers collected demographic information via clinical face sheets. The PHQ-9 and C-SSRS were collected by interview during participation in the program. Length of stay and readmission data for participants in the program was collected from care coordination case records. This study (SBE-18-14293) met the *not human research determination* as defined by DHHS regulations at 45 CFR 46 or FDA regulations at 21 CFR 50/56 on September 5, 2018, by the University of Central Florida's Institutional Review Board.

## **Measurement of Study Variables**

The outcome variables selected for this exploratory study were based on the primary aim for the larger study of the care coordination program, which was to reduce youth suicide-related behavior (attempts and deaths). The three main outcome variables identified in this study included 1) depressive symptomology, 2) suicidality and 3) re-admission to the CSU. The two independent variables identified in this study included age and length of stay in the program. Table 2 outlines the operationalization of each variable in more detail.

## **Outcome Variables**

### **Depression symptomology**

Depression symptomology is a continuous variable assessed by the Patient Health Questionnaire (PHQ-9). The adolescent interview version of the Patient Health Questionnaire (PHQ-9), a unidimensional tool containing nine items that screen for depressive symptomology was used to measure depression. This version includes slight modifications in wording to make the measure more accessible to youth, and one additional question assessing suicide risk. Participants are asked to rate the frequency of which symptom was experienced in the past two weeks, ranging from 0 (“not at all”) to 3 (“nearly every day”). Items are summed to create a total depression severity score, ranging from 0-27 (Kroenke, Spitzer & Williams, 2001). Scores on the scale can be categorized to reflect severity: mild (5-9), moderate (10-14), moderately severe (15-19), and severe (20-27). The scale has shown to be reliable and valid with adolescent and adult populations (Richardson et al., 2010; Sergio et al., 1999; Spitzer et al., 2000). See Appendix A for PHQ-9.

### **Suicidality**

Suicidality is a continuous variable assessed by the Columbia-Suicide Severity Rating Scale. Existing suicide prevention and intervention research require assessing both suicidal ideation and behavior when identifying risks and responses to treatment (Posner et al., 2011). The C-SSRS was designed to define and measure the severity and frequency of suicidal ideation and behavior and monitor change across time. For the care coordination program, an abbreviated version of the C-SSRS was adopted, and six items assessing suicidality (ideation, plans, and attempts) were included in the interview administration. Participants are asked to answer “yes” or “no” to questions about suicidal thoughts, plans, and attempts since their last visit (defined in

Table 2). Items are summed to create a total suicidality score, ranging from 0-6, thus making it a continuous variable in this study. This total score summarizes suicidality risk factors. Posner and colleagues (2011) analyzed the validity and reliability of the C-SSRS using three multi-site longitudinal studies. In all three studies, the scale “demonstrated convergent, divergent, and predictive validity; sensitivity to change; sensitivity and specificity of the instrument; and internal consistency of the intensity subscale” (p.12). See Appendix B for C-SSRS.

### **Readmissions**

A categorical variable distinguishing between participants who were readmitted to the CSU for suicide risk versus participants who were not readmitted (within 90 days after enrollment). The two categories were 0= no readmissions, 1= readmissions.

### **Independent/Covariate Variables**

#### **Length of stay**

Two independent variables were included in this study: length of stay (a continuous variable measured by the number of days the participant remained in the program) and age (a continuous variable measured by the patient’s age at the time of admission). In the primary study, due to funding restrictions, children under the age of 10 were excluded. Two co-variables were also included in the study: race/ethnic identity (a categorical variable distinctive of the participants racial/ethnic identity) and crisis stabilization unit site (a categorical variable identifying the location of where short-term, in-patient psychiatric services were provided).

Table 2. Operationalization of Variables

<b>Variable</b>	<b>Type</b>	<b>Classification</b>	<b>Measure</b>	<b>Score</b>	<b>Definition</b>
Readmission	DV	Categorical	Agency Record	Coded by number 0= no readmissions 1= readmissions	Readmission to Crisis Stabilization Unit within 90 days after enrollment in CC for imminent risk of suicide
Depression	DV	Continuous	PHQ-9	Coded by total score (Scores ranges, 0-27)	Presence and severity of affective/cognitive and somatic symptoms
Suicidality	DV	Continuous	C-SSRS	Coded by total score (Scores range, 0-6)	C-SSRS measures suicidality based on 3 components (ideation, plans, attempts) Suicidal Ideation: “general, non-specific thoughts of wanting to end one’s life/complete suicide.” Suicidal Plans: “thoughts of killing oneself with details of plan fully or partially worked, with intent to carry it out.” Suicidal Attempts: “nonfatal, self-directed potentially injurious behavior with any intents to die.”
Length of Stay	IV	Continuous	Care Monitoring Form	Coded by number (1-90)	Number of days that participants remained in the CC program
Age of Client	IV	Continuous	Agency Record	Coded by number	Participant’s age when enrolled in the CC program
Race/Ethnic Identity	CV	Categorical	Agency Record	Coded by number 1= Black and/or African American 2= Hispanic	Participants racial/ethnic identity
Crisis Stabilization Unit Site	CV	Categorical	Agency Record	Coded by number 1= Site A 2= Site B 3= Site C	Location of where short-term, in-patient psychiatric services were provided

## Data Analysis

Statistical analyses were conducted using the Statistical Package for Social Sciences (SPSS) Statistics version 25 software program. Univariate descriptive statistics (e.g., frequencies, measures of central tendency and variability) were used to determine variability within covariates, mean age of participants, and percentages of Black, African American and Hispanic females from each site. Bivariate and multivariate tests statistical tests were used to test the hypotheses for this study. Specifically, the main research questions below were analyzed in the following ways:

**Research Question 1:** *Is there a difference in depression symptomology (PHQ-9) scores from pre-test to post-test for racial and ethnic minority females participating in the care coordination program?* Using bivariate statistics, a paired sample *t*-test was used to compare the average (mean) depression score for the group on the PHQ-9 at baseline to the average (mean) depression score for the group at post-test.

