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Digital Citizenship and Adolescents Online Risk Behaviors

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2023

Abstract

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MA, Walden University, 2007

BS, Andrews University, 2001

Dissertation Submitted in Partial Fulfillment

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Educational Technology and Design

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Abstract

Adolescents now have greater access to digital resources and spaces and are more likely to engage in risky online behaviors for which they are unprepared. The study's purpose was to examine the little-understood online behaviors of adolescents to better educate and prepare them for safe online interactions. The study was framed by two theories: digital citizenship— the ability to engage in digital environments competently and responsibly, and problem behavior theory—an understanding of what encourages problem behavior. This research asked if there was a relationship between adolescents' digital citizenship and online risk behaviors using a quantitative correlational design. Teachers from three private secondary schools that did not offer digital citizenship education collected data using the Five-Factor Digital Citizenship Scale to measure digital citizenship and the Problematic and Risky Internet Use Screening Scale to measure online risk behaviors from a sample size of N = 597 students. After data were shared with the researcher, they were analyzed using Pearson's *r* correlation coefficient and descriptive statistics to describe the scores' mean, standard deviation, and variance. Results revealed no correlation between digital citizenship and adolescents' online risk behaviors, although adolescents reported moderate knowledge or application of digital citizenship and online risk behavior related activities. Further research is needed to examine other variables. Stakeholders can use the results to inform their decisions about appropriate online choices, home and curriculum programs, tools, and policies to advance social change in the digital community.

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Dedication

I dedicate this study to my mother, Rudel Liverpool, who devoted her life to helping me succeed. Her inspiration and encouragement kept me on course. I am forever indebted to her many sacrifices and prayers that made this journey a reality. Although she is not here to witness this stage of my progress, I dedicate it to her memory. To my husband, Ian, and two children, Imani and Shai, whose patience, personal sacrifice, and constant beckoning motivated tenacity.

I also dedicate it to the service of God for the knowledge, wisdom, and understanding God has liberally given to me and those who assisted me.

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Chapter 1: Introduction to the Study

Introduction

This study was focused on the relationship between digital citizenship (DC) and adolescents' online risk behaviors (ORBs). DC enables accessibility and full use of digital environments so individuals can make intelligent choices as users interact in the environment (Commonsense Education, 2022). DC is the consistent development of norms for appropriate, empowered, and responsible use of technology. DC is boosted by integrating knowledge, strategies, resources, learning experiences, and personnel. Therefore, DC aims to guide and help orchestrate positive digital experiences, help children be aware of their actions and their effect on others, and help them interact in ways that will promote the collective good (Ribble, 2015). Online risks are intended or inadvertent experiences that may increase the probability of harm to users (Staksrud & Livingston, 2009). ORBs are any behaviors that contradict social norms in an online space and have the potential for an undesirable outcome by going against formally enacted rules or informally violating social norms (Kim & Han, 2020). ORBs are actions or situations that increase opportunities threatening adolescents' safety and well-being as they interact in a virtual environment. In this study, I examined the relationship between these two variables.

Examining adolescents' DC and ORB is critical because the safety and well-being of adolescents may be at risk as they interact in digital environments. Researchers have recognized the need for research on DC as teachers and parents express concern that an increase in digital activities and access to digital society increases risks to the safety and

well-being of adolescents (Buchholz et al., 2020; Gámez-Guadix et al., 2018). There is an increased need for digital access by children and adolescents, thus, increased need for adolescents to possess skills and knowledge to use devices effectively, participate in digital activities, and make wise choices as they interact in cyberspace. Parents, teachers, and policymakers have highlighted their concerns about the heightened need to access digital environments for learning and the digital divide this need revealed. Moreover, society is expressing the need for students to be cyber savvy (Dawkins, 2020). Understanding the relationship between DC and ORB will provide some direction for future prevention and intervention programs for all stakeholders.

The need for online safety and well-being for children and adolescents is also the attention of educators and policymakers in Trinidad and Tobago and the wider Caribbean and Latin American region. The United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2020) in Latin America acknowledged the increasing dangers of youths as they gain access to digital technologies and environments. The education ministries in the region concluded that DC is necessary to treat the myriad of ills that children and youth face in the 21st century. Consequently, in conjunction with Microsoft, UNESCO embarked on a project on a "digital citizenship programme in Latin America, so digital citizenship becomes an educational public policy for all countries in the region" (p. 6). This is a notable and needed effort. Educators and policymakers can glean needed insights from research on DC and ORB issues to validate their policy.

DC in Trinidad and Tobago is a new concept that the Ministry of Education (MoE) still needs to explore and develop in schools. In 2018, Digicel Foundation (2020),

recognizing the need for digital literacy, embarked on a DC program to train secondary school students to navigate a digital-driven world. Presently, the MoE's goal is to ensure that students access technology for virtual schooling. The plan for virtual access includes training teachers in virtual instruction, computers for education, and the internet for education in collaboration with public and private sectors (Government of the Republic of Trinidad and Tobago, 2021). This plan means that more students will have access to cyberspace. In her speech Breaking barriers: Transitioning beyond the norm to the Caribbean Association of Principals of Secondary Schools, the Minister of Education of Trinidad and Tobago highlighted the need for digital transformation and curriculum reform. The digital transformation includes activities such as teacher training, e-tests, and e-books (Gadsby-Dolly, 2021). The MoE has articulated that establishing a digital ecosystem is one of its 2022 to 2027 goals for digital transformation. The digital ecosystem is a network of resources and people to facilitate connections and interactions valuable to all users. As part of the digital ecosystem, the MoE vows to create a national online open school for the country, accessible to all citizens (MoE, 2022). Despite these initiatives, there are limited initiatives in DC education and studies on DC in Trinidad and Tobago and the wider Caribbean that support DC.

There is a scarcity of literature on the relationship between DC and adolescent ORBs in Trinidad. There is insufficient knowledge to answer the question, is there a relationship between DC and adolescents' ORBs? A study on DC and ORB will be a valuable asset to the 2022 to 2027 efforts purported by the MoE and may help the MoE and UNESCO to make decisions based on empirical evidence.

Not only is the study of DC and adolescents' ORBs a focus of educators and policymakers, but it is also vital for adolescents to make informed choices. As members of digital society, adolescents should undertake developmental tasks such as accepting and assuming the rights and responsibilities of individuals and taking an active role in society (Kim & Han, 2020). Understanding the relationship between DC and adolescents' ORBs contributes to the knowledge base of parents and adolescents to make informed decisions about their children's internet use, and adolescents will understand how their behaviors relate to their online actions.

In this chapter, I describe the background, problem statement, purpose of the study, research questions, and hypotheses. I also provide the study's theoretical frameworks, nature, definitions, assumptions, scope and delimitations, limitations, and significance. I provide a general description of the research to create a backdrop for the study.

Background

Over time, more students have access to the internet. Access to digital resources and environments has escalated with the increased need for online learning. Consequently, children and adolescents have ready access to technology (Anderson & Jiang, 2018; Başarmak et al., 2019; Buchholz et al., 2020; Dawkins, 2020). Parents, educators, education policymakers, and the community are concerned about the risks associated with escalating access to the internet. These stakeholders wonder whether schools are prepared to address these risks. In a qualitative document review study, Başarmak et al. (2019) analyzed secondary school curricula to determine the

subdimensions of DC. The researchers found that computer science, democracy, and human rights courses had the highest references. These results reveal that students not enrolled in computer science, democracy, and human rights courses might have little opportunity to learn about DC in schools. This lack makes it more difficult for adolescents to prepare for the risks.

Researchers were prompted to examine the DC issue due to the need expressed by parents, teachers, and society. Kim and Choi (2018) conducted quantitative exploratory and confirmatory factor analyses with 200 preservice and in-service teachers to develop the digital citizenship scale for adolescents perceived by teachers who educate students on DC. The study resulted in a 5-factor DC scale, the SAFE model. Teachers and researchers can use this model to conduct further research on DC for adolescents. Some researchers found this study helpful advancing theirs (see Ahmad et al., 2021; Arredondo Trapero et al., 2020; Davis, 2020; Rahim & Zare, 202; Rodriguez-Perez et al., 2021).

The knowledge of DC also needs to be improved among young adults. In a quantitative descriptive analysis study, Al-Abdullatif and Gameil (2020) surveyed 204 female undergraduate students in the bachelor of education program to investigate students' knowledge and practice of eight of Ribble's (2015) nine elements of DC. Results indicated an insufficient number of undergraduate students knew good DC, even though a significant number of undergraduate students observed eight of the nine elements of DC. Furthermore, the individuals' extent of experience using the internet was not a factor in their knowledge and practice of DC. If young adults older than adolescents with more experience display a lack of DC skills and application of their knowledge, then

adolescents may face the same dilemma. Research that tests the relationship between DC and adolescents' ORB is therefore warranted.

As the safety and well-being of adolescents continue to be concerns, researchers have begun to seek answers to address the concerns. Gámez-Guadix et al. (2016) conducted a quantitative cross-sectional and longitudinal study with 888 adolescents to analyze the cross-sectional and longitudinal relationship between three adolescent ORBs: problematic internet use (PIU), cyberbullying perpetration, and meeting strangers online. The researchers found a cross-sectional and longitudinal relationship between the risky behaviors analyzed. Teachers and parents seeking interventions for ORBs should consider a variety of ORBs instead of treating them singly. DC is one intervention or prevention strategy (Ribble, 2015). However, educators, parents, and policymakers should understand its relationship to adolescents' ORB to help them make positive decisions. This study's results will clarify DC's relationship to adolescents' ORBs.

The search for answers has continued as society sees an increase in attention to online grooming and adolescent sexual solicitation. Two years later, Gámez-Guadix et al. (2018) found that adults online use persuasion strategies of deceit, bribery, and the minor's nonsexual experience as a means of soliciting sex from adolescents ages 12 to 15. Researchers emphasized that adolescents' online grooming and sexual solicitation are an increasing concern that needs intervention, such as understanding the strategies adults use to persuade adolescents to engage in such ORBs. DC can provide a holistic plan for adolescents to understand the nature of the internet, its dangers, users' responsibilities,

and more (Ribble, 2015). This study was conducted to determine if DC is related to adolescents' ORBs.

Researchers are looking for ways to help examine the risks related to internet use by children and adolescents. Vlaanderen et al. (2020) conducted a quantitative experiment with 298 children ages 10 to 12 to examine if an online anti-cyberbullying intervention program increased children's intention to intervene on behalf of a cyberbullied victim. The results showed that children who took the anti-cyberbullying intervention showed a greater intention to intervene on the victim's behalf than those given non-related interventions. The safety and well-being of adolescents of all ages are threatened by adults and peers. Teachers and parents need solutions to these concerns. A study of the relationship between DC and adolescents' ORB will help address the problem.

Problem Statement

The problem that compelled this study was that adolescents engage in risky online behaviors that can jeopardize their safety, for which they are unprepared, and about which there is little known (Gámez-Guadix et al., 2016; Jessor & Jessor, 1977; Kim & Han, 2020; Kurek et al., 2019; McQuade & Sampat, 2008). Kim and Han (2020) found that most adolescents experience ORB that may change over adolescence, and their level of DC may be related to these ORBs. This speaks to the need for research to further explore this relationship and fill this gap.

Other evidence points to the reason this problem is current. Adolescents are starting to use online applications and may risk jeopardizing their online safety without

learning DC (Kim & Han, 2020). DC may be necessary for reducing adolescents' risky behaviors they are exposed to now more than ever because of increasing reliance on the internet for teaching and learning, especially during the COVID-19 pandemic (Buchholz et al., 2020). As children and adolescents have increased their cyber-connected activities, there is evidence of disinhibition and aggressive behaviors (Kurek et al., 2019). While there is research on young adults' DC and their internet use (Al-Zahrani, 2015; Kara, 2018; Takavarasha et al., 2018; Xu et al., 2019; Yildiz et al., 2020) and a need for increased levels of DC in schools, there still exists a problem in the deficit of studies on DC and its relationship to adolescents' ORB.

While this study sought to address a gap in the literature, the problem of adolescents engaging in activities that threaten their safety and the well-being of others persists. Teenagers use social media and technology as a critical part of their social and academic lives; 95% have access to a smartphone, and 45% report being online constantly (Anderson & Jiang, 2018). As such, this poses a threat to adolescents to engage in risky activities. Gámez-Guadix et al. (2016) found that adolescents are prone to risky behaviors in general and are prone to such behaviors in cyberspace.

Researchers have investigated and suggested DC as an intervention and prevention program to address the problem of risky online behaviors. For most people, technology is ubiquitous, resulting in digital disruption (Skog et al., 2018) that requires them to be digital citizens (Mossberger et al., 2007). Increasing internet access is a new phenomenon; therefore, supporting DC competency can help adolescents navigate the challenges of the digital age (Saputra, & Al Siddiq, 2020). Moreover, as society and

schools increasingly depend on online technology, there is a need for educational technology researchers to investigate how different components of digital identity are exhibited in cyberspace activities, especially among adolescents (Kurek et al., 2019), so that young people can develop an informed strategy to participate online (Buchholz et al., 2020).

DC includes digital identity and its relationship to adolescents' ORB. Vlaanderen et al. (2020) found that adolescents exposed to anti-cyberbullying interventions were less likely to participate in cyberbullying. Additionally, a research-based curriculum has effectively instilled needed DC skills in adolescents (James et al., 2019). While DC is a current and relevant issue (Buchholz et al., 2020; Dawkins, 2020; Kurek et al., 2019; Saputra & Al Siddiq, 2020), educators, parents, and policymakers still need to understand the relationship between DC and adolescents' ORB to make decisions for assessment, prevention, and intervention efforts. Thus, this study's findings help to clarify the relationship between DC and adolescents' ORB for parents, educators, and policymakers.

Purpose

The purpose of this quantitative, correlational study was to examine the relationship between DC and adolescents' ORB using the screening scale (PRIUSS) score and adolescents' ORB as measured by the SAFE digital citizenship scale (SAFE) score for adolescent students in private secondary schools in Trinidad who participated in the study. Adolescents between 12 and 18 years of age were the focus because this group has posed public concerns about social and ethical issues relating to online socialization (Kim & Han, 2020).

Research Questions and Hypotheses

The following are the study's research question and hypotheses.

RQ1: What is the relationship, if any, between DC as measured by the SAFE score and adolescents' ORB as measured by the PRIUSS score?

H_0: There is no correlation between DC and adolescents' ORB.

H_A: There is a correlation between DC and adolescents' ORB.

Theoretical Framework

The theories that framed this research are Ribble's (2015) digital citizenship theory and Jessor and Jessor's (1977) problem behavior theory. Technology has altered the activities and behaviors of families, schools, and communities. Despite the numerous benefits of technology's use, there are also drawbacks. Consequently, researchers have designed programs to safeguard users against these pitfalls. Ribble's theory provides a historical view of technology use, the emergence and growth of DC, and a comprehensive plan for DC education to help technology users get the most out of technology use and safeguard themselves against the pitfalls. Digital citizenship theory outlines nine elements of DC that educators, policymakers, and other stakeholders should be mindful of when designing DC education for schools. The elements are digital access, digital commerce, digital communication, digital literacy, digital etiquette, digital law, digital rights and responsibilities, digital health and wellness, and digital security. This theory provides a foundation, lens, and benchmark for the DC examined in this researach.

Additionally, because adolescents are likely to engage in risky online behaviors (Gámez-Guadix et al., 2016), Jessor and Jessor's (1977) provided explanations in their

problem behavior theory on why adolescents may make certain confident choices and why they are prone to risky behaviors. Jessor and Jessor suggested that intrinsic and extrinsic factors influence adolescents' behaviors, and these factors may fall under three systems: (a) the personality system, (b) the perceived-environment system, and (c) the behavior system. These factors may encourage the behavior or protect the adolescent from problem behavior. This theory provides insights into adolescents' proneness or risky nature and the different systems they operate, including online behavior. Combining these two theories helps answer the question of the relationship between DC (an extrinsic factor) and adolescents' ORB. The constructs of these theories are explained in Chapter 2.

