

THE IMPACT OF TIC DISORDERS ON TEENAGERS AND YOUNG
ADULTS' SEXUAL BEHAVIOR

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CLARIBEL PEREZ

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DISSERTATION APPROVAL

This dissertation submitted by Claribel Perez has been read and approved by three committee members of the American Academy of Clinical Sexologists. The Dissertation Committee has examined the final copies and the signatures that appear here verify the fact that any necessary changes have been incorporated and that the dissertation is now given in final approval with reference to content, form and mechanical accuracy. The dissertation is accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Dissertation Committee

Signature

Date

William A. Granzig, Ph.D., FAACS D

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VITA

Claribel Perez was born in Brooklyn, New York to parents of Hispanic race from Puerto Rico. She transitioned to Puerto Rico with her parents during her teenage stage and received a Bachelor of Science degree in Education with a specialization in Teaching English to Speakers of Other Languages (TESOL) from the University of Puerto Rico with Magna Cum Laude. She was nominated to the National Dean's List for the school years 1987-1988 and 1988-1989. She taught secondary level English in Puerto Rico for ten consecutive years. Thereon, she relocated to Orlando, Florida and has taught English as a Second Language (ESOL) since 1999. She received a Master of Science degree in Psychology, Mental Health Counseling with distinction from Nova Southeastern University in 2005.

Claribel Perez is a Licensed Mental Health Counselor in the state of Florida. As a mental health counselor, she has worked with children and family matters in a private setting; she has worked as an assessment specialist with juveniles in detention centers, Orange County and Osceola County jails, and has worked with adults enduring grief issues, relationship challenges, and mood and anxiety disorders. In addition, she continues to work as a certified English teacher and currently teaches English to Speakers of Other Languages (ESOL) in Seminole County, Florida. She has worked with students and families in transition that migrate from different parts of the world for twenty-six years.

ABSTRACT

Gilles de la Tourette's Syndrome (GTS) and Tic Disorders (TD) are neurological disorders that have drawn clinical research attention in the last decade. Numerous studies have been conducted to understand the nature of the disorders. Contemporary researchers have suggested better treatment options for people that have been diagnosed and affected by GTS and TD. Nonetheless, very little is known about how GTS and TD may impact the sexual behavior of young teenagers and young adults suffering the disorder. This study explored how GTS and TD affect sexual behavior. The following research study explored the variables of self-esteem and self-actualization and their correlation to the impact of GTS and TD on sexual behavior. An online survey was used to assess twenty-eight anonymous participants. The survey collected quantitative descriptive data about the participants' sexual behavior. The samples included male and female participants between the ages of six-teen through thirty-nine. The questions revolved upon topics of sexual behavior and its correlation with the symptoms of GTS and TD. Overall, the quantitative data suggested that in most teenagers and young adults, symptoms of GTS and TD did not affect their sexual behavior. This study implemented the use of qualitative data via a case study on one participant during eight years, in order to understand the variables of self-esteem and self-actualization and its influence on sexual behavior from the perspective of a young teenager. The qualitative data suggested, in turn, that symptoms of GTS and TD seemed to affect the self-esteem in teenagers; accordingly, the symptoms seemed to impact the courage to engage in sexual relationships. Although, this study may contribute to the understanding of how young adults cope day by day with GTS and TD and the sexual aspect of their lives at a formative stage, further study is suggested in order to explore the impact of the different levels of GTS and TD symptoms, from mild to severe, on the sexual behavior of young adults.

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CHAPTER I

INTRODUCTION

Over time, researchers have conducted scientific studies to understand the nature and etiology of Gilles de la Tourette Syndrome (GTS) and Tic Disorders (TD). Tic disorders (TD) are identified as neurobiological conditions. Currently, the DSM V (APA, 2013) classifies TD as a Tourette's disorder also called Tourette Syndrome (TS), as a persistent (chronic) motor or vocal tic disorder and as a provisional tic disorder. Woods, Conolea, and Himle (2010) confirmed that TD, alternatively identified as Gilles de la Tourette Syndrome (GTS), is a neurobiological disorder characterized by motor and phonetic tics.

Numerous quantitative and qualitative studies have raised the awareness and understanding of how the disorders affect children. Furthermore, contemporary researchers have gathered efforts to suggest better treatment options for individuals that have been diagnosed and affected by GTS and TD. Nonetheless, very little is known about how GTS and TD impact the sexual behavior in the lives of young adult individuals suffering the disorders.

Understanding how GTS and TD impact the sexual behavior of teenagers and young adults at a vulnerable stage of their lives remains pivotal. Most U.S. adolescents are not engaging in partnered sexual behavior; however, 40% of seventeen year-old males reported vaginal intercourse (NSSHB, 2010). Data shows that by the age of seventeen, teenagers show a significant interest in partnered sexual behavior. While sexual relationships may be considered central in the lives of teenagers and young adults, accordingly, sexual behavior may be

considered a concern at a vulnerable stage in the lives of teenagers and young adults suffering GTS and TD. From this perspective, this research study purposes to understand how GTS and TD affect sexual behavior in the lives of teenagers and young adults at a vulnerable stage. According to Newman & Newman (2003), when young adults transition into further life stages, they encounter college and career decisions, independent living choices, identity issues, relationship issues and engage in the exploration of sexual activities.

Considering that teenagers and young adults explore sexual activities and sexual relationships, this study intends to contribute to the line of research on how GTS and TD impact teenagers and young adults' sexual behavior in a decisive stage of their lives. The scientific research methodology consisted on a mixed method; a qualitative and a quantitative research approach. Qualitative data was gathered from a case study on one male teenage participant and quantitative data was attained from an online questionnaire that assessed twenty-eight participants. Two constructs were considered paramount to this research study; *self-esteem* and *self-actualization* within the *variable of sexual behavior*. Thus, this study unfolded under the theoretical frameworks: Psychosocial Stages and Hierarchy of Needs Theory.

GTS and TD have gained research interest in recent years. Compared to issues of Attention-Deficit-Hyperactivity Disorder (ADHD), GTS and TD do not appear as a common disorder that may usually be observed in clinical facilities,

school settings, and/or among a family nucleus. Therefore, GTS and TD may yet be scarcely recognized, understood or treated.

Leckman (2002) asserted that TD has been a subject of speculation for the past three hundred years, and that despite the scientific investigations, vast unawareness on TD remains. In recent years, however, alongside the efforts to increase awareness of GTS and TD, the identification of GTS and TD in the adult population is also increasing. For instance, during this research investigation, additional research studies intended to uncover the reverse; a study about the impact of sexual activity on individuals that suffer GTS and TD. The research study suggested that there was anecdotal clinical evidence that tics improve following periods of affectionate touch and sexual intercourse (Martino D., Macerollo A., Leckman JF., 2013). Martino, et al., (2013) found that patients with GTS or TD exhibited differences in a number of behavioral, cognitive, and anatomical traits that appeared to be sex related.

Nevertheless, the contrary, the impact of GTS and TD on the sexual behavior of teenagers and young adults, remains yet a speculation.

SIGNIFICANCE OF THE STUDY

As the purpose of this research study intends to raise the awareness of how GTS and TD impact the sexual behavior of young teenagers and young adults, accordingly, the significance of this research study lies in the intention to provide a potential benefit to individuals whose self-esteem and sexual behavior may be affected by GTS and TD.

Rogers, et al., (2014), indicated that sex-specific phenomenological data of GTS and TD-affected adults are rare. Numerous research studies describe the implications of GTS and TD in children; however, studies that address the correlation between GTS and TD and sexual behavior are lacking.

The significance of this study lies in its contributions to better understand a phenomenon and its impact on the sexual behavior of individuals at a vulnerable and decisive stage of their lives, such as teenage stage and young adult stage. The replication of research studies that address the correlation between GTS, TD and sexual behavior may contribute significantly to the clinical, educational, and psychological field in benefit of better treatment options and interventions that can better serve the sexual behavior challenges among teenagers and young adults suffering GTS and TD.

STATEMENT of the PROBLEM

Past research studies suggested that tics decrease during adolescence and early adulthood, and sometimes disappear entirely; however, recent clinical data described that many individuals experience tics into adulthood and, in some cases, tics can become worse in adulthood (CDC, 2007). If GTS and TD affect the neurological aspect of an individual, thus, GTS and TD most likely may affect the sexual behavior of individuals during a decisive stage of their lives. However, there is not sufficient scientific data that evidence or suggest the influence of GTS and TD upon the sexual behavior of teenagers and young adults.

The DSM V manual (APA, 2013) stated that GTS and TD are a prevalent disorder among children and several research studies have suggested that GTS and TD are a childhood disorder. Moreover, Walkup (2006) suggested that GTS and TD may outgrow by the age of eighteen. Nevertheless, individuals diagnosed with GTS and TD not always out-grows the symptoms by age eighteen. According to the data presented by the Center for Disease Control (2007) in the United States, it is not known exactly how many people have Tourette Syndrome (TS); yet, a study has found that one of every 360 children six through seventeen years of age and living in the United States have been diagnosed with TS based on parent report; this represents about 138,000 children. GTS and TD among teenagers and young adults are on the rise.

Recent research studies found that GTS and TD also affect individuals of recognized fame. An exorbitant amount of well-known individuals from the media have been identified as patients of TD and GTS.

Waltz, M. (2014), stated in a recent article for the National Tourette Syndrome Association (NTSA) that:

“a significant group of people with TS go through their 20's and 30's waiting for the promised improvement that never comes. Often, hitting 40 or 50 marks the turning point.”

According to a recent TSA newsletter (2014), the following individuals are well-known public figures that are part of the list of adults diagnosed and living with GTS and TD:

- Craig Carton, TV Sports Journalist
- Jennifer K. Stenger, Ph.D., Educator
- Jared Day, Movie and Television Actor
- Michael Conway, Tri-Athlete and IRONMAN competitor
- Chance Raspberry, Lead Animator, "The Simpsons"

- Antonio Palazzola, one of the "Barter Kings"
(Spring '13)
- Stephanie Schroeder, Journalist and Publicist (Winter '12)
- Cindy Kurtz, President of Marketing and Media
Company (Fall '12)
- Jeff Koterba, Award-winning Editorial Cartoonist (Summer '12)
- James Durbin, Musician, American Idol Finalist (Spring '12)
- Marleen Martinez, Spacecraft Test Engineer (Winter '11)
- Scott Robertson, Actor (Broadway, Movies, TV
and more (Fall '11)
- Richard Paul Evans, New York Times Best-Selling Author (Summer '11)
- Chelsea White, Comedian, Television Host, Producer (Spring '11)
- Jason Duika, Professional Opera Singer (Winter '10)
- Nikki Burdine, News Anchor (Fall '10)
- David Pittman, Singer Appears on "American Idol"(Summer '10)
- Jeremy Stenberg, Professional Freestyle Motocross (FMX) Rider
- Heather West, Professional Chef (Winter '09)

- Christian Juneau, State Park Ranger (Fall '09)
- Chris Laro, Writer, Mentor, Activist (Summer '09)
- Frank Tortorici, A renaissance man (Spring '09)
- Blair Abene, Miss Louisiana 2008 (Winter '08)
- Dash Mihok, Actor (Fall '08)
- Tiffany Cato, Louisiana native, poet, mother and student of life (Summer '08)
- Matt Giordano, Drumming Circle Leader (spring '08)
- Ed Buckner, Chief TV Meteorologist (winter '07)
- Bryan Randall Smith, Musician, Song writer, Self Employed Window Cleaning Contractor (fall '07)
- Stephen McCall, Defense Department Branch Chief, Minister, Graduate Student (summer'07)
- Jim Couchenour, Businessman and Musician (spring'07)
- Megan Toy, Peaceable Schools Coordinator, Tri-Athlete (winter'06)

- Luke Parkin - Musician, Composer (summer'06)
- Eric Bernotas - Olympian (summer'06)
- Keith Collins - Model, Actor, Professional Events Planner (winter'05)
- Casey Roberts Dunham - Works with Elderly; former motivational speaker, beauty queen (fall'05)
- Jim Merklinger- Attorney (summer'05)
- Agi Lidle - Web Radio Show Host, Author of Self Help Books, Videos (spring'05)
- Michael Wickersham - Music Educator, Masters Degree candidate (winter'04)
- Amy Arellano - Attorney (fall'04)
- Paige Vickery - Classical Music Conductor (Summer'04)
- Charlie Sosinski - Crime and Fire Scene Investigator (spring'04)
- Kellie Haines – Ventriloquist writes, produces, directs (winter'03)
- R. Mark Wootten - Teacher and Coach (fall'03)
- Jon Schwartz - Works in Corporate Communications, Coaches Hockey (summer'03)
- Bruce Ochsman - Senior VP, Financial Services (spring'03)

- Evan Trost - Physician (winter'02, updated)
- Michael Wolff - Jazz Musician (fall'98, updated)

Particularly, teenagers and young adults, during the ages of eighteen through twenty-four, are in the midst of career planning, relationship issues, identity issues and partnered sexual activity. Therefore, understanding and defining how may GTS and TD impact their sexual behavior deems crucial. According to Newman & Newman (2003), the ages between eighteen through twenty-four are characterized by heightened sensitivity to the process of identity development; and personal identity is developed as an individual struggles to answer the following questions: “What is the meaning of my life?”, “Who am I?”, and “Where am I heading?” Furthermore, Newman & Newman (2003) claimed that “individuals within this stage of development may struggle with the uncertainty of having to choose many of their own life’s directions” (p. 332).

Newman & Newman (2003) described The Psychosocial Theory, in which one of the assumptions indicate that individuals have the capacity to contribute to their psychological development at each stage of life; moreover, that people have the ability to integrate, organize, and conceptualize their experiences in order to protect themselves, cope with challenges, and direct their course of their lives.

Considering the tenets of the Psychosocial Theory, as teenagers and young adults diagnosed with GTS and TD are considered to be at a vulnerable phase of their lives, they may not only have to live day by day with symptoms, but also cope with greater challenges beyond the norm, which may interfere, interrupt, and disturb their sexual behavior within their normal course of life at a significant stage.

Although, the study of GTS and TD has gained research interest in the neurobiological, behavioral, and psychological field, there is a lack of scientific information on how the complexity of GTS and TD affect teenagers' and young adults' sexual behavior. The extent literature has focused on the history and etiology of GTS and TD, its symptoms, co-morbid disorders and treatment interventions. Research studies have addressed the possible influence of serotonin levels and progesterone levels on GTS and TD; yet, the investigations appear to be limited, as GTS and TD have exclusively been investigated in relation to Attention-Deficit Hyperactivity Disorder (ADHD) and Obsessive-Compulsive Disorder (OCD). Leckman (2002) mentioned that as knowledge of GTS increases, so does the pathogenic complexity of the disorder and the challenges associated with its treatment.

Hence, as the complexity of GTS and TD affect the lives of teenagers and young adults in the behavioral and cognitive aspects, similarly it may be hypothesized that the constellation of symptoms of GTS and TD may influence the sexual behavior of teenagers and young adults.

RESEARCH INQUIRY

This research investigation unfolded based on the following research inquiry:

“How do GTS and TD impact the sexual behavior of teenagers and young adults at a significant stage of their lives?”

CHAPTER II

REVIEW OF THE LITERATURE

DEFINITIONS AND KEY CONCEPTS

With the objective to understand key elements in the research study and the variables related to the impact of GTS or TD on sexual behavior, a definition of fundamental concepts have been provided as follows:

- *tic disorders* – are defined as motor or phonic, sudden, rapid, and non-rhythmic movements of the body or parts of the body.
- *tourette's syndrome* – a neurodevelopmental disorder which is usually diagnosed in early childhood or adolescence, TS symptoms are involuntary movements and sounds called tics.
- *copropraxia* - compulsive obscene gestures
- *coprolalia* - obscene words
- *echolalia* – repetition of words or phrases
- *self-actualization* - the explicit feelings of self-worth or the global evaluation of the self (Buhrmester, 2011)
- *self-esteem* - Kassin, Fein, and Markus (2008) indicate that *self-esteem* is an affective component of the self, consisting of a person's positive or negative self-evaluations
- *self-concept* – Crooks & Baur (2005) define the term as feelings and beliefs we have about ourselves; and self-concept can influence relationships and sexuality.

- *dopaminergic* - characteristic of dopamine; the central neurotransmitter of the brain
- *thalamocortical* – corresponds to ongoing neural signals between nuclei in the thalamus and neurons in the cortex
- *comorbidity* – a co-occurrence of two or more clinical issues
- *snowball or chain sampling* - snowball sampling is a non-probability technique that is used by researchers to identify potential subjects in studies where subjects are hard to locate.
- *504 plan* – The "504 plan" refers to Section 504 of the Rehabilitation Act and the Americans with Disabilities Act, which specifies that no one with a disability can be excluded from participating in federally funded programs or activities, including elementary, secondary or postsecondary schooling. "Disability" in this context refers to a "physical or mental impairment which substantially limits one or more major life activities." This can include physical impairments; illnesses or injuries; communicable diseases; chronic conditions like asthma, allergies and diabetes; and learning problems.

Gilles de La Tourette's and Tic Disorders

The fifth revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V, May 2013) classified Tourette's and Tic disorders as motor disorders listed in the neurodevelopmental disorder category. Swerdlow, NR stated the following: "Tourette syndrome is the more severe expression of a spectrum of tic disorders, which are thought to be due to the same genetic vulnerability; nevertheless, most cases of Tourette syndrome are not severe; although a significant amount of investigative work indicates genetic linkage of the various tic disorders, further study is needed to confirm the relationship."

DIAGNOSTIC CLASSIFICATION:

The DSM V (APA, 2013) identifies that the five tic disorders, in order of severity, are:

307.20 Other specified tic disorder (specify reason)

307.20 Unspecified tic disorder

307.21 Provisional tic disorder

307.22 Persistent (chronic) motor or vocal tic disorder (specify motor or vocal)

307.23 Tourette's disorder

EPIDEMIOLOGY:

At the time this research study was initiated and conducted, the DSM V of the American Psychiatric Association (APA, 2013), classified a Tics disorder (TD) as a lifelong neurological disorder that affected approximately .05% to 3 % of the population usually beginning in childhood around the age of six or seven. The DSM V (APA, 2013) indicated the following: “ TD affects four times more boys than girls; It is thought to be genetically determined and is co-morbid with Obsessive Compulsive Disorder (OCD) and Attention Deficit Hyperactivity Disorder (ADHD); and the symptoms include multiple motor tics and at least one phonics tic that wax and wane in both type of severity; Motor tics include, simple or complex symptoms ranging from compulsive eye blinking to *copropraxia* (compulsive obscene gestures); Phonics tics include nose sniffing, *echolalia* (repetition) or *coprolalia* (obscene words)”, (Edge, C. & Remer, R., 2007).