**Research Question 2:** *Is there a difference in suicidality (C-SSRS) scores from pre-test to post-test for racial and ethnic minority females participating in the care coordination program?* To examine this question, a paired sample *t*-test was used to compare the average (mean) suicidality score for the group on the C-SSRS at baseline to the average (mean) depression score for the group at post-test.

**Research Question 3:** *What is the percentage of racial and ethnic minority females who were re-admitted to the CSU within 90 days of enrollment in the care coordination program?* To examine the percentage of minority females readmitted to inpatient services, descriptive statistics were conducted.

**Research Question 4:** *How does age and length of stay in the care coordination program impact treatment outcomes (depression symptomology and suicidality) for racial and ethnic minority females participating in the care coordination program?* Multivariate analysis of covariance (MANCOVA) was conducted to examine if there was a statistically significant difference between the pre-test and post-test mean scores in terms of depression symptomology and suicidality after controlling for age and length of stay in the program.

**Research Question 5:** *What is the relationship between age and length of stay on readmission into the CSU?* Logistic regression was conducted to examine if age and length of stay were possible predictors of readmission. The analysis method allows for the determination of how much of the variance can be attributed to the individual risk factors.

### **Data Screening & Assumptions**

Prior to main analysis, the variables were examined for errors in data entry, missing values, and outliers. Initial observation of the data revealed that there were missing values for the post-test scores of the PHQ-9 and C-SSRS. Chi-square and independent sample *t*-tests were conducted to with outcome variables and there were no differences

Certain assumptions must be met to run parametric statistics. Specific to bivariate statistics (paired sample *t*-tests), the outcome variables must be continuous. Depression symptomology and suicidality are continuous variables, thus meeting this assumption. Second, observations must be independent of one another (i.e., one person's scores are not dependent on another person's score). Third, the outcome variables should not include significant outliers. Fourth, the data must be normally distributed. To test these assumptions skewness and kurtosis values were evaluated, results of the Shapiro-Wilk's test were reviewed, and a visual inspection

of a Q-Q plot occurred. Skewness and Kurtosis values were determined to be within the range of 2 and 7, resulting in no detection of outliers. The significance value of the Shapiro-Wilk test was greater than 0.05, suggesting that the data is normally distributed. The inspection of the Q-Q plot revealed a reasonably normal distribution with no substantial outlier values.

There are multiple assumptions that must also be met when analyzing data using multivariate analysis of covariance (MANCOVA). The first four assumptions are related to the study design and include: (a) at least two continuous outcome variables; (b) the independent variable is categorical (e.g., intervention); (c) the covariates(s) are continuous; and (d) there is no relationship between the observations (i.e., participants). Next, there was a linear relationship between covariates (i.e., age and length of stay) and the change scores for outcome variables (i.e., depression and suicidality) as assessed by visual inspection of a scatterplot.

Next, there must be homogeneity of regression slopes, as assessed by the interaction term between intervention and age,  $F(2,20) = .974, p = .772$  and between intervention and days in program,  $F(2,20) = .948, p = .588$ . This assumption was met because there was not statistically significant interaction terms. Then, there must be homogeneous of covariance as assessed by Box's M test. This assumption was not violated as  $p > .001$ . Another assumption is that there should be no outliers as MANCOVA is very sensitive to their effects (Tabachnick & Fidell, 2014). However, outliers were detected, thus violating this assumption. Due to this, results were interpreted with caution. The final assumption is that residuals are normally distributed, as assessed by Shapiro-Wilk's test. This assumption was met as Shapiro-Wilk's test was greater than 0.05.

Logistic regression requires seven assumptions to be met, including a minimum sample size of 15 cases per independent variable. The sample size (N=76) of this study exceeded this expectation. The next assumption requires the outcome variable to be measured as a dichotomous variable. The outcome variable was coded as readmission versus no readmission into the CSU. When using logistic regression, there must also be one or more independent variables, which may be continuous or categorical. The scores for both independent variables (age and length of stay) were continuous. Next, the dependent variable must be mutually exclusive and exhaustive (i.e., the cases cannot have multiple response options). The independent variables (i.e., age and length of stay) are also expected to be linearly related to the log odds. To test this assumption, the Box Tidwell (1962) procedure was used to perform natural log transformations and to create interactions terms for each independent variable). This assumption was met as the interaction terms of the independent variables were not statistically significant, thus showing a linear relationship of age and length of stay to the logit of the readmission variable. The assumption of multicollinearity was met and was tested by reviewing the Variance Inflation Factors (VIF), which was less than 5. To test for outliers, a box plot and the casewise diagnostics were reviewed. Results indicated that outliers were present. Similar to outliers identified in the MANCOVA analyses, the cases were not removed and the results were interpreted with caution.

### **Power Analysis**

A priori power analysis was conducted using G\* Power to compute the minimal sample size needed to make generalizations to the population (Faul, Erdfelder, Lang, & Buchner, 2009). With an anticipated effect size of 0.15, power level of 0.8, three predictors and a probability level



of 0.05, the priori power analysis indicated a minimum sample size of 75 is required to reach statistically significant results.

## **CHAPTER FIVE: RESULTS**

The following chapter describes the statistical analyses used to examine the above research questions and hypotheses. This chapter begins with a presentation of the descriptive statistics for all study variables. Next, the results of the bivariate and multivariate analyses are reported. The chapter concludes with an interpretation of the hypotheses testing.