Nature of the Study

In this study, I used a correlational quantitative research design. In quantitative studies, researchers test theories by investigating relationships between or among variables (Creswell, 2009). Further, explanatory correlation designs allow researchers to explain the relationship among two or more variables and use statistical correlation tests to describe and measure the degree of relationship between them. Researchers use this method when they intend to show a simple association between two or more variables to see whether they are related in any way (Creswell, 2008). This research design aligns with my research because its purpose was to examine the relationship between two variables: DC and adolescents' ORB.

I used secondary survey data for this study. This source is associated with correlational quantitative studies (Price et al., 2015). I established a site agreement with a

private education organization in Trinidad to use the data collected from its secondary schools that did not offer digital citizenship training. The schools' administrators collected the data as part of their operation and permitted me to use the data as part of my study. The school administrators implemented two surveys to collect data from a pool of 923 students from their secondary schools about online behaviors and students' knowledge and application of DC. The following instruments were used: Modified Five-Factor Digital Citizenship Scale and the SAFE model (Choi et al., 2017; Kim & Choi, 2018). The researchers designed this scale to measure the adolescents' DC and guide the direction of DC education. The PRIUSS (Jelenchick et al., 2015). The scale tests PIU and risky behaviors in adolescents and young adults. I used this instrument to assess adolescents' online behaviors.

Data analysis involved several steps. First, I used SPSS software and organized the data. Second, I conducted the bivariate correlation or Pearson's correlation (Pearson's *r*) to test the relationship between DC and adolescents' ORB with no assumptions of causality. A bivariate correlation is used to analyze the relationship between two variables to determine whether a relationship exists and, if one does, whether the relationship is positive or negative. Nonetheless, this test provides no direction of causality (Field, 2009). Third, I assessed the value for its statistical significance, an important step. I conducted a hypothesis test to determine if the parameter of the population may be true, retaining or rejecting the null hypothesis. Fourth, I used descriptive statistics to conduct the mean, standard deviation, and variance of the scores

to describe the scores' spread and distribution. Descriptive statistics are useful when a researcher wants to understand the variation and central tendency of the data (Lee, 2020).

Definitions

Cyberbullying: Bullying experienced through digital media in the form of texting, instant messaging, posting embarrassing information, or pictures of another child on a webpage to humiliate the other person (Kowalski et al., 2012).

Cyberspace: Wired and wireless computer networks and computer protocols that connect various types of devices to enhance connected functions (U.S. Department of Defense, 2013). A connection between computers, the physical hardware, information, and the users' mental processes allows people to socially connect (Reveron, 2012).

Digital citizenship (DC): The positive and competent use of digital technologies and digital spaces at different levels for the good of self and others (Council of Europe, 2022).

Digital citizenship education: The integration of knowledge, strategies, resources, learning experiences, and personnel to help develop DC in students (Ribble, 2015).

Disinhibition: Disinhibition can be defined as the incapacity to avoid inappropriate behaviors or respond to situations in socially acceptable ways (Cahn-Weiner & Johnson, 2011).

Internet grooming: The act of befriending to build a relationship or trust or to establish an emotional connection with someone online to exploit or cause harm, such as sexual abuse or to obtain sexually explicit pictures or videos (Childnet International, 2021; Smith & Steffgen, 2013).

Online risk behavior (ORB): Any behavior that contradicts social norms in an online space and has the potential for an undesirable outcome by going against formally enacted rules or informally violating social norms (Kim & Han, 2020).

Problematic internet use: The collection of social, emotional, physical, or functional dysfunctions associated with the prolonged use of the internet (Caplan, 2010; D'Angelo & Moreno, 2020).

Sexting: The use of electronic technology such as a smartphone or the internet to post or send nude or seminude photographs or videos (Kowalski et al., 2012).

Social network: A digital connection or network that links people to people, concepts, locations, documents, and other objects (Henson et al., 2011).

Social network sites: A bounded system that allows users to create profiles that are public or private, select persons they want to connect with, and navigate the profiles of all their connection (Boyd & Ellison, 2007).

Assumptions

This study was based on several assumptions. First, there was an assumption that the schools honestly and accurately collected the archival data this study analyzed. Archival data, though advantageous in studies with vulnerable populations, does not allow a researcher to ensure that all research protocols for data collection are of high quality (Shultz et al., 2005). Another assumption was that participants were honest in their responses to surveys, have a general understanding of the internet, are conscious of their actions when interacting in cyberspace, and honestly answered all questions. This was necessary to establish that the statistical conclusions were valid (see Creswell, 2008;

Frankfort-Nachmias & Nachmias, 2008) and that there was construct validity (see Cook & Campbell, 1979). Additionally, I assumed the sample chosen was an accurate representation of the secondary schools' population in terms of size. Having an adequate sample helped me to establish statistical conclusions validity (García-Pérez & Alcalá-Quintana, 2012).

Scope and Delimitations

In this study, I examined the relationship between DC and adolescents' ORB using a correlation study. I tested the two variables using two instruments to answer the questions adequately and correctly. The focus of the study was on an examination of ORBs prevalent among adolescents but excluded prosocial behaviors.

ORBs were the focus of this study because adolescents encounter these factors as they interact in digital spaces, which consequently puts their safety and well-being at risk (Kim & Han, 2020). DC is an intervention and prevention strategy educators and researchers believe will help adolescents address the risks (Buchholz et al., 2020; James et al., 2019; Saputra & Al Siddiq, 2020). Jessor and Jessor (1977) postulated that adolescents need protective factors to help mitigate risks.

The focus population was 12- to 18-year-old students from three secondary schools of a private organization in Trinidad using the quantitative correlational research method. This method was appropriate to answer the question of the relationship between DC and adolescents' ORB. Two delimitations were placed in this study. First, only private school students were involved in the study. I encountered fewer challenges in accessing data from this population compared to government schools and other primary

schools because of bureaucratic constraints. Second, adolescents were the target group. Adolescents are more prone to risk behaviors as they develop (Jessor & Jessor, 1977), and they have posed social and ethical concerns to themselves and society (Kim & Han, 2020).

Limitations

There were several limitations of this study. One of the limitations was the time schools took to organize and share the data. Another limitation was using private school student data owned by a private organization. This private institution was chosen because it was easier to access and provided the appropriate and adequate population for the study. The participating schools were from three different school districts and had similar characteristics. However, they were only representative of some of the secondary schools, including public schools, in the country or other secondary schools in other countries. Therefore, the population scope is limited and different from public school students. Not only did the private nature of the school limit the scope of the study, but the specific geographical location of the study group, Trinidad, which limited generalization to adolescents in other parts of the world. Additionally, this study was limited in scope because I did not examine a causal relationship (Price et al., 2015). I selected the next best method in a correlational design to answer the research question.

I used self-reported data, which might have resulted in response bias in participants. Response bias may result when participants want to look socially good despite anonymity and may not be honest in their responses (Rosenman et al., 2011). However, the teachers administering the surveys explained to participants the importance

of selecting responses that best represent them and ensured participants their responses were confidential.

My bias might have also been a limitation. I have taught at the university level of the organization for 15 years. The organization operates primary and secondary schools as well as a university. However, the university has a different board of directors, and administrators report to a different entity. I am not linked to the secondary school system, nor do I interact with its students. Further, DC is one of the topics I teach and promote among teachers in training. Therefore, DC is a topic I am passionate about. I addressed this bias by ensuring that experts in research and theory informed the study and reported the findings as stated in the analysis. I asked a quantitative analysis expert to conduct the test to validate the results.

Significance

My research focused on adolescent DC and ORB for secondary school students in Trinidad. The findings provide empirical evidence of DC's relationship to ORB or lack thereof. This adds knowledge by deepening and widening the understanding of DC of adolescents in educational technology discipline. The findings also provide a springboard for further educational technology research about adolescents' DC and ORB. In so doing, stakeholders such as students, parents, educators, and policymakers may have clarity and confirmation about the relationship of DC and ORB, which can serve as a foundation for designing interventions for the well-being of adolescents in cyberspace.

The UNESCO's mandate for DC in the region and the MoE's policy for digital transformation in Trinidad and Tobago now have support from research on DC. This

study highlights the DC framework and areas vital to DC intervention programs. The results will help policymakers understand the relationship to ORB, which needs attention as adolescents interact in cyberspace. This study is an asset to the 2022–2027 endeavor/initiative purported by the MoE and the UNESCO's initiative. Moreover, the findings will help all stakeholders make more informed decisions.

This study has the potential for social change at the micro, macro, and mega levels. At the micro level, the findings can bring awareness to parents, students, and teachers of the role of DC in adolescents' choice of cyberspace activities, which may prompt positive choices in cyberspace and classroom activities reform. At the macro level, the results may assist administrators, policymakers, and national leaders in making decisions based on empirical evidence, thus creating positive change for an entire school system, including curriculum reform. These changes will take effect as adolescents change the ways they use technology and digital spaces. At the mega level, the results of the study can lead to parents, students, teachers, administrators, and policymakers understanding this relationship, and each individual choice will then impact the digital society.

Summary

Adolescents now have more access to technology as they play, socialize, and participate in spiritual and educational tasks. This increased access has placed their safety and well-being at risk because of the nature of the internet and adolescents' lack of knowledge about managing their behavior, digital resources, and digital environment. Consequently, parents, educators, and society have expressed concerns about the dangers

adolescents may face and the need for prevention and intervention programs such as DC. However, some research has been conducted regarding DC in young adults, there are insufficient studies dealing with DC and adolescents' activities in cyberspace, especially in Trinidad and the wider Caribbean region. Therefore, there is insufficient evidence about the relationship between DC and adolescents' ORB.

This study aimed to provide that evidence and help bridge the gap that exists in the literature so that educators, administrators, and policymakers can make informed empirical decisions as they plan and execute prevention and intervention programs to address their concerns. In Chapter 2, I provide the search terms used to find information for the study, an in-depth analysis, and a synthesis of two theories that frame the study, and research that relates to them. Next, I provide a research analysis further highlighting the problem and establishes the need for this study.

Chapter 2: Literature Review

Introduction

The problem that compelled this study is that adolescents engage in risky online behaviors that can jeopardize their safety and for which they are unprepared (Gámez-Guadix et al., 2016; Jessor, & Jessor, 1977; Kim, & Han, 2020; Kurek et al., 2019; McQuade & Sampat, 2008). Whether DC is related to ORB in adolescents remains unclear (Kim & Han, 2020). There is limited evidence that adequately explains the relationship between DC and adolescents' ORB (Finkelhor et al., 2021). Therefore, the purpose of this quantitative correlational study was to examine the relationship between DC and adolescents' ORB among students in some private secondary schools in Trinidad.

Adolescence can be a risky period, and adolescents' access to digital devices and spaces has increased their risks. Parents and educators have voiced concern for the safety of adolescents (Buchholz et al., 2020; Gámez-Guadix et al., 2018). However, children and adolescents access digital devices and spaces to play a participatory role in the virtual world (Rodríguez-Pérez et al., 2021). There is a need for educators and policymakers to understand the necessity for access and the dangers of gaining access to plan appropriately for adolescents' safety. Education program designers seek ways to aptly address the issues by accessing and designing prevention and intervention programs.

Few intervention programs are available with empirical evidence of their effectiveness. There is a need for more research that examines the appropriateness of intervention and prevention programs for the online risks adolescents may face

(Finkelhor et al., 2021). Understanding the problem and knowing there are evidence-based programs to address the problem will be valuable in promoting safe digital and online use among adolescents. In this literature review, I provide analyses of research on risks adolescents face in online environments; a proposed intervention and prevention program, DC; DC's tenets and previous use and theories explaining them; and how the findings apply to this research. In this chapter, I provide an overview of the background of the study. The sections include the literature search strategy, theoretical foundations, and literature review related to key variables.

Literature Search Strategies

To conduct the review of literature, I used the university library at Walden University and at the University of the Southern Caribbean. Databases included EBSCO, ProQuest, SAGE, and Walden's general Thoreau database. Further, I conducted Google Books and Google Scholar searches and searched government, private, and international agencies' websites, library catalogs, and online bookstore searches. The following keyword searches were helpful in locating resources: *digital citizenship, digital citizenship education, adolescents and digital citizenship, digital citizenship in schools, adolescent internet activities, online risk behaviors, online risks, internet risks, youth behaviors in cyberspace, cyberbullying among adolescents,* and *sexting in adolescence*. I used set year and publication type parameters to narrow the search for articles with 2018 to 2020 publication years and to locate sources from academic peer-reviewed journals. Older resources helped me establish theories and research that supported the theories and materials for historical context.

During the search, I focused on peer-reviewed research literature for relevance to the topic and the variables within the study. I organized articles according to the topic and research constructs. I divided the topics into two sections: ORB and DC. Organizing it this way helped me to locate literature easily because there was limited literature with both constructs. Consequently, I conducted separate searches for studies on both topics and reviewed how they are aligned.

Theoretical Foundations

Parents, educators, policymakers, and the community are seeking ways to help youths operate in a safe space and develop skills that provide opportunities to survive in a digital society (Livingstone et al., 2017; Magis-Weinberg, 2021; Wang & Xing 2018). These issues and desires elicited the need for DC, especially among adolescents, who are prone to risks and now have readily available access to the internet (Wang & Xing, 2018). I took a deeper look at the theories that provide a basis and a clear understanding of DC and the nature of adolescents' behaviors. In this section, I examine digital citizenship theory (Ribble, 2015) and problem behavior theory (Jessor & Jessor, 1977; Jessor, 1991).

Digital Citizenship Theory

Ribble (2015) tracked the development of social citizenship to digital citizenship noting that citizens are responsible for the well-being of their members in a collective place and linked it to digital citizens who have specific responsibilities as they interact in a digital world. Ribble purported a lack of developed social guidelines that guide the use of digital technologies and that the same governing bodies that work for the good of

society should work for means of supporting digital technology in digital communities. On this premise, Ribble indicated the need for DC.

DC is a framework that outlines norms for prosocial behaviors when interacting with digital technologies and spaces. The concept is currently known as a framework that guides appropriate technology use (Ribble, 2015) or a framework that outlines a sum of knowledge and responsible behavior for using technology (Council of Europe, 2022). Ribble's delineation of DC will be the main consideration for this study.

History of Digital Citizenship

The idea of DC is not new, though it took many forms. The concept of DC originated from the onset of computer use and associated concerns. This concern became more profound with the emergence and availability of new technology, which aroused ethical concerns (Ribble, 2015). Examples of this availability and introduction of technology include the emergence of the printing press, telephones, and televisions in homes in the 1950s and 1960s, where information was more accessible to all who had access to the tools.

One of the noted concerns in the early use of modern technology was the idea that messages from devices, such as televisions, were not the only problem that may affect society; device characteristics can also be problematic (McLuhan, 1964). Parents and educators continued to have concerns throughout the 1980s and 1990s. There was the advent of the internet and its greater accessibility, and users demanded standards for acceptable and misuse of technology. Consequently, the concept of computer ethics evolved and grew in the 1990s (Ribble, 2015). Moor (1985) defined computer ethics as

an examination of computer technology and its effects on users and the appropriate equivalent justifiable policies for ethical use. Educators continued to have concerns about appropriate and inappropriate uses. This led to more meaningful interest in how students engage with technology (Ribble, 2015). These were the early indications of a need for a framework to guide technology use.

In the 2000s, there was greater access to mobile computing with the advancement and availability of cellular phones and other mobile devices. Ribble (2015) postulated one of the challenges with mobile computing devices is ignorance of the social implications, threats, or risks of owning and using such devices. As time passed, more students were able to access digital devices, but schools were unprepared to deal with the associated challenges. Many schools placed a ban on devices initially to deal with the influx and misuse of devices in schools. However, tragedies, such as the Columbine, High School shooting, and the national terrorist attacks in the United States in 2001, produced parental demand for students to be allowed to have their phones in schools. Nonetheless, this emergency demand for access did not require literacy—a practice that continued (Ribble, 2015).