Gilles de la Tourette’s Syndrome (GTS) was considered a spectrum of tic disorders (TD), which includes provisional, transient and persistent (chronic) tics. According to the DSM IV, APA (2000), the essential features of GTS are multiple motor tics and one or more vocal tics, the onset of the disorder is before age eighteen, the tics are not due to the direct physiological effects of a substance or a general medical condition, and simple or complex tics may affect any part of the body. In addition, simple motor tics involve rapid contractions of one or more muscles, such as eye blinking, facial grimacing, head jerking, tongue protrusion, sniffing, hopping, skipping, throat clearing, and stuttering-like speech; whereas, complex motor tics involve touching, squatting, retracing steps, and twirling

(DSM V-APA, 2013). The vocal tics include various words or sounds such as clicks, grunts, yelps, barks, sniffs, snorts and coughs; moreover, *coprolalia* is a complex vocal tic involving the uttering of obscenities (DSM V, 2013).

History of Tic Disorder and Gilles De La Tourette's Syndrome

According to the literature, Walkup (2006) found that the history of tic disorders (TD) originated as Tourette syndrome (TS) in the late 1800's with Jean Charcot, Sigmund Freud, and Gilles de la Tourette. As a neurologist, Charcot treated individuals that suffered neurologic issues with movement problems; whereas, Freud, inclined towards a psychoanalyses approach, treated people with a non-neurologic conditions that appeared neurological, such as hysterical paralyses and blindness. Neurological treatment or non-neurologic treatment became appealing in addressing issues of TD at that time (Walkup, 2006). Consequently, although J.M.G Itard first identified TS in 1825 (Hurst, 1983), Gilles de la Tourette, a prodigy of Charcot, interjected to work with this population and he classified the issue as Tourette Syndrome (TS), which Walkup (2006) emphasized is synonymous of Tic disorders.

In the early twentieth century, various interventions were attempted. First, Freud characterized and treated TD as a psychological disorder (Walkup, 2006). Yet, as psychological intervention outcomes became unsuccessful, a medication intervention, Haloperidol, was attempted in the 1960's with patients of TD and markedly reduced symptoms of tics (Walkup, 2006). Upon successful effects of Haloperidol, neurological validations lifted the stigmas of TS; thus, according to Walkup (2006), GTS was characterized as strictly neurological. However, due to associated psychiatric symptoms alongside GTS, Walkup (2006) reported that in the late 1980's researchers looked at familial nature of GTS, including psychiatric

co-morbid disorders. Consequently, GTS appeared beyond an exclusive neurological or psychological disorder.

Walkup (2006) coined the term *neurobiologicalization* as a modern view of TD. A modern viewpoint considered TD as a combination of neurological, biological and behavioral disorder. Hence, research studies have suggested etiological theories and interventions in the investigation of TD.

Theories about the Etiology of GTS and TD

Scientific researchers intended to explain the symptoms of TD and GTS via neurobiological and environmental theories. Researchers reported experimental procedures and case studies in which neurobiological on one side and environmental influences on the opposite side appeared as the root of GTS.

Neurobiological Theories

Researchers that are inclined towards a neurobiological model described TD as an inherited disorder and as a developmental imbalance of dopamine pathways in the brain. Porta, Sassi, Cavallazzi, Fornari, Brambilla, & Servello (2008), explained that the etiology of TD/GTS involves the cortical pathways of the brain (cortico-striatal-thalamocortical & basal ganglia pathways: CS-TC) which cause imbalances of the dopaminergic (characteristic of dopamine; the central neurotransmitter of the brain) pathways in the brain.

Accordingly, current electromagnetic methods that record brain activity explain the assumptions of neurological etiology. For instance, according to Porta et al. (2008), the underlying valuable information of GTS activity derives from *electromyographics* of muscle activity associated with tics, blink-reflex studies, movement studies, assessment of cortical pre-motor potentials, transcranial magnetic stimulation studies, neuroimaging studies, and stereotactic surgery which targets thalamic and infra-thalamic regions to alleviate tics.

In a similar point of view, Felling & Singer (2011) described TD as a developmental imbalance of dopamine pathways in the brain. Indeed, Felling &

Singer (2011) claimed that as numerous neurotransmitters participate in the transmission of messages through circuits; a dopaminergic dysfunction (characteristic of dopamine; the central neurotransmitter of the brain) was considered as the leading cause of TD. Similarly, Harris & Singer (2006) justified neuroanatomy and neurochemistry as underlying causes of TD, speculating that TD may involve an alteration of neurotransmitter circuit systems of the brain.

On the other hand, Church et al., (2003) argued against the genetic influence on TD, since no common single genetic locus had yet been demonstrated. Conversely, researchers revealed results from the same large family study which suggested that TD is partly genetically determined. For example, recent studies on pervasive developmental disorders in childhood, considered genetic predisposition in Asperger's syndrome, since an X chromosome showed linkage with chronic vocal TD (Lichtenstein, et al. 2010). Without doubt, Lichtenstein et al., (2010) acknowledged evidence of substantial genetic vulnerability within developmental disorders and TD, although genetic predispositions first manifested as TD.

Moreover, several researchers suggested that over-activity of *thalamo-cortical* drive may generate tics and compulsions; meanwhile, additional researchers believed that loops involving thalamic circuits are implicated in TS (Savica et al., 2012). Although, Felling & Singer (2011) argued that evidence supports TS as an inherited disorder, they acknowledged that the precise genetic abnormality remains unknown.

Environmental Theories

Stress factors that are non-biologically justified and that affect an individual's stability may be considered environmental factors.

According to Porta et al., (2008), prenatal and environmental infections explained the environmental influences in the development of TD in children. For instance, Porta et al, (2008) reported that twin studies suggested the substantial role of environmental factors, such as prenatal factors, in which severe nausea and vomiting during pregnancy may lead to changes in sensitivity of dopaminergic receptors increasing the likelihood of developing TS.

An additional theory of environmental basis emerged from a cross sectional study which examined the pediatric autoimmune neuropsychiatric disorder associated with streptococcal infections (PANDAS) hypothesis. The theory of PANDAS suggested possible association of TD with streptococcal infection and anti-basal ganglia antibodies (ABGA) (Church, Dale, Lees, Giovannoni, & Robertson, 2003). According to Church et al., (2003), until the 1990's, Sydenham's chorea, a post streptococcal neurological disorder, was considered the only neurological sequel of streptococcal infection; however, numerous reports of a streptococcal infection outbreak in Rhode Island confirmed that children developed sudden onset tics and psychiatric disorders, such as obsessive compulsive disorders (OCD). Eventually, a clinical phenotype of post streptococcal tics and (OCD) was defined, thus became labeled as PANDAS (Church et al., 2003). Five clinical characteristics define PANDAS. Snider (2004)

listed the five characteristics as; the presence of OCD and TD, a pre-pubertal age onset, an abrupt onset and relapsing, and an association with neural abnormalities during exacerbations. Snider (2004) indicated that there is growing evidence supporting an etiologic role for Sydenham's chorea and PANDAS.

Concurrently, additional theories suggested the association between streptococcal infections, obsessive compulsive disorders (OCD), and TD (Church et al., 2003). For example, a case study reported that a subgroup of childhood onset OCD and TD was found, *post-infectious autoimmune mediated etiology-group A beta-hemolytic streptococci* (GABHS), designated as PANDAS; where a five year old child prior to showing symptoms of OCD and TD was treated for GABHS and after forty-eight hours of second course of antibiotics (Amoxicillin), the OCD, TD, and ADHD symptoms decreased in intensity and frequency (Snider & Swedo, 2003).

Finally, Porta et al, (2008) considered PANDAS as an important environmental influence in the development of TD/TS; yet acknowledged that despite studies showing the positive link between PANDAS and the development of TS, controversy over the association still existed.

Diagnostic Challenges of Tic Disorders and Tourette's Syndrome

The diagnostic challenges of TD and GTS stem from the existing overlap between neurobiological and psychiatric symptoms. Indeed, the co-morbidity, or co-occurrence, of disorders increases the challenges of differential diagnosis. A

prelude of the term co-morbidity follows, with the objective to understand diagnostic challenges of TD and GTS.

Co-morbidity derives from the word co-morbid, which is defined as a co-occurrence of two or more clinical issues. Kaplan, Dewey, Deborah, Crawford, Susan, Wilson, et al. (2001) stated that co-morbid was a term borrowed from medicine and that its original meaning indicated the presence of at least two diseases. For instance, Kaplan et al., (2001) described that an individual with diabetes and asthma was said to be co-morbid for these two diseases. Thus, co-morbidity is not simply an association or link between issues, as exemplified in a study by Akos & Ellis (2008) that linked cognitive, social, and emotional factors with positive self-esteem and developmental identity. Instead, co-morbidity represents an overlap of issues, as exemplified by Anand (2007) through a study that described the overlap among Dyslexia with Attention Deficit Hyperactivity Disorder (ADHD) and Mental Retardation (MR) with dysmorphic features. Overall, Anand (2007) illustrated studies that demonstrated associations and co-morbidity between disabilities and disorders.

However, researchers such as Kaplan, et al. (2001) debated over the term co-morbidity as questionable in regards to developmental disorders. Thus, familiarity and understanding of co-morbidity seem fundamental within diagnostic assessments and treatment of issues pertaining to neurobiological or neuropsychopathological disorders.

Part of the diagnostic challenges of GTS and TD include the proper identification and differentiation of disorders. Differential diagnosis is noteworthy in order to appropriately address the primary disorder, thus, accordingly recommend the best treatment interventions. Numerous studies have suggested an overlap between Tic Disorders (TD), Attention-Deficit Hyperactivity Disorder (ADHD), and Obsessive Compulsive Disorders (OCD). For example, according to Gaze et al (2006), children and adolescents with TS were most likely to experience symptoms of a co-occurring psychiatric disorder than their peers. Similarly, Snider (2004) mentioned that the overlap between TD and OCD is most apparent in pediatric populations as two thirds of children with OCD are observed to have co-morbid tics. In a similar view, Felling & Singer (2011) agreed that affected individuals are at increased risk for the development of various co-morbid conditions, such as obsessive-compulsive disorder, attention-deficit-hyperactivity disorder, school problems, depression, and anxiety. Hence, proper identification of TD or TS undertakes diagnostic challenges. Gave et al., (2006) indicated that a co-morbid disorder may be categorized in one of three ways: (a) as associated with TS, (b) as a primary co-morbid disorder, or (c) as a secondary effect of TS.

On one side, TD may be diagnosed as a primary condition; on the other hand, TD may co-exist with psychiatric or developmental conditions. Moreover, TD may portray as a secondary diagnosis or a symptom derivative of a pervasive developmental or psychiatric disorder. As a result, differentiation of diagnosis and symptoms, identification of dual diagnosis, and focus on the primary disorder

deems essential. Walkup (2006) mentioned that sorting out the differences between repetitive behaviors that are motor-like, compulsive-natured, self-injurious, and developmentally stereotypes-like, is crucial. Diagnosis of individuals that show multiple neurological or psychiatric symptoms may be considered challenging. Therefore, diagnosis and treatment of TD and GTS entail the proper identification between primary disorders and co-morbid disorders.

Although, research studies have associated GTS and TD with co-morbid disorders or co-occurring issues, studies have not yet uncovered an association between the impact of GTS and TD on sexual behavior.

Intervention Methods for GTS and TD and Sexual Behavior

Researchers pursue to uncover data that can confirm effective interventions for treatment of TD and GTS. Scientific theories claim over several treatment interventions for individuals with TD. However, controversy still exists regarding effective treatment interventions. For instance, while several researchers favor behavior therapy; on the other hand, opposing researchers favor medication or surgical interventions.

Nonetheless, effective interventions may seem relative, as the efficacy of the treatment may depend on the neurobiological, neurobehavioral, and psychological component of the individual. For instance, an individual that suffers the symptoms of GTS and TD may necessitate *Behavior Therapy* in order to address issues of sexual behavior, assertiveness, fear and self-esteem.

Accordingly, although the efficacy of a treatment intervention remains under the scope of further research investigations, the efficacy of treatment interventions depend on the objective and treatment goals. Overtime, scientific researchers have developed the following intervention methods:

Behavior Therapy: Habit Reversal Training

Himle, Woods, Piacentini, & Walkup (2006) argued that research studies confirm behavior therapy as an effective intervention for GTS and TD, specifically Habit Reversal Training (HRT), as an alternative or as an adjunct treatment. The management of tics, via identification of events or experiences that contribute to tics, represents the goal of HRT. HRT consists of four steps: relaxation training, awareness, competing response, and behavior analysis (Walkup, 2006).

Behavior interventions models sustain that tics, although are biological in origin, can be worsened, improved, or maintained by environmental events (Himle et al., 2006). Furthermore, according to Himle et al., (2006), antecedent variables (setting, emotional, and cognitive states) and consequence variables (social reactions) worsen or improve tic severity; therefore, detection of warning signs of tics and reduction in the premonitory urge or sensation of a tic is essential in HRT. Anticipation and awareness of the variables that trigger the tics are an essential role on behalf of the individual during HRT.

Himle et al., (2006) asserted that the efficacy of HRT posits promising; nevertheless, concerns about neurological features of TD, i.e., involuntary muscular movements, in light of the anticipation and awareness factor, may lead

to a debating topic that questions the protocols of HRT applied to individuals diagnosed with tic disorders. Similarly, Woods, et al., (2010) formulated that empirical evidence supports behavior therapy as treatment intervention for TD, despite that most individuals with TD do not seek for Behavior Therapy. The application of Behavior Therapy for individuals whose sexual behavior is affected by GTS and TD, may consist on the management of GTS and TD symptoms such as twitching, cursing, involuntary body movements among others, during sexual intercourse or sexually related approaches.

Cognitive Behavioral Therapy

Distorted cognitions or maladaptive expectations are confronted or replaced with realistic anticipations. Walkup (2006) described that the primary focus of Cognitive Behavior Therapy (CBT) is changing the way a person evaluates his or her actions in high risk situations. In a similar stance, O'Connor, Brault, Robillard, Loiselle, Borgeat, & Strip (2001) highlighted that the basis of CBT is that tension increases the likelihood of tics and that thoughts and emotions have an effect on tension. The protocols in CBT include a combination of intervention models.

Robertson & Chowdhury (2011), emphasized that CBT is similar to Habit Reversal Training (HRT) with Cognitive Therapy (CT) added, of which research studies report promising outcomes for treatment of TD. Moreover, Leckman (2002) suggested CBT strategies, such as, exposure and response training; nonetheless, his suggestions specified cases when TD is co-morbid with OCD.

The application of CBT to individuals, whose sexual behavior may be affected by the symptoms of GTS and TD, may consist of working on re-arranging irrational beliefs of self-esteem and self-image in face of developing assertiveness toward sexual behavior.

Exposure Response Prevention

Exposure based interventions in the treatment of TD entail exposure to the sensations and urges that precede tics, and response prevention of the tics. Robertson & Chowdhury (2011) explained that Exposure Response Prevention (ERP) are based on the conceptualization of tics as voluntary intentional movements that are performed in order to decrease unpleasant sensory urges experienced in muscles. With ERP, the individual habituates to the premonitory experiences, which results in tic reduction.

Robertson & Chowdhury (2011) reported that a randomized study of ERP was conducted with patients of TD and the response evidenced marked improvement of tics after three months. However, according to the report, sample participants in the randomized study were under medication treatment during the time of the study.

The efficacy of ERP within treatment of sexual behavior issues among individuals suffering GTS and TD, may consist of increasing sensate focus on the tics and urges, while simultaneously being exposed to a sexual encounter or moment.

Relaxation Training Therapy

Relaxation Training (RT) involves deep breathing exercises and guided imagery, with the objective to reduce stress and alleviate anxiety. Robertson & Chowdhury (2011) described a randomized trial that compared RT versus a control group; out of twenty-three children from a pediatric clinic, sixteen completed the three-month study, and although initial improvement at three month follow-up showed on seven of the samples, there was no difference between groups. Thus, the authors concluded that RT showed a limited role in the treatment of TD.

Interestingly, considering that a recent research study suggested that sexual behavior ameliorates anxiety and tics; as a study suggested that there was anecdotal clinical evidence that tics improve following periods of affectionate touch and sexual intercourse (Martino D., Macerollo A., Leckman JF., 2013), perhaps the reverse, RT, may reduce anxiety, reducing the tic symptoms and concurrently improving sexual behavior.

Massed Practice

Massed Practice (MP) involves voluntary repetition of tics. According to Robertson & Chowdhury (2011) MP has been used for a long time in the treatment of TD. MP consists on over rehearsal of the target tic, in which the patient voluntarily reproduces and repeats tics several times a minute, in order to produce a build-up of inhibition/fatigue and subsequently result in tic reduction (Robertson & Chowdhury, 2011).

According to Robertson & Chowdhury (2011), a randomized study was conducted to compare the effects of MP with HRT. According to the results of the randomized study, ten subjects were trialed in the study of HRT and twelve subjects were trialed in the study of MP. After a four week follow-up, the twelve subjects in MP showed thirty three percent of tics reduction versus the ten subjects in HRT, who after four month follow-up showed ninety-nine percent of tic reduction. Thus, Robertson & Chowdhury (2011) concluded that HRT was considered more effective than MP.

The pertinence of MP to treat the impact of GTS or TD on sexual behavior may deem contingent upon the severity of the symptoms and the client's preference. Perhaps a combination of HRT and MP may elicit favorable to ameliorate symptoms and enable gratifying sexual behavior in the lives of teenagers and young adults with GTS and TD.

Psychotherapy

Psychotherapy consists on interventions based on helping an individual endure challenging situations. Similarly, Walkup (2006) mentioned that psychotherapy helped patients get through understanding the implications of TD, by coping with the self and developing self-resiliency. Similarly, Leckman (2002) explained that cases of uncomplicated tics can be successfully managed with support and psychotherapeutic attention; which include social coping skills, family issues, school adjustment issues, behavior training, and self-esteem.

From this standpoint, Walkup (2006) stated that psychotherapy treatment of TD required setting goals of management and coping skills, in addition to developing self-empowerment. Thus, psychotherapy interventions may offer amelioration of symptoms rather than elimination of the disorder.

In regards to treating sexual behavior challenges due to symptoms of GTS and TD, Psychotherapy interventions may deem applicable in addressing issues of self-esteem and self-empowerment to attain goals revolving sexual behavior.