### **Descriptive Analysis**

The sample consisted of 76 racial and ethnic minority female youth participating in the FL LINC care coordination program between July 2016 and November 2018. As shown in Table 3, 57.9% of the females in the sample identified as African American or Black and 42.1% identified as Hispanic. The mean age at admission into the program was 14.63 years ( $SD = 1.57$ ). Age of participants ranged from 11 to 17 years. Almost 90% of participants were diagnosed with a mood disorder; approximately 8% were diagnosed with an adjustment disorder. At baseline, the mean PHQ-9 score was 15.68 ( $SD = 6.40$ ) and 7.20 ( $SD = 6.27$ ) at posttest (discharge from the program). In terms of suicidality, the mean C-SSRS score at baseline was 3.73 ( $SD = 1.77$ ) and 0.66 ( $SD = 1.19$ ) at posttest. The majority of participants (84.2%) in the program were not readmitted into the CSU. The mean length of stay, as measured by number of days enrolled in the program, was 88.13 ( $SD = 33.35$ ). Participants were enrolled in the care coordination program through agencies located in three different regions of Florida. Approximately 27.6% of the sample resided in the northeast, 31.8% in the central, and 40.8% in the southeast regions.

Table 3. Sample Characteristics of Participants in the FL-LINC Program

	N	%	Median	Mean	SD
Age	76	-		14.63	1.57
Race/Ethnic Identity	76				
-Black/AA	44	57.9			
-Hispanic	32	42.1			
Sexual Orientation	70				
Heterosexual	64	84.2			
Bisexual	2	2.6			
Lesbian	4	5.3			
Primary Mental Health Diagnosis	73				
-Mood Disorder	65	89.0			
-Adjustment Disorder	6	8.2			
-Anxiety Disorder	1	1.4			
-Neurodevelopmental	1	1.3			
Agency	76				
-Site A	31	40.8			
-Site B	24	31.6			
-Site C	21	27.6			
PHQ-9					
-Baseline	76			15.68	6.40
-Posttest	30			7.20	6.27
C-SSRS					
-Baseline	70			3.73	1.77
-Posttest	46			0.66	1.19
CSU Readmissions					
-No	64	84.2			
-Yes	12	15.8			
Length of Stay	76		93	88.13	33.35

\*Length of Stay ranged from 14-221 days

### Research Question 1

*Is there a difference in depression symptomology (PHQ-9) scores from pre-test to post-test for racial and ethnic minority females participating in the care coordination program?* A paired sample *t*-test was performed to examine the mean differences between PHQ-9 scores for participants enrolled in the care coordination program at baseline and at post-test. Results in Table 4 reveal a statistically significant mean decrease in PHQ-9 scores from pre-test to post-test

time points,  $t(29) = 6.36, p < .001, d = 1.53$ . The Cohen's  $d$  statistic (1.53) indicated a large effect size. To examine possible differences across race/ethnicity (Black vs. Hispanic), further analyses were conducted. Findings revealed no statistically significant difference in mean scores between Black ( $M=10.06 [8.32]$ ) and Hispanic ( $9.21 [8.61]$ ) females,  $t(28) = 0.27, p = .79$ .

## Research Question 2

*Is there a difference in suicidality (C-SSRS) scores from pre-test to post-test for racial and ethnic minority females participating in the care coordination program?* A paired sample  $t$ -test was also performed to examine the mean differences between C-SSRS scores for participants enrolled in the care coordination program at baseline and at post-test. Similarly, Table 4 shows that there was a statistically significant mean decrease in C-SSRS scores,  $t(45) = 10.06, p < .001, d = 1.89$ . The Cohen's  $d$  (1.89) indicated a large effect size. Similarly, between race/ethnicity, there was no statistically significant difference in mean scores,  $t(44) = 1.66, p = .64$  (Black:  $M=3.41 [2.02]$  vs. Hispanic:  $M=2.42 [1.92]$ ).

Table 4. Paired Samples  $t$ -test of Depression and Suicidality

		Paired Differences								
		N	Mean Diff.	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		<i>T</i>	Df	Sig. (2-tailed)
						Lower	Upper			
Pair 1	PHQ 9 baseline -PHQ 9 post	30	9.667	8.323	1.519	6.559	12.774	6.36	29	.000
Pair 2	CSSR-S baseline – CSSR-S post	46	3.000	2.022	.298	2.400	3.600	10.06	45	.000

\* Statistical significance,  $p \leq .001$

### Research Question 3

*What is the percentage of racial and ethnic minority females who were re-admitted to the CSU within 90 days of enrollment in the care coordination program?* Approximately 16% of racial and ethnic minority females were re-admitted to the CSU within 90 days of enrollment in the care coordination program. The majority (84%) were not re-admitted. Further exploratory analyses were conducted to examine depression and suicide risk scores for those who were re-admitted (16%) into the CSU. For depression symptomology, these participants had a higher mean PHQ-9 score than the total sample at baseline (17.17 vs. 15.40) and a lower mean PHQ-9 score at post-test (5.80 vs. 7.48), albeit the difference was not statistically significant,  $p = .53$ . For suicide risk, the mean C-SSRS score was also higher (but not significant) than the total sample at baseline (4.55 vs. 3.58) and post-test (1.22 vs. 0.53). Although these differences were not statistically significant, findings suggest that these females may be uniquely different than the total sample (see discussion for clinical implications).

### Research Question 4

Multivariate analysis of covariance (MANCOVA) was conducted to examine the impact of covariates, age and length of stay, on depression symptomology and suicidality simultaneously. As displayed in Table 5, there was no statistically significant difference between the pre-test and post-test mean scores in terms of depression symptomology and suicidality after controlling for age and length of stay in the program,  $F(2, 20) = .172$ ,  $p = .843$ , Wilks'  $\Lambda = .983$ , partial  $\eta^2 = .017$ . Additional analyses were examined to control for site, as CSU site may have influenced pre and posttest changes. However, when controlling for site (region), it did not impact the findings,  $F(1, 20) = .00$ ,  $p = .989$ , Wilks'  $\Lambda = .983$ , partial  $\eta^2 = .017$ .

Table 5. Multivariate Analysis of Covariates on Outcomes

Variable (N=21)	$\Lambda$	$F$	$Df$	$P$
Intervention	.983	.172	2, 20	.843
Age	.978	.228	2, 20	.798
Length of Stay	.999	.014	2, 20	.986
Intervention * Age	.974	.262	2, 20	.772
Intervention * Length of Stay	.948	.545	2, 20	.588

As noted in the assumption section in Chapter 4, the length of stay variable had several outliers which may have influenced the results for this research question. Two analyses were conducted, one including the outliers and one excluding the outliers. In both analyses, the results were not statistically significant. Therefore, the outliers are included in the results shown in Table 5.