The consistent bombardment from threats and concerns of technology misuse encouraged schools and homes to develop safety programs. One such encouragement came from the American Civil Liberties Union, which demanded that schools analyze and evaluate their policies on appropriate and inappropriate technology use (Parry, 2005). Concerns also led to the development of acceptable use policies, which outline acceptable and unacceptable uses and that all technology users are expected to sign and adhere to

(Ribble, 2015). Organizations, such as the International Society of Technology in Education (ISTE), instituted standards known as National Educational Technology Standards for teachers, students, coaches, and administrators, which included technology ethics and, ultimately, DC (ISTE, 2021; Ribble 2015). Another program that resulted from technology misuse was the DC service learning and digital divide program from Drake University (Shulman et al., 2002).

One of the biggest phenomena that prompted concerns about digital technology and its advancing accessibility was cyberbullying. Consequently, educational organizations developed character education and value-based education programs. Examples of such programs are Character Counts and Character Education Partnership (Ribble, 2015). The principles espoused by these programs encourage the development of life skills needed to help citizens successfully navigate society both face-to-face and digitally.

All these events, concerns, threats, and phenomena resulted in the development of the Ribble's (2011) digital citizenship theory. Ribble (2015) noted that DC aims to teach all technology users to clearly understand how to use technology effectively and appropriately and encourage others to do the same. The constructs of digital citizenship theory are outlined below.

Constructs of Digital Citizenship Theory

According to Ribble (2015), when students understand appropriate and inappropriate technological behavior, they can identify situations and respond appropriately. Ribble outlined nine elements of DC and categorized them into three main

principles: respect, educate, and protect. The respect, educate, and protect principles are the foundation of DC and should be repeated over users' school life, home life, and social life. Users learn to respect others and themselves, educate themselves about the technologies they use, teach others about the technologies, and protect themselves and the technology they use with regard for other users. The three principles and their elements are outlined in the next sections.

Respect Yourself and Others. Digital citizens respect themselves through the sites they choose to visit, the information they access, and their activities as they interact with others. They not only respect themselves but respect the choices, opinions, and privacy of all digital citizens. According to Ribble (2015), the following three elements demonstrate respect: (a) digital access, (b) digital etiquette, and (c) digital law.

Under Element 1, "digital access: full electronic participation" (Ribble, 2015, p. 25), the user has full access to technology to enable electronic participation in the digital society if they choose. For example, adolescents have limited access because of their age. Parents and educators sometimes monitor and deprive them of specific tools and programs without adult supervision. Adolescents may be unable to demonstrate effective DC if they do not have technological devices, which can deprive them of the ability to practice showing respect in a digital environment. Researchers may only effectively examine adolescents' ORB if they have digital access.

Element 5 is "digital etiquette: the electronic standards of conduct or procedure" (Ribble, 2015, p. 39). This is the awareness and ability of a user to apply digital standards of behavior or procedure when using digital technologies. As adolescents gain access to

digital tools, they should know, understand, and apply clearly outlined standards to use these tools respectfully. If an adolescent used a smartphone to complete projects or share project ideas, they should be aware of the expectations of respectable smartphone use and standards that govern digital sharing.

Element 6 is “digital law: the electronic responsibility for actions and deeds” (Ribble, 2025, p. 42). Users are aware of rules and policies that govern digital technology use and ensure that they adhere to these when using digital technologies to advance their personal goals or interact with others. Another aspect of respect is respecting laws and policies that govern digital use. Adolescents who are digital citizens understand that if they engage in computer hacking, it is a crime, and they are punishable by law for doing so. Adolescents respect themselves and others by obeying these laws.

Educate Yourself and Others. Digital citizens need to educate themselves about technology use and appropriateness for their growth and effective participation in a digital society. They also do their best to educate others, causing a digital education transformation. This section highlights three ways digital citizens apply education: (a) digital literacy, (b) digital communication, and (c) digital commerce.

Element 4 is “digital literacy: the process of teaching and learning about technology and the use of technology” (Ribble, 2015, p. 35). The users learn about various digital technological tools, understand and use them appropriately and effectively to accomplish their learning and other goals, and teach others about these technologies and how to use them effectively. For example, digitally literate youths may read, take

short courses, or attend webinars to learn more about technology tools and strategies. They use these tools and strategies to enhance their learning.

Element 3 is “digital communication: the electronic exchange of information” (Ribble, 20215, p. 32). Users know many digital communication methods and tools and understand how to use them appropriately. For example, secondary students rely more on communication tools to connect with friends and teachers. Still, they may lack the skills to correctly access the tools and understand the appropriate digital communication techniques for effective communication. DC provides opportunities for youths to develop and apply digital communication skills.

Element 2 is “digital commerce: the electronic buying and selling of goods” (Ribble, 2015, p.28). The user understands what is needed to buy and sell in the digital world and has the knowledge and protection of participation in digital commercial activities.

Protect Yourself and Others. This section deals with helping digital citizens understand what they can do to protect themselves from harm, protect others and report inappropriate behaviors. This section notes three elements digital citizens may use to help protect themselves and others: (a) digital rights and responsibilities, (b) digital health and wellness, and (c) digital security.

Element 7 is “digital rights and responsibilities: those requirements and freedoms extended to everyone in a digital world” (Ribble, 2015, p. 46). The digital rights and responsibility element deals with having the requirements extended to all digital users to use and protect them in the digital society and being able to defend the rights and

freedom of others. An example of the correct application of this element is a seventh-grade student who cannot attend classes online because of the poor internet access in the area wherein she lives. The principal encourages her parent to take her to the nearest library to access internet services during school hours and organizes with the library staff to supervise and monitor her.

Element 8 is “digital health and wellness: physical and psychological well-being in a digital technology world” (Ribble, 2015, p.49). Users are accountable for their physical and psychological well-being as they use digital devices and interact in digital spaces. digital citizens understand the effects of prolonged use and inappropriate use of digital devices on physical and psychological wellbeing. For example, adolescents tend to spend a lot of time on the internet doing school and social-related activities. Still, they may be unaware of the effects of prolonged internet use on their physical and mental wellbeing. Digital citizens understand how to balance digital use, interaction, and face-to-face world activities.

Under Element 9 is “digital security: the electronic precautions to guarantee safety” (Ribble, 2015, p. 52), the users take precautions that will enhance the safety of their information and take precautions to protect the data of others. For example, Shai is in grade 10 and attends school online. She decides to share her user account with the members of her group to access information. One day she notices some strange activities in her user account. Because Shai has some knowledge about digital security, she admits her mistake and quickly changes her username and password.

Ribble (2015) developed these elements to help parents, teachers, and students understand what is needed to be functional members of a digital society. They also help educators systematically organize instruction to help develop and mold digital citizens. The tenets of the digital citizenship theory are the underlying issues to help users effectively navigate the digital society regardless of changing tools, rules, and procedures. Educators are responsible for equipping students to work, learn, and play in a world without boundaries. Educators must help learners do so in a respectful, accountable, and safe way. Thus, when learners effectively apply the principles of DC, they can achieve this goal. This study is grounded in this framework to help researchers understand the DC variable under examination. The best theory to provide this understanding is the digital citizenship theory.

Research About Adolescents and DC

As the access to technology increases for adolescents, so is the need for DC. Opportunities and risks are sometimes covariates—more opportunities present greater risks (Livingstone, et al., 2011). Youths now have more access to cellular phones, social networking sites, and virtual platforms. Consequently, they need guidance to help them be socially responsible in cyberspace because of the potential risks involved with cyberspace interactions (Buchholz, 2020; Choi, 2016; Clarke, 2009). As this need becomes more prominent and critical, researchers have begun to conduct studies that deal with Ribble's (2015) digital citizenship and others such as the International Society for Educational Technology (2021) and Common Sense Education (2021). However, there is

a lack of research specific to DC and adolescence. My study sought to help fill the gap. This section highlights some areas on DC and adolescence that researchers examined.

Adolescents experience increased access to technology and cyberspace interactions. Adolescents noted an increase in both positive and negative online choices/experiences because of increased time in cyberspace compared to 2019 (Magis-Weinberg, 2021). This increase has prompted the higher risks and a greater need for DC skills. The London School of Economics and Political Science conducted a quantitative study on teenagers online with 25,000 adolescents of Europe from 25 different nations. They found that teens may encounter greater risk when they have greater skills since the greater the skill, the more the teen will know how to navigate, and greater navigation skills presents greater risks. However, they are less likely to engage in the risk behavior or receive harm from these risks. Along with other recommendations, they included the need for parental awareness of online uses and safety, DC, and industry support for digital literacy (Livingstone et al., 2011). With these recommendations, there is still a sense of trepidation that adolescents will encounter numerous risks, and educators and parents should plan ways to protect them.

Researchers and educators should place greater emphasis on parental involvement. The need for parental awareness for adolescent DC has since gained traction and momentum (Livingston et al., 2015). Two hundred and seventy adolescents and their parents participated in a quantitative study to test the role of parental involvement and their socioeconomic status. The researchers used three of Ribble's (2009) and Choi's (2016) digital citizenship theory elements: (a) digital access, (b) digital

safety, and (c) digital etiquette (Wang & Xing, 2018). They found a positive correlation between DC's digital etiquette and digital safety with parents' involvement, and digital access, digital safety, and digital etiquette with parents' socioeconomic status. Adolescents become better digital citizens with parental participation from homes with higher socioeconomic status. The idea of adolesecents from homes with higher socioeconomic status becoming better digital citizens may mean that adolescents have greater digital access that may lend to greater literacy skills and etiquette, as noted in Livingston et al. (2011). The findings indicate a relationship between DC and problem behavior when parents participate in their online activities. Jessor et al. (2016) noted the protective factors principle in problem behavior theory, which is synonymous with the results in this study.

Along with parental involvement and skills, adolescents need to develop dispositions of DC if they are to positively thrive and help others strive in cyberspace, the goal of DC (Magis-Weinberg, 2021). The need for a clear understanding of digital citizenship theory is paramount if researchers examine the relationship between DC and adolescents' ORB. To this end, in this study, I utilized the digital citizenship as one of its frameworks.

Problem Behavior Theory

Problem behavior is any behavior that goes against established norms (Jessor & Jessor, 1977; Jessor, 1991). Problem behavior theory helps researchers to understand adolescent behavior. Problem behavior theory is an organized set of principles based on the psychosocial relationship between and among systems and their variables. The

systems and their variables may increase or diminish problem behavior in adolescents. The theorists initially identified three systems: (a) the personality system, (b) the perceived environment system, and (c) the behavior system (Jessor & Jessor, 1977). Jessor and Jessor emphasized that these systems work together and may collectively determine the level of deviant behaviors. The personality system is cognitive, and it is the sum of expectations, values, attitudes, beliefs, and orientation of self and others. The environment system is the concepts responsive to the personality concepts such as influence, models, controls, expectations of others, and those representing environmental characteristics that can be cognized or perceived. Moreover, the behavior system includes all the socially learned purpose, function, and significance; and intrinsic experiences and outward actions (Jessor & Jessor, 1977). Each of these systems has variables that instigate problem behavior referred to as risk factors and variables that help to control against participating in problem behavior referred to as protective factors. There is a balance between the instigators and the controls that define the level of proneness for problem behavior within each system. However, the measure of proneness across all systems defines the psychosocial conventional or unconventional realities of each adolescent. The adolescent period envelops all these systems, and problem behavior theory is worthy of examination for this study.

Researchers and practitioners should analyze the systems holistically to get the most significant effect and contribution. Jessor and Jessor (1977) underscored practitioners could most accurately determine the interaction of the personality and environmental stimulus when viewed together. Therefore, researchers should give

priority to the causal relationship of the interaction of all the systems. Consequently, practitioners should consider personality and environment when analyzing adolescents' problem behavior to recommend correct programs. This section provides an overview of problem behavior theory history, problem behavior theory systems, and the risk behavior framework.

History of Problem Behavior Theory

PBT stemmed from the concern with problem behavior and adolescence (Jessor &Jessor, 1977). Early societal concerns about the irrational or irresponsible behavior of the youth prompted much research, programs, and interventions. However, more notably, a study of problem behavior has benefits for social scientists (Jessor & Jessor). Jessor and Jessor highlighted several reasons to study problem behavior. Firstly, problem behavior bears an interconnection of different sources of influence, such as personal, institutional, behavioral, and social. It provides a vantage point for psychosocial scientists to understand human behavior. Secondly, especially in adolescence, problem behavior has a connection with personal and societal change. For example, sexting may be a personal change in an adolescent's life, making a transition from childhood to adulthood. In contrast, the pervasiveness of sexting and its effects on society may influence social and legal standards at the societal level. Therefore, problem behavior may help social and behavioral scientists to understand personal and societal change. Thirdly, the society continues to have grave concerns about adolescent problem behavior, regardless of its type, drugs, delinquency, alcoholism, and now sexting and internet abuse. Scientific

studies in this area can generate numerous research on general principles, producing knowledge that targets societal needs and addresses their concerns.

Society's concern about adolescence also prompted the development problem behavior theory (Jessor & Jessor, 1977). According to Jessor and Jessor, there is a lack of research on psychosocial behavior and adolescent development. Consequently, there was a gap in knowledge of this period, resulting in frustration with the attitudes and behaviors that emanated during this developmental stage. A theory and research to support the idea were warranted. Additionally, adolescence is when life changes are inevitable and meaningful for future development and actions. This change is an indication of the esteemed position of this life period. The adolescence period is a transition from childhood to a coveted stage of adulthood. Adolescents are considered capable and ready to make their own decisions, participate in activities that society accepts as norms, and shift from the confinement of the family context. The community also takes it as a period that prepares adolescents to develop skills, educational pursuits of their choice, and personal and occupational experiences that they need to help them succeed later in life (Jessor & Jessor, 1977).

Moreover, adolescents can form an identity that will inform their experiences and actions in adulthood (Jessor & Jessor, 1977). Problem behavior theory and its research provided answers and clarified misconceptions about the adolescence period. The concerns are still valid today because adolescents still play a pivotal role in society and require proper development. My study contributes to filling the gap in the literature on adolescent development and behavior and the gap in the community for a need to help

adolescents participate safely and responsibly in a digital society. Problem behavior theory is pertinent for my study on adolescents' ORB because it helps me to better understand the salient adolescence period.

Another concern that prompted Jessor and Jesor (1977) problem behavior theory was a lack of relevant theory. At the time of problem behavior theory development, much behavioral science research was nontheoretical. It delineated current issues, interests, or variables that researchers deemed rational. Though such research brought value in filling the knowledge gap on some problems, it created a legacy of misperception and misunderstanding (Jessor & Jessor, 1977). This misunderstanding has ensued because facts do not stand alone (Kaplan, 1964; Kuhn, 1962). Facts depended on

> …whatever meaning they have from their location in a set of concepts or ideas that are linked together in a network that is, from a theory or a conceptual framework. Theory, thus, is the instrument of explanation or understanding, a source of meaning for facts or observations that endows them with wider significance. (Jessor & Jessor, 1977, p. 10)

Researchers should see the value of theory, abandon the atheoretical emphasis on longitudinal studies, and embrace the empirical stance of theory to encourage profound understanding of societal problems they seek to address. Based on this premise, Jessor and Jessor (1977) developed the problem behavior theory from their Tri-Ethnic study (Jessor et al., 1968). The idea of the theoretical approach gives precedence to the causal logic of adolescents' interactions and situations. Jessor and Jessor (1977) formulated

concrete principles that accounted for adolescent deviant behavior and termed it problem behavior theory.

The Tri-Ethnic study examined alcohol abuse among Native Americans. Problem behavior theory has its genesis from the need for an alternative approach to social inquiry, a need for a more coherent psychosocial theory, that was problem derived rather than discipline derived. It is a multidisciplinary approach, inclusive of the person and the environment, functions, and goals of socially learned behaviors. Further, the theory was interdisciplinary, transcending boundaries. The critical role of the approach was to create a more meaningful theoretical base with depth and breadth (Jessor et al., 1968).