Deep Brain Stimulation Approach

Current research studies posited favorable towards Deep Brain Stimulation (DBS) approach, which is an alternative therapy of surgical procedures that stimulate electrodes in anesthetized patients, while using a stereotactic head frame and targeting the center of the thalamic (Savica, Stead, Mack, Lee, and Klassen, 2012). DBS intervention consists of dopamine stimulation in the thalamic surface via surgical means, yet the specific nuclear thalamic target during DBS yet remains ambiguous.

A group of scientific researchers such as Rabins, Appleby, Brandt, Delong, Dunn, Walkup, et al., (2009), sponsored a conference via the National Institute of Health and the Dana Foundation, in which ethical issues regarding the use of DBS as potential treatment for Disorders of Mood, Behavior, and Thought (MBT) were explored. Research supports DBS by evidence of changes in mood, affect, and behavioral symptoms in patients undergoing treatment of movement disorders.

Furthermore, Rabins et al. (2009) also reported that positive DBS treatment outcomes surfaced among a small number of subjects with depression, OCD, and TS. For instance, in a one year follow-up study, Savica et al., (2012) reported improvement on three participants with severe TD who underwent DBS targeting of the thalamus, and showed a mean reduction in the Yale Global Tic Severity Scale (YGTS).

Implications regarding DBS may include the alternative between enduring surgical procedures or management of GTS or TD symptoms to improve sexual behavior. If DBS stipulates promising to treat TD, most likely, it may render positive outcomes enough to improve self-esteem, consequently, sexual behavior.

Pharmacological Interventions

Several medical professionals and researchers continue to favor pharmacological over psychotherapy interventions. For instance, Felling & Singer (2011) stipulated that there is no cure for tics, and symptomatic therapy includes behavioral and pharmacological approaches. Over the past decades, researchers have attempted clinical trials and suggested drug interventions for treatment of TD.

Neuroleptics and Serotonin reuptake inhibitors (SSRIs) stand as the most common treatment interventions for TD. Bagheri, Kerbeshian, & Burd (1999) stated that the most common drugs used as treatment intervention for TD are neuroleptics, as they intend to block dopamine receptors in the brain.

Neuroleptics commonly used include Haloperidol, Primozide, and the atypical neuroleptic agent, Risperdal (Bagheri et al., 1999). Alternatives to neuroleptics are clonidine (Catapres) and guanfacine (Tenex), which use is supported by placebo-controlled studies (Phelps, 2008). As studies generally report on medications, neuroleptics may induce side effects. Precisely, Bagheri et al., (1999) indicated that the side effects of neuroleptics include sedation, weight gain, impaired academic performance, social anxiety, and tardive dyskinesia. Nonetheless, Robertson & Chowdhury (2011) argued that the drug effects vary among patients and that tics rarely extinguish.

Most commonly, Tetrabenazine represented the medication that suppressed tics. Moreover, Tetrabenazine was considered a drug that diminishes pre-synaptic dopamine and serotonin stores, and blocks post-synaptic dopamine receptors (Porta et al., 2008). Clinical studies showed efficacy of Tetrabenazine on hyperkinetic movement disorders, including a small amount of patients with TD. According to Porta et al., (2008), findings of studies showed that treatment with the Tetrabenazine may have long term benefits on TD. In fact, Porta et al., (2008) emphasized that if the promising results are confirmed in further studies, Tetrabenazine could be the appropriate treatment of choice in patients with sleep disorders and tics.

On a similar stance, researchers reported that a recent study on sixteen children showed depleted symptoms of tics upon a trial of an atypical antipsychotic, Aripiprazole; which was used for treatment of schizophrenia and bi-polar disorders (Murphy, Mutch, Reid, Edge, Storch, Bengston, et al. (2009).

The antipsychotic medication was approved by the Food and Drug Administration (FDA) and according to Murphy et al., (2009); Aripiprazole may provide the new treatment option for pediatric TD.

Typical interventions for TD include a combination of behavioral therapy and pharmaceutical management (Davis et al., 2004). Pharmaceutical interventions, however, may elicit side-effects that include sedation, dysphoria, cognitive blunting, psychomotor retardation, mood swings, weight gain, and blurred vision (Leckman, 2002). On the other hand, behavioral therapy interventions may reveal promising outcomes, yet research in this area is limited.

Considering that psychotropic treatment interventions may cause side effects; it is essential to understand the effects and consequences that psychotropic treatment interventions can impose on the sexual behavior of teenagers and young adults. Efforts have been made to provide significant information on the etiology and treatment interventions for individuals suffering GTS and TD. Certainly, the complexity of GTS and TD include its behavioral features and the challenges it may impose upon sexual behavior management.

For this reason, far beyond understanding the history, etiology and treatment interventions for the symptoms of GTS and TD, the concern of “how do the symptoms of GTS and TD impact the sexual behavior of teenagers and young adults at a crucial stage of their lives” yet remains. From this perspective, it may also deem essential to understand the significance of the stages of development through life.

THEORETICAL FRAMEWORKS

Theories of Stages of Development

A teenager's or young adult's developmental stages and sexual behavior is contingent upon the individual's prior developmental stages and experiences. As physical maturation and emotional aspects are essential to growth, so is the sexual phase of an individual. Thus, both may be considered crucial for a healthy emotional and sexual behavior development. Given the integration of the cognitive, biological, psychological, and social aspects of human development, both Psychosocial and Hierarchy of Needs theories may be considered applicable to the physical, clinical, and psychological concerns that teenagers and young adults may endure regarding sexual issues. Harper et al., (2003) labeled individuals in crisis as individuals at risk.

In this line of thought, development through life entails confronting age-related challenges and complex issues that individuals must face and transition. Nevertheless, when an individual suffers an abnormal challenge, such as GTS and TD, it is significant to understand age-related issues and its impact on an individual's self-esteem and sexual behavior. Considering that the teenage and young adults' stages represent a peak for sexual exploration and sexual experiences, a breakdown of Erik Erikson's (1963) stages of development follow.

Understanding the impact of GTS and TD in the lives of teenagers and young adults entail the understanding of developmental life stages and the stage in which sexual interests develop. Considering its cognitive, biological,

psychological, and social aspects of human development and given its foundation of a comprehensive framework, the Psychosocial Life-Span Developmental Theory represents a theory that describes the different aspects of human development, including sexual development, during different phases of life.

The Psychosocial Life-Span Developmental Model and Sexual Behavior

Although, foundational theorists, such as Piaget, Kohlberg, Gilligan, Erikson, Maslow, and Loevinger, have all articulated stages of development, current developmental theories illustrate a comprehensive framework that address the physical, emotional, and social development of human beings (Newman & Newman, 2003).

The psychosocial life-span model emerges from the psychosocial theory that originated with Erik Erikson in 1963 (Newman & Newman, 2003). Specifically, Gelso & Fassinger (1992) identified that economic, demographic, and sociopolitical events such as, compulsory education for youth, demanded a complete understanding of changes in adulthood and required a more detailed demarcation of an entire life span. Consequently, interest in psychosocial life-span model encouraged developmental psychologists the study of adulthood, gerontology, adolescence, and college students while maintaining the traditional focus on childhood (Gelso & Fassinger, 1992).

According to Newman & Newman (2003), five assumptions underline the psychosocial developmental model: (a) growth occurs at every period of life; (b)

lives show continuity and change through time; (c) individuals function in an integrated manner as a whole; (d) individuals' behaviors must be analyzed in the context of relevant settings and personal relationships; and (e) people contribute actively to their development. Given assumptions reflect a comprehensive perspective of the psychosocial life-span model. Accordingly, the model illustrates a framework that describes the stages of development from conception until very old age. Erikson's (1963) model has been criticized as insensitive to racial, gender, or ethnic issues (Vogel-schibilia, Menulty, Baxter, Miller, Dine, et al., 2009). Nonetheless, the foundational philosophy of psychosocial life-span developmental model aligns to the epigenetic principle, which as stated by Erikson (1963), represents a biological plan for growth that allows each function to emerge systematically, until the fully functioning organism has developed.

The Clinical Value of Stage Articulations to Sexual Behavior

The stage articulations of psychosocial model may be considered clinically significant to the study of "how GTS and TD impact the sexual behavior of teenagers and young adults", as the model illustrates pertinent tasks and behaviors expected at each developmental stage. The model describes psychosocial, biological, cognitive, and social influences throughout the stages of human development. In this regard, Newton & Newton (2003) stated that the concept of life includes several aspects of development, such as physical growth, social relationships, and cognitive capacities at a given period of life, in order to speculate about their interrelationship.

Accordingly, the stage articulations may pose as an appropriate model for the investigation of how GTS and TD affect the sexual behavior of teenagers and young adults at a significant stage of their lives. Indeed, the model's tenets of development may also facilitate the identification of stress factors and crisis that may typically hinder a teenager's or young adult's sexual development at a particular life stage.

Newton & Newton (2003) identified eleven life tenets as follows: *developmental tasks, psychosocial crisis, central process, coping behavior, prime adaptive ego quality, core pathology*, and relevant issues per stage.

- Developmental Tasks

The concept of *developmental tasks* accounts for skills and competencies that contribute to the mastery of an individual's environment. These tasks contribute to the development of self-concept, self-control, self-theory, and self-evaluation of the individual during the first four stages of development (Newman & Newman, 2003). Development of the *self*, which fosters independency skills in children, enables positive crisis management skills that facilitate the transitions through the developmental stages. Upon mastery of developmental tasks, new competencies enable their ability to engage in further complex relationships (Newman & Newman, 2003). In relation to the impact of GTS and TD on the self-esteem and sexual behavior of teenagers and young adults; if an individual with GTS or TD masters positive crisis management skills, a greater likelihood exists

for the individual to develop a healthy *self-image* and engage in complex relationships, such as sexual relationships.

Nevertheless, it is important to be aware that the biological and environmental factors may obstruct development of skills and competencies, which consequently may affect the development of the self. *Social perceptions* may also impact the development of the self. Similarly, Fein, Kassin, and Markus (2008) explained that social perceptions arise from the interaction of three sources: (a) persons, (b) situations, and (c) behavior. Thus, social perceptions may become influenced by behavior and by verbal and non-verbal cues. Fein et al., (2008) emphasized that the process of social perception is influenced by past experiences, political or economic situations, history, cultural beliefs, and predispositions. Similarly, factors that influence social perceptions of GTS and TD may indeed affect an individual's developmental tasks; consequently, may affect the development of the *self* and impact sexual behavior.

- Psychosocial Crisis

The concept of *psychosocial crisis* represents the result between cultural pressures and social expectations, which may encourage socialization as unforeseen actions that promote self-sufficiency; on the other hand, may result in defensiveness, regression, or dread (Newman & Newman, 2003). Self-sufficiency represents an individual's self-support, autonomy, and independence, while a crisis may lead to a conflicting experience at any life stage; moreover, crisis may interfere with developmental fulfillments or, on the other hand,

promote self-sufficiency (Newman & Newman, 2003). Examples of crisis in the life of teenagers and young adults include a disease or a disorder, loss of a sexual partner, loss of a career, fear, low self-esteem or rejection among others.

- Central Process

Subsequently, the concept of central process reflects the way an individual absorbs, adapts, and makes sense of the *self*. Imitation deems central during toddlerhood stages, as it promotes expansion of skills, furthermore, expansion of self-initiated behavior and control of their actions (Newman & Newman, 2003). For instance, teenagers may imitate an adult, a television model, a friend, or teacher with the purpose to expand basic skills and show control over their actions, regardless of psychosocial crisis. Accordingly, the central process is considered essential for resolving psychosocial crisis (Newman & Newman, 2003).

- Coping Behavior

In addition, the construct of coping behavior refers to the adaptive efforts in managing stressful events, and the emotions associated with the stress factors; thus, coping requires appraisal of a situation as it enables development and growth (Newman & Newman, 2003). In reference to coping behavior in teenagers and young adults suffering GTS and TD, fundamental resources such as professional support services, family support, and financial resources may promote a positive attitude and ease coping behavior that can influence sexual behavior.

- Prime Adaptive Ego Quality

Next, the concept of prime adaptive ego qualities represents the individual's approach towards the world. Newman & Newman (2003) described that prime adaptive ego qualities derive from the individual's positive resolution during a crisis. As previously stated, coping behavior may result from an individual's positive outlook. Thus, psychosocial resources may be considered crucial to the development of prime adaptive ego qualities as well. Hope, will, purpose, and competence represent the ego qualities illustrated in the psychosocial developmental model (Newman & Newman, 2003). As each adaptive ego quality enables optimistic attitudes in light of psychosocial or developmental crisis, each adaptive ego quality entails courage and determination. Therefore, the impact of GTS and TD on the sexual behavior of a teenager or young adult may be contingent upon the individual's coping behavior and prime adaptive ego quality.

- Core Pathology

Last of all, the construct of *core pathology* represents an individual's negative resolution, which describes as a destructive force that prevents exploration of socialization, growth, and change (Newman & Newman, 2006). Withdrawal, compulsion, inhibition, and inertia represent core pathology of the first four stages of development. In reference to GTS and TD specifically, individuals at a teenage stage and young adult stage may experience core

pathology as they may typically exhibit symptoms of withdrawal, compulsion, inhibition, and/or inertia.

In all, it can be postulated that the impact of GTS or TD on the self-esteem and sexual behavior of teenagers and young adults may be contingent upon the developmental tasks, development of the *self*, and prime adaptive ego along the coping behavior of the individual.

The Psychosocial Tenets of Stage Development

The psychosocial tenets integrate developmental features pertinent to age-appropriate biological and psychosocial development that are aligned with cultural and social expectations. Each developmental tenet unfolds throughout the eleven developmental stages. A description of the developmental stages (from infancy through very old age stage) follows, with the objective to address its application to teenagers and young adults with GTS and TD. According to Newman & Newman (2003), the developmental stages are classified as follows:

- **The infancy stage**, from birth to two years, entail developmental tasks such as maturation of sensory, perceptual, and motor functions, attachment, sensorimotor intelligence, understanding creation of objects and creating categories, and emotional development. The prime adaptive ego quality is hope, while the core pathology is withdrawal.
- **The toddlerhood stage**, from two to three years, involves developmental tasks as elaboration of locomotion, language development, fantasy play,

and self-control. The prime adaptive ego quality is will, while the core pathology is compulsion.

- **The early school age**, from four to six years, engage in developmental tasks, such as gender identification, early moral development, self-theory, and peer play. The prime adaptive ego quality is purpose, while the core pathology is inhibition.
- **The middle school stage**, from six to twelve years, engage in developmental tasks such as friendship, concrete operations, skill learning, self-evaluation, and team play. The prime adaptive ego quality is competence, while the core pathology is inertia.
- **The early adolescence stage**, from twelve to eighteen years, engage in physical maturation, emotional development, peer groups, and sexual relationships. The prime adaptive ego quality is fidelity to others, whereas the core pathology consists on dissociation.
- **The later adolescence stage**, from eighteen to twenty-four years, engage in autonomy from parents, gender identity issues, internalized morality, and career choices. The prime adaptive ego quality consists on fidelity to values and ideologies; while the core pathology lies on issues of repudiation. The psychosocial crisis in this stage includes individual identity, identity confusion, and identity formation for males and females.
- **The early adulthood stage**, from twenty-four to thirty-four years, engage in life course, social roles, and fulfillment theories. The prime adaptive ego qualities include issues of love, while the core pathology includes issues of

exclusivity. The psychosocial crisis in this stage is intimacy versus isolation.

- **The middle adulthood stage**, from thirty-four to sixty, engage in managing a career, nurturing an intimate relationship, expanding caring relationships and managing the household. The prime adaptive ego quality consists on care, while the core pathology includes issues of *rejectivity*.
- **The later adulthood stage**, from sixty to seventy-five, engage in accepting one's life, promoting intellectual vigor, redirecting energy to new roles and activities, and developing a point of view about death. The prime adaptive ego quality is wisdom, while the core pathology is *disclaim*.
- **The very old age stage**, from seventy-five until death, engage in coping with the physical changes of aging, developing a psycho-historical perspective, traveling uncharted territory. The prime adaptive ego quality is confidence, while the core pathology is *diffidence*.

It can be perceived that, a normal crisis may arise within each developmental stage and a central process operates to resolve it; moreover, a resolution of crisis determines coping skills (Newman & Newman, 2003). While a positive resolution may contribute to ego strengths; on the other hand, a negative resolution may contribute to core pathologies (Newman & Newman, 2003). As a result, new behaviors and new relationships (which result from skill acquisition and successful crisis resolution during each stage of growth), contribute to

optimal development; while tendencies that restrict social behavior contribute to lack of development and core pathologies (Newman & Newman, 2003).

Accordingly, the philosophical basis of psychosocial tenets may facilitate the understanding of GTS and TD along its impact on sexual behavior. For instance, according to psychosocial theory, the developmental tasks in early childhood stages include language development, self-control, peer play, and the elaboration of locomotion among other tasks (Newman & Newman, 2003); however, an individual with GTS or TD may exhibit absence of these developmental tasks and instead display symptoms of core pathology, such as social withdrawal and lack of sexual interest.

The development of the *self* is considered critical during stages of development in the life of teenagers and young adults affected by GTS and TD. As previously stated, the concepts of *self-sufficiency*, *self-regulation*, *self-concept*, *self-control*, *self-initiated behavior*, *self-evaluation*, and *self-efficacy* correspond to the response towards stimuli and coping skills, which may be developed throughout each stage of development in light of stage related demands, situations, and crisis (Newman & Newman, 2003). Researchers stress the importance of empowerment and optimism (Vogel-Scibilia et al., 2009). As sexual behavior is an essential aspect in the lives of teenagers and young adults, therefore, the awareness of the stage articulations and optimal interventions may deem crucial to foster the development of the *self*, particularly *self-esteem*, *self-sufficiency*, *self-regulation*, and *self-efficacy* in teenagers and young adults diagnosed with GTS and TD.

Generally, the psychosocial model reflects that mastery of cognitive, communication, and social development skills facilitates transitions toward the subsequent developmental stages. According to Newman & Newman (2003, p. 58), “predictability is found in the sequence of psychosocial stages”. In a similar point of view, Gordon (2004) confirmed that the realization of a goal requires transitions from a previous stage. Conversely, when mastery of expected skills at a given childhood stage is absent, perhaps the concept of growth, mastery of communication, and social development skills pose questionable.

The significance of psychosocial theory ponders upon its integration of biological, psychological, and social aspects of development. The psychosocial model may enable clinical practitioners, educators, and primary caregivers the identification of age-appropriate skills and needs alongside the age related pathology in individuals. For this reason, knowledge of the psychosocial model and familiarity with its precepts may facilitate best clinical practices of sexual counseling and appropriate clinical practices and treatment approaches towards individuals whose sexual behavior have been affected by GTS and TD.