### Research Question 5

A binomial logistic regression was performed to examine the effects of age and length of stay on the likelihood that participants would be readmitted to the CSU. Compared to null model, the predictive model had a significant improvement in fit,  $X^2(3) = 10.31, p < .05$ . The model explained 21.8% (Nagelkerke  $R^2$ ) of the variance in readmissions. The model accurately predicted no repeat readmissions at 84.2%, while only predicting readmission at 15.8%. Of the two predictor variables, only length of stay was statistically significant (as shown in Table 6). The odds ratio for length of stay was 1.03, indicating that a 1 unit (one day) increase in length of stay lead to a 3% increase in odds of readmission to the CSU.

Table 6. Logistic Regression Predicting Likelihood of Readmissions based on Age and Length of Stay

	B	S.E.	Wald	df	P	Odds Ratio	95% C.I. for Odds Ratio	
							Lower	Upper
Age	.163	.246	.439	1	.508	1.154	.713	1.867
Length of Stay	.033	.013	6.508	1	.011	1.034	1.006	1.057
Race/Ethnic Identity	-.754	.705	1.142	1	.285	.471		
Constant	-6.903	3.998	2.982	1	.084	.001		

\* Statistical significance,  $p \leq .05$ . N=76

## Hypothesis Testing Conclusions

### Depression Symptomology

It was hypothesized that there would be a reduction in PHQ-9 scores for racial and ethnic minority females who participated in the care coordination program compared to baseline scores. The paired sample  $t$ -test revealed there was a significant mean decrease, 54% change in scores from Time 1 to Time 2; therefore,  $H_1$  was supported.

### Suicidality

It was hypothesized that there would be a reduction in C-SSRS scores for racial and ethnic minority females who participated in the care coordination program compared to baseline scores. The paired sample  $t$ -test revealed a significant mean decrease, 82% change in scores between the time points; therefore,  $H_2$  was supported.

### Readmission to Crisis Stabilization Unit

It was hypothesized that racial and ethnic minority females would have less than a 30% re-admission rate to the CSU within 90 days after enrollment in the care coordination program.

Among females who participated in the program, 15.8% were re-admitted. The percentage of females who returned to the CSU was lower than 30%, therefore, H<sub>3</sub> was supported.

#### **Age and Length of Stay on Depression Symptomology and Suicidality**

It was hypothesized that racial and ethnic minority females who stayed in the program longer would have reduced depression symptomology and suicidality. It was further hypothesized younger females who stayed in the program longer would have improved outcomes. These findings were not supported, thus suggesting that after accounting for age and length of stay there was no effect of the intervention on depression and suicidality scores (H4a and H4b were not supported).

#### **Age and Length of Stay on Readmission into the Crisis Stabilization Unit**

Finally, it was hypothesized that as age increases, the likelihood of readmission into the CSU would decrease. Additionally, as time in the program increased, the likelihood of readmission would decrease. Results indicated that age did not predict the likelihood of readmission, therefore H5a was not supported. Conversely, the relationship between length of stay on readmission into the CSU was statistically significant, but not as predicted. An increase in the length of stay in the program increased the likelihood of readmission, therefore H5b was also not supported.

Table 7 provides a Hypothesis Testing Summary of the above section, which demonstrates whether a hypothesis was supported or not, indicated by an “X” as a result of bivariate and multivariate analyses.



Table 7. Results of Hypothesis Testing

<i>Hypothesis</i>	<i>Supported</i>	<i>Not Supported</i>
<b>Hypothesis 1.</b> There will be a reduction in PHQ-9 scores for racial and ethnic minority females compared to baseline.	<b>X</b>	
<b>Hypothesis 2.</b> There will be a reduction in C-SSRS scores for racial and ethnic minority females compared to baseline.	<b>X</b>	
<b>Hypothesis 3.</b> Racial and ethnic minority females will have less than a 30% readmission rate to the CSU within 90 days of enrollment into the care coordination program.	<b>X</b>	
<b>Hypothesis 4a.</b> Racial and ethnic minority females who stay in the program longer will have reduced depression symptomology and suicidality.		<b>X</b>
<b>Hypothesis 4b.</b> Racial and ethnic minority females who are younger who stay in the program longer will have reduced depression symptomology and suicidality.		<b>X</b>
<b>Hypothesis 5a.</b> As age increases, the likelihood of readmission into the CSU decreases.		<b>X</b>
<b>Hypothesis 5b.</b> As time in the program increases, the likelihood of readmission into the CSU decreases.		<b>X</b>

## **CHAPTER SIX: DISCUSSION**

In this final chapter, findings of the five research questions will be described within the context of prior research and relevant theories. Next, a review of study limitations and practice and policy implications for social work and mental health practitioners will be presented. This chapter concludes with recommendations for future research.

### **Depression Symptomology and Suicidality**

Research supports that there is a strong correlation between depression and suicidal ideation and behavior in female youth (Bridge, Goldstein & Brent, 2006; Choate, 2014; Essau & Chang, 2009; Nock et al., 2010; Shain, 2016). In general, female youth who experience depression are more likely than their male counterparts to suffer from depression, have thoughts and act upon thoughts of suicide, and encounter risk factors associated with suicide risk (Choate, 2018; Klomek et al., 2009; Nock et al., 2013). Due to the intersection of race and gender, Black and Hispanic female youth are at a heightened risk for depression and suicidal behavior. Several risk factors related to racial, ethnic or cultural identification contribute to mental health service use and presence of mental health symptomology.