Though the research was about alcohol abuse among Native Americans, Jessor et al. (1968) extended the scope of the study to include the three ethnic groups in the Colorado community: (a) Native Americans, (b) Hispanics, and (c) Anglo-Saxons Whites. Jessor et al. also had other variables such as crime and violence, drinking; and conformity, and conventional behaviors such as church attendance and club involvement for adolescence. The theorists included additional variables and populations and created a middle-range theory (Merton, 1957). The middle-range theory was relevant to a specific domain of social action (problem behavior) to guide empirical inquiry rather than a grand theory such as behaviorism. In its earliest stage, problem behavior theory was pertinent for middle-range purposes and researchers found value in it decades later. For example, researchers established an interdisciplinary research program grounded on the problem behavior theory in 1966.

Researchers modified problem behavior theory and eventually named it the "classical version" (Jessor et al., 1968). The change included findings from a longitudinal study focusing on a significant population, adolescence. The modification was necessary to help researchers fully grasp the behaviors across the adolescent life span. It helped to track the behavior and development of youth across four years: (a) the high school years, (b) early adolescence and the college years, (c) late adolescence/early adulthood, and (d) the college years, spanning ages 12 to 22. With the modification, the researchers tested the theory longitudinally with a population that was homogeneous in its socioeconomic standing, ethnicity, and period, looking more precisely at the psychosocial development of adolescence. The theorists included the social environment, persons influencing problem behavior, and the perceived environment. The perceived environment is more proximal to the adolescent. Additionally, the modification had a more delineated behavior system that provided problem behavior and conventional, prosocial behavior structures and more socialization processes that influence adolescent behavior and development. However, the primary hypothesis remains the same – change in both the personality and perceived environment systems should attribute individually to change in problem behavior but should be combined for a more robust attribution to charge in problem behavior (Jessor & Jessor, 1977).

As an appendage to the classical version of problem behavior theory, Jessor et al. (1991) included theoretical constructs of problem behavior of the young adult population, known as Beyond Adolescence: Problem, behavior and young adult development, their volumes problem behavior's evolution. This appendage dealt with "socialization of

problem behavior in youth study." Jessor et al. noted that the variance in problem behavior in young adults was as substantial in adolescence and included the same developmental generality in theory. Practitioners may apply the ideas of development in several instances or life stages. There is the existence of behavior syndrome in young adults. The young adult appendage version of the theory also included the notion that predictors of problem behavior during adolescence forecast problem behavior in young adults. There is substantial continuity of change from adolescence to young adulthood (Jessor et al., 1991). Practitioners who understand the substantial continuity of change from adolescence to young adulthood have a broader scope for continuous intervention and prevention programs that will help the adolescent to have a solid start in adulthood, especially in the online environment.

Though the continuous change is substantial, the change during young adulthood is on a conventional trajectory, while adolescence is on an unconventional or deviant course (Jessor et al., 2016). Notable in the study is there is no "spillover" effect. The problem behaviors in adolescence do not compromise the progression or adjustments in adulthood. For example, adolescents who engage in problem behaviors can be productive during adulthood. However, the behaviors termed deviant for adolescence, such as drinking, sex before marriage, and drug use, which are accepted norms in adulthood; they are age specific (Jessor, 2016). Examples relevant to cyberspace are sexting and PIU that may be acceptable for adults but not adolescents. The same effects that these behaviors have during adolescence are prominent in adulthood, based on the continuity principle of the theory.

The theorists later expanded the theory with the appendage, beyond adolescence, and included an adolescent health domain, which is beyond problem behavior. The adolescent health domain is based on the disadvantaged and the risk context. Jessor et al. (1991) purported that some health-related practices are not considered problem behaviors but structured as social and personal norms just as problem behaviors. For example, eating habits, exercise, sleeping habits, and internet use are norms related to some problem behaviors that are social and personal norms. These variables were worth including to give the theory more balance and generality. The modification subsequently led to adolescent behavioral health (Jessor, 1984).

Problem behavior theory had a major reformulation for explaining adolescents' risks behaviors. Jessor (1991) and Jessor et al. (2016) reformulated the theory now referred to as reformulating problem behavior theory for explaining adolescent risk behavior: the current framework. The current framework includes broad area categories of risk behavior instead of only problem behaviors. For example, sexting is a problem behavior, but frequent visits to chat rooms are risky. Jessor et al. (2016) saw the need to include ideas from a new subdiscipline of behavioral epidemiology, which deal with risk factors and protective factors that were consonant with instigation and control the theoretical predictor variables in the original and modified forms of the theory. The researchers felt that the approach would be more helpful to researchers and practitioners in the health field and those who seek to develop prevention or intervention programs. My study was about examining an intervention and prevention program, DC. Problem behavior theory was, therefore, a fitting theory. Including the risk behaviors were

necessary because problem behaviors are all behaviors that may affect adolescent health and successful development, and adolescents, parents, and educators should be aware of the risks.

Jessor et al. (2016) also added two domains to the previous three. There are five interrelated domains known as the "causal" influence domains: (a) the perceived environment, (b) social environment, (c) personality, (d) behaviors, and (e) biology/genetics domains. Further, the theory now has predictor variables known as risk factors and protective factors in each domain (Jessor 1991; Jessor et al., 2016). For example, the social environment domain has risk factors such as models of PIU and protective factors such as high controls against PIU. The protective factors take a moderator role and interact with risk factors to dimmish risk behaviors at their initial onset or reoccurrence. The risk and protective factors concept "accounts for the transformation of problem behavior theory from its additive regression model about instigation and control to a more interactive model for the use of risk and protection relationship" (Jessor, 2016, p. 8). The more interactive model was contextual to my study, examining the risk and protection relationship.

Although problem behavior theory does not include a notable online domain, it applies to the study of ORBs in adolescents. Problem behavior theory transcends age, though it is typically a theory for adolescents' behavior and development, and disciplines and any study that deals with risk and protection or mitigation of those risks (Jessor et al., 2016). Problem behavior theory is, therefore, helpful for the foundation of this study on online ORB and a protective factor, DC, a model for conventional behaviors. The digital

citizenship model delineated the perceived environment domain, high intelligence in the biology/genetic domain, quality schools and cohesive families in the social environment domain, value of achievement and health in the personality domain, and involvement in school in the behavior domain. Based on the digital citizenship theory's tenets, ORBs can fit into several domains: biology/genetics, perceived environment, social environment, personality, and behavior. Ultimately, Jessors and Jessor (2016) expanded the problem behavior theory to the risk behavior framework (RBF), which I analyzed in the next section.

Problem Behavior Theory Systems

The Risk Behavior Framework. The risk behavior framework is a social-psychological framework for understanding risk behaviors in adolescents, which emerged from problem behavior theory. The risk behavior framework evolved from behavioral epidemiology and social developmental psychology (Jessor, 1991; Jessor & Jessor, 2016). Some agents or conditions in the biomedical field are responsible for increased chances of ill health and poor quality of life. Medical practitioners refer to these agents as risk factors (Jessor, 1991). A specific example is someone with signs of cervical dysplasia may be at risk of developing cancer. Medical practitioners classified risks as biological, environmental, or personal choices (Jessor, 1991; Jessor & Jessor, 2016). Epidemiology provided a clear understanding of risks and their relationship to health and the quality of life in the medical and social environment. Jessor and Jessor (2016) expanded the risk behavior framework to include other types of risk behaviors.

As comorbidities affect health and the quality of life, issues in the social environment and behavior may also affect one's health (Jessor, 1991). For example, a female stressed about her mother-daughter relationship may be at risk of breast cancer if the stress persists. Behavior is a risk factor for ill health and poor quality of life (Jessor). For example, poor human behavior may lead to HIV, or frequent visits to chat rooms is a risk factor for internet grooming and sexting. The concept of epidemiology evolved into behavioral epidemiology and the psychosocial reality of risk. Jessor (1991) concluded that even though behavior as a risk factor originated from biomedical epidemiology, it became behavior epidemiology and had biomedical social, personal, and psychosocial consequences. Therefore, researchers and education practitioners need to understand the psychosocial risks and when behaviors are considered risk factors. Researchers should examine the risk of behaviors in all areas of life, not just biomedical.

The risk behavior framework has the five domains, the subtotal of adolescent behavior as listed above (Jessor, 1991; Jessor & Jessor, 2016). The domains represent the full range of personal development and social adaptation in adolescence. Jessor posited that the five domains collectively form a web of causation that explains adolescents' risk behaviors. Risk behaviors can pose varied effects on adolescent development. Risk behaviors can thwart the normal developmental processes of adolescence, hinder the fulfillment of expected social roles, inhibit the acquisition of social skills and a sense of worth, adequacy, and competence, and hinder appropriate preparation for advancement to adulthood (Jessor, 1991). A risk behavior is any behavior that obstructs successful adolescent psychosocial development. A few examples of risk behaviors that obstruct

proper functioning are drug abuse, truancy, sexting, and prolonged online gaming. Without an awareness of risk behaviors, educational practitioners may be unable to enact effective interactions.

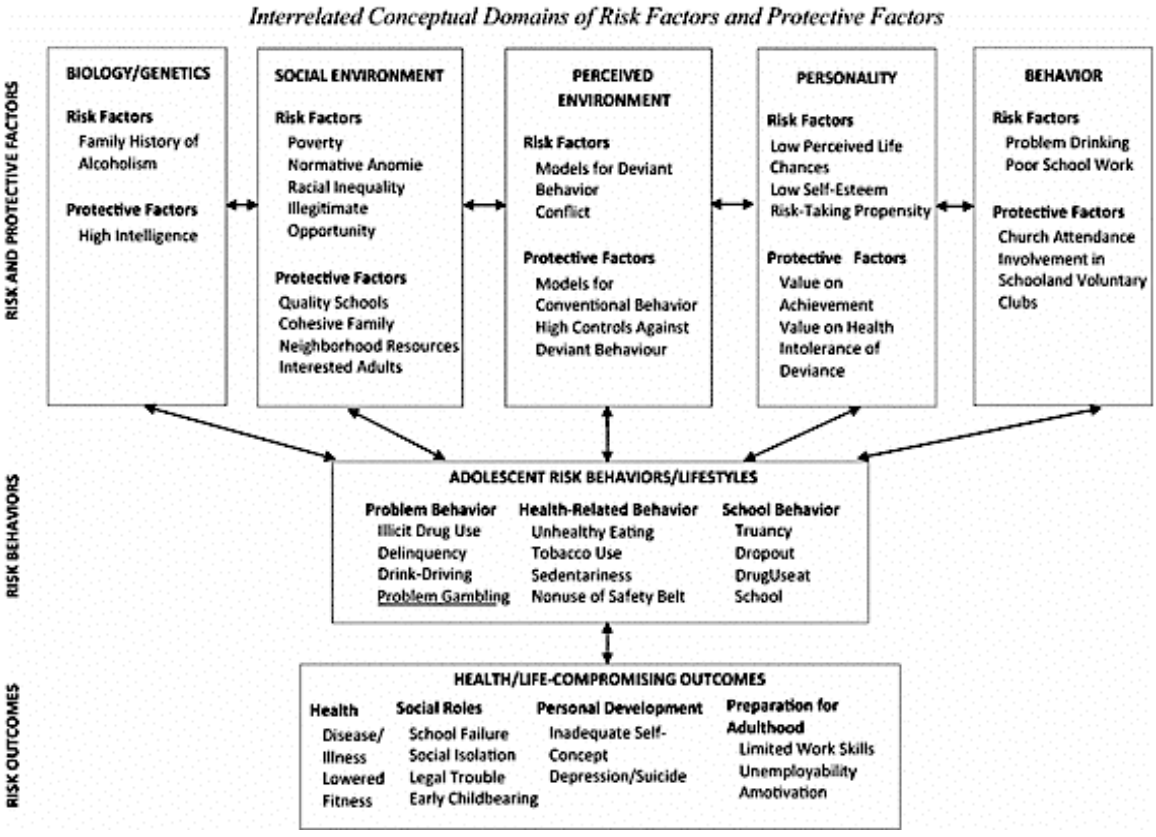
Each risk behavior domain consists of risk factors and protective factors, which may mitigate against risks when present (Jessor, 1991; Jessor & Jessor, 2016). For example, the social environment may have risk factors such as poverty and racial inequality and protective factors such as quality schools and a cohesive family. The risk factors are anything that poses a risk and prompts risk behavior (Jessor, 1991). Therefore, a risk factor in the perceived environment domain can be a model of deviant behavior. Only when the adolescent participates in the deviant behavior does it become a risk behavior. Protective factors may be things, persons, or systems that buffer and insulate against the risk factors (Garmezy, 1995; Rutter 1990). Extending the previous example, models of conventional behaviors or high controls against deviant behaviors are protective factors in the perceived environment domain that can protect against the risk factor models of deviant behavior. See Figure 1 for an outline of the domains and their associated risk and protective factors. The risk factors and protective factors stated in the figure are not locked into this framework but are examples (Jessor, 1991).

The risk behavior framework has three general declarations. First, practitioners using the framework to assess risk behavviors must engage in complex thoughts and organizations to claim risk behaviors on adolescents (Jessor, 2019). One factor gives rise to multiple outcomes; thus, the user must engage several domains and understand their interactions. For example, practitioners should not make assumptions of risk behaviors by

looking at the social environment domain or personality domain only; instead, they should consult the social environment domain, personality domain, biology/genetic, and behavior domains and how they interact with each other to draw conclusions. Consultation of a variety of domains is necessary because the domains are interconnected. Therefore, consultants of this framework must take this into account when planning interventions.

Figure 1

Conceptual Domains and Their Related Risk and Protective Factors



Jessor, R. (2016). Springer International Publishing (2016). Copyright [2016] by Springer International Publishing. Reprinted with permission

Even though the domains are interconnected, practitioners must also study and understand them in silos. Jessor (2019) highlighted that even though users of this framework should understand the interconnections of the domains and examine several before determining their effectiveness, they should bear in mind that each domain in the web of causation directly affects adolescent risk behaviors. Consequently, users of the framework should understand each domain and distinctly consider each as a separate source of risk and articulate their risk factors. For example, the social environment domain should be a social environment risk with risk factors such as poverty and protective factor, school library. Likewise, the biology/genetic domain has risk factors such as a family history of addiction and protective factors such as knowledge of the effects of addiction.

Risk factors can be indirectly related but eventuate into risk behaviors. Jessor (2019), in his third disclaimer, explained that risk factors in one domain indirectly affect adolescent risk behavior. For example, biology/genetic risk factors such as a family history of obesity may directly impact the family's health. However, these risk factors may indirectly affect bad eating in the behavior domain and prelude risk behavior. An example relating to the online environment is the perceived environment factor, models for deviant behavior, and pornographic viewing, which has a direct risk. However, it may influence the risk factor of sexting in the behavior domain, influencing risk behavior in the adolescent. The direct and indirect effects are beneficial in helping practitioners to design programs to mitigate risk factors. These three declarations are the foundation that practitioners should build on as they seek to address adolescent problem behavior.

The Perceived Environment. Like all ages, adolescents operate in various environments that may shape their actions. Social scientists view adolescent development through theoretical, psychological, and sociological lenses. However, these reflect the participant's interpretation and perception of their environment constructs along a continuum from distal and proximal attributes (Jessor, 2016). The distal characteristics of the continuum are those factors that indirectly relate to adolescent behaviors, for example, parental support. The proximal attributes are those the adolescent interacts with daily; for example, the adolescent has close friends who engage in cyberbullying. Though all environments may impact action, some are less impactful than others. Jessor referred to such environments as biology, physics, and geography, remote from the participant's direct experiences and are considered distal and too univocal to measure or relate to concrete thinking. However, perception, experiences, and functional stimulation are proximal environments of the participant's perception, experiences, and functional stimulation that can be measured in concrete variables and affect individuals' decisions, choices, and behavior (Jessor, 2016).