Hierarchy of Needs Model and Sexual Needs

Every individual has needs; the need for love, for belonging, for acceptance and for sexual gratification. In order to fulfill human needs, individuals must be able to fulfill prior needs. In view that teenagers and young adults with GTS and TD face a greater challenge than the norm population, fulfilling sexual gratification, a physiological need, may entail fulfilling the self-esteem first, a psychological need. For this reason, the Hierarchy of Needs Model deems significant to the development of the *self* for the development of a positive sexual behavior in individuals with GTS and TD.

Origin

According to Gordon (2004), hierarchy of needs theory originated in 1954 with Abraham Maslow. Eventually, the hierarchy of needs model further developed in 1970. Maslow has been considered as a humanistic actualization psychologist over time (Gordon, 2004). Maslow developed an ascending pyramid of needs in an interest to emphasize that fulfillment of physiological needs regard as vital for growth and development. Accordingly, the hierarchy of needs model illustrates that achievement of the highest goal requires transitioning through hierarchical stages (Gordon, 2004). Hierarchy of needs model consists of five stages and each stage entails the transitions from physiological needs to psychological needs respectively.

Perspectives of Hierarchy of Needs Model

The perspectives of hierarchy of needs consider that the fulfillment of basic needs enable transition to the next stage of need. Motivation represents a crucial factor that facilitates the achievement of the highest goal (Gordon, 2004). On the other hand, *needs* represent an essential principle in hierarchy of needs theory, as the pyramid illustrates that the fulfillment of physiological, emotional, and psychological needs deem vital for the attainment of goals (Gordon, 2004). Essentially, physiological needs will enable achievement of psychological needs. This postulate explains that physiological needs correspond to the base of the pyramid, while psychological needs correspond to the top of the pyramid. In a similar stance, Johnson & Mortimer (2011) explained that according to hierarchy of needs theory, when basic needs are established, individuals can focus on higher order needs, such as intellectual stimulation and self-actualization. As observed, psychological needs represent the paramount goal in the hierarchy of needs pyramid.

As described by Gordon (2004), the hierarchy of needs pyramid ascends from physiological needs, to safety needs, belongingness, self-esteem, and ultimately toward self-actualization. Maslow's hierarchy of needs is described as follows:

- **Physiological needs**, as described by Gordon (2004), concern human basic needs such as water, food, and sleep. Yet, Harper, Harper, & Still (2003)

further related physiological needs to the body's need for food, water, oxygen, optimal temperature, and sleep in order to maintain homeostasis and survival.

- **Safety needs**, as defined by Gordon (2004), refer to the need for shelter and protection from danger. Furthermore, Harper et al., (2003) noted that safety needs also involve security, stability, and freedom from fear and constant anxiety.
- **Belongingness needs**, as highlighted by Gordon (2004), represents the need to be part of a group, to love and feel loved. Moreover, Harper et al., (2003) listed groups that foster belongingness such as family, friends, youth clubs, religious circles, professional groups, work groups, or fraternities.
- **Self-esteem**, as described by Gordon (2004), concerns the need to feel good about self. Moreover, according to Fein, Kassin, and Markus (2008), a combination of factors such as culture, race, and gender, impact self-esteem. Thus, Fein et al., (2008) indicated that self-esteem is an affective component of the self, consisting of a person's positive or negative self-evaluations. On another stance, Heatherton & Polivy (1991), as cited by Fein et al., (2008), argued that it is a state of mind that fluctuates in response to success, failure, social relations, and other life experiences. Despite the divergent views of self-esteem, daily experiences may additionally influence a person's self-esteem as highly responsive to praise and/or overly sensitive to criticism. Kassin, Fein, and Markus (2008) indicate that self-esteem is an affective component of the self, consisting of a person's positive or negative self-evaluations. Furthermore,

Kassin et al., (2008) highlight different perspectives of self-esteem; according to Coppersmith (1967), self-esteem refers to our positive and negative evaluations of ourselves; according to Heatherton & Polivy (1991), it is a state of mind that fluctuates in response to success, failure, social relations, and other life experiences; and according to Baldwin, et al., (1996), it fluctuates in response to daily experiences-which makes them highly responsive to praise and overly sensitive to criticism.

- **Self-actualization**, as mentioned by Gordon (2004), corresponds to fulfilling potentials; which requires going beyond a homeostatic state of being and produces internal equilibrium towards producing something creative. Moreover, according to Gordon (2004), self-actualization enables peak experiences that reorganize the self and leads towards another higher level of homeostatic state. Similarly, Harper et al., (2003) stated that self-actualization corresponds to the need for aspiring unique talents and establishing highest potentials.

As observed, the transitions among the pyramid flow from basic physiological needs towards complex psychological needs. Overall, *self-actualization* represents the utmost goal of hierarchy of needs. Its application to this research study was viable in terms that *self-actualization* may signify a teenager's and young adult's utmost accomplishment of a satisfying sexual relationship and a gratifying partnered sexual experience.

Clinical Value of the Hierarchy of Needs Framework to Sexual Behavior

Although several researchers debate over the Hierarchy of Needs Theory, recent research studies refer to the clinical applications of the hierarchy of needs model. Harper et al., (2003) claimed that Maslow's hierarchy of needs theory could be used as a framework for counseling individuals in crisis that are unable to fulfill their basic needs due to extenuating circumstances. Respectively, teenagers and young adults suffering GTS and TD symptoms for the most part endure life stage crisis and perhaps may be unable to fulfill their sexual needs due to the extenuating symptoms of GTS and TD.

Harper et al., (2003) suggested that all human beings have similar basic needs, yet may differ individually and culturally in their ability to fulfill their needs. Harper et al., (2003) labeled individuals in crisis as individuals at risk. Individuals may be capable to transition and fulfill the hierarchy of needs, yet, reliant on a support system. Precisely, in a study of children in crisis, Harper et al., (2003) suggested that the ease versus difficulty to fulfill human needs is influenced by the person's support, ethnic, social class, economic, political, or religious status within a given culture, as well as the environmental resources available for the needs' fulfillment of a given culture.

As teenagers and young adults with neurological disorders endure psychological, emotional, and social challenges; their particular individuality may require specific goals pertinent to their specific needs. For instance, a specific goal for teenagers and young adults with GTS and TD may consist on

maintaining a positive self-esteem during sexual communication in order to develop positive sexual behavior, thus, upon engagement of sexual relationship, the teenager or young adult may feel self-actualized. Although, the development of specific goals may not necessarily aim for the elimination of a disorder, indeed, the development of specific goals may help modify symptoms. In this view, teenagers and young adults that feel self-actualized most likely may reach their highest potential and engage successfully in sexual behavior, regardless of GTS or TD symptoms. In a similar stance, Gibson & Mitchell (1999), as cited by Harper et al., (2003), also discussed the significance of Maslow's hierarchy of needs in setting goals. Considering an individual's specific need or disorder, a person may work on the achievement of a short term or long term goal, thus perhaps may accomplish a sense of self-actualization.

Self-esteem and self-actualization represent the paramount goals of hierarchy of needs. Self-esteem and self-actualization may be considered significant to the sexual behavior of a teenager and young adult that suffer symptoms of GTS and TD. Accordingly, the hierarchy of needs framework, given its central focus on the physiological, emotional, social, and psychological aspects of human development, may be considered clinically significant towards addressing issues of sexual behavior among teenagers and young adults with GTS and TD.

A Comparison between Both Theories and Their Application to Sexual Behavior

On one stance, the perspectives of Psychosocial Theory correspond to the biological, psychological, and social aspects of individuals. Whereas, the perspectives of the Hierarchy of Needs correspond to the physiological needs ascending through emotional and psychological needs sequentially. The goals of psychosocial theory reflect as multi-dimensional throughout all stages of development (Newman & Newman, 2003); meanwhile, the goals of hierarchy of needs reflect as an ascending pyramid of stages (Gordon, 2004). Accordingly, each theory postulates the need to master a previous stage in order to attain growth and transition into the next stage. Theoretical principles of psychosocial theory illustrate the developmental tasks, central processes, adaptive ego, and stage crisis which influence development of the self (Newman & Newman, 2003). On the other hand, theoretical principles of hierarchy of needs emphasize concepts such as motivation, needs and the self (Harper et al., 2003).

In general, the framework of psychosocial theory pertains to social, biological, and psychological development; concurrently, the structure of hierarchy of needs theory pertains to physiological and psychological fulfillments. Reasonably, both frameworks deem relevant to human development, hence, may pose applicable to understand and address the impact of GTS and TD on self-esteem and sexual behavior.

Overall, individuals with developmental and neurological disorders may be able to progress through the developmental stages and may be able to accomplish goals at an individual pace, contingent on a support system. Teenagers and young adults with GTS and TD need a support system; especially to address issues of sexuality and self-esteem. Kassin, et al., (2009) stated that the need for belonging and the need for affiliation explain the attraction and close relationships in human beings. Kassin et al., (2009) emphasized on Leary's (2001) and William's et al., (2002) view that the need to belong runs deep, which is why people are distressed when neglected, rejected, excluded, ostracized, or stigmatized by others, all forms of "social death".

For this reason, the elements of *motivation*, *needs*, and the *self*, which are included in both the Psychosocial Theory and Hierarchy of Needs Theory, pose significant to understand and treat issues of sexual behavior among teenagers and young adults diagnosed with GTS and TD.

The Impact of Gilles De La Tourette's And Tic Disorders on The Behavior of Teenagers and Young Adults

Storch et al (2007) stated that youth with TD experience distress and/ or impairment related to tics; families often report that the co-morbid disturbances are most disturbing and impairing, and the primary motivator for seeking treatment.

In addition, Storch (2007) shared that clinical efforts have lagged behind with regards to assessing the full constellation of symptoms, which are; tics, externalizing behaviors, and internalizing symptoms that are often present in youth with tics. Externalizing behaviors are those noticeable and distracting to others, which include Attention Deficit Hyperactivity Disorder (ADHD), Obsessive Compulsive Disorder (OCD), Impulsivity, Mood disorders, and/ or Learning Disabilities (LD). Internalizing behavior problems include those disguised, such as depressed mood, somatic complaints, and withdrawal.

As the symptoms of GTS and TD impact the behavior, cognition, relationships and quality of life of the affected individuals, it may be hypothesized that the full constellation of symptoms of GTS and TD may also disrupt the normalcy in sexual behavior of teenagers and young adults. Teenagers and young adults that suffer the symptoms of GTS and TD may be perceived as less valuable or less attractive, thus, reducing their possibilities of experiencing gratifying sexual relationships. Concurrently, as symptoms of GTS and TD may impact the sexual life, it most likely may impact the emotional stability, causing

social anxiety. Low perceived mate value may influence the mate selection and sexual relationship process.

Precisely, a research study highlighted that *social anxiety* has the potential to be a characteristic that is associated with low perceived mate value and, therefore, to influence the mate selection process (Wenzel, 2009). The study, indicated that socially anxious (n = 63) and non-anxious (n = 62) participants were presented with a series of photographs and accompanying narrative descriptions of opposite sex individuals representing various levels of physical attractiveness and social status; they were instructed to rate (a) the likelihood in which they would engage in various relationship and sexual behaviors with similar people, and (b) the likelihood in which similar people would want to engage in these relationship and sexual behaviors with them (Wenzel, 2009).

Thus, relative to non-anxious participants, socially anxious participants estimated that they would be less likely to initiate these behaviors with physically attractive people and more likely to initiate these behaviors with physically unattractive people; moreover, they consistently estimated that others would be less likely to engage in these behaviors with them (Wenzel, 2009). These results supported the theory that socially anxious individuals' low perception of their own mate value influences the partners with whom they enter into relationships (Wenzel, 2009). Social anxiety, by definition, is characterized by distress in social interaction, and Wenzel (2009) cited that empirical research shows that it is associated with social consequences such as a decreased frequency of sexual behavior with a partner (Leary & Dobbins, 1983) and dating (Jones & Carpenter,

1986), and even a decreased likelihood of marriage (Schneier et al., 1994; Wittchen & Beloch, 1996).

Wenzel (2009) concurs with Kassin et al., (2008), that when men are looking for a long-term, committed relationship, they prefer youthful, physically attractive women (i.e., qualities that signal reproductive fitness), whereas women value characteristics that speak to a man's ability to provide resources (e.g., status, ambition; Buss & Schmitt, 1993; Lippa, 2007). Once again, perspectives in human mate selection vary upon individualistic goals and personalities. Hence, it may seem reasonable to infer that social anxiety may represent a challenge that most likely may interfere with successful human mate selection and sexual behavior, especially in the lives of teenagers or young adults suffering GTS and TD.

Sexual Behavior and Sex Practices among Teenagers and Young Adults

According to Crooks & Baur (2005), people who study human sexuality share certain goals with scientists in other disciplines; these include understanding, predicting, and controlling or influencing the events that are a subject matter. In addition, the way certain behavior patterns influence the quality of couples' interactions can help predict the happiness of a relationship (Crooks & Baur, 2005). Although the study of American sexual behaviors initiated with Alfred Kinsey in the 1940's and early 1950's and have progressed over time, numerous questions remain unanswered regarding sexual behavior and neurological disorders, specifically GTS and TD. This study considered the sexual standards and sexual practices among teenagers and young adults in order to understand controlling factors, such as GTS and TD that may influence the sexual behavior of teenagers and young adults.

Sexual Standards

There is wide variability in what people consider having sex (Sanders, Hill, Brandon, Yarber, William, Graham, Cynthia, Crosby, Richard, and Milhausen, 2010). In a recent study at The Kinsey Institute, nearly 45% of participants considered performing manual-genital stimulation to be having sex, 71% considered performing oral sex to be sex, 80.8% for anal-genital intercourse. Considerations of sex also varied depending on whether or not a condom was used, female or male orgasm, and if the respondent was performing or receiving the stimulation. With participants ranging from ages eighteen to ninety-six years, the oldest and youngest groups of men were less likely to consider

some behaviors as sex (Sanders, Hill, Brandon, Yarber, William, Graham, Cynthia, Crosby, Richard, and Milhausen, 2010).

Adolescence is considered the phase of dramatic physiological changes and social-role development (Crooks & Baur, 2005). Sexual behavior and role expectations vary from culture to culture. For example, Western societies classify the ages between twelve and twenty as the transition stage. According to Crooks & Baur (2005), by cross-cultural standards, adolescence in our society is rather extended; for instance, adult roles are assumed at a much earlier age. Puberty denotes as the period of physical changes in early adolescence and the hypothalamus plays a key role as it increases the secretions that cause the pituitary gland to release larger amounts of hormones identified as gonadotropins into the blood stream (Crooks & Baur, 2005). As physical change occur, alongside, the changes of voice and body parts occur, such as erection in boys and vaginal lubrication and secretion in girls.

Considering that teenagers and young adults with GTS and TD endure multiple tic symptoms; perhaps having to cope with both, the symptom of GTS and TD and with the typical bodily changes of adolescence, may raise internal conflicts such as self-esteem issues and or external conflicts such as, inadequate bodily movements or inappropriate verbal outbursts. Nevertheless, adolescence is a period of increased sexual exploration. According to Crooks & Baur (2005), sexual self-stimulation and partner-shared stimulation generally increase. Furthermore, although much of teenage sexuality is a progression from childhood behaviors, a new significance is attached to sexual expression (Crooks & Baur, 2005). Essential developments occur during teenage phase

such as, sexual double standard, masturbation, non-coital sex, and development of ongoing relationships, intercourse and homosexuality (Crooks & Baur, 2005).

The Sexual Double Standard

Typically, children are taught gender-role stereotypes since infancy and gender-role differentiation increased during the adolescent phase. Crooks & Baur (2005) mentioned that gender-role expectations for males and females are revealed through the existence of a sexual double standard: different standards of sexual permissiveness for women and men, with most restrictive standards almost always applied to women. For example, it is not uncommon in Hispanic cultures that while male can enjoy sexual permissive behaviors at an early child-hood age, as it is considered cool or macho, in turn women are not allowed to engage in or even discuss about sexual behavior until they get married, if not, it would be considered an offense and embarrassment to the society and family name. Crooks & Baur (2005) stated that sexually emerging teenagers often receive the full brunt of this polarizing belief; therefore, the sexual double standard can impact both male and female sexuality throughout their lives.

Although, in recent years this standard may have diminished some, especially among women in North America (Crooks & Baur, 2005), the sexual double standard may impose further influence in the assertiveness, self-esteem and sexual behavior of both males and females, especially suffering issues due to the constellation of symptoms of GTS and TD. Crooks & Baur (2005) mentioned that potential influences on male may include: being labeled as *sissy*, thus affecting their self-image and self-

esteem; and that on females may include: ambivalence and dilemma between feeling too easy or too un-interesting.

Overall, in one way or another, sexual double standard remains a factor in teenage sexual behavior, which should be considered when treating individuals whose sexual behavior may be threatened or affected by GTS or TD.

Masturbation

Typically, sexual behavior of teenagers and young adults include solo masturbation, partner masturbation, kissing, oral-genital, ani-linguous, anal penetration, and vaginal penetration. Young adults and teenagers reach a stage of strong sexual urge; accordingly, they long for sexual gratification. Thus, among teenage and young adult sexual behaviors, solo masturbation is the most prevalent teenage sexual activity, and reported recent solo masturbation is high at 43% of males and 37% of females (NSSHB, 2010).

Solo masturbation rates increase in males to about two thirds of seventeen year-olds, but stay stable among females of all age groups at about one third (NSSHB, 2010). Crook & Baur (2005) found that a survey of teenage males revealed an average masturbation frequency of five times per week; and that masturbation rates frequency among females were notably lower for age groups. Nonetheless, in view that generally women seem more private to reveal about standards regarding sexual behavior, perhaps this differentiation rate between genders may be questionable.

Masturbation poses as an essential avenue for sexual expression during adolescence. Crooks & Baur (2005) considers that besides always providing an always

available outlet for sexual tension, self-stimulation is an excellent way to learn about one's own body and its sexual potential.

Non-coital Sexual Expressions and Sexual Intercourse

Non-coital sex refers to erotic physical contact that can include kissing, holding, touching, manual stimulation, or oral-genital stimulation-but no coitus; petting, hooking-up, making out and messing around are other expressions for non-coital sex (Crooks & Baur, 2005).

Rates of recent oral sex are relatively low among fourteen year-olds (4.3% female partners for young men and 6.6% male partners for young women), but increase with age (NSSHB, 2010). The incidence of oral sex has risen dramatically. A number of surveys have shown that the incidence of oral-genital stimulation among teenagers has risen to a level two or three times higher than the rates reported in the Kinsey studies (Crooks & Baur, 2005).