The findings in this study revealed a significant decrease in depression symptomology and suicidality following participation in the program. For instance, there was a 54% decrease in depression scores (15.68 to 7.20) at post-test. An 82% decrease in suicidality scores was also found (3.73 to 0.66). These findings suggest promising treatment outcomes of the intervention. Other care coordination programs, incorporating similar components, but with other populations show promising results in mental health outcomes (Wang et al., 2015). However, it is interesting to note that Black females had higher depression and suicidality scores than Hispanic females.

As previously described, risk factors (i.e., individual, interpersonal, environmental) and protective factors are important in examining vulnerability to suicide, and may have confounded results, specifically other protective factors may have influenced the outcomes of these findings.

In fact, evidence supports the use of protective factors in decreasing suicide risk (Stone, et al., 2017; Swahn, et al., 2012). For example, social connectedness (i.e., peer and family) has been found to reduce depressive symptoms, suicidal ideation, and attempts (Czyz, Liu, & King, 2012). Although the focus of this study did not seek to examine the relationship between protective factors and depression or suicidality, components of self-determination theory such as positive reinforcement and therapeutic alliance (which is from the therapeutic alliance model, Karver et al., 2005) were embedded within the FL LINC care coordination intervention. The intervention was designed to enhance the participant's capacity to use protective factors through teaching and reinforcement of effective coping skills, positive social support (i.e., parental and peer support), connectedness, and strategies to facilitate help-seeking (accessing services).

### **Readmissions**

Another goal of the care coordination intervention was to reduce the need for crisis stabilization and psychiatric hospitalization. Specifically, research has found that the highest risk of suicidal events (i.e., increases in suicidal ideation, re-attempt rates or deaths by suicide) occur following psychiatric hospitalization, specifically within the first month (Huisman, Kerkhof, & Robben, 2011; Luxton, June, & Comtois, 2013; Wolff et al., 2018). Adolescents who have had an inpatient stay for mental health concerns are at greater risk for repeated hospitalizations (Arnold et al., 2003). This study found that 84% of participants did not readmit to the CSU while enrolled in the care coordination program. Therefore, it is possible that the intense engagement

that occurs through the follow-up contacts at multiple points in time reduced the need for rehospitalization for this marginalized population. This is consistent with findings regarding the use of brief contact interventions; these studies found that utilizing frequent and short contacts (i.e., phone calls, letters, visits) increased engagement of patients in care, improved mental health functioning, and reduced hospitalization due to suicidal events (Brent, et al., 2013; Huisman, Kerkhof, & Robben, 2011; Luxton, June, & Comtois, 2013; Milner et al., 2015). Perhaps strategies used in this intervention helped to reduce fears/lack of trust and stigma often associated with mental health concerns in minority populations (Mays, et al., 2017; Wong, Maffini, & Shin, 2014). The higher depression and suicide scores for those who were re-admitted vs. those who were not suggests that these youth may have more risk factors upon entering the care coordination program. Possible explanations for this increased risk, include involvement in child welfare and juvenile justice systems. Given these findings, further attention is needed to explore unique needs of racial and ethnic minority youth populations involved in other systems of care as it is important for designing and implementing effective suicide prevention interventions.

### **Impact of Age and Length of Stay on Depression and Suicidality**

The results of this study also revealed that after controlling for age and length of stay, there was no significant difference between depression symptomology and suicidality scores from pre to post-test periods. Therefore, suggesting that when accounting for both age and length of stay, there appears to be no effect of the intervention on treatment outcomes. This finding is somewhat surprising given that other mental health studies suggest that the length of treatment (time needed to complete therapeutic sessions) may impact treatment outcomes (Fedewa et al.,

2016; Hasselberg, Grawe, Johnson, & Rudd, 2011). Although no prior research to date has been found to support or refute these findings, it is possible that the small sample size is a potential explanation in that it increases Type II error and subsequently the ability to detect differences (Creswell, 2012). Another possible explanation of the effect of age on the outcome variables in this study is due to the limited amount of variation ( $SD = 1.57$ ) within the age of the sample.

On the other hand, there was variation within the amount of days participants remained in the care coordination intervention. The program was initially designed to be implemented for 90 days post discharge from acute inpatient care, however agencies had discretion to keep participants in the program longer if necessary based on level of risk. The length of stay in the program ranged from 14 to 221 days, thus resulting in the presence of outliers in the data. Of the 76 participants, eight participants remained in the program for 30 days, eight remained in the program for 60 days, and 49 participants remained in the program for 90 days. This left 11 participants either dropping out between 14 and 30 days or staying in the program up until 221 days.

### **Impact of Age and Length of Stay on Readmissions**

This study also explored the relationship between age and length of stay on readmission into the CSU. The findings of this study revealed that age was not a predictor of readmissions, indicating that no matter the age of the participant, it had no impact on whether youth were more or less likely to re-admit to the CSU. There are relatively few studies that have examined the impact of age as a possible predictor of psychiatric hospital readmissions for suicidal adolescents (Arnold et al., 2003; Lalayants, Kim, & Prince, 2018). Moreover, the literature is inconsistent, with some studies suggesting that younger youth are more likely than older youth to be

hospitalized (Arnold et al., 2003; Pavkov, Goerge, & Lee, 1997), while others have found the opposite (Foster, 1999; Layalants, Kim, & Prince, 2018). Within these studies, there was also a discrepancy regarding the intersection of race, gender and age on hospitalization outcomes. Given these incongruencies in the literature, further research is needed to examine age as a predictor of rehospitalization among minority female youth as it is important for prevention efforts and designing interventions.

It was further hypothesized that length of stay would predict readmission rates in that the increase in length of stay of participants would decrease the likelihood of readmission into the CSU. Unexpectedly, the results of the data revealed that youth who stayed longer in the program had a greater likelihood of being readmitted to the CSU. Although the length of stay finding is inconsistent with the hypothesis, it highlights the fact that length of stay in the program is a significant factor to consider when designing or implementing prevention and intervention programs. Further attention is needed to explore this relationship as it is possible that participants who are at greatest risk remained in the program for more than 90 days; therefore, suggesting a need for improved care planning for clients whose suicide risk remains high despite therapeutic care coordination support. Perhaps for these youth, a higher level of care is needed. Further research is needed to examine if certain risk factors increase the need for more intensive treatment.