When placed on a continuum of distal-proximal attributes, Jessor (2016) noted that the perceived environment is closest to the participant and is called a proximal or perceived environment. Researchers and practitioners studying and working with adolescents need to understand the nature or properties of the perceived environment. The perceived environment has four distinct structural properties: (a) texture or differentiation, (b) depth, (c) temporal extension, and (d) generality-specificity. The environment's texture or differentiation property is multifaceted and heterogenous in its

content and includes varied aspects such as authority structures, rules, models of behavior, reinforcement for action, and more. Additionally, the depth aspects of the perceived environment include all aspects of the texture property; however, they are varied along the distal-proximal scale. For example, an adolescent may perceive that his friends generally support him and will be available to help him in times of need; more proximally, he may perceive that they support his acts of stealing.

The perceived environment also has temporal extension because it encompasses time and developmental growth. Adolesecents may show predictable and systematic changes at different stages in life, such as early and late adolescence, which shows developmental regularities (Jessor, 2019). Developmental regularities may be valuable in this study to understand the consistent nature of adolescents' online behavior at particular stages during adolescence. Jessor (2016) referred to the generality-specificity aspects in the perceived environment as sometimes extensive and persistent variables, while others may be univocal but temporary. For example, an adolescent may perceive that she has the general care and support of her parents but feels threatened by them when she wants to participate in an activity they do not support. Understanding these attributes of the perceived environment helps focus this research and guide the researcher to understand the relationship between DC, which can be considered a perceived environment variable, and ORB. It is also essential for practitioners to create environments that will support positive online behavior and negate ORBs.

Research authenticated these properties of the perceived environment. The longitudinal study confirmed that the perceived environment has a role in accounting for

variation in behavior because of the distal-proximal attributes of the continuum (Jessor & Jessor, 1973; Jessor, 2016). Jessor and Jessor (1973) and Jessor (2016) found that adolescents showed continued progression when they combined the features of the distal and proximal attributes, and behavior changed based on context or developmental stage. Further, the longitudinal study they conducted with adolescents over four years indicated that different roles within the perceived environment are relatively distant and proximal, and they account for variations in adolescents' behavior (Jessor 2016). Additionally, the researchers found progressive development of the perceived environment during adolescence. An example of progressive development is adolescents showing a steady increase in the combined distal attribute, peer support, and the proximal attribute, friends' approval for marijuana use, from 7th through 8th grade over four years (Jessor, 2016; Jessor & Jessor, 1973). Jessor and Jessor (1973) confirmed that adolescent behavior is consistent with the perceived environment. The behaviors are starting points of empirical evidence, and researchers should conduct further research for specific contexts (Jessor, 2016). Researchers need to understand how the environment, especially the proximal environment, impacts behavior to answer questions relating to adolescents' choice of activities. In this study, I examined the proximal environment factors to address adolescent behaviors in an online environment. Moreover, educators and policymakers need research to understand the relationship between DC, a perceived environment, and ORB exclusively. The constructs of risk behavior theory will help researchers understand the risks adolescents face and the necessary protective factors that may play a role in diminishing the risk behaviors. The risks and protective factors will provide specific

attributes in data collection instruments to ensure relevant data collection and analysis and more relevant results.

Literature Review Related to Key Variables

I accessed and reviewed approximately 82 published books, peer-reviewed journal articles, and government and organizations policy documents from their websites. The literature review includes an analysis of research addressing the focus of the study questions. The two main areas that align with the research question are ORB in adolescents and DC for adolescents.

Educational technology researchers have consistently looked for ways to address the problem of the appropriate ways students use technology in academia and its safety. Researchers conducted a study with 744 adolescents to examine the frequency of electronic violence and proper mechanisms to help protect students while using the internet and found a significant correlation between cyberbullying and the way students use the internet (Gaborov et al., 2021). Here, the researchers examined the safety of students and how they can be safe through a questionnaire and the threats that ensue.

Another area that educational researchers note is the value of preventative programs in helping students to be media literate, enhancing their safety during media use. Blažević et al. (2022) explained that their study with 267 students from grades 5-8 found that prevention programs help develop media-literate students. There was a positive correlation between applications for everyday life and internet danger prevention. Having intervention programs will be a benefit to safeguarding students in digital spaces and intervention with digital devices. However, interventions also involve

parents' or caregivers' safety and literacy skills. Parents of primary school students participated in a test on their skills and knowledge of digital literacy. The examination revealed that of the 524 parents, about one-fifth of them demonstrated digital literacy on online safety at a satisfactory level (Tomczyk & Potyrala, 2021). Communication with online users is a neglected area.

Safety is a concern for educational technology researchers. Consequently, they have adopted several approaches to the problem. These included examining intervention strategies (Gaborov et al., 2021), concerns such as violence that emit from technology use (Blažević et al., 2022), and how parents and caregivers are prepared in terms of knowledge and skills to assist with safety (Tomczyk & Potyrala, 2021). These approaches provided needed insights on how educators, parents, and caregivers should treat with safety as students interact with technology devices for learning.

It is laudable that educational technology researchers have looked at ways that may help keep students safe while benefiting from the use of technology as mandated by United Nations Conventions on the Rights of the Child (1990, Articles 17 e) UNICEF (2022) required that children have free access to information and resources from various national and international sources dealing with their moral, social, and spiritual well-being and physical and mental health. Moreover, the responsible parties should take all necessary precautions to ensure that children are safe as they interact with the information and materials.

The approaches are limited it testing or examining specific intervention programs, understanding behaviors that may result in e-violence, and parents' understanding and

application of events or environments that promote online safety. The literature review examines studies on themes that deal with DC, a needed intervention or lifestyle program, and the inherent threats of adolescents' internet use—adolescents' ORB.

ORB in Adolescents

Adolescents may engage in ORB when there is a lack of protective factors. When juveniles experienced higher risk domains and lower protective domains, there was a greater propensity to commit both online and offline offenses, such as physical assault and cyberbullying (Rokven et al., 2018). Protective factors such as models of responsible behavior should be included in adolescents' offline environments to help decrease the inclination to ORB. Rokven et al. used the adolescence risk behavior framework (ARB), which suggests that adolescents who experience protective factors such as role models for the desired behavior in the perceived environment domain decrease their risk of deviant behavior in the same domain (Jessor, 1991). Protective factors are needed in the life of adolescents if they are to make informed online choices.

Just as there is a correlation between offline and ORBs, some adolescents' ORBs are interdependent. The relationships between cyberbullying perpetration, problematic social media use, and their relationship with social connectedness, depression, and self-esteem among high school students and university students, were stronger among high school students than university students, and cyberbullying perpetration and problematic social media use were related (Kırcaburum et al., 2019). Adolescents and young adults who demonstrated higher problematic social media use lso exhibited higher cyberbullying perpetration. In short, adolescents who are exposed to and participate in

one ORB are in danger of participating in more. Therefore, if adolescents avoid one risky behavior, they have a greater chance of avoiding another. However, ORB can vary by type, particularly in adolescence.

Types of Adolescents' ORB

As adolescents interact in cyberspace for school, socialization, and play, they may encounter many risks which may be more prevalent than others. Adolescents' development entails growth in socialization and forming and maintaining intimate relationships, and technology has provided many opportunities for creating and maintaining these connections. Unfortunately, the many opportunities for creating and maintaining relationships pose risks to adolescents (Hernández et al., 2021; Calvete et al., 2021; Machimbarrena et al., 2018). The need for digital technology and internet access has become more necessary now than ever for connecting with friends, peers, teachers, e-commerce, gaming, and more (Yang et al., 2021). As adolescents gain access to digital technologies and internet access, the risks of engaging in some risk behaviors increase (Machimbarrena et al., 2018; & Yang et al., 2021). The speedy growth of technology and the demand for its use placed adolescents at risks that affect their bio-psycho-social well-being. These risks include cyberbullying, cyber dating abuse, sexting, online grooming, and PIU (Machimbarrena, 2018). Many of the risks pose concerns to some adolescents, parents, teachers, and society. An understanding of the risk is essential for this study.

Adolescents find it easier to practice these risks because of the anonymous nature of the , prompted by disinhibition. Online disinhibition is the lack of control in responding inappropriately or participating in effective communication while online than

in-person response communication (Suler, 2004). Online disinhibition has two major types: (a) benign disinhibition and (b) toxic disinhibition. Adolescents who practice benign disinhibition are willing to share private thoughts, feelings, and personal things openly in cyberspace. Suler also explained that adolescents who practice toxic disinhibition participate in unacceptable behaviors such as hate, criticism, name-calling, anger, foul language, and threats. Adolescents who practice toxic disinhibition also tend to explore pornographic and violent sites they will never venture to or go to in the real world (Suler, 2016). Individuals who have high online disinhibition express themselves more freely in cyberspace. They are unaware of the need to take responsibility for their actions. These individuals also show a lack of empathy and an inability to recognize social cues (Zych et al., 2019). The lack of awareness and knowledge of the easy accessibility of cyberspace and the effects of users' actions in cyberspace prompt ORBs (Llorent, 2019). In this section prominent ORBs among adolescents are analyzed.

Cyberbullying. One of the adolescents' activities in cyberspace is cyberbullying or internet trolling. Cyberbullying is a repeated act that causes psychological or emotional harm using electronic devices and virtual spaces such as social networking sites, school chat rooms, discussion rooms such as text or photos, or emails (Beghin, 2020). As adolescents have more access to digital technology and cyberspace, cyberbullying has become a phenomenon globally affecting adolescents' lives (Beghin, 2020; Mikhaylovsky et al., 2019; Munnelly et al., 2017). It is an ORB behavior that is worth examination.

Adolescents sometimes show mixed conclusions about cyberbullying. Implicitly, adolescents believe that cyberbullying is both depraved and decent because, in some instances, it incites fun. However, adolescents explicitly deem it destructive (Munnelly, 2018). Adolescents' beliefs about cyberbullying reveal a need for a more precise definition and understanding of cyberbullying, a concept I explored in DC.

Cyberbullying can take forms. Internet trolling, catfishing, flaming, slamming, and more are among the ways adolescents are cyberbullied or engage in cyberbullying (Brochado et al., 2021). Regardless of the forms, cyberbullying poses challenges to the prosocial development and well-being of the adolescent. Victims of cyberbullying experience increased inherent anxiety, complemented by isolation, depression, loss of interest in maintaining and forming friends and peer groups, degeneration, and degradation of daily or lifestyle activities, for example, not completing academic tasks. Cyberbullied victims also exhibit lower academic performance, frustration stemming from doubt and disappointment, and medium and high levels of constriction (Mikhaylovsky et al., 2019). Cyberbullied adolescents show negative emotional well-being (Baier et al., 2018; Brochado et al., 2021; Campbell et al., 2019), especially among adolescents who have irregular school attendance, those who are cyberbullying victims, frequent internet users, and those who are older (Brochado et al., 2021). Moreover, victims display poorer mental health and experience psychological and physical stress than their counterparts who are not bullies or are victims of cyber victimization (Campbell et al., 2019). Cyberbullied adolescents and cyberbullies are at a greater risk of self-harm and suicidal behaviors (John et al., 2018). They may experience loneliness,

conduct problems such as respecting the rights of others, and have somatic symptoms (Baier et al., 2018). All these effects pose a danger to adolescents' positive development, and it is apparent that cyberbullying, an adolescent ORB, is a challenge that parents, and educators need to address.

Internet disinhibition enables Cyberbullying. Adolescents who demonstrate high internet disinhibition neglect to show sympathy and often do not see or observe social cues (Zych et al., 2019). They may be at a greater risk of participating in cyberbullying activities, especially those who associate with deviant peers when compared to their adolescent counterparts who are low in online disinhibition. Adolescents with low online disinhibition have higher behavior inhibition and self-control (Yang et al., 2021). Adolescents with higher online disinhibition are more likely to witness and perpetrate homophobic cyberbullying (Wright & Wachs, 2020). Because DC provides opportunities for education on these characteristics, researchers will find it valuable to examine its relationship with ORB.

Intervention and treatment programs help prevent cyberbullying or mitigate its effects. However, adolescents may ignore measures and guidelines for cyber safety and cyberbullying and continue online risk actions such as providing personal information (Hutson et al., 2018). Ignoring mesures and guidelines for cyber safety is typical of adolescents' behavior, who sometimes break the rules and take risks and, as such, may need early intervention programs that focus on cyber etiquette and fostering habits of cyber safety behavior (Heyeres et al., 2021). Therefore, the need for early intervention programs establishes the idea of early training that can be habitual in the child's lifestyle,

cyber enculturation- the early training of the attributes, norms, and values of cyberspace culture that becomes part of the citizen's way of life. This is the intention of DC programs.

Another preventative measure is parents' cyber education programs. School leaders and political leaders should establish cyber education programs involving parents (Abreu & Kenny, 2017; Gaffney et al., 2019; Hutson et al., 2018). Such parental-focused programs should present clear definitions and applications that adolescents use, such as Instagram, for knowledge of such programs, enhancing parent-child communication (Heyeres et al., 2021). Other prevention and treatment programs that were studied and recommended include those that focus on policy change, collaboration, and empowerment. Importantly, programs should focus on all groups involved, for example, parents, teachers, students, etc.; communication skills, strategies to deal with its effect; empathy; and positive social engagement (Heyeres et al., 2021). With the numerous suggested and studied strategies for intervention and treatment, it is clear that cyberbullying is a problem perpetrated by adolescents as they interact in cyberspace. This study shed light on DC, an intervention and treatment program, and its relation to general adolescent ORB.

Problematic Internet Use. PIU is one of the adolescent risk factors that has gained the attention of researchers. PIU is synonymous with internet addiction. It is the use of the internet in ways that affect the user's psychological, social, work, and school functioning (Beard & Wolf, 2001; Gu, 2020). As seen in the literature, PIU has become prominent (Uddin et al., 2016) and has affected the lives of adolescents (Cerniglia et

al.,2017). Moreover, several varied contributing factors lead to adolescents' PIU. These may include depression (Dib et al., 2021), parental marital success, psychological disorders, perceived stress, internet expectancy (Gu, 2020), and frequency of use (Laconi et al., 2018; Mamun et al., 2019b; Mamun & Griffiths, 2019b; Vigna-Taglianti et al., 2017). Regardless of the varied factors of PIU, it is a challenge and an internet risk that adolescents face and thus needs examination.

PIU also contributes negatively to adolescents' growth and development as many associated risk factors of PIU are seen (Anderson et al., 2017), even though PIU may range from moderate or severe (Chandrima et al., 2020). As adolescents depend more on the internet, especially those with associated predispositions, there are risks of PIU displayed as increased poor psychological health and social risks (Simcharoen et al., 2018). More specifically, the risks of PIU include lack of sleep (Kokka et al., 2021), peer victimization, mental well-being, anxiety, and stress (Alimoradi et al., 2019; Balcerowska et al., 2020; Pal Sing Balhara et al., 2019; Cerniglia et al., 2017; Vally et al., 2020), lower academic grades (Chandrima, 2020), obsessions and inability to control urges, preoccupation and behaviors related internet use (Mamun & Griffiths, 2019), and poor interpersonal relationships (Livingstone et al., 2017). These noted risks of PIU envelop a wide range of the adolescents' development zones: social, emotional, social, spiritual, physical, and mental. PIU has the potential for harm to the adolescent.

As adolescents persistently seek ways to face the myriad of life or developmental problems, they may turn to the internet for solutions. Some adolescents who engage in PIU do so because they believe they have no other alternative to help them address or

cope with their challenges and their feelings of psychosocial malaise (Venuleo et al., 2021). Ironically, even though the internet has become an avenue for access to resources, people, and places that aid in the normal psychosocial development of adolescents, it poses many risks to those it is enabling. As such, adolescents should have mediation programs or preventative measures to gain the advantage of cyberspace while simultaneously mitigating PIU risks (Bleakley et al., 2016; Chang et al., 2019; Livingstone et al., 2017).