Step by step sexual engagement in teenagers and young adults usually begins with holding hands. According to Crooks & Baur (2005), holding hands to kissing and genital stimulation can progress with emotional intimacy. Indeed, emotional intimacy plays an essential role in sexual behavior among couples. Thus, if an individual with GTS and TD attempts kissing, making out or genital stimulation, perhaps the severe symptoms of twitching, head jerks back and forth and shoulder shrugs from side to side may interfere with emotional intimacy and sexual behavior. Truthfully, intimacy and the responses of others are two important factors in the lives of teenagers and young adults. Crooks & Baur (2005) mentioned that through such sexual activities is how adolescents learn,

within an interpersonal relationship, about their own and their partner's sexual responses.

Mosher, Chandra, & Jones (2005), stated that between the ages of fifteen and seventeen, about thirteen percent of males and eleven percent of females had had heterosexual oral sex but not vaginal intercourse; between ages eighteen thru nineteen, about eleven percent of males and nine percent of females had had oral sex but not vaginal intercourse; among men between fifteen and nineteen years, 45.1% reported no partners in the last twelve months, 29.7% reported one partner of the opposite sex in the last twelve months, and 21.8% reported two or more partners of the opposite sex in the previous year. Among women between ages fifteen and nineteen years, 42.9% reported no partners in the last twelve months, 30.5% reported one partner of the opposite sex in the last twelve months, and 16.8% reported two or more partners of the opposite sex in the previous year (Mosher, Chandra, & Jones, 2005).

Ongoing Sexual Relationships

Mosher, Chandra, & Jones(2005) reported that men between fifteen and nineteen, 2.4% reported having had same-sex sexual contact in the previous twelve months, and 4.5% reported having had same-sex contact in their lifetime; whereas, among women between age fifteen and nineteen, 7.7% reported having had same-sex sexual contact in the previous twelve months (Mosher, Chandra, & Jones, 2005).

The extent literature and data consistently suggests that during the teenage and young adult's phase there is heightened interest and engagement in sexual behavior. According to Crooks & Baur (2005), romantic interest in the other sex and curiosity

about sexual matters are typically high during the childhood stage of development; moreover, Cooks & Baur (2005) mentioned that adolescent sexual expression is currently more likely to take place within the context of an ongoing relationship than it was during Kinsey's time. Accordingly, Cooks & Baur (2005) confirmed that a significant increase in the number of both young women and young men who experience intercourse by age nineteen has increased in the last decades.

Considering sexual behavior among teenagers and young adults, it appears that most individuals engage in partnered sexual behavior. More than half the participants in the 2010 national sex survey ages eighteen thru twenty-four indicated that their most recent sexual partner was a casual or dating partner. For all other age groups, the majority of study participants indicated that their most recent sexual partner was a relationship partner (NSSHB, 2010).

As partnered sexual behavior includes touching, kissing and penetration, concurrently, touching, kissing and penetration employ neurological and muscle engagement. Considering the constellation of GTS and TD symptomatology, sexual behavior such as touching, rubbing, kissing, and penetration may be disrupted by symptoms of GTS and TD such as twitches, or hands, arms and shoulder, neck and head jerkiness. In given situation, such symptoms may interfere with sexual activity, which may cause partner emotional withdrawal. Consequently, problems may rise due to fear of recurrence. Crooks & Baur (2005) stated that when sexual activity includes an extreme fear of sex and a compelling desire to avoid sexual situations, it is considered sexual aversion disorder. Accordingly, teenagers and young adults may undergo self-

esteem difficulties; hindering, refraining and preventing their freedom to engage in sexual activities and or sexual relationships, with either same sex or opposite sex.

Beyond the cultural expectations and influences, sexual behavior challenges may originate from psychological factors. GTS and TD are neurological disorders that affect individuals' emotional and psychological well-being. Crooks & Baur (2005) highlighted upon the term performance anxiety, which indicated that an individual may avoid sexual activity to protect himself/herself from embarrassment or a sense of failure. For this reason, it may be speculated that sexual behavior in teenagers and young adults can be influenced by the development of the *self* such as, self-esteem, self-awareness, and self-concept, which all pose an essential aspect of teenage and young adults' development through life.

Table 1 displays an analysis with participants ranging from eighteen to ninety-six years, according to Sanders et al. (2010), the oldest and youngest groups of men were less likely to consider some behaviors as sex.

| Percentage of Americans Performing Certain Sexual Behaviors in the Past Year (N=5865) | | | | | | | | | | | | | | | | | | | | |
|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-------|
| Sexual Behaviors | Age Groups | | | | | | | | | | | | | | | | | | | |
| | 14-15 | | 16-17 | | 18-19 | | 20-24 | | 25-29 | | 30-39 | | 40-49 | | 50-59 | | 60-69 | | 70+ | |
| | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women | Men | Women |
| Masturbated Alone | 62% | 40% | 75% | 45% | 81% | 60% | 83% | 64% | 84% | 72% | 80% | 63% | 76% | 65% | 72% | 54% | 61% | 47% | 46% | 33% |
| Masturbated with Partner | 5% | 8% | 16% | 19% | 42% | 36% | 44% | 36% | 49% | 48% | 45% | 43% | 38% | 35% | 28% | 18% | 17% | 13% | 13% | 5% |
| Received Oral from Women | 12% | 1% | 31% | 5% | 54% | 4% | 63% | 9% | 77% | 3% | 78% | 5% | 62% | 2% | 49% | 1% | 38% | 1% | 19% | 2% |
| Received Oral from Men | 1% | 10% | 3% | 24% | 6% | 58% | 6% | 70% | 5% | 72% | 6% | 59% | 6% | 52% | 8% | 34% | 3% | 25% | 2% | 8% |
| Gave Oral to Women | 8% | 2% | 18% | 7% | 51% | 2% | 55% | 9% | 74% | 3% | 69% | 4% | 57% | 3% | 44% | 1% | 34% | 1% | 24% | 2% |
| Gave Oral to Men | 1% | 12% | 2% | 22% | 4% | 59% | 7% | 74% | 5% | 76% | 5% | 59% | 7% | 53% | 8% | 36% | 3% | 23% | 3% | 7% |
| Vaginal Intercourse | 9% | 11% | 30% | 30% | 53% | 62% | 63% | 80% | 86% | 87% | 85% | 74% | 74% | 70% | 58% | 51% | 54% | 42% | 43% | 22% |
| Received Penis in Anus | 1% | 4% | 1% | 5% | 4% | 18% | 5% | 23% | 4% | 21% | 3% | 22% | 4% | 12% | 5% | 6% | 1% | 4% | 2% | 1% |
| Inserted Penis into Anus | 3% | | 6% | | 6% | | 11% | | 27% | | 24% | | 21% | | 11% | | 6% | | 2% | |

Table 1

Table 2 represents teenagers ages fourteen through seventeen. According to the NSSHB (2010):

“at any given point in time, most U.S. adolescents are not engaging in partnered sexual behavior. While 40% of seventeen year-old males reported vaginal intercourse in the past year, only 27% reported the same in the past ninety days. (NSSHB, 2010) Solo masturbation is the most prevalent teenage sexual activity, and reported recent solo masturbation is high at 43% of males and 37% of females. (NSSHB, 2010) Solo masturbation rates increase in males to about two thirds of seventeen year olds, but stay stable among females of all age groups at about one third. (NSSHB, 2010) Rates of recent oral sex are relatively low among fourteen year olds (4.3% female partners for young men and 6.6% male partners for young women), but increase with age (NSSHB, 2010)”.

| SEXUAL ACTIVITY (%) | Past 90 Days | | Past Year | | Lifetime | |
|-------------------------------|--------------|---------|-----------|---------|----------|---------|
| Ages 14 -17 | Males | Females | Males | Females | Males | Females |
| Solo Masturbation | 57.8 | 35.9 | 68.6 | 42.6 | 73.8 | 48.1 |
| Partnered Masturbation | 7.9 | 10.8 | 10.9 | 13.8 | 13.4 | 15.0 |
| Gave Oral Sex | 11.7 | 15.2 | 13.2 | 18.5 | 14.4 | 21.7 |
| Received Oral Sex | 17.3 | 13.2 | 21.8 | 17.2 | 24.3 | 18.5 |
| Vaginal Intercourse | 13.7 | 16.0 | 20.2 | 20.8 | 20.5 | 22.6 |
| Anal Intercourse | 1.7 | 2.3 | 4.4 | 4.3 | 4.7 | 5.5 |
| Any partnered sexual behavior | 22.1 | 22.8 | 27.4 | 28.3 | 27.6 | 29.2 |

Table 2

SUMMARY

Considering the historical perspectives and origin of GTS and TD, valuable research studies have overtime contributed to the description and understanding of GTS and TD. The symptoms of GTS and TD have clinically lead researchers to speculate numerous etiological theories about the disorders. Current researchers continue to uncover possible effective interventions to ameliorate symptoms that impact the behavior of individuals suffering GTS and TD. Although, major efforts to define the disorder and address its symptoms have been conducted, plentiful research is yet needed in order to uncover the influence of GTS and TD on the sexual behavior of teenagers and young adults at a vulnerable stage of their lives.

Foremost, considering the life stage of development in teenagers and young adults, literature suggests that self-concept and self-esteem play an essential role in teenagers and individuals' behavior. If individuals' self and academic or emotional behavior suffers the impact of the constellation of symptoms of GTS and TD, it may be speculated that the dynamics of GTS and TD may perhaps pose an influential factor on a teenager's or young adult's sexual behavior. Consequently, impairments regarding sexual expression and sexual behavior may interfere with sexual relationships.

CHAPTER III

RESEARCH METHODOLOGY

Research Instrumentations and Data Collection Methods

This study implemented a mixed-method design, applying a combination of quantitative and qualitative methodologies; i.e., a survey questionnaire and a case study. This study represents a non-experimental design as it relied on interpretations, observations and interactions to reach a conclusion. Thus, a hypothesis was not proposed, a control group did not exist, nor was a pilot group conducted. The purpose of implementing a survey and a case study as research instrumentation was to gather and attain information from two different perspectives; from the perspective of a young teenager and from the perspective of young adults.

The quantitative instrument that was used was a self-administered online survey questionnaire. According to Leedy (2010), quantitative measures are useful to measure behavior, attitude, or other phenomenon of interest. This instrument was used to gather anonymous descriptive quantitative data through ten multiple-choice questions to measure the attitude and sexual behavior of teenagers and young adults affected by a phenomenon, GTS and TD. All anonymous and voluntary participants of this research study had been diagnosed with GTS or TD. The survey study was designed to examine the sexual behavior and experience of teenagers and young adults suffering GTS and TD; and to understand the probability of the influence of GTS and TD on sexual behavior.

As a newly diagnosed population, individuals suffering GTS and TD, generally feel stigmatized, as mentioned by Walkup (2006). As such, this stigmatized population may hold privacy issues and feel reluctance towards disclosing personal sexual matters. This survey was self-generated to probe in an anonymous venue, intimate questions about the sexual behavior and sexual performance of individuals with GTS and TD.

The sample size was twenty-five anonymous participants. The participants of the online survey ranged from ages nine-teen through thirty-nine. All twenty-five subjects were members of the Tourette's Syndrome Association (TSA) that accessed the invitation from the TSA page on the social media page Facebook®. Gender classification consisted of seventeen male and eight females, although their identities were unknown, as their voluntary participation was anonymous. Prior to responding to the online surveys, an invitation letter describing the rationale of this study was provided to them.

As current researchers (e.g., Reddy et al., 2011) have considered that quantitative methodologies are valuable; it was assumed that the survey instrument approach may have posed as a substantial method to attain relevant data for future research studies.

Quantitative approach utilizes measurable data to enable research conclusions; yet, its methodological procedures may hold the shortcoming of not explaining the underlying rationale of the data. For example, in a yes-no questionnaire, a response is limited to a yes-no alternative; accordingly, excludes

the opportunity for a why or how interpretation. Given this factor, Leedy (2010) highlighted that in quantitative approaches, people's behaviors or attitudes are easily simplified or quantified; nonetheless, the valuable information that clarifies people's responses may vanish within the quantitative process. In a similar view, as cited by Slanley (2001), Salmon (1984) mentioned that positivist explanations might speak to the what questions regarding empirical events, however they fail to address questions regarding the why or the how of events occurred.

For this reason, a qualitative instrument was implemented for the accomplishment of this study. In a qualitative research study, a researcher may readily access, describe, and understand a phenomenon that is unquantifiable and difficult to measure (Aisbett, 2006). Furthermore, a qualitative approach enables the description of the lived experience and the meanings expressed by the individuals that experience it (Sadala & Adorno, 2002).

This study used a single case study; in which open-ended question interviews, and observations were conducted, and medical documents, video tapes and school records were gathered. The purpose of implementing case study instrumentation was to understand a complex social phenomenon within a real life context. This case study involved the exploration of a contemporary phenomenon that is misunderstood. Thus, the sample that was selected qualified as an inherent lens, which enabled an in-depth look at the phenomenon within a natural setting. Creswell (2007) highlighted that the longer researchers get to know the participants, the more they know what they know from firsthand information.

The sample participant's age was six years old at the beginning of field study observations and investigations; and is currently fourteen. The subject of the case study was from Orlando, Florida. To honor his confidentiality he was identified in this study as Solomon. Upon meeting with the participant of the case study, a Survey Consent form was reviewed and signed, in order to discuss the purpose of the research study and to ensure confidentiality. The qualitative data were analyzed and coded to reflect themes that best described the subject's experience.

The Quantitative Instrument and Data Collection Methods

The online survey was self-generated and hosted via Survey Monkey^R ; *www.surveymonkey.com*. Survey Monkey^R also enabled data analysis. An invitation letter to participate in the study was presented on the Tourette 's Syndrome Association (TSA) page, a gateway to access qualifying subjects and respondent-driven sampling, on the social media Facebook. The letter included the purpose of the study and asserted confidentiality to the participants, as the questionnaire was prepared to ensure confidentiality through anonymous participation. The direct link to the survey questionnaire was: <https://www.surveymonkey.com/s/Q5JHFNR>. Twenty-five sample participants anonymously responded to the ten-question survey; although, the invitation letter and link was re-posted three times within a period of four months, from May 2014 through August, 2014. The sample size was considered small, yet not trivial. This sample size has been considered appropriate for a preliminary small-scale study of a comparable population. Similarly, Chang et al, (2011), conducted a pilot

study that surveyed thirty pregnant young women who responded to a self-report mail-in survey in regards to their use of drugs and alcohol prior to pregnancy. Thus, as this study is a mixed study with a Case Study, this study can be considered equitable to similar studies. The questionnaire included ten questions and each question was concise and presented four alternatives. The questionnaire posed questions regarding demographics, such as age, gender, sexual behavior and the influence of GTS and TD on sexual behavior. The questionnaire's approximate time span of completion was five minutes. A qualitative analysis was drawn from a summary of the collected responses to the items on the questionnaire. The questionnaire explored to uncover the probability of a causality of a phenomenon upon the sexual behavior of the subjects.

Fig. 1.2 depicts the survey questions and the responses per questions.

Population and Sample

The sample selection for the survey questionnaire was gathered through a snowball sampling technique on the social media Facebook. According to Johnson & Sabin, (2010), snowballing or respondent-driven sampling are appealing to subjects who otherwise would be difficult to reach. The strategy labeled as snowball or chain sampling enables the identification of resource individuals that know potential cases which are information-rich for a research study (Creswell, 2007). From this stance, this research study gathered voluntary members of the Tourette 's Syndrome Association (TSA) to participate in the research investigation. Twenty-five participants accessed the online invitation letter of participation on the Facebook social media, specifically, the TSA page

and anonymously volunteered to respond to a ten-question online survey. As Facebook represents a large social networking site, factors of accessibility and affordability justified the use of Facebook as a viable venue to recruit participants via a snowball approach. The participants' age range was between nine-teen and thirty-nine. Seventeen participants were male and eight participants were female. Marital status was not assessed, yet all participants' responses suggested they had engaged in sexual behavior and sexual relationships. Religion, nationality, residency, level of education and level of income were omitted for simplicity purposes. All responses were gathered and summarized via www.surveymonkey.com.

The Qualitative Instrument and Data Collection Procedures

This study also implemented a Case Study as the instrument of choice to acquire data based on naturalistic observations. The case study unfolded upon interviews with in-depth open-ended questions and observations.

Creswell (2007) highlighted that data collection draws upon documents, archival records, interviews, direct observations, participant-observations, and physical artifacts. Given that qualitative methods use the discovery of new information based upon participants' experience of the world, a Case Study posed the most appropriate methodology to explore a phenomenon in the life of an individual for eight years. Hoepfl (1997) agreed that qualitative methods are appropriate in situations where quantitative methods cannot describe or interpret a situation. Accordingly, the qualitative research methods consisted on the gathering of responses and information attained from formal and informal interviews, field notes, video recordings and observation methods in a qualitative stance. Patton (2002) mentioned that three kinds of qualitative data include interviews, observations, and documents (p.4). According to Patton (2002), interviews entail open-ended questions and probes, which elicit people's feelings, experiences, opinions, and knowledge; moreover, observations include fieldwork of activities, behaviors, and observable human experiences.