### **Study Limitations**

Several notable limitations warrant consideration in interpreting the results of the present study. This section outlines limitations related to: (a) sampling and study design, (b) instrumentation, and (c) procedures. For one, the sample size of the study is small ( $n = 76$ ),

which limits the generalizability of the findings. Moreover, since youth were selected from three regions in Florida, it is unknown how generalizable or representative this sample is to racial and ethnic minority youth across the United States. There was also no random sampling of participants as all eligible clients, who consented to be part of the program, made up the sample. It is unclear if any differences existed between youth who elected to participate in the program from those who did not. Differences between participants and non-participants may impact overall generalizability.

Another limitation is the use of the one group pre-test/post-test design (primary study design). This study did not incorporate a control group; as such, any youth who met criteria for admission to the CSU received the care coordination intervention. Therefore, causality of the intervention cannot be inferred as confounding variables may exist and could have impacted treatment outcomes (Trochim, 2006). For example, it is possible that other treatment effects, such as participant's exposure to concurrent treatment modalities, programs or services could have influenced the outcomes. Other threats to the internal validity of the study include maturation, history, and testing. The threat of maturation exists as the age ranges of the participants are often associated with developmental changes. Also, participant's expression and experience of their mental health symptomology may change over time. The threat of history is present due to the possibility of other events that can occur during the study timeframe (Creswell, 2012). Testing threats exist as the instruments (e.g., PHQ-9 and C-SSRS) were administered at multiple points in time throughout the intervention. This could contribute to the youth experiencing fatigue from answering the same questions multiple times, thus causing them

to either refuse to answer the questions, respond using a random pattern, or a blanket response. For instance, answering “no” to every question.

Another limitation is the self-report nature of the PHQ-9 and C-SSRS instruments. Since participants were asked sensitive questions specific to the presence and severity of depression symptomology and suicidality (i.e., ideation, plan, and attempt), there might have been the presence of social desirability bias (Creswell, 2012). For instance, youth might have reported absence of or symptoms of lower severity due to fear of hospitalization and to avoid greater stigmatization, thus resulting in underreporting of true symptomology.

Procedural limitations include fidelity regarding delivery of the intervention. Since the intervention was delivered at three different sites, it remains unclear how sites delivered the intervention and collected the data. One specific concern in this study, in particular, included the presence of missing PHQ-9 and C-SSRS data. Agency level policy changes regarding the administration of the testing instrument occurred after launch of the care coordination intervention. Delays in fully embracing agency-level changes may have led to inconsistent data collection by care coordinator. Statistical methods were employed to control for missing data. However, there were no statistically significant differences between the missing and non-missing data based on age or racial/ethnic identity on depression symptomology and suicidality variables. . Given the reduced sample size, findings must be interpreted with caution. Lastly, another limitation is the use of secondary data. More specifically, data for this study was restricted as the primary data collection was conducted based on objectives of the larger study. This limitation prevented the researcher from gathering other additional information from



participants that may have been used to further examine the impact of racial/ethnic disparities on treatment outcomes.

Yet, despite these limitations, there are several notable strengths. For one, the existing literature examining adolescent suicide prevention is dominated by studies on White youth (Joe, Banks, & Belue, 2016; Joe, Canetto, & Romer, 2008; Robinson, Hetrick, & Martin, 2011). This study addressed a gap in the current state of suicide prevention research by focusing solely on racial and ethnic minority youth. Furthermore, this study specifically focused on Hispanic, Black, and African American females, using an intersectionality framework to aid in the understanding of how race and gender impact suicide risk and health disparities. Additionally, this study extended existing research in that it focused on an intervention that has not been tested in community-settings with at-risk youth, specifically racial and ethnic minorities. The care coordination program is a theory, consumer-driven and research-informed intervention that was designed to address behavioral health service system disparities and gaps known to prevent youth from engaging in mental health services. More importantly, the study addressed a very timely and relevant public health issue, as suicide accounts for approximately 4,600 deaths yearly for youth between the ages of 10 to 24 (CDC, 2017). Moreover, there is a growing concern for the increase in suicide deaths for racial and ethnic minority youth as suicide is the 3<sup>rd</sup> leading cause of death for African American youth and the 2<sup>nd</sup> leading cause of death for Hispanic youth (CDC, 2018).

### **Social Work Implications**

Given the current state of youth suicide in the United States, particularly with racially and ethnically diverse groups, this study has significant implications for practice, policy, and future

research. In social work practice, there continues to be a strong emphasis on the use of evidence-based interventions (Wike et al., 2014). The larger study, in which this study is framed from, was developed as a result of the Joint Commission's (e.g., accrediting body for health and behavioral health organizations) recommendation for behavioral health organizations to address system disparities in identifying and responding to suicide (Gryglewicz, et al., 2017). The care coordination intervention, the primary aim of the larger study, incorporated evidence-based practices to engage clients in therapeutic processes via rapport building, education and reinforcement of coping skills and strengths.

This current study highlighted a critical need in understanding how a post-care intervention for racial and ethnic minority females impacts mental health outcomes. The significant decrease in depression symptomology and suicide risk for Black and Hispanic females after enrollment in the care coordination program suggests that components of the intervention focusing on enhancing protective factors have important practice implications. Components, such as engagement, fostering a sense of belonging, and promoting self-efficacy are significant factors to practitioners to consider when working with diverse and underserved clients, especially minority youth. Interestingly, it is worth noting that Black females endorsed higher depression and suicidality scores than Hispanic females at both pre and post intervention timepoints. Although these differences were not directly examined, social work practitioners should give special consideration to using culturally responsive practice skills when addressing the unique mental health needs of minority youth populations at risk of suicide. It appears that culturally appropriate mental health care services have the potential to improve treatment outcomes and reduce biases towards ethnic minority youth populations (Cauce et al., 2002;

Hatcher, King, Barnett, Burley 2017; Metzger, Cooper, Zarrett, Flory, 2013). Moreover, it imperative that culturally-sensitive risk assessment occurs with instruments designed at validated with multicultural groups.