Several measures have been used to successfully address the threat of PIU. Parental or adult mediation positively correlates with PIU (Bleakley et al., 2016; Chang et al., 2019; Livingstone et al., 2017). Examples of such mediation are active mediation internet use, where parents talk to their children about content on the internet; restrictive mediation internet use, as in cases where parents set rules and limits to control use; active mediation internet safety, parents teach their children about safe internet use; and monitoring or technical mediation, where parents install programs to block, filter or monitor use (Chang et al., 2019). This is evident and correlates with studies that identify parental support as a factor that affects PIU (Bleakley et al., 2016; Chang et al., 2019; Livingstone et al., 2017). DC is a form of mediation; therefore, studies focusing on this variable may contribute to a better understanding of PIU.

Emotional intelligence is another form of mediation for PIU. A quantitative study with Spanish adolescents and PIU and smartphone use revealed a negative association between problematic internet and smartphone usage and suicide ideation (Arrivillaga et al., 2020). Adolescents with higher emotional intelligence exhibited weaker problematic

internet and smartphone use and were less susceptible to suicide ideation. The results showed that the problems derived from PIU and inappropriate use of the smartphone may prompt thoughts of suicide. Consequently, adolescents who can evaluate, perceive, and control their emotions can more intelligently use the internet and its auxiliary tools and activities. DC promotes intelligent internet use; my study will examine its relationship to ORB

A positive family environment may help to address the concerns of PIU. A hostile family environment depicted by little cohesion, high conflicts, and low expressiveness correlates with PIU (Sela et al., 2020). The hostile environment prompts depressive behaviors and fear of missing out, resulting in PIU as a coping mechanism (Sela et al.). The results, therefore, suggest that the home atmosphere is crucial to mitigating PIU by mitigating other issues that prompt PIU. Because PIU also deals with inappropriate internet use, methods related to technology use should be considered mediation for dealing with PIU, both preventative and restorative measures. DC is one such method that will be explored in my study.

As adolescents interact, their influence may also enable or disable PIU. Deviant peer affiliation (DPA) correlates with adolescent PIU (Jia et al., 2017; Zhai et al., 2019). As adolescents interact, they observe and imitate each other (Bandura, 1977; Jessor & Jessor, 2016). Therefore, it is significantly likely that adolescents may practice deviant behavior, such as PIU, with their associates. Similarly, adolescents who practice prosocial behavior can be a moderating factor for PIU. DC promotes prosocial behavior; therefore, it warrants examination.

Sexting. Sexting is another of the risk behaviors adolescents engage in as they interact in cyberspace. Sexting is sharing sexually expressive content using any form of media such as text, image, video, or audio enabled by technological devices such as the phone, computer, or using internet-enabled spaces such as social media sites (Bianchi et al., 2021; Boer et al., 2021). Sexting has become more prevalent among adolescents during the pandemic, as seen in the increase in sexting from 2020 to 2021 among girls (Bianchi et al., 2021). Adolescents who engage in sexting spend prolonged hours using their mobile phones for peer-to-peer engagement, prolonged general internet use, and prolonged use of social networking sites (Boer, 2021; Calvete et al., 2021; Yepcz-Tito et al., 2020).

The prolonged device and internet use and its effects on sexting confirmed the different access levels and lengths of access time for other adolescent groups. There is greater technology use among middle and later adolescents and less parental involvement compared to early adolescence (Calvete et al., 2021). Internet management time and parental control may lessen younger adolescents' sexting, which is part of the DC curriculum, as Ribble (2015) and other DC proponents such as Common Sense Digital Citizenship (2022).

Sexting can also be associated with other characteristics. Boer et al. (2021) examined Dutch adolescents' sexting revealing that being male, frequent use of social media, being a younger adolescent, engaging in online porn, having sexual experiences, and being subjected to sexting, are all contributing factors to sexting. This study also revealed the need for an evidence-based preventative approach extended beyond regular

sex education programs to online media literacy initiatives, suggesting a need for preventive interventions. This study seeks to provide such evidence needed for intervention, DC.

Sexual solicitations from adults are also factors that contribute to adolescents' sexting. When adults solicit sexual interactions from adolescents, there is more significant sexualized interaction with adults and greater sexts with peers or partners (Calvete et al., 2021). Inferentially, sexual solicitations attribute to access to digital devices and the internet, making it easier for adults to target or reach out to adolescents. However, Calvete et al. highlighted that younger adolescents have a lower chance of sexual solicitations from adults because they receive greater supervision and less access. It is necessary that adolescents, especially those who are less supervised, become aware of the risks associated with digital technologies and prolonged internet use and spot and analyze risks to avoid such adult interactions or encounters. DC education may bring about this awareness.

Adolescents involved in sexting are motivated to sext when there is an explicit purpose, such as a reward, for instrumental aggravated reasons, and to support body image (Bianchi et al., 2021). Consequently, researchers grouped sexting into two significant categories: experimental sexting, where an adolescent consents to sexting to explore their sexuality and identity, their basic developmental needs, and aggravated sexting. This category denotes that adolescents' intentions for sexting are aggressive and deviant. For example, they share sexts from others without their permission to cause embarrassment or harm (Morelli et al., 2021), or they are coerced to sext. For example,

they sext because of peer pressure or threats referred to it as instrumental aggravated motivation (Wolak et al., 2018). Further, they may sext for something in return, for example, attention from a male. Additionally, they may engage in sexting if they are under pressure from someone, for example, girls within a group who engage in it. Some adolescents also sext for harmful intent, for example, to get back at someone who hurt them.

Though researchers conclude that sexting may have harmful effects on adolescents relating to depression, substance abuse, feelings of sadness, victimization, and suicidal thoughts and consider it deviant (Couturiaux et al., 2021; Doyle et al., 2021; Meehan, 2021; Setty 2020; Van Ouytsel et al., 2017; Wolak et al., 2018), and perpetuation of abuses and harassment (Couturiaux et al., 2021; Rodríguez-Castro et al., 2021; Stanley et al., 2018) others believe that sexting is a regular developmental activity that technology helps to facilitate (Doyle et al., 2021; Setty, 2019). Despite this discrepancy, the noted adverse effects also affect social connections and development which some researchers found beneficial. Therefore, research suggests that parents and educators should encourage adolescents to evaluate the benefits and adverse effects of sexting on their well-being and the well-being of others. Being aware of the well-being of self and others is a goal of DC. A possible relationship between DC and adolescent sexting behavior, an ORB, is a question that this research seeks to answer.

In a latent class analysis study, Mori et al. (2021) found that while some adolescents engage in sexting, not all participate in sexual behaviors and vice versa, and they portray individual differences in their sexual behaviors. However, the authors

encouraged educators to initiate programs to guide adolescents about their sexual and online health. These are also objectives of any DC program.

As adolescents continue to engage in sexting and its associated activities, some character strengths may prevent them from engaging. Two such character strengths are fairness and authenticity. These are negatively correlated to sexting, while humor and curiosity are positively related to sexting (Yepez-Tito et al., 2021). Yepez-Tito et al. emphasized that fairness, deciphering what is morally right and wrong, and treating others with equity, negates sexting especially sharing sexts without permission. Fairness is a virtue that adolescent friends deem necessary, and they correlate it with being trustworthy (Wagner, 2019). Authenticity, being and acting who they are, thus being responsible for their actions (Peterson & Seligman, 2004), is another character trait that mitigates sexting. Adolescents who are accountable and authentic are less likely to engage in sexting (Yepez-Tito et al., 2021). Such virtues position the adolescent to avoid any behavior against such characteristics, including sexting. An effective intervention or prevention strategy that can be used by parents and educators is humor and curiosity used in a positive way to stimulate adolescent development and fairness, authenticity, respect, and responsible use of digital technologies in their relationships. There is a call for parents and educators to promote and encourage character strengths to help prevent ORBs among adolescents. Yet, stakeholders need to know if DC is related to such digitally motivated practices.

Online Grooming and Sexual Solicitation. Online grooming is another ORB adolescents engage in as they interact in cyberspace. Online grooming (OG) is the

process by which an adult befriends minors or their environment to gain emotional access to extract sexual favors or sexual abuse using digital means (Calvete et al., 2020). Recently, researchers and legislators focused on internet predation of minors (Greene-Colozzi et al., 2020). While online sexual solicitation is a one-time request or pressure for sexual favors, OG is a continuous, strategic ploy or preparation of the minor emotions to gain trust, which ends in a sexual relationship. It often involves a series of steps, such as selecting the victim, developing their confidence, developing rapport, touch desensitization, and sexual activity (Winters et al., 2017). Cyberspace facilitated the escalation of OG (Winters et al. 2017).

As adolescents continue to interact online, there is a greater risk of interacting with adults who may solicit sexual activities and seek to groom them for sexual activities (Longobardi et al., 2021). In the United States, 68 % of adolescents between the ages of 11 and 14 and 78% between the ages of 14 and 18 regularly use the internet at home (US Department of Education, National Center for Education Statistics, 2018). About 69%-80% of these adolescents often interact on social networking platforms (Anderson & Jiang, (2018). In Europe, 82% often interact on social networking platforms (Longobardi et al., 2021). They use popular social networking sites such as Snapchat, Kik, and Instagram with chatroom features (Greene-Colozzi et al., 2020). This consistent use of cyberspace and the platforms set a niche for online sex solicitors and groomers. Adolescents reported long conversations with adult strangers they met in chatrooms, social networking platforms, and gaming situations. They often converse with these

strangers because they are bored, lonely, desiring an adventure or excitement, curious, or have similar interests and likes with them.

Adolescents perceive that these strangers are mentors who encourage them about life and education, find them attractive or desirous of sex, and do not seem malicious or aggressive but someone they can trust (Greene-Colozzi et al., 2020). Based on the definition, this is typical of online groomers. Further, any website that facilitates internet communication is the potential for sexual solicitations and OG (Kloess et al., 2017). Notably, access to cyberspace that is so easy and prevalent among adolescents and facilitates communication should have supervision or support for effective use, which acts as protective factors based on Jessor's (2016) PBT.

Too many adolescents experience online solicitation and grooming. Many children and adolescents are at risk for online sex solicitation (Donmez & Soylu, 2020; Longobardi et al., 2021; Longobardi et al., 2020; Marengo et al., 2018; Stahl & Dennhag, 2020). In a quantitative study with 1,133 adolescent participants, 25% percent chatted with adult strangers online. Of those who conversed with strangers, 65% experienced sexual solicitations from adults. Further, of the 1,133, 23% experienced OG from adult strangers. Of these, 38 % met face-to-face with adult strangers, and 68 % of those who met face-to-face engaged in sexual intercourse (Greene-Colozzi et al., 2020). These figures are too high for adolescents who are still forming their identities and positioning themselves to advance to adulthood. Moreover, OG and online sexual solicitation should be considered an ORB for adolescents that needs exploration. Other ORBs, such as

cyberbullying, sexting, intimate face-to-face relationships, and meeting with strangers, are online social comorbidities for OG (Longobardi et al., 2021).

Sexual solicitation and OG have affected adolescents in a variety of ways. Some adolescents who were groomed online and accepted invitations for sex reported that they were at the risk of being emotionally traumatized. Moreover, they are at risk of developing conflicting and strenuous relationships with their parents, depression, suicide, pregnancy, and heartbreak (Greene-Colozzi et al., 2020). These are similar to some of the results of other ORBs, as highlighted above. The results deflate social and emotional development and distort the sexual maturation and exploration typical during adolescence.

As with many ORBs, parents and educators need solutions for combatting OG or solicitations, and researchers have suggested preventions and intervention measures. Researchers suggested intervention through parental training and psychoeducation. Many adolescents reported that they are not supervised by their parents and find it easy to access chatrooms and have conversations with strangers on social networking platforms (Greene-Colozzi et al., 2020). They suggest that parents need education on internet safety and supervising their children online. Educators, communities, and churches should have comprehensive prevention and intervention programs that address the holistic well-being of the adolescent and not just programs that address one issue (González-Cabrera et al., 2021). One such program is DC. However, there is limited knowledge of its relationship with adolescents' ORB.

DC in Schools

Some schools are using DC as a means of helping students develop skills to navigate the internet safely and responsibly. Many schools use the International Standards Technology in Education (ISTE) to guide and evaluate the process. In a quantitative study, Aldosari et al. (2020) surveyed 396 middle and high school students to ascertain how many of the four domains of ISTE DC standards (ethical behavior, intellectual property, digital identity, and digital privacy and security) they see applied or targeted in their learning experience. Aldosare et al. found that students engaged in high levels of ethical behavior and digital identity and showed high levels of internet self-efficacy. Aldosari et al. recommended that educators promote and emphasize DC in middle and high schools, especially in cybersecurity, cyberbullying, intellectual property rights, digital identity, and positive online interactions. Researchers, therefore, need greater clarity on DC's relationship to helping adolescents understand and deal with online risks.

Educational institutions' leaders expect that librarians take the responsibility of teaching DC because it is necessary for students to be aware of practices of safe technology use, which is pervasive in libraries (Dawkins, 2020). Further, policymakers emphasize that all researchers should help learners become digitally literate in the thrust to become a digitally literate nation by researching this concept (US Senator Amy Klobuchar, 2019). Christian schools also seek to incorporate DC in their curriculum to complement the need and support for technology integration. In a document analysis of a Christian school, Smith and Sevensma (2020) found that the school used the theological

concept of discernment in the policies and plans to address the issue of technology use. The ideas were similar to that of DC. They noticed the evolution of the concepts and their application as the plans and use of technology evolved. Some researchers also refer to the DC concept as digital intelligence (DQ) (Fediy et al., 2021). This reveals that schools seek ways to help learners use technology and the internet safely and responsibly. The concept articulated is similar to DC, whether or not they are stated as such. Clearly, DC in schools is a concept and digital or education technology method that schools want to attain; however, they may articulate it differently. An examination of such a method warrants the attention of researchers.

Some may include DC in their curriculum or activities in varied forms, but it still needs to be improved compared to the number of students who have access to the internet and digital devices. While only 37.1% of middle school adolescents noted that they interact with DC concepts in school (Martin et al., 2020), the average youth spends about 6 hours online daily, excluding time engaging in educational activities (Gleason & Von Gillern, 2018). Approximately 98% of American adolescents have access to digital technologies, namely smartphones (Abi-Jaoude et al., 2020; Anderson & Jiang, 2018; International Telecommunications Unit, 2017). Gleason and Von Gillern (2018) confirmed that DC is not a norm in public schools, and youths are left on their own to figure out literacy skills. The disparity in knowledge and access is too significant, and researchers should research the relationship between DC and learners' online activities. Young adolescents do not fully understand DC practices such as cyberbullying, digital footprint, digital privacy, digital netiquette, and digital identity. Teachers, administrators,

and parents should plan and implement measures to address this lack (Martin et al., 2020).

Teachers and parents should expose children as early as possible to DC if this concept blossoms in adolescence. Fediy et al. (2021) cautioned that DC is crucial to the safety and productive lives of children who interact in a virtual world. It is, therefore, necessary for educators to render instruction in DC as soon as children can access digital technology. Therefore, teachers and parents should have programs to help children develop productive habits in cyberspace or DC formation at an early age.

DC in Adolescents

Adolescents may need DC to help them positively and responsibly interact in cyberspace, and one of the popular ways they do so is through social media. When adolescents used a combination of school-directed and informal DC knowledge, they were able to engage in a civic manner. Social media, such as Twitter, showed a reliable means for the informal engagement of DC (Gleason & von Gillern, 2018). During the pandemic, the inverse of adolescent behavior occurred; they moved closer to family and became less aware of friends, losing some of their social ties needed for social development. Consequently, digital technology has become a critical part of their lives to maintain and develop connections via social media 55%, WhatsApp (66%), and video chat (56%). They also spend a lot of time engaged in digital media, such as YouTube (83%), streaming services (56%), and videogames (59%). Consequently, negative and positive online experiences increased, especially in older adults. Educators and parents

provide opportunities for DC since it is crucial in helping adolescents participate and interact safely in a digitally connected world (Magis-Weinberg, 2021).