Crooks & Baur (2005) define a Case Study as a non-experimental research method that examines either a single subject or a small group of subjects individually and in depth. Therefore, this research investigation implemented a

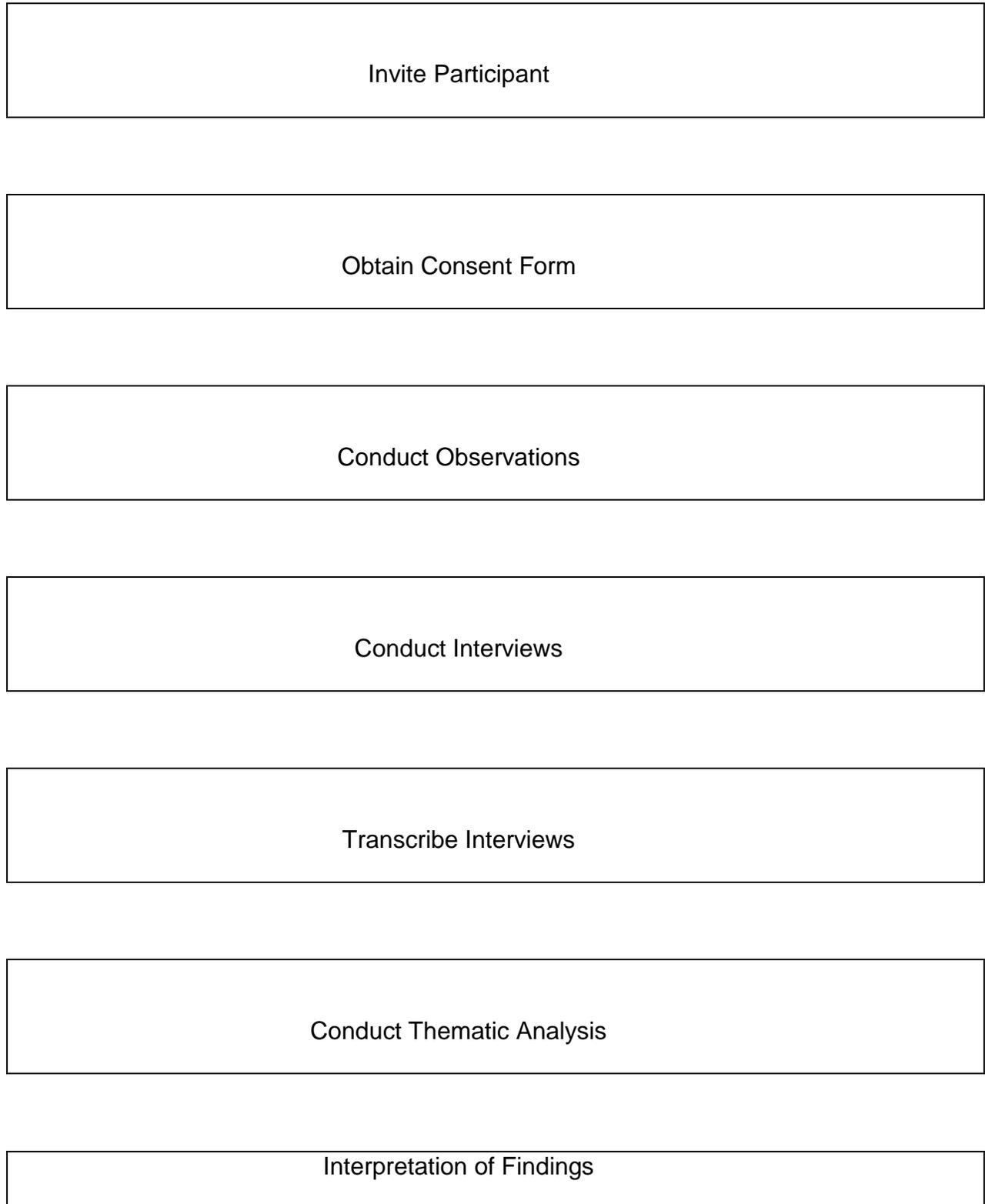
Single Subject Case Study design with a sample of one young teenager within a period of eight years. The observations documented on the single subject initiated on August 2007 through May 2014. The bounded system included settings, such as Altamonte Springs, FL., Apopka, FL., Orlando, FL., Puerto Rico, and Charleston, South Carolina. Situations, incidents and events surrounding the sample provided an in-depth understanding of the phenomenon, GTS and TD. Similarly, teacher reports, medical records, artifacts, informal and formal interviews and video recordings were documented and support the description of the bounded case; the subject and the phenomenon.

Internal validity embraces the cohesion between qualitative methodologies and the description of the phenomenon; as consistency among the strategies, design, and the data collection procedures along a framework of a detailed accurate description of the phenomenon ensure internal validity. Data analysis included highlighting significant phrases, developing meanings, and clustering them into themes; which explains the term triangulation. On the other hand, the strategies implemented within this learner's qualitative research do not support external validity, as qualitative research makes no claims to generalizability.

As reliability searches consistency among what is presented and what is reported, this qualitative research study does not purpose to deliver an experimental design nor claim replicability. Nevertheless, a strategy that ensures reliability within this research study was addressed through careful documentation and procedures utilizing video recordings and transcribing of data.

Credibility of this case study lies upon the development of a qualitative inquiry which pursues rigorous methods that include field work unraveled under phenomenological structure. Qualitative methods included naturalistic inquiry, purposive sampling, in-depth open-ended questions and finally, the training and experience of this researcher within the field of mental health and psychology. The utility factors within this research study ensured that the data is accurate, valid, and applicable to a general population.

Table 2: Flowchart of Procedures Diagram for the Case Study



A Single Case Sample

The approach that was implemented to recruit the sample for this study was a personally-handed invitation letter that included the description of the study, the purpose of the research study, the significance of the sample's participation, a review of the protocols, and an assertion of confidentiality.

The rationale for the selection of the subject consisted on convenience factors; proximity and accessibility to the individual. Given that the subject was a student that attended the school where the researcher worked at, the opportunity to have access to the subject's daily natural setting became a gateway to conduct observations, interviews, and note-taking, which all enabled information-rich data for a period of five years of the eight years of observations and exploration. The focus and interest on this single case was its exceptional qualities to enable understanding of the phenomenon to be explored; which seven years ago was seldom recognized or understood.

The subject is currently a fourteen year old male; yet, was observed for a period of eight years, since he was six. The subject is of Hispanic descent to Puerto Rican parents and grandparents, though is a non-Spanish speaker. He was born in Orlando, Florida. He currently attends middle school in a private school setting in Altamonte Springs. He shows interest in topics of sexual behavior; yet, apparently has not yet engaged in partnered sexual behavior. The subject agreed to participate as long as confidentiality was honored, thus, he completed and signed the Consent Form alongside the researcher.

CHAPTER IV

RESEARCH FINDINGS AND DATA ANALYSIS

As this study intended to explore about “How does GTS and TD impact the sexual behavior of teenagers and young adults?” via a mixed research method, the present chapter illustrates the demographics of the survey questionnaire along with the analysis of the data; moreover, the description of the case study alongside the interpretation and analysis of the data. The purpose of implementing a survey questionnaire and a case study as research instrumentation was to gather and attain information from two different perspectives; from the perspective of a young teenager and from the perspective of a young adult.

An illustration of several figures will describe the results of both, the quantitative data and the qualitative data, alongside corresponding findings.

Demographics of the Survey Questionnaire

Fig. 1.1 presents the age range of the twenty-five participants; eight were female and seventeen were male. Three participants (12.50 %) were between the age ranges of nineteen thru twenty-one, twelve participants (50%) were between the age range of 22-29, and nine participants (37.5%) were between the age range of thirty thru thirty-nine, there was zero response from participants between the age range of sixteen through eighteen, and one participant chose not to respond to this question. Ethnicity, religion and sexual preference were not assessed, given that such variables were not considered a decisive factor to the research inquiry.

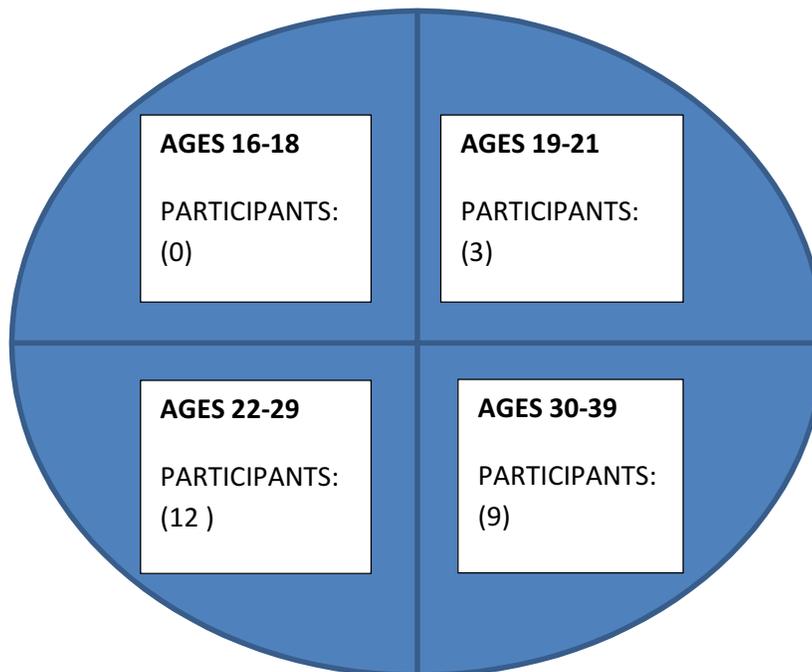


Figure 1.2 corresponds to the summary of the survey questionnaire responses and reflects the responses of twenty-five anonymous participants to ten survey questions of multiple choices.

ONLINE QUESTIONNAIRE RESPONSES

The following online questionnaire was presented on the TSA Facebook page. Twenty-five volunteer participants anonymously responded to the following ten survey questions.

Q1: Which category below includes your age?

- Answered: 24
- Skipped: 1

| Answer Choices | Responses |
|----------------|--------------|
| 16-18 | 0.00% 0 |
| 19-21 | 12.50% 3 |
| 22-29 | 50.00% 12 |
| 30-39 | 37.50% 9 |
| Total | 24 |

Q2: What is your gender?

- Answered: 25
- Skipped: 0

| Answer Choices | Responses |
|----------------|--------------|
| Female | 32.00% 8 |
| Male | 68.00% 17 |
| Total | 25 |

Q3: At what age did you engage in sex for the first time?

- Answered: 25
- Skipped: 0

| Answer Choices | Responses |
|----------------|--------------|
| 16-18 | 32.00% 8 |
| 19-21 | 40.00% 10 |
| 22-29 | 20.00% 5 |
| 30-39 | 8.00% 2 |
| Total | 25 |

Q4: How recent have you engaged in sex?

- Answered: 25
- Skipped: 0

| Answer Choices | Responses |
|--------------------|--------------|
| several days ago | 52.00% 13 |
| several weeks ago | 16.00% 4 |
| several months ago | 8.00% 2 |
| several years ago | 24.00% 6 |
| Total | 25 |

Q5: How frequent do you engage in sexual intercourse with a partner?

- Answered: 25
- Skipped: 0

| Answer Choices | Responses |
|----------------|-------------|
| Daily | 16.00% 4 |
| Weekly | 36.00% 9 |
| Monthly | 24.00% 6 |
| Never | 24.00% 6 |
| Total | 25 |

Q6: Does TS symptoms interfere with kissing or caressing your partner?

- Answered: 25
- Skipped: 0

| Answer Choices | Responses |
|----------------|--------------|
| Yes | 28.00% 7 |
| No | 72.00% 18 |
| Total | 25 |

Q7: Does TS symptoms interfere with sexual intercourse with your partner?

- Answered: 25
- Skipped: 0

| Answer Choices | Responses |
|----------------|--------------|
| Yes | 20.00% 5 |
| No | 80.00% 20 |
| Total | 25 |

Q8: Does TS symptoms make you bite, yell, scratch, elbow, punch, bang, or exert pain on your partner during sexual intercourse?

- Answered: 25
- Skipped: 0

| Answer Choices | Responses |
|----------------|--------------|
| Yes | 8.00% 2 |
| Sometimes | 32.00% 8 |
| No | 60.00% 15 |
| Total | 25 |

Q9: Does TS affect your erection or orgasm during sexual intercourse?

- Answered: 25
- Skipped: 0

| Answer Choices | Responses |
|----------------|--------------|
| Yes | 4.00% 1 |
| Somewhat | 28.00% 7 |
| No | 68.00% 17 |
| Total | 25 |

Q10: On a scale from 1-4, how would you rate the impact of TS symptoms on your sex life?

- Answered: 25
- Skipped: 0

| Answer Choices | Responses |
|-------------------|--------------|
| 1 - No Impact | 40.00% 10 |
| 2 - Little Impact | 28.00% 7 |
| 3 - Some Impact | 16.00% 4 |
| 4 - Huge Impact | 16.00% 4 |
| Total | 25 |

The responses to **question one**, as described above, reflect that seventeen males, and eight females responded; yet one participant did not respond. We do not know how many were male and female per age group. All twenty-five participants responded to **question two**, (68%) of the respondents were male and (32%) of the respondents were female. Next, **question three** showed that (32%) of the respondents indicated that their first sexual experience occurred between the ages of sixteen and eighteen. 40% of the respondents indicated that it was between the ages of nineteen and twenty-one; 28% of the participants indicated that it was between the ages of twenty-two and twenty-nine; and only 8.0% participants indicated that it was between the ages of thirty and thirty-nine. In regards to **question four**, their most recent sexual activity, thirteen participants (52%) indicated several days ago; four (16%) indicated several weeks ago, two (8%) indicated several months ago; and six (24%) indicated several years ago. **Question five** inquired about their frequency in sexual behavior with a partner; four participants (16%) responded that they engaged daily in sex; nine participants (36%) stated that they engaged weekly; six (24%) stated that they engaged in sexual activity monthly; and six (24%) indicated that they never engage in sexual activity with a partner. **Question six** probed if GTS interfered with non-coital sexual activity and seven participants (28%) responded yes; whereas, eighteen participants (72%) responded no. **Question seven** explored if GTS interfered with sexual intercourse and five participants (20%) responded yes; while twenty participants (80%) responded no. **Question eight** queried if GTS made them bite, pinch, punch and act violently or aggressive

during sex and two participants (8%) responded yes; eight (32%) responded sometimes; and fifteen (60%) responded no. **Question nine** surveyed whether GTS affected their orgasm or erection and one participant (4%) responded yes; seven participants (28%) responded somewhat; and seven participants (68%) responded no. Finally, **question ten** investigated the level of impact of GTS on sexual activity and ten participants (40%) stated no impact; seven (28%) indicated little impact; four (16%) indicated some impact; and four (16%) indicated a huge impact.

Research Findings and Analysis of the Case Study

According to Creswell (2007), Stake (1995) indicated that in a single instrumental case study, the researcher focuses on an issue or concern, and then selects one bounded case to illustrate this issue. Therefore, this study implemented a Single Instrumental Case Study which focuses on GTS and TD through one subject to illustrate the case. Qualitative data was attained in a natural setting with; which supported the understanding of the phenomenon Gilles de la Tourette Syndrome and Tic Disorders and its influence on the *self* and on *sexual behavior*. Data analysis was gathered from the following sources; open-ended questions, observations, formal interviews, school and clinical documents, and video recordings during different events and on different occasions throughout the subject's childhood stage and teenage stage.

Fig. 2.1 displays the open-ended questions that were generated for the formal interviews.

A. Case Study Interview Questions that regard GTS and TD

Topic: How Does GTS and TD Influence Sexual Behavior?

1. At what age were you aware that you had GTS and TD?
2. What is GTS?
3. How did you feel about living with GTS and TD symptoms day by day?
4. How did others treat you day by day?
5. What worried you the most at that age about the disorder?
6. How did you perceive yourself as a child with GTS and TD?
7. How do you perceive yourself now as a teenager with GTS and TD?
8. How has GTS/TD affected your life?
9. How has it affected your academic performance?

10. How has it affected your mood?
11. How has it affected your health?
12. Why did you feel bullied as a child? What did your classmates say about your tics?
13. What arrangements had to be made in your classroom because of your tics?
14. What does GTS/TD prevent you to do?

B. Questions that regard the influence of GTS or TD on sexual behavior

15. Currently, if you would like to kiss a girl, how do you think GTS/TD symptoms may interfere?
16. At what age did you feel that your body parts felt pleasure?
17. What kind of sexual pleasure have you enjoyed in your teenage stage?
18. How do you feel about kissing a girl, knowing that you have GTS/TD?
19. Are you fearful that tics will affect, kissing, touching, intercourse?
20. How do you think you will perform on your first partnered sexual experience?

Data Analysis of the Case Study Interview Questions

The first set of questions; one through fourteen focused on the disorder GTS and TD. The nature of these first set of questions involved understanding the subject's feelings about GTS and TD, and his feelings and thoughts about the responses of others towards his tics. These first set of questions, were recently informally assessed during the summer of 2014. Accordingly, the second set of questions, explored his insights and feelings about his tic symptoms and his feelings towards his tics in regards to his sexual behavior, interests and experiences. To protect his identity, he was named Solomon (*pseudonym*).

A. Case Study Interview Questions that regard GTS and TD

Solomon indicated that he was truly aware about his TD when he was nine years old. He affirmed that he learned about TD via the information provided by his mother, through the literature such as, TSA articles about TD that his mother provided, a book titled: "In Front of the Class", and the movie "In Front of the Class" also provided by his mother. When asked about his feelings about living with GTS and TD symptoms day by day, he usually responded "not bad". However, when asked about how others treated him day by day, he replied: "some good; some days disrespectful!" According to question five, Solomon stated that "he worried that he'd be different around others". When asked about what he thought about himself as a child with GTS and TD, he responded, "I was careless, but as I grow, my concerns grow." Also, when inquired about what he thought about himself as a teenager, he responded that he wondered about

some concerns regarding his future and his character, but that overall he thought that his concerns were normal within his age. From this question, an additional informal question arose; “What kind of concern?” and he replied, “Concerns regarding my future and anger issues, I don’t want to let anger get in my way”. When asked about how GTS or TD affected his social life, he indicated: “as a child I barely had a good life; classmates always made fun of me, didn’t want me around, and people always stared at me and were cruel and offensive to the point that I wanted to be in heaven”; “now, as a teenager, it isn’t as bad, I have so many friends and everybody loves me, including boys, girls and teachers“. When Solomon was asked about how GTS and TD affected his academic performance, he replied that “it was bad in elementary school; now it’s gotten better”. Solomon was asked, how has GTS or TD affected his mood and he replied that GTS did not affect his mood; but how others treated him did, as it made him feel frustrated and sad as a child. When asked how GTS and TD affected his health, he replied: “I feel frequent headaches, neck-aches and terrible back pains, especially when my head and neck jerks back and forth so quickly and suddenly and I can’t control it. “ He continued, “But, I don’t feel dizziness, tremors or numbness or I don’t feel that I’m contagious.” The researcher regressed on the topic of bullying and asked him about why did he feel bullied as a child and what did his classmates say about his tics, and he replied: “ In school, kids looked at me and imitated my tics behind the teachers’ back, they complained about my noises in the classroom, when all I did was humming, they accused me falsely of hitting, talking and bothering others and

then laughed at me if I was punished, they ignored me and never like to be around me; and I felt like I never belonged there”. When asked about what arrangements had to be made in his classrooms because of his tics, he replied that none; then he uttered, “Except during some test days, when I had to be placed in another classroom with another teacher.” Finally, when inquired about what things GTS and TD prevented him to do, he responded: “nothing, I can do everything a normal child does.”