A primary focus of the care coordination intervention consisted of engagement and forming alliances between the youth and service provider. Due to the low readmission rates found in this study, the intense engagement that occurred by the care coordinators during the follow up contacts is a critical component when delivering interventions aimed to reduce rehospitalizations. The brief contacts that occur at multiple points in times allows practitioners the opportunity to foster a sense of connectedness and create a therapeutic alliance with the client. This is extremely important when working with communities of color in that they may view the healthcare system as one that perpetuates mistrust, stigma, poor quality of care and racism (Bains, 2014; Briggs, Briggs, Miller, & Paulson, 2011; Samuel, 2015).

Length of stay in the program also appeared to be a significant factor to consider when implementing suicide intervention programs. The findings of this study suggest that participants who were at greater suicide risk remained in the program for more than 90 days. Practitioners should pay careful attention to risk levels over the course of treatment to ensure that appropriate care planning occurs to meet higher level of care needs of clients.

## **Policy and Public Affairs Implications**

***Federal level.*** National initiatives (i.e., WHO Mental Health Action Plan 2013-2020, U.S. Surgeon General's National Strategy for Suicide Prevention 2012) exist to guide suicide prevention. In particular, in November 2018, the Joint Commission revised new elements of performance (EP) or standards for hospitals and behavioral health organizations. Starting in July 2019, these standards will be required for all accredited facilities to follow. Specifically, National Patient Safety Goal (NPSG) 15.01.01 aims to “improve the quality and safety of care for those who are being treated for behavioral health conditions and those who are identified as high risk for suicide” (Joint Commission, 2019, p 1). The care coordination intervention meets EP 2, 3, and 6 of the National Patient Safety Goal. As such, this model follows suicide risk screening requirements as all clients should be screened using measures such as the PHQ-9 and C-SSRS, validated screening tools at enrollment and during all care monitoring contacts. The intervention aligns with requirements regarding safety planning, crisis counseling, and follow-up at discharge. For instance, safety plans are initially developed at discharge from a CSU, then care coordinators review these with clients during ongoing contacts and revise plans as necessary. Using assessment tools such as the Wellness Toolkit & Crisis Action Plan, care coordinators also review contact information for community and crisis resources, including the National Suicide Prevention Lifeline, important elements to keep at-risk youth safe.

*State level.* State governments regulate the practice of healthcare (Grise-Owens, Owens, & Miller, 2016). As of 2017, all 50 states had a suicide prevention plan in place. Since the release of the 2012 National Strategy for suicide prevention, the majority of states (86%) have revised their suicide prevention plan. However, the status and scope of suicide prevention training policy vary greatly between the states. Florida is one of 38 states that has not adopted specific policies for suicide training (Graves et al., 2018). Guiding the care coordination intervention is a set of suicide prevention training policies. These policies are designed to educate health care professionals about prevention, assessment, and treatment for those at risk for suicide (Graves et al., 2018). Since disparities exist among states, including in Florida, regarding the scope and implementation of policies addressing suicide prevention, including training on best-practices and procedures for post-discharge care, findings from this study can be used to guide policy-makers to develop culturally-sensitive suicide prevention policies. Ideally, these policies could improve clinical practice standards for eliminating disparities amongst racial and ethnic minority populations.

### **Public Affairs Implications**

Suicide accounts for close to 800,000 deaths each year, making it one of the leading causes of death in the United States (WHO, 2018). Suicide is a national public health issue that affects individuals, communities, and the larger society. It is a complex social problem that requires prevention efforts at the state and community levels through various service sectors, including healthcare, criminal justice, schools, and community organizations. Due to the magnitude of suicide, it is the responsibility of academics, policymakers, healthcare professionals, and citizens to collaborate in creating innovative interventions to address this

“wicked” problem (Graves, et al., 2018; Zalsman, et al., 2016). Models such as LINC can be incorporated across a variety of delivery systems to help professionals work with at-risk populations, especially racial and ethnic minority youth.

### **Future Research**

While this study was intended to examine the impact of care coordination strategies amongst a unique population, a larger scale analysis of the intervention is currently underway to provide more information regarding the effectiveness on youth outcomes across all races/ethnicities, genders, and sexual orientations. However, this study generated a foundation for future research concerning racially and ethnically diverse adolescents. Building off this foundation, further studies using critical race theory and an intersectionality framework are needed to explore the intersection of race and gender on suicide outcomes for young women of color. In general, there is a lack of knowledge in suicide prevention literature concerning intersectionality and suicide risk factors as their connections to disparities in care is evident.

Noted in the limitations, confounding variables such as background factors (i.e., individual, interpersonal, and environmental) may play an important role in participation in treatment and treatment outcomes. Thus, it is important to conduct future research using quantitative and qualitative methods to examine the relationship between these variables and depression and suicide outcomes. For instance, further investigation to study the relationship between risk factors, protective factors, and warning signs of suicide for multicultural youth populations is needed to design and implement culturally appropriate programming.

Understanding these relationships is especially important so practitioners can be better equipped to implement culturally responsive programming. This programming may lead to a reduction in

disparities in mental health services and improve suicide prevention interventions for racial and minority female youth. (Robinson et al., 2016).

There remains to be a call for future research focusing on ethnic minorities, as literature suggests that a tailored approach is needed. Culturally responsive research methodologies are needed to understand the unique identity of the participants and the participatory process (Berryman, SooHoo, & Nevin, 2013). The use of qualitative methods and community-based participatory research are necessary in understanding the lived experiences of racially and ethnically diverse adolescents in dealing with mental health conditions and what has led and/or hindered their access to services. These methodologies focus on the individual, their experiences, and their engagement in the research process. For marginalized populations who face structural inequalities and institutional racism, culturally responsive research is essential to inform culturally responsive practice.