DC in adolescence is essential for civic and social rights in digital environments. Rodríguez-Pérez et al. (2021) conducted a literature review using the conceptual approach for DC in adolescents. They found that there should be at least five elements of adolescents' DC in the digital environment that teachers should account for: digital self-protection, digital fluency, digital participation, digital ethics, and digital identity. They emphasized that all adolescents must have the opportunity to transfer their right to citizenship to any digital environment. Adolescents can exemplify these abilities through their online civic engagement, care, respect, and intelligent use of information communication technologies (Rodríguez-Pérez et al., 2021). Adolescents are active citizens and need to participate in all meaningful activities, even in online spaces. Educators should accordingly plan for meaningful civic and social participation, and researchers should investigate such topics.

Digital Self-Protection

Society is concerned about the safety of children and adolescents in cyberspace (Buchholz et al., 2020; Gámez-Guadix et al., 2018). Consequently, not only should educators and parents provide means of ensuring their safety, but adolescents should also know how to protect themselves. This knowledge can occur through DC.

Digital self-protection is a feature of adolescents' DC. It involves adolescents' ability to maintain safe spaces, detect dangers and defend themselves and others. Further, it necessitates a choice of physical and psychological health habits (Rodríguez-Pérez et

al., 2018). Digital self-protection in adolescents also demands that adolescents form safe and healthy relationships (Kim & Choi, 2018), be able to employ strategies that will protect their information and ensure their privacy, and they have the skills to use technology safely (Gleason & von Gillern, 2018; Hui & Campbell, 2018). Educators and parents who encourage DC in adolescents empower their children to protect themselves in digital communities.

Digital Identity

Adolescents who interact in cyberspace should know and establish their digital identities. This is an integral part of adolescent DC. Adolescents ascertain their identities from an intersection of life events, transitions, and real-time experiences. However, optimum identity has roots in quality family relationships and friendships where constructive life narratives occur (Branje, 2022). Additional facets of adolescent identity include their personality, self-concept, and environment (Pérez-Torres et al., 2018). If these situations help adolescents form their identity, then one can conclude that these situations may occur both physically and virtually. Digital identity for adolescents involves knowing whom they are in a digital space, being aware of what they do, and understanding the impact of their actions on the digital society. They understand their values and are willing to defend them (Branje, 2022). Adolescents who know their digital identity are, therefore better equipped to make positive choices

The context for adolescents' digital identity development is social networking sites and generally internet-enabled online spaces (Kim & Choi, 2018). Moreover, adolescents tend to self-disclose and feel belonging in their virtual communities by

communicating online. These mechanisms help adolescent peers influence each other digital self-identities (Branje, 2022). Therefore, adolescents who have developed digital identities can cultivate and manage when interacting in digital environments. Any effective DC program should help adolescents understand and manage their digital identities.

Digital Fluency

DC allows adolescents to not only be digitally literate but digitally fluent. Digital fluency involves understanding the use of various digital tools, evaluating their appropriateness, using them for different functions or outcomes, and defending their choices of the devices (Gleason & von Gillern, 2018). Adolescents should be digitally fluent to effectively interact in digital spaces to contribute to the digital society.

Adolescents should have digital data fluency to access and evaluate the information for relevance, accuracy, and currency, for their decision-making depends on it. Additionally, digital fluency encourages fluent communication in imparting ideas online and sharing their stories by creating digital content (Pluss, 2018). Digitally fluent adolescents can leverage technological tools to enhance their learning (Hui & Campbell, 2018; Pluss, 2018). As adolescents grow and develop their digital identities, being digitally fluent may help them accomplish their development goals and be productive digital citizens.

Digital Participation

The goal of digital access should be to participate in digital activities. Consequently, digital participation is another dimension of adolescents' DC. Digital

participation involves adolescents' ability to fully contribute to online communities and facilitate civic and ethical engagement (Hui & Campbell, 2018). Digital technologies are prevalent in adolescents' lives (Cabello et al., 2021), and they are beneficial in helping adolescents participate (Fairlie & Kalil, 2017; Gleason & von Gillern, 2018). Thus, digital participation is a valuable aspect of 21st-century adolescent development. When children and adolescents are included in digital communities and can meaningfully contribute, they experience enhanced development and well-being (UNICEF, 2017).

Li et al. (2017) discovered that adolescents participate digitally in basic participation, game-oriented participation, and creative participation. They tested adolescents' involvement in social media use, media creation, recreational gaming, personal knowledge construction, and social learning. Adolescents who were basic participators had a below-average engagement in all the activities. The gaming-oriented participators also showed below-average engagement in the activities but higher in different gaming situations, e.g., action games. Perceptibly, adolescents who are creative participators showed above-average participation in all activities. It is evident that creative participators may have the most significant benefit in digital participation. It should be the goal of educators, parents, policymakers, and program creators to help them achieve the creative participatory level. Adolescents who are creative participators have higher socio-digital competencies than their adolescent counterparts who are basic and gaming-oriented participators (Li et al., 2017). Because DC demands civic, political, and social participation (Hui & Campbell, 2018), an adolescent digital citizen has the potential to become a creative participator. Educators should select DC programs to

enhance adolescents' socio-digital competencies to enable their digital participation at the highest level. When educators empower them in this regard, they can contribute to the development of society (Casa-Todd, 2018; Hollandsworth et al., 2017).

Digital Ethics

Ethics is an inevitable concern in digital settings. Adolescents who interact with digital technologies will encounter ethical situations because ethics is a typical element in virtual environments; it envelopes adhering to online laws, respect for others, responsible actions, and etiquette (Kim & Choi, 2018). Ethics in DC concerns the adherence to norms and regulations, how adolescents solve problems ethically (Curran & Ribble, 2017), and appropriate engagement in virtual environments (Gleason & von Gillern, 2018). With all these elements of adolescents' DC, adolescents who govern their lives by these elements have a significant advantage in digital safety and well-being. Adolescents who practiced digital ethics of care were responsible for their online behaviors, and undesirable consequences ensued when they failed to apply moral reasoning (O'Reilly et al., 2021).

Though immersed in technology, the youths of this age still need to understand the effective use of technology. While youths may be natives of digital technology, parents, teachers, and society should not presume that they are competent users of technology (Nash, 2019). Experience does not always equate to skill or preference (Brandau et al., 2022). Brandau et al. added that the internet is a vast arena governed by norms of social and ethical behaviors as expected in the physical world. Consequently, adolescents need to learn and practice these norms. Digital literacy enables children to know and understand the norms. Thus, training is needed to help adolescents effectively

use technology and navigate the vast digital space. When they experience training through DC in digital environments, adolescents can better form positive digital identities and navigate digital spaces in a healthy, creative, ethical, and critical manner (Rodríguez-Pérez et al., 2021). Moreover, adolescents must have a created identity in cyberspace and have critical eyes for ethical dilemmas or situations. They must possess the ability to have positive social interactions in online environments (Kim & Choi, 2018). Based on Ribble's (2015) explication of DC, adolescents exposed to DC programs can understand the norms of ethics of digital association and interaction.

There are benefits of participating in online spaces and experiences that adolescents may profit from if they know how to do so effectively. Adolescents who spend time online can establish a social connection and participate in educational and extramural activities, especially for those unable to physically do so (Brandau et al., 2022). Though virtual connections are not without risks, these opportunities are necessary. Educators should ensure that the youths have improved online experiences by providing opportunities to develop social, technical, and emotional skills needed to effectively participate in those online experiences (Hargittai & Micheli, 2019). Educators and parents should seek ways for the youths to access technology while teaching them the norms and skills of building and engaging in successful experiences in an online environment. These are beneficial to social and psychosocial growth and later success. DC can be transformative in this regard (Brandau et al., 2022). Logically, because DC offers opportunities for children and youths to understand the norms and skills that can aid them to benefit from experiences of online participation ethically and sociably,

adolescents stand to benefit if they are digital citizens. Since this is a noble benefit, this study has shed light on the relationship between DC and adolescents' ORB to help guide policymakers and educators in their decision making.

Children and adolescents have the right to access digital spaces and the right to be digitally protected. Because adolescents are a part of a digital society, they must have the opportunity to participate digitally; social inclusion includes digital inclusion (Picornell-Lucas & López-Peláez, 2022). Therefore, policymakers should have digital policies that will protect the rights of the digital well-being of children and adolescents. Picornell-Lucas and López-Peláez (2022) found that caretakers, policymakers, and all relevant entities are increasingly deciding the rights of adolescents in a digital environment. Therefore, adolescents must develop the necessary skills to participate.

Educators and parents are looking for prevention strategies for online harm, and researchers should conduct studies to inform the need. Based on a literature review conducted by Finkelhor et al. (2021) to find out adolescents' internet dangers and the value of prevention programs, prevention programs have two main challenges. There is a lack of research about the nature of online risks. Consequently, program developers lack explicit knowledge and understanding of the origin of the harm and the circumstances that led to them. The other challenge is a scarcity of literature examining the best programs, skills, and messages that will be best to address the harms. Though there are more programs on the issue, few have empirical evaluations. Therefore, educators, program developers, and policymakers will be in a better position to develop effective prevention programs if they understand the harms and have empirical support for the

programs they want to implement. This study provided light on online risks adolescents are exposed to and DC and tested their relationship. Educators and program designers may find it beneficial to develop prevention strategies.

Summary and Conclusions

Adolescents need to practice DC, which students apply in a more meaningful way when guided by their parents. Wang and Xing (2018) confirmed after examining three aspects of Ribble's (2015) digital citizenship theory: (a) digital etiquette, (b) digital access, and (c) digital safety, adolescents demonstrated these attributes at higher levels when they had the support of their parties in their online activities. Though digital etiquette and digital safety were related to parental involvement, parents' socioeconomic status was related to digital access. DC is therefore buttressed with parental support or with other adults such as teachers. Parents and educators should have an active approach to DC.

Even though adolescents seek independence from parents and form relationships and connections using internet-based tools, they need parental or adult support to make these choices safely and responsibly. This aligns with Jessor's (2016) PBT of risks and protective factors. Even though there are risks in cyberspace, protective factors can help mitigate the risk and help adolescents have normal psychosocial development. DC is a protective factor that may relate to ORB in adolescents.

Despite these previous results reported in the literature, the literature does not address whether or not DC is related to adolescents' ORB. This study intended to add to the literature by answering the question, what is the relationship between DC as measured

by SAFE score and adolescents' ORB as measured by PRIUSS score? Further, provided descriptions of the scores so that policymakers and other educational stakeholders may better understand them to enable informed intervention decisions. Chapter 3 describes the data collection strategies and analyses that will help to answer the research questions.

Chapter 3: Research Method

Introduction

This quantitative correlational study aimed to measure DC using SAFE scores and adolescents' ORBs using PRUISS scores and to examine the relationship between DC and adolescents' ORB. This will help educators, parents, and policymakers make informed decisions about the secondary school curriculum and internet uses in the home. This chapter provides an overview of the study's design and the methods and instruments used to collect and analyze data, justifying the selected methods. Additionally, I describe the population, explain sampling techniques for the participants, and describe the procedures for recruitment, participation, and data collection. Finally, I provide a description of the threats to the validity of this study.

Research Design and Rationale

I used a correlational quantitative research design to conduct this study and examined two variables: DC and adolescents' ORB. Because I sought to determine a relationship between these variables, a quantitative approach was required. Quantitative methods are used to test theories by investigating relationships between or among variables (Creswell, 2009). Further, explanatory correlation designs allow researchers to explain the relationship among two or more variables and use statistical correlation tests to describe and measure the degree of relationship between them. Researchers use this method when they intend to show a simple association between two or more variables to determine whether there is a relationship when the intention is not to show causation (Creswell, 2008; Field, 2009). In an explanatory correlational design, researchers accept

the participants to be part of the study as they are, without providing treatment as typical in experimental designs and typically terms it as degrees of associations (Thorndike, 1997). This research design aligns with my research because its purpose is to examine the relationship between two variables: DC and adolescents' ORB. Additionally, this design allowed me to examine and report participants' scores collected with two instruments to provide a snapshot and context for my readers. However, this design does not intend to show causation, nor did I administer an intervention or treatment. This was the best design to answer the research question, test the hypotheses, and fulfill the purpose of the study.

An explanatory correlation design is most fitting when a researcher collects data in one instant in time and analyzes the participants as one group (Creswell, 2008). Another critical factor in this type of research design is finding at least two scores for each participant. Each of the scores represents a variable. This study aligned with these attributes of explanatory correlational design. Data collection and instruments aligned with the choice of this design.

Education research can be conducted using both quantitative and qualitative designs. The choice of method depends on the research questions. A qualitative design does not result in an explanation of the relationships among variables; rather, it allows a researcher to have an in-depth understanding of a phenomenon (Creswell, 2008, p. 51). Statisticians usually recommend correlational research when experimental studies cannot be achieved (Creswell, 2008). Therefore, the use of such a design is common among educational studies.

There were time constraints that affected this study. First, my time was limited due to the financial resources available to conduct this study. Consequently, finishing it in a timely manner helped me address my financial constraints. Second, permission to access the data had some time constraints. I had no control over when the administration of the participating schools provided the data. The administrators collected the data for their administrative use and allowed me to use it. I, therefore, had to wait until they were ready to distribute it. If I did not access the data at a specific time, I might have had to obtain a new site agreement because leadership might have changed.

Methodology

Population

The population in this study was the students enrolled in three private secondary schools in Trinidad. I selected this specific population because the institutional leadership was willing to participate in this study and had interest in the understanding DC and students ORBs as part of their operations. The school leadership of other schools had many bureaucratic steps and processes and many requests for research studies. which would have delayed data collection.

The private organization operated secondary schools with an approximate enrollment of 923 students. The ages of the students range from 12 to 18. I secured an agreement with the Department of Education to use the data from the three schools. Participants were enrolled in any of the three private secondary schools run by this organization. The schools did not have an existing structured DC program and therefore were eligible for participation.

Sampling and Sampling Procedures

I used convenience sampling for this study. I approached the private institution and secured an agreement to participate in part because I work for a related institution, and they were willing to be part of the study. Researchers use convenience sampling when participants or participants' units are easily available and are willing to participate in the study (Creswell, 2008; Frankfort-Nachmias & Nachmias, 2008). This type of sampling is pertinent to quantitative studies because it can provide information that is useful to answer the questions and test the hypotheses. Further, a simple selection was needed, and the population of 923 was ample for this design.

The convenience sample strategy is ideal for this study because of its strengths. This strategy is straightforward and simple (Creswell, 2008). Even though this sampling strategy is convenient, it has some challenges. This strategy does not allow me to confidently say the sample is representative of the population (see Creswell, 2008) because only students who attend one of the three specific private schools were eligible to participate. Although participants were from a private institution, students represent different backgrounds, cultures, and ethnicities in Trinidad. Additionally, all students within the sample of 923 adolescent students had an equal chance to participate.

To compute the sample size, I first determined the input parameters. These parameters included the effect size, the alpha level, the power, and the degrees of freedom. With an effect size of .30, an alpha level of .05, power of .80, and degrees of freedom five, recommended by Buchner et al. (n.d.), I conducted a G*Power analysis. The results showed that I needed a sample size of 148. Though this size was enough, I

used the entire data set to ensure I had enough valid responses and a wider scope of responses.

Procedures for Recruitment, Participation, and Data Collection

Recruitment and Participation

Once the study site administrators and Walden University Institutional Review Board (IRB) approved the study proposal, the Department of Education, agreed to grant me access the data they collected from their students based on schools' day-to-day operations. The site administrators collected the data to be used for their own purposes. The participants included in the study met the inclusion criteria of any student enrolled and attending a school that did not offer digital citizenship training and who was available on the day of the survey implementation. Because subject areas and grade levels were not variables in this study, teachers decided the best time and strategy to collect the data. Teachers administered the survey as part of class activities. Teachers were offered an online module on DC as a thank-you to the administration for providing the data.

Data Collection

I established a site agreement with the Department of Education to use the data from its secondary schools. The school administrators agreed to grant me access to the data they had collected from the student population as part of their regular school operation and allowed me to access the data. My committee approved the proposal, and IRB approved the site agreement and my IRB submission (approval number 08-19-22-0107339). After that, I submitted a proposal and briefed the education director and principals about the study, the purpose of the research, and their role in the process. The

schools used two instruments to collect the data: the SAFE DC scale (Choi et al., 2017; Kim & Choi, 2018) and the PIRUSS (Jelenchick et al., 2014) ORB survey. I had no interaction with the participants. The administrators and teachers determined the time of data collection and conducted the process as part of their classroom routine.