B. Questions that regard the influence of GTS or TD on sexual behavior

The subject, Solomon, was subsequently presented the following prompt: if he would like to kiss a girl, how did he think the symptoms of GTS or TD may interfere; he replied “I don’t think it will interfere at all, I would feel great, if it’s with someone that feels love, I don’t think I would hurt someone when kissing that person.” He added: “I would love to try it, and I can’t wait for that moment.” When asked about the age that his body began to feel sexual pleasure, he preferred not to answer the question. Afterwards, he was asked about the kind or nature of sexual pleasure that he enjoyed in his teenage stage, and he replied, “Just thinking about girls, and masturbating meanwhile, I think girls are the most beautiful thing God has created.” Moreover, when asked how he felt about kissing a girl knowing that he had GTS, and if he thought tics would affect kissing, touching, or intercourse, he replied, “I feel great about the thought of kissing a girl, I hold no fears whatsoever and I’d hold no regrets either! I don’t think GTS will affect me at all; all I know is that I will go for it and all I know is that

I will have all so many offspring.” Finally, when asked how he thought he would perform on his first partnered-sexual experience, he responded, “GREAT!

Data Analysis of the Observations

For a period of seven years, observations were conducted on the male subject, whom at the time of the first formal observation, was seven years old in 2007. Informal observations were documented during the subject’s early stages of life on different events, incidents and occasions during his first grade through fifth grade of elementary school.

The Case of Solomon

Observations began to take place in Solomon’s elementary school while he was in first grade. He attended his neighborhood school in a rural area of Apopka. The display of sudden and unusual bodily movements on Solomon’s upper part of the body such as, shoulders, neck and head, generated the inquiry, “What triggered the sudden-rapid movements?” Followed by the initial observation, notes of the observation were documented daily; three hundred and sixty-five days for seven years. After a period of six months, the exacerbations of tics increased in Solomon day by day, and in different ways. Subsequently, a consultation with his pediatrician confirmed the clinical diagnosis of TD; specifically GTS. The following observations have taken place interchangeably, day by day in the life of Solomon.

- **Observations in the Elementary School Setting in Apopka, FL.**

While attending first grade, Solomon increasingly showed facial twitching, shoulder shrugging, and neck jolting back and forth, head jolting back and forth at times and side to side at other times while standing in a class line, or sitting at his work desk, while playing in the playground, while singing in the school choir, or while eating at the lunchroom. The subject expressed phrases such as, "Ouch, I can't stop this, I can't control this!" Symptoms varied almost weekly. Unconsciously, symptoms interrupted his ability to write neatly, draw neatly and work quietly. Examples of written material such as class work or drawings, showed his inability to connect dot to dot lines in a straight fashion, trace over the line, or write legibly. Furthermore, Solomon showed difficulty using scissors, sitting on his bottoms, and remaining quiet without humming. However, Solomon showed a high intelligence performance in testing, a high capability to memorize process and learn, and high music; singing and instrumental ability. Through his elementary school journey, as he moved forward each grade level, so did increased struggles with each grade level. Report card grades declined from all grade A's to a combination of grade A's through D's. During fourth grade, Solomon was recommended to be placed on a 504 plan; which signified that the child had to be accommodated during his school years, due to his clinically diagnosed condition. He showed appreciation to his counselor, who helped him individually through state-wide exams. He managed to score well on the

exams and show progress, enough to move on to the next grade. Every afternoon, through all his elementary level school years, he returned with a sad look on his face, teary and not wanting to share the reason. When asked his favorite colors, he replied that they were black, grey and white. He frequently stated, "White, grey and black are beautiful. " All his colorings and worksheets were colored in white, grey and black. Every afternoon, along with his sad face, he returned from class and uttered, "no one likes me, no one likes to be my friend, I wish I was in heaven."

Humming: "Hmhmhmhummm" in a rhythmic way became his tool of management mechanism, as school policy was that he had to remain seated in his classroom chair for one or two hours without speaking. In addition, a focus on keeping his fingers busy either with tiny pencils, tiny figurines or classroom computer games seemed to soothe the anxiety symptoms that showed via his nail biting habits. As his age progressed from six through eleven, he showed less self-confidence, and low self-esteem, as he avoided being around his classmates, and as he expressed, "everyone makes fun of me, thinks I'm weird and the teachers don't believe me." Frequent phrases during the elementary school years were, "Nobody wants to be my friend", "I wish they would believe me that I can't control this", "no one cares", "the kids are all mean", "I can't take it anymore", "I wish I was in heaven". Frequent utterances while completing classwork were, "on sharks" and "peanut butter". On his last day at elementary school, Solomon's fifth grade class dance became the perfect

picture that portrayed all about him and his feelings, representative of his self-esteem, during all his years in elementary school. The Fifth Grade Dance floor was perfectly decorated for pre-teens, lights were dimmed and the D.J. music was loud enough to engage every student on the dance floor. While a group of approximately one hundred and fifty students gathered at the center of the dance floor to dance; Solomon, the boy with the tics, enjoyed his own dance, between rhythmic steps and twitches. He stood isolated on a corner beside the D.J.'s equipment all day. Ticks made him twitch back and forth, side to side, yet did not prevent him from dancing, smiling and enjoying that last day of school, his preferred way; isolated and standing right by the D.J.

- **Observations in the Home Environment in Apopka, Fl.**

In the comfort of his home, the researcher observed a happier face, as Solomon was surrounded by two loving sisters and a loving mother. Solomon showed the same tics symptoms, regardless of the comfort he showed in his home environment. Hums were continuous during dinner or breakfast time, hums were present during computer time or hand-held times, during bath time and during family conversations time. Nonetheless, as tics varied interchangeably, so did uttered phrases. During his fifth grade, Solomon began to utter more than usual the phrase, "I love you, I love you, I love you". The utterance of the lovely phrase became increasingly overwhelming at times, as he uttered the phrase, as

counted one day, more than fifty times one day in one weekend. With Solomon's growth, grew the intolerance as well at times, from his two older high-school sisters. Inappropriate interruptions and undeliberate disruptive behaviors such as, tapping loud, laughing out loud, and interruption of conversations became grounds to initiate treatment interventions. He was ten years old. That was the time that behavior training, such as Relaxation Therapy along with Cognitive Behavior Therapy began alongside psychotropic medications such as, *Stratera*. Currently, as an eighth grader, Solomon is an only child in his home. He enjoys playtime in his room, listening to music and relaxing in the home with his immediate family. He has been off the psychotropic medications, *Stratera*, since he was in seventh grade, and he exhibits excellent control over verbal outbursts and interruptions.

- **Observations in the Church Environment in Orlando, Fl.**

Throughout his childhood, Solomon showed extreme elation towards church activities. "The pastor likes me", "Everybody here is my friend", "I love coming to this place", were phrases uttered every Sunday or every Wednesday night throughout his childhood phase. He showed joy in participating in bible classes, as he was allowed to express himself and speak; as opposed to be controlled to remain in total silence for one hour, as it was in the school setting. Solomon showed empowerment enough to show assertiveness in the church environment, as opposed to the school

environment. He sang like a star and he deliberated bible stories, reflections and preaching like a preacher throughout his childhood years, on stage and in front of an audience of more than one thousand. Similar to the home environment, regardless of the joy and comfort with the environment, the tic symptoms did not go away. On the Mother's Day of May 8th, 2011, at the age of ten, Solomon delivered a forty minute encouragement message dedicated to mothers, in front of an audience of over 1,000 members. He titled his message, "Everything Will Be Alright". He used an interpreter to translate his message to Spanish. He acted out parts of his message and maintained a connection with the audience, which kept all eyes in that audience engaged and fixed on him. Throughout his preaching, however, twitches were clearly observable, eyes, nose and shoulders and neck movements, from the beginning until the end. Nonetheless, the constellation of symptoms of GTS and TD did not interfere with his cognition, ability to memorize, speak or connect effectively with an audience, as it was observed in a video posted on the social media on Youtube®. In his frequent invitations to speak to children and adults, he addressed his encouragement to focus on "strengths" not on "weaknesses". Likewise, he showed that he acknowledged his disorder by stating: "GTS and TD are a neurological disorder, but it does not affect fun times, friendship, or intelligence." One humorous side he always showed as a child in front of an audience was when he stated: "GTS and

TD are neither contagious, so you can shake my hand and hug me anytime.”

- **Observations in the Basketball Court in RDV Orlando, FL.**

Solomon showed minimal interest in playing baseball, especially showed the inability to stand and wait out in the field patiently. Although, he showed a great capability when playing basketball, as he showed great energy and skills to actively engage. Yet, the older he grew, the more *self-conscious* he became. He showed fear, shame, and shyness. He began to express, “I am no good, and I don’t want to belong there anymore.”

Concurrently, the coach would yell at him, sit him out often, until he was totally ignored during the last games. Consequently, exacerbated ongoing tic attacks emerged and that was the end of his basketball experiences as a child. Again, frustrated and sad, he expressed, “I’m a loser, I feel stupid, and I don’t want to go back.”

- **Observations in Vacation Settings such as Charleston, S.C. and Puerto Rico**

As Solomon transitioned from elementary school to middle school, the opportunity to travel, visit relatives and relax enabled a happier demeanor in him.. Expressions such as” yeah!”, “alright baby!”, and “Let’s do it” became a frequent utterance in his vocabulary. Activities such as, fishing, swimming and hiking along family that treasured him, supported him and loved him, instilled empowerment in him. He showed positive attitudes

such as, positive talks about himself, about his looks and his body growth. He showed confidence to travel independently and to associate with friends and family openly, regardless of the tics.

- **Observations in Middle School as a Teenager in Alt. Springs, Fl.**

A new school, not a public school, became Solomon's preferred environment. A private Christian setting became his oasis. He smiled every morning on his way to school and every afternoon after school; he continued to utter, "I love you" one hundred times a day, yet he added with joy every afternoon thru evening, "How was your day?" Similarly, to the church environment he was allowed to sing and participate. Neither tics nor the past elementary school bullying memories got in his way. He developed eloquence in public speaking throughout middle school. He won second place in the "Tropicana Public Speaking Contest", He expressed daily, "wow, I loved my day", "I love my friends", "everyone loves me here even if I have tics", "I should have been here before." Solomon started to share interest on girls, as he began to share much information such as, "you know, I like a girl, she's so pretty; in and out; I love her smile, I can't stop thinking of her; we text, we talk a lot about our families". During the age of thirteen, Solomon's twitching has diminished to only nose, eyes and mouth twitches. Yet, they change intermittently. Recently, the humming is under control, in which he shows management of the urge to hum, by humming only in the privacy of his bedroom.

Current academic grades shows a significant soar to the point of become part of the A-B Honor Roll. Solomon displays self-confidence as he relates with his classmates and friends, when he texts girls on his cell-phone, and when he calls friends to schedule play-dates. As a teenager, he is part of the Altamonte Christian School (ACS) school soccer team in Altamonte Springs, FL. Currently; he shows no complaints and frequently expresses and communicates about his goals and dreams. Finally, different from childhood years, his favorite colors are no longer white, grey or black; instead his favorite color is lime green.

Data Analysis of the Conversations and Interviews

Conversations and formal and informal interviews involved Solomon's teachers, from first grade through seventh grade, counselors, pediatricians, and mother. Overtime, from Solomon's childhood through his adolescent stage, informal conversations and or interviews unfolded upon the nature of the following questions.

1. Tell me about Solomon's.
2. What specific behaviors seem unusually disruptive?
3. What have you learned about GTS or TD?
4. What symptoms can you identify of GTS or TD?
5. How can you accommodate or tolerate the child's behavior?

6. What is your plan to address the behaviors of Solomon?
7. How do you feel towards Solomon's behaviors?
8. How do you feel towards GTS and TD?
9. How are you willing to cope with Solomon's disorder?
10. How do you correlate GTS and Intelligence factor in Solomon?

- **Formal and Informal Interviews with Teachers**

Solomon went through the hands of more than six teachers, including Physical Education coaches and teachers of the electives courses during the elementary school years. When asked to tell me about Solomon, a common underlying phrase among all teachers was: "Solomon is very verbal". Five out of six homeroom teachers also stated: "Solomon is a thinker". When asked about the specific behaviors that were disruptive, two teachers, the third and fourth grade teacher, indicated that the humming in class did not bother them, but disrupted the students. The fourth grade teacher interjected: "He's just a happy child in his own world!" When asked what they knew about GTS and TD, not one teacher was informed or exact about the disorder. When asked about what GTS or TD symptoms could they identify, not one teacher reported to know about the symptoms of GTS or TD, until it was explained to them about it. Thereafter, every teacher showed an "*aha*" expression, indicating: "Oh that explains his twitching." When inquired about, how they can

accommodate the child's behavior, one teacher out of six, indicated that they would have a designated setting in the classroom, where he could work and hum. When asked what was their plan to address the behaviors of Solomon, five out of six teachers implemented behavior plans consistently; however, one out of six teachers and one electives teacher showed reluctance to understand or accommodate for Solomon's classroom behavior, such as humming or outbursts of the verbal utterances: "peanut butter", "oh sharks". When asked about their feelings towards Solomon's behavior, two teachers showed and expressed reluctance to understand his behavior and intolerance towards his behavior. Nonetheless, the majority of the teachers showed support, care and effort to work around the challenges in order to understand his case and help him accomplish his academic goals. Likewise, the majority of the teachers showed admiration towards his strengths such as, his politeness, intelligence and kind spirit, rather than focus on his weaknesses.

- **Formal and Informal Interview with His Counselors**

Two counselors addressed Solomon's needs during his elementary school years. Solomon was tested for the gifted program, as he was referred by his kindergarten teacher. According to the results, his score was off by two points, and did not qualify. Although the counselors shared that the test was administered by an intern counselor and they recommended a second testing administration for the following year. One counselor

showed additional support as she sat by Solomon during the Florida Comprehensive Exam Tests (FCAT) in fourth and fifth grade, to provide the accommodation that he was entitled to (additional time and frequent break times), through the 504 plan.

The counselors showed understanding towards Solomon's behavior. In addition, they continuously shared about his personality through informal conversations and formal interviews. Phrases that they commonly shared included: "Solomon is a highly cognitive thinker", "Solomon is such a polite and pleasant young man" and "Solomon has a good heart".

- **Conversations with His Pediatrician**

With a smile on his face, Dr. Rick (pseudonym) clinically assessed Solomon's reports, behaviors and symptoms at the age of six. Dr. Rick confirmed a disorder of GTS and TD. With a bright smile, he always addressed Solomon positively. He encouraged Solomon to play sports, to swim, to engage socially with other children. He understood Solomon's social challenges, yet always indicated: "It will get better", "He will grow out of it", "He will be fine", "and He's a smart kid". Dr. Rick did not highly recommend psychotropic treatments for Solomon throughout his childhood. Yet, when tics began to interfere with his mood, with his grades and body pain such as neck ache and headaches, Dr. Rick recommended and prescribed *Stratera*, which at that time Solomon was eleven years old.

Afterwards, at the age of twelve and thirteen, Solomon indicated to Dr. Rick: “I feel great!”, “I’m happy”, and “I’m going to be a tall guy!” Dr. Rick repeatedly reinforced to Solomon: “You are going to be a great man.” “You are going to do great in life”.

- **Conversations with His Mother**

Solomon showed attachment to his mother as a child. A father was not in the picture, as biological father had been arrested, when he was four years old, for domestic violence. At the age of ten, a step-father appeared in his life. Solomon usually asserted to his step-father: “you are a great man Mr. G” (pseudonym). Solomon showed affection and love towards his mother, Mrs. C (pseudonym). He usually asked Mrs. C the following questions: “Do you love me?”, “Do you think I’m good looking?”, “Will you always love me?”, and “Do my tics bother you?” Mother showed 100% positive response and reinforcement such as: “you are a mother’s dream come true” and “you are a special gift from heaven.” Solomon always inquired: “Do you always say that because I am your son?” Mother always replied, “No, I always say these words because you are truly special, loving, adorable and unique, just as others comment about you.” Mother always reiterated that no matter the flaws, she would always love him and be there for him. During the teenage stage of his life, the nature of Solomon’s questions shifted more towards his self. Solomon inquired: “Do you think girls will like me?” “Do you think girls would like to kiss me?” “Do

you think that I'll ever get married?" "Do you honestly think I can make a woman happy?" The teenage phase evoked a shift in interest questions towards relationships and body image. Solomon began to ask his mother: "Do you think it's normal that my penis stretches for no reasons in the mornings?" "Why does this happen to me?" "Is it because of GTS?" Mother initiated teachable moments within the conversations, to teach Solomon about sexual changes, sexual behaviors, and sexual relationships. Throughout his teenage phase, in the last three years, Solomon showed body growth and increased maturity; yet, never ceased to hug and kiss his mother at least ten times a day. Currently, Solomon continues to repeatedly utter to his mother and step-father: "I love you" more than twenty times a day.

Data Analysis of Official Records and Documents

Records and documents were an added source of information to the present qualitative study. Samples of official records and documents included report cards, clinical notes, school conference notes, Solomon's art-work, and Solomon's written journals, classwork and letters.

- **Report Cards**

Report cards were considered significant to this study due to the reports on the academic and behavioral performance of the student, from kindergarten through seventh grade. Report cards from Kindergarten through Second grade reflected Outstanding to Satisfactory (A-B) academic performance and satisfactory behavioral performance with the exception to a section related with verbal self-control and listening and following directions skills. Report cards from third through fifth grade began to show a slight decline in Solomon's academic performance; which reflected A's, B's and C's and a consistent behavioral concern regarding verbal self-control and listening and following directions skills. Upon Solomon's transition to ACS middle school, reports cards for sixth grade reflected an outstanding academic performance (A-B Honor Roll); yet, verbal self-control continued to pose a concern at the beginning of sixth grade. As Solomon became motivated and interested in extra-curriculum activities, so did his effort to manage his tics and verbal outbursts. During seventh and eighth grade, Solomon transitioned into assuming self-

responsibility to care for himself, his clothing, his assignments, his duties and chores all independently. At the time he endured a family crisis, while he was in Seventh grade, related with his mother's battle with breast cancer. Nonetheless, report card grades only reflected an increased improvement in behavior, and a consistent outstanding academic performance.

- **Clinical Notes**

Clinical notes included records, diagnosis, and follow-ups of Solomon's neurological diagnosis, GTS and TD. Diagnosis included the codes for GTS and TD, the behavioral observations and symptoms, and the medical observations of the neurologist. Follow-up notes included the physicians' observations on Solomon's behavior and symptoms, which were consistent.

- **School Conference Reports**

Conference notes from the Elementary school showed descriptions of Solomon's behaviors, accomplishments and recommendations. Notes such as: "Please continue to work on verbal self-control and following direction" were common in all school conference notes. One school report indicated: "Please allow Solomon to self-express at home enough so that he can remain quiet in class".