### **Conclusion**

The objective of this study was to determine whether participation in the care coordination program for racial and ethnic minority females changes depression symptomology and suicidality. In addition, the study examined if participation in the care coordination program reduced re-admission rates to inpatient hospitalization. This study also assessed whether age and length of stay in the program influenced those treatment outcomes. Guided by an exploratory conceptual framework, inclusive of ecological systems theory and self-determination theory, a one-group pretest-posttest design was conducted. Bivariate and multivariate analyses revealed promising treatment outcomes.

Key findings included significant decreases in depression symptomology (54%) and suicidality (82%). Among the participants enrolled in the care coordination intervention, this study found that 84% of the participants did not have a re-admission to the CSU. Furthermore, there was a significant relationship between length of stay on readmission into the CSU. The results of this study supported previous research as well as provided implications for future research, policy, and practice implications. To ensure healthy development for all youth, in particular, minority female youth, a grand challenge for social work is to “increase local and state capacity to support the high-quality implementation of effective preventive interventions” (Hawkins, 2017, p.#1). One innovative way to address this would be to expand the FL LINC care coordination intervention model to other settings, including school systems, juvenile justice, and other youth service organizations. Emphasizing the importance of the therapeutic alliance, this intervention has potential to produce promising outcomes for minority youth across systems of care.



## **APPENDIX A: PATIENT HEALTH QUESTIONNAIRE (PHQ-9)**

Over the past 2 weeks, how often have you been bothered by any of the following problems?	Not at All	Several Days	More Than Half the Days	Nearly Every Day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3
3. Trouble falling asleep, staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself or that you're a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or, the opposite-being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

Column Totals \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

Add Totals Together \_\_\_\_\_

## **APPENDIX B: COLUMBIA SUICIDE SEVERITY RISK SCALE (C-SSRS)**

SUICIDE IDEATION DEFINITIONS AND PROMPTS:		Past month		Scoring
Ask questions that are bolded and underlined.		YES	NO	Range of Scores 0-7
Ask Questions 1 and 2				
<p>1) <b><u>Wish to be Dead:</u></b> Person endorses thoughts about a wish to be dead or not alive anymore, or wish to fall asleep and not wake up.</p> <p><b><u>Have you wished you were dead or wished you could go to sleep and not wake up?</u></b></p> <p>2) <b><u>Suicidal Thoughts:</u></b> General non-specific thoughts of wanting to end one's life/commit one's life/commit suicide, "I've thought about killing myself" without general thoughts of ways to kill oneself/associated methods, intent, or plan."</p> <p><b><u>Have you actually had any thoughts of killing yourself?</u></b> If YES to 2, ask questions 3, 4, 5, and 6. If No to 2, go directly to question 6.</p>				No or Minimal Risk
<p>3) <b><u>Suicidal Thoughts with Method (without Specific Plan or Intent to Act):</u></b> Person endorses thoughts of suicide and has thought of a least one method during the assessment period. This is different than a specific plan with time, place or method details worked out. "<i>I thought about taking an overdose, but I never made a specific plan as to when where or how I would actually do it..... and I would never go through with it.</i>"</p> <p><b><u>Have you been thinking about how you might kill yourself?</u></b></p> <p>4) <b><u>Suicidal Intent (without Specific Plan):</u></b> Active suicidal thoughts of killing oneself and patient reports having <u>some intent to act on such thoughts</u>, as opposed to "<i>I have the thoughts, but I definitely will not do anything about them.</i>"</p> <p><b><u>Have you had these thoughts and had some intention of acting on them?</u></b></p>				Moderate Risk
<p>5) <b><u>Suicide Intent with Specific Plan:</u></b> Thoughts of killing oneself with details of plan fully or partially worked out, and the person has some intent to carry it out.</p> <p><b><u>Have you started to work out or worked out the details of how to kill yourself?</u></b></p> <p>6) <b><u>Do you intend to carry out this plan?</u></b> <b><u>Suicide Behavior Question</u></b> "Have you ever done anything, started to do anything, or prepared to do anything to end your life?" Examples: Collected pills, obtained a gun, gave away valuables, wrote a will or suicide note, took out pills but didn't swallow any, held a gun but changed your mind or it was grabbed from your hand, went to the roof but didn't jump; or actually took pills, tried to shoot yourself, cut yourself, tried to hang yourself, etc.</p>				High Risk

## **APPENDIX C: IRB APPROVAL LETTER**



University of Central Florida Institutional Review Board  
Office of Research & Commercialization  
12201 Research Parkway, Suite 501  
Orlando, Florida 32826-3246  
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276  
[www.research.ucf.edu/compliance/irb.html](http://www.research.ucf.edu/compliance/irb.html)

### **NOT HUMAN RESEARCH DETERMINATION**

From: UCF Institutional Review Board #1  
FWA00000351, IRB00001138

To: Michelle Vance

Date: September 05, 2018

Dear Researcher:

On 09/05/2018, the IRB determined that the following proposed activity is not human research as defined by DHHS regulations at 45 CFR 46 or FDA regulations at 21 CFR 50/56:

Type of Review: Not Human Research Determination  
Project Title: AN EXAMINATION OF THE FLORIDA LINKING  
INDIVIDUALS NEEDING CARE CARE COORDINATION  
PROGRAM FOR RACIAL AND ETHNIC MINORITY  
FEMALES  
Investigator: Michelle Vance  
IRB ID: SBE-18-14293  
Funding Agency: N/A  
Grant Title: N/A  
Research ID: N/A

University of Central Florida IRB review and approval is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are to be made and there are questions about whether these activities are research involving human subjects, please contact the IRB office to discuss the proposed changes.

This letter is signed by:

A handwritten signature in black ink that reads "Kamille Chaparro".

Signature applied by Kamille Chaparro on 09/05/2018 12:47:08 PM EDT

Designated Reviewer

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