- **Solomon's Art and Work**

Classwork such as, math worksheets, reading comprehension worksheets and other assignments showed Solomon's outstanding ability to comprehend; yet, deficient ability to write, trace, cut or draw neatly at the expected grade level. Furthermore, art work, drawings, paintings and crafts seemed poorly crafted most of the time, although he hummed through the processes. When given the option, most of his colors that he employed in class work sheets were white, grey and black through elementary school. He usually drew pictures of three figures, his father, his mother and himself under a black sky. However, as a teenager, Solomon has showed the precaution to express himself through writing and art with improved dedication. He holds two 100-page portfolio's each of admirable visual artwork that he draws. He shows preference in drawing caricature and his favorite character to draw is Sonic.

- **Solomon's Letters**

As a child, Solomon wrote letters about his feelings of sadness and his desire to be in heaven. He frequently described his love towards his mother. Overtime, as a teenager, Solomon has shifted from letters of sadness and hopelessness to reflections of encouragement, strengths, and hope. He shows writings of dreams that he sometimes has and writes them down and interprets them; then, he develops a reflective message and shares them with teachers, family and friends.

- **Audiovisual Materials: Photographs and Videotapes**

Pictures and videotapes of Solomon during school activities, playtime, reading time, bed time and on stage activities throughout his life reflect evidence of facial twitches. Nevertheless, pictures also reflect Solomon's courage to overcome GTS and TD, and enjoy childhood activities regardless of his challenges lived day by day. Similarly, videotapes of Solomon's performances at school, church, basketball games, and family events evidence his struggles and challenges with the tics; yet, on the other side evidences his self-empowerment in all he did. Numerous recordings can be found at Youtube®.

The data collection represented an extensive drawing on multiple sources of information such as, interviews, observations, documents and video recordings. Through the presented findings, a chronology of events, from day by day experiences of one subject, unfolded in order to attain insights of the phenomenon in exploration; GTS and TD. Key issues appear meaningful in light of the research inquiry: "How do GTS and TD influence the sexual behavior of teenagers and young adults at a significant stage of their lives?" The following presentation will describe a direct interpretation of significant instances that were relevant to the issue and the research inquiry.

Thematic Synthesis and Categories of Themes in the Case Study

During the process of gathering the data, new themes emerged. Themes involving the development of the *self* extended in depth; which guided the development of this study. For instance, as Solomon dealt with the tics, he showed *self-consciousness* and showed low *self-esteem* issues several instances throughout his childhood phase and teenage phase. First, when as a child he stated: “Everyone makes fun of me”, “Nobody wants to be my friend”, “They think I’m weird”, Then, when as a teenager, he asked questions such as, “Do you think I’m good looking?” “Do you think girls will like me?”, “Do you think I’ll ever get married?”, “Will you always love me?” Therefore, the aforementioned instances lead to explore the Psychosocial Stages Theory, in which one of the postulates mention that the *self* is crucial in the teenage phase of life. In addition, stemming from the teacher interviews, another theme that emerged and appeared significant to this study was *perception of others*. The majority of Solomon’s teachers showed difficulty understanding, accepting, and supporting the behaviors related with the symptoms of GTS and TD, as not one teacher was aware at the beginning of the definition and implications of GTS and TD, Furthermore, as Solomon continuously stated “I love you”, “Do you love me?”, “Will you always love me?”, “Nobody likes me”, another theme that emerged was the *need for love and acceptance*. The Hierarchy of needs shows that the needs of individuals include biological needs, but the most essential for a well-developed and functional individual is the *need for love*. Overall, the identified key issues revolved around the *self* and *needs*.

Focus on the key issues is intended to understand the complexity of the case. According to Yin (2003), one analytic strategy would be to identify issues within the case and look for common themes that transcend the case. The following themes showed a pattern and emerged via the following incidents.

- Apprehension

The subject expressed *worry* on numerous times during his elementary school years; as he indicated, “I worry to be different around others”. This thematic issue remained constant throughout his teenage stage, as when asked about how he felt about GTS and TD as a teenager, he replied that he had concerns regarding growth.

- Perception of Others

When asked about worries, he also worried about what others thought about him; thus, this lead on to another theme, *perception*, that may be consider significant for further investigation.

- Fear

The subject showed fear numerous times at the basketball games. Given the setting, it appeared that a tough, loud and insensitive coach (a new one) instilled fear, lack of confidence, and provoked exacerbation of tics. Consequently, it seemed as if tics increased, so did his fear to play; however, it was observed that as yelling and pushing increased, so did his fear to play increase along with the symptoms of tics.

- Self-Control

During elementary school, when Solomon sat in class, he was almost daily stigmatized due to his movements and facial expressions. He seemed to want to try to stop it; yet showed frustration when he sometimes shouted: “Ouch!” “I wish I could stop this!” “I try, but I can’t control it!” The *will* to want to control his rapid-racing body movements and verbal outbursts showed impairment.

- “Heaven Ideation”

The levels of frustration from the inability to “do something about it” prompted frequent outbursts such as, “I wish I was in heaven!” Perhaps, the underlying thoughts of death existed unconsciously as a solution, in the mind of the child during that stage.

- Low Self-Esteem

Phrases such as: “Nobody likes me”, “Nobody wants to be my friend”, “They make fun and imitate my twitches”, and “Teachers don’t believe me” evidenced Solomon’s sense of frustration and rejection as others looked down upon him. He seldom showed feelings of low self-esteem, throughout the teenage stage, as he asked: “Do you think I’m good looking?”, “Do you think girls will like me?” and “Will you always love me?”

- Empowerment

At age fourteen, Solomon started to show assertiveness through singing more often on stage, preaching on stage, connecting with adults in churches, thereon, communicating with new friends in middle school, texting with girlfriends and guys in middle school, setting up play dates, wanting to kiss a girl sometime soon, asking about sexual behavior and using verbal expression such as, “They like me, “My friends love me”, I feel great”, and “Yeah, let’s do it”.

Naturalistic Generalizations: The Interpretive Phase of the Case Study

This research study focused on the influences of a complex phenomenon, GTS and TD, on behavior; particularly to be able to understand its influence on sexual behavior. Interestingly, as the study explored the subject's feelings and thoughts about GTS and the responses of others; during the process of investigation, thematic patterns that were common across the case, posed as a significant source of learning about the issue of this case.

The category of themes that emerged such as, apprehension, fear, perception of others, self-control, "heaven ideation", and low self-esteem, appeared to be more prevalent and frequent during the childhood stage and within the elementary school environment. On a different stance, the category of empowerment showed common during the childhood stage but only among his church, home and vacation environment, as he showed powerful ability to memorize, speak in public, preach, sing and connect with others. Interestingly, the element of empowerment remained constant throughout his teenage stage in all the settings of his life environment, including his middle school.

Accordingly, themes of apprehensions, fears, perception of others, self-control, heaven ideation, and low self-esteem faded as the subject transitioned into middle school and teenage years. Concurrently, the subject showed behaviors that evidenced a healthier self-esteem and self-confidence, a positive and enlightened mood, interest in sexual experiences and relationships, and eager towards growth and learning.

CHAPTER V

IMPLICATIONS, LIMITATIONS, and CONCLUSIONS OF THE STUDY

IMPLICATIONS

According to the results of the quantitative methodology, data suggests that the male group showed a greater interest and or concern on responding to the survey than women did. Another supposition is that men showed more courage than women did to respond to a sexual related questionnaire, as *more than half of males than women were participants* of this study. It seems as a *first sexual experience* occurred most regularly between the ages of nineteen and twenty-one; although the specific gender in this category is unknown. Interestingly, data showed that 32% of the respondents indicated that their first sexual experience occurred between the ages of sixteen and eighteen. However, participants between the ages of sixteen and eighteen did not respond to this questionnaire. A possible explanation may revolve towards the fear of minors disclosing information about their sexual experiences to adults; thus, suggesting that although sexual behavior occurs between these ages; minors seldom disclose about it. Another noteworthy data shows that 8% of the participants indicated that their very first sexual experience was between the ages of thirty and thirty-nine. A possible conjecture may be that the sexual lives of adults living with GTS and TD may be highly impaired by the severity of the symptoms.

Data concerning the *frequency of sexual behavior* with a partner or intercourse suggested that the majority, 36%, of subjects engaged in sex weekly; followed by 24% that engage in sex either monthly or never. Although, when compared subjects that engage in weekly sex (36%) to subjects that rarely or never engage in sex altogether (48%), a majority of participants suffering GTS or TD seldom engage in sex. Thus, an assumption may be that individuals living with GTS or TD, rarely engage in sexual behavior with a partner. When queried a yes-no question; whether GTS or TD interfered with non-coital sexual activity, data showed that 28% responded yes; whereas, 72% responded no. Data lacks gender classification; what amount of yes respondents were male or female and what amount of no respondents were male or female. Presumably, as non-coital sexual experiences include kissing, touching and all sexual activity that excludes sexual intercourse, subjects' non-coital sexual behavior may not be as impacted by GTS or TD. As explored *if GTS interfered with sexual intercourse*, 20% responded yes and 80% replied no. A possible assumption may be that GTS or TD uncommonly interferes with sexual intercourse; similarly as in non-coital sexual behavior. Nonetheless, gender or age classification is unknown. Data concerning the *effect of GTS on sexual aggression*, such as; bite, pinch, punch and act violently or aggressive, showed that during sex 8% responded yes; 32% responded *sometimes*; and 60% responded no. Another supposition from this study indicates that the majority of individuals living with GTS or TD do not engage in violent behavior during sexual intercourse or sexual activity. An assumption involving whether *GTS affects orgasm or erection* is that GTS or TD

uncommonly influences orgasm or erection; accordingly, almost never affects orgasm or erection, as 4% of the samples responded *yes*; 28% of the samples responded *somewhat*; and 68% of the samples responded *no*.

When queried *the level of impact of GTS on sexual activity*, data showed that a majority of the sample, 68%, indicated little to no impact; whereas, 32% indicated *some impact to huge impact*. According to the data, it appears that the constellation of symptoms of GTS and TD seldom impact sexual behavior. Therefore, in view of the data revealed in this study, the impact of GTS and TD on the sexual behavior of teenagers and young adults appears to be nominal.

Data on this quantitative study displayed a discrepancy. Possible grounds for incongruity is that on one side data suggested that individuals living with GTS or TD rarely engage in sexual behavior with a partner; on the other hand, five out of ten inquiries suggested that GTS or TD minimally influences the sexual behavior or sexual activity in teenagers and young adults.

On the other hand, implications involving the qualitative approach via the case study draw on several naturalistic generalizations. A particular point of interest isolates the support system and the self-esteem as significant factors in this study. The support system that surrounded the subject suffering a complex phenomenon during elementary school compared to the support system that surrounded the subject still suffering the phenomenon throughout middle school (such as, new friends at a new school that showed acceptance as opposed to bullying and teasing, that showed love and support from new teachers as

opposed to the “reluctance” from several teachers in the elementary school) seemingly posed an influential factor towards self-esteem, towards management of tics behavior and towards an interest in the subject to experience sexual encounters, sexual experiences and sexual relationships.

The complex phenomenon under exploration, GTS and TD, which represent the instrumental case, appeared to remain constant in the daily life of the subject, during his childhood stage and teenage stage. The phenomenon appeared to influence the subject’s behavior and affect his social relationships and academic performance during his childhood stage. However, the phenomenon did not impair his cognitive ability to memorize, speak and perform, when in a different environment other than the one where he was stigmatized and misunderstood.

Nevertheless, the phenomenon and its symptoms appeared to ameliorate in the life of the subject during the teenage stage. Considering that factors of apprehension, fear, perception of others, “heaven ideations”, and low self-esteem were no longer present.

LIMITATIONS

Several factors influenced a limited generalizability; thus, the research findings may not be generalized to a particular population.

The sample size may be considered small and the low response rate may not be considered representative of a larger population. Only twenty-five participants voluntarily responded to the study.

This study entailed a purposive sample of individuals. The samples were self-referred to the survey through the Tourette's Syndrome Association page on the social media Facebook®. Nonetheless, by posting the survey on the specific Tourette's Syndrome Association (TSA) page related with GTS and TD, it was assumed that the survey drew a purposive sample of subjects that met the criteria under investigation.

Accordingly, the nature of the study focused specifically on young teenagers and young adults that were suffering GTS and TD. This sample may not be representative of the target population, as the respondents were anonymous, and numerous other individuals, regardless of being the patients or caregivers, are also members of the TSA page on Facebook®. Moreover, another limitation consists on the risk of veracity of the anonymous participants, as some may pose fictitiously or may not treat the study seriously.

Since this study was designed to elicit anonymous participation, follow-up with the respondents is not possible; thus, the quantitative data are not verifiable.

For this reason, it cannot be confirmed if the subjects were who they indicated they were or if they answered truthfully.

Conclusion

Perhaps the research findings may not be generalized to a particular population. However, a practical application of this study suggested that the majority of young adults affected by GTS or TD asserted a positive self-actualization and self-esteem in their sexual behavior; thus, suggesting that their sexual behavior was rarely affected by GTS or TD. Findings suggested that sexual behavior did not appear to be frequent; yet, a majority of the responses supposed that GTS or TD did not impact sexual behavior among teenagers or young adults.

On the other hand, data analysis gathered from the participant of the qualitative case study suggested that symptoms of GTS and TD seemed to affect self-confidence and self-esteem, similarly, affecting behavior and the confidence to engage in sexual behavior. According to Vogel-Scibilia, et al. (2009), the elements of empowerment and optimism are crucial; furthermore for sexual behavior. Through the lens of the subject in the qualitative study, it was understood that beyond the influence of GTS and TD on the behavior or sexual behavior of individuals, the factors of “perception and responses of others” posed a greater influence on the self-esteem and behavior of a teenager.

Given that GTS and TD did not appear to restrict the cognitive, intellectual or artistic aspect of a teenager at a vulnerable stage of his life, then a generalized assumption may be that perceptions of the *self* may affect sexual behavior rather than the symptoms of GTS or TD itself. Altogether, a learning lesson, as coined

by Lincoln & Guba (1985) may draw that GTS and TD may not affect sexual behavior or self-esteem, as much as the perception and responses of others towards GTS and TD will.

As previously stated, individuals with developmental and neurological disorders may be able to accomplish goals at an individual pace, contingent on a support system; likewise, teenagers and young adults with GTS and TD need a support system; especially to address issues of sexuality and self-esteem. Kassin, et al., (2009) stated that the *need for belonging* and the need for affiliation explain the *attraction* and close relationships in human beings. Kassin et al., (2009) emphasized on Leary's (2001) and William's et al., (2002) view that the need to belong runs deep, which is why people are distressed when neglected, rejected, excluded, ostracized, or stigmatized by others, all forms of "*social death*". This theory clearly deems applicable to the case of Salomon; in which during his childhood stage, he experienced nearly "*social death*" while attending elementary school. For this reason, the elements of *motivation, needs,* and the *self*, which are included in both the Psychosocial Theory and Hierarchy of Needs Theory, may pose significant to understand and treat issues of sexual behavior among teenagers and young adults diagnosed with GTS and TD.

Considering the increasing identification of teenagers and young adults with GTS and TD in modern age, and considering that the research scrutiny in regards to the impact of GTS or TD on sexual behavior remains a gap in the existing field, future replication of the study is strongly recommended. Whether GTS or TD poses as a predictor or risk factor on sexual behavior as it does on

academic performance and overall academic behavior, it is uncertain, thus replication of this research study is highly proposed.

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www.tsa-usa.org/aPeople/LivingWithTS/LivingTS.htm

APPENDIX A – ONLINE SURVEY RESEARCH PARTICIPATION LETTER

You are kindly invited to participate in a research study that we are conducting with the American Academy of Clinical Sexologists. Voluntary participants may complete a 5 minute set of online questionnaires concerning the impact of Tic Disorders on intimacy and sexual relationships in the lives of young adults. Your participation in response to this survey is very important and will help to contribute to a growing body of research regarding the impact of Tourette’s syndrome in the sexual lives of adults. As a part of this study, we are looking for your individual responses to one questionnaire instrument. Your input is an integral part of this research.

This set of questionnaires should take you no more than 5 minutes to complete. Please click the link below to go to the survey website (or copy and paste the survey link into your internet browser).

Follow this link to the Survey:

<https://www.surveymonkey.com/s/Q5JHFNR>

Or copy and paste the URL below into your internet browser:

[Click here to take survey](https://www.surveymonkey.com/s/QZW57NP)

Your participation in this survey is voluntary and all of your responses will remain anonymous. No personally identifiable information will be associated with your responses in any reposts of this data. Should you have any questions or comments, please feel free to contact me at claribel_perez@scps.k12.fl.us or 407-617-6944. This study has been reviewed and approved by the American Academy of Clinical Sexologists Review Board, and if you have any questions about your rights as a participant in this study, you may contact them by telephone at 407-645-1641.

We appreciate your time and consideration in completing the survey. It is only through the help of participants like you that we can provide information to help guide the development of research regarding the impact of Tourette’s syndrome on the lives of young adults.

Kindly,
Claribel Perez
Research Primary Investigator
American Academy of Clinical Sexologists, Inc.
3203 Lawton Road, Suite 170, Orlando, Fl. 32803

APPENDIX B – CASE STUDY PARTICIPATION CONSENT FORM

You are kindly invited to participate in a research study that we are conducting with the American Academy of Clinical Sexologists. The purpose of this study is to explore the impact of Tic Disorders on intimacy and sexual relationships in the lives of teenagers and young adults. Your participation in response to this survey is very important and will help to contribute to a growing body of research regarding the impact of Tourette’s syndrome in the sexual lives of adults. As a part of this study, we are looking for your individual participation.

Your participation in this survey is voluntary and all of your responses will remain anonymous. No personally identifiable information will be associated with your responses in any reposts of this data. Should you have any questions or comments, please feel free to contact me at claribel_perez@scps.k12.fl.us or 407-617-6944. This study has been reviewed and approved by the American Academy of Clinical Sexologists Review Board, and if you have any questions about your rights as a participant in this study, you may contact them by telephone at 407-645-1641.

Your consent to participate relieves the primary research investigator and the American Academy of Clinical Sexologists, Inc. from any and all future liabilities.

We appreciate your time and consideration in completing the survey. It is only through the help of participants like you that we can provide information to help guide the development of research regarding the impact of Tourette’s syndrome on the lives of young adults.

Kindly,
Claribel Perez
Research Primary Investigator
American Academy of Clinical Sexologists, Inc.
3203 Lawton Road, Suite 170, Orlando, Fl. 32803

Attestation of Consent to Participate

I, _____, voluntarily agree to participate in this research study, understanding the purpose of the study and the conditions in which I agree to participate. I understand that my name will remain confidential and that the information used will be for scientific investigative purposes only.

Research Participant Signature

Primary Research Investigator

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