Schools collected and archived survey data for their own purposes and agreed to share. This data source is associated with quantitative correlational studies (Price et al., 2015). Archival data were the most appropriate for this study because the target population of adolescents is considered a vulnerable population (Frankfort-Nachmias & Nachmias, 2008). Archival data in this format, selecting the suitable instruments based on the research variables for the schools to distribute, helped me have appropriate data without meeting all the requirements for collecting data from a vulnerable population and addressing ethical issues. The teachers completed the data collection process and shared a copy of the data with me.

Instrumentation and Operationalization of Constructs

The SAFE model (Choi et al., 2017; Kim & Choi, 2018), see Appendix C, measures adolescents' DC and guides the direction of DC education. This instrument was appropriate to the study in that it examined the independent variable, DC, and the essential DC elements as espoused by Ribble's (2015) digital citizenship theory. The attributes of DC are: (a) self-identity in a digital environment, (b) activity in the online environment, (c) fluency for digital tools, and (d) ethics in the digital environment. The researchers developing the instrument used exploratory factor analysis (EFA) and then cross-validated it with confirmatory factor analysis (CFA). Participants for the scale's

development study were 200 pre-service and in-service teachers who taught DC to adolescents.

For the SAFE instrument, Kim and Choi (2018) conducted EFA and CFA with maximum likelihood factoring and the direct Oblimin rotation because they assume the factors are correlated and to ensure the items are loaded properly. They tested for reliability and validity of scales using Cronbach's alpha and CFA using structural equation modeling. The results showed that the Cronbach's alpha coefficient for 18 items on the DC scale was 0.75. The Cronbach's alpha coefficients for verifying the internal consistency of each subfactor extracted from the exploratory factor analysis were 0.92 for the first factor, 0.74 for second factor, 0.83 for the third factor, 0.91 for the fourth factor, and 0.76 for the fifth factor. In summary, the homogeneity between the items constituting each subfactor of DC was between 0.74 and 0.92 (Kim & Choi, 2018, p. 164). The instrument uses a five-factor 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree.

The PRIUSS instrument (Jelenchick et al., 2015), see Appendix D, tests PIU and risk behaviors. This instrument was appropriate for this study because it tested the ORB variable in adolescents. The PRIUSS instrument has 18 items with three subscales: (a) emotional impairment, (b) social impairment, and (c) risky/impulsive internet use. The instrument is based on the PIU conceptual framework established by Moreno et al. (2013). The framework has seven basic constructs: (a) psychological risk factors, (b) physical impairment, (c) emotional impairment, (d) social functional impairment, (e) risky internet use, (f) impulsive internet use, and (g) internet use dependence. These

constructs are similar to the problem behavior theory (Jessor, 1991; Jessor, 2016) that I used to ground this study. The researchers used 714 college students as the participants to develop this instrument. This instrument uses a three-factor, 5-point Likert scale: 0 = never, 1 = rarely, 2 = sometimes, 3 = often, and 4 = very often.

Jelenchick et al. (2014) tested the face validity of the instrument using a pilot group of 714 young adult students ages 18 to 25, which resulted in some minor word changes. The participants rated the PRIUSS items consistent with the theoretical framework used to ground the instrument to establish content validity. Jelenchick et al. established construct validity by using iterative EFA with the Biquartimin rotation, a factor analysis oblique rotation technique (Gorsuch, 1970), to reduce the items based on the scale's factor structure. The researchers also calculated a Cronbach's alpha coefficient to determine the instrument's internal consistency. Jelenchick et al. found that "Cronbach's alphas for the sub-scales were 0.89, 0.90, and 0.88, respectively. The final 18-item three-factor model provided a good fit in the cross-validation sample (GFI = 0.92, RMSEA = 0.06)" (p. 174).

Participants did not disclose their names and the name of their schools. They completed the instruments using a pencil and paper during their respective class sessions or chapel sessions on the selected days. Teachers administered both tests on the same day in one sitting. Participants needed approximately 20 minutes to complete each instrument, and the teachers supervised the process.

I received permission from the authors to use these instruments in my research. See Appendix A and Appendix B, respectively for permission from the authors. Walden's

IRB advised that the researcher may use the data if the school staff (teachers and/or administrators) of the schools collect and store the data as part of their operational process and release the data to me as secondary data.

Data Analysis Plan

I used Pearson's *r* test of association to test the relationship between the variables and measured the relationship's strength (Field, 2008). This test helped answer the question —what is the relationship, if any, between DC as measured by the PRIUSS score and adolescents' ORB as measured by the SAFE score? The Pearson's *r* tested the hypotheses:

H0: There is no correlation between DC and adolescents' online risk behavior.

HA: There is a correlation between DC and adolescents' online risk behavior.

Field (2008) noted that the criterion for using this type of test is that the variables should be continuous on an interval scale to accurately measure a linear. Both instruments I used in this study are interval scales, using 5- point Likert scales. As part of the analysis, I selected descriptive options to use —mean, standard deviation, and variance to understand and describe the participants' PRIUSS and SAFE scores. I calculated descriptive measures of central tendency to understand the pattern and distribution of the scores using the mean. Additionally, to understand the spread of the scores, I used measures of spread statistics —standard deviation and variance. These two types of descriptive analyses complement each other, adding greater clarity to the data set (Lee, 2020).

SPSS was used to screen and clean the data. Data screening allows the researcher to ensure that the data in the data file accurately represents what the participants provided, and the data meets the inherent assumptions of the statistical test (Meyers et al., 2016). Value cleaning is necessary as part of the data screening process to ensure a valid analysis. Values cleaning allows the researcher to verify all values are appropriate or correct for each variable as described in the study. It also helps the researcher to identify missing values. I deleted all data that were not clean. One method appropriate for value cleaning of data that I employed was frequency tables. This was necessary to detect illegitimate codes or values and determine whether these codes or values were reasonable (Meyers et al., 2016).

Another method of screening data is screening for missing values. I looked for missing values guided by Graham's (2009) "mechanisms of missingness": "missing at random," "missing completely at random," or "not missing at random" (p. 552) and used SPSS missing values analysis module to identify and manage the missing values. This module helps researchers to note the patterns in the missing data sets, use statistical algorithms to impute missing values, and estimate summary statistics (IBM, n.d.). These measures helped to facilitate the process of determining the nature or severity of the missing values so that the appropriate measures, such as ignoring the values as irrelevant or deleting the cases because of important missing values, were used to handle this (Meyers et al., 2016). I used the listwise deletion method (Meyers et al., 2016) to exclude participants that had cases with missing values for any of the variables at random. The

concern of sample size reduction that is typical with the listwise method (Meyers, 2016) was not an issue because I used more than the required sample size.

Threats to Validity

Validity in research ensures that the research measures what it says it will measure (Frankfort-Nachmias & Nachmias, 2008). Researchers and practitioners can depend on the results to advance change. Researchers, therefore, should ensure that the methods, instruments, and conclusions are valid. Because measurement can sometimes be indirect, researchers may be unsure whether they will measure a variable that the research intends to measure (Frankfort-Nachmias & Nachmias, 2008). Therefore, they reiterated that the researcher should provide evidence that an instrument measures the variable it intends to because the instrument's validity can impact the conclusion's validity. A study, therefore, may have threats to validity. Researchers ensure several types of validity: content validity, criterion-related or empirical validity, construct validity (Frankfort-Nachmias & Nachmias, 2008), and statistical conclusion validity (García-Pérez, 2012). For this study, I examined and identified the threats to construct and statistical conclusion validity because these are most relevant for correlational research using survey instruments (Mitchell, 1985).

Construct Validity

Researchers establish construct validity when the findings are meaningful, and the measurement is aligned with the study's theoretical framework to determine logical and empirical alignment with the concepts and assumptions of the theory (Frankfort-

Nachmias & Nachmias, 2008). Additionally, they prove construct validity when the scores from the instrument show significance and fulfill their purpose (Creswell, 2008).

Nunnally (1978) identified the following threats to construct validity: (a) a vague definition of the construct, (b) inadequate preoperational definition of the construct, (c) an inadequate explication of constructs and their levels, and (d) inadequate explanations of construct's boundaries. To manage these threats, I clearly defined the DC and ORB constructs, and I identified and explained the appropriate boundaries for the study in Chapter 2 of this study.

If the instrument fails to measure the construct, construct validity will be an issue (Frankfort-Nachmias & Nachmias, 2008). I selected an adequately aligned tool with the constructs regarding definition and boundaries and examined its validity measures to avoid this threat. The authors of both the SAFE (Kim & Choi, 2018) and PRIUSS (Jelenchick et al., 2014) instruments established high reliability and construct validity by using concept analysis, EFA, and CFA.

Statistical Conclusion Validity

Statistical conclusion validity (SVC) deals with the degree to which data correlates or does not correlate (Cook & Campbell, 1979). This type of validity has several threats, and researchers should take precautions to deal with the threats. Some threats to statistical conclusion validity include low statistical power, which happens when observations within the study are too limited to determine or discover the effect. Additionally, there is a threat of violated assumptions in statistical tests when researchers conduct an inappropriate test for the data, its goals, and its design (García-Pérez, 2012). I

used Pearson's *r* coefficient to analyze the data in this study. The Pearson's *r* test is appropriate when the researcher seeks to test the relationship between two continuous variables and the data is continuous on an interval scale. The researchers will only yield accurate results in testing linear relationships when the data are interval (Field, 2009). Pearson's *r* is an appropriate fit for the goal of this study, to examine the relationship between DC and adolescents' ORB, and therefore suitable for quantitative correlational research (Creswell, 2008).

Another threat to SCV is the small sample size. If the sample size is too small, there is a possibility of an incorrect result (García-Pérez, 2012). To combat this threat, I conducted a G*Power analysis to calculate the sample size. The sample size suggested was lower than the sample size of the sampling population. Generally, SCV has two types, Type one error, where the researcher rejects the null hypothesis claiming that there is a statistically significant relationship between the two variables when there is no relationship. There is also Type two error when the researcher rejects a false null hypothesis that is true (García-Pérez, 2012). Researchers should declare the study's validity limitations in conclusions because data may not unequivocally answer research questions (García-Pérez, 2012). Therefore, I ensured that Type-I and Type-II errors rates match those I declared in the limitation by setting the appropriate conditions, including using the correct tests and having an adequate sample size. There is a violation of SCV when researchers lose control over Type-1. One threat to these errors is repeated testing. However, Frick (1998) proposed that researchers conduct repeated testing or optional

stopping under the composite open adaptive sequential test (COAST) principle to control Type-I error.

Insufficient data collection may contribute to an incorrect conclusion. I used two different instruments to test the variables to deal with this threat. These two instruments measured the two constructs to enhance the understanding of the study, therefore leading to a more accurate conclusion of analysis (Salkind, 2010).

Ethical Procedures

Researchers always face the issue of ethics when conducting research. The ethics in social sciences research has become more of a concern with the advancement, penetration, and sophistication of methods and analysis of data (Frankfort-Nachmias & Nachmias, 2008). To this end, research investigators should apply procedures to ensure grounded ethical practices. The nature of the study and its data collection methods have embedded ethical issues that researchers should identify and plan to address. One such issue is the kinds of participants researchers collect data from, for example, the poor and children (Frankfort-Nachmias & Nachmias, 2008).

Researchers should unequivocally address the issue of privacy when conducting research involving human subjects. Frankfort-Nachmias and Nachmias (2008) encouraged researchers to implement procedures such as anonymity and confidentiality to safeguard the participants' privacy. They cautioned that researchers should adhere to these two methods without fail and adhere to all the relevant institutions' codes of ethics.

This study involved the use of a vulnerable population—adolescents. To address this, the participating institutions agreed to collect and store all data. Thus, they own the

data. I used archival data and had no access to the participants. Regarding the ethical issue of privacy, all data was anonymous. The teachers did not collect any data that could have identified the participants. Frankfort-Nachmias and Nachmias (2008) confirmed that this is a simple and effective way of ensuring anonymity.

Because others may access confidential information via emails, the participating institutions distributed only hardcopy data. However, I informed them that if the court subpoenaed the data, I would have to surrender it. The institutions provided me with hard copy documents to avoid data breaches through electronic means. I, therefore, converted the raw data to electronic form for data analysis using SPSS. I created a folder on a dedicated storage device protected by a password and stored it in a secure place. I will delete all data after 5 years.

One of the ethical issues that I had to consider was my relationship with the participating organizations. I am an employee in a tertiary institution in a private organization. The participating sites were secondary schools. The educational department of this organization in Trinidad operates primary and secondary schools. The Caribbean region officiating body of this organization governs the tertiary institutions. The department of education was not obligated to participate in this study because I am an employee in a related institution. This was personal research, and there is no institutional commitment to my study. Further, I was not familiar with the students and most of the teachers.

I adhered to all ethical procedures from the participating institution and Walden University. The Walden IRB reviewed this study to ensure I addressed all ethical issues.

Summary

This study used a quantitative, correlational approach to collect and analyze data. This approach is appropriate to the study's questions and problem to determine the relationship between DC and adolescents' ORB as measured by SAFE score and PIRUSS. Adolescent students at three secondary schools from a private organization in Trinidad participated in the study by answering the questions presented on the two instruments I highlighted. These instruments are reliable and valid.

There are threats to validity, specifically, construct and statistical conclusion validity, which are relevant to this design. The threats to construct validity include vague definitions and incomplete or inaccurate explanations of the constructs. I ensured that I selected instruments that had been validated. All descriptions and explanations of the constructs were clear to eliminate this threat. Further, construct validity can become compromised if there is an insufficient sample size. I ran a G* power analysis to calculate an accurate sample size to deal with this issue.

Researchers also face the issue of ethics when conducting research. Researchers should apply all necessary steps to address ethical problems such as the population's vulnerability and participants' privacy. Because the population is vulnerable, I used archival data, and the participating school leaders removed personal information from the data to protect the participants' privacy.

I am an employee of a private organization in Trinidad that has tentatively agreed to participate in the study. However, I work at the tertiary level and am not familiar with the students.

After receiving approval from the Walden University Research Review and IRB approval, I accessed the archival data and analyzed the data. I shared the data collection process in chapter four and noted any discrepancies. I also explained the results from the analysis based on the research question and hypotheses.

Chapter 4: Results

Introduction

The purpose of this correlational study was to examine the relationship between DC and adolescents' ORB among Trinidad private school students. The variables were measured using participants' SAFE scores and PIRUSS scores. This study answered the following question and tested the following hypotheses:

RQ1: What is the relationship, if any, between DC as measured by the SAFE score and adolescents' ORB as measured by the PRIUSS score?

H_0: There is no correlation between DC and adolescents' ORB.

H_A: There is a correlation between DC and adolescents' ORB.

The study frameworks were twofold. First, Jessor and Jessor's (1977) risk behavior theory explains risk behavior and the nature of adolescents, the factors that promote risks, and the factors that protect against risks. Second, Ribble's (2015) digital citizenship theory provided a foundation of skills, knowledge, and behaviors that constitute DC. In this chapter, I describe the data collection process and report the results.

Data Collection

I received IRB approval and began data collection process by contacting the individual schools permitted to participate. I shared details of the study with principals and teachers. Three schools participated, and the school administrators agreed to share previously collected surveys. All the classes, Forms 1 to 5, had representative participants in all three of the schools.

Data collection and processing occurred over an 8 week period because external activities and adverse weather conditions impeded the process. One of the schools completed the process in 2 weeks and provided 80 completed surveys. This data set alone did not meet the requirement of 148 valid samples to achieve an accurate correlation based on the power analysis. Eventually, I received the data from the other two schools, with 683 completed surveys from the three schools.

After I screened and cleaned the data by removing incomplete or confusing responses, 597 participants met the inclusion requirement and were eligible for the study. This total was more than the 148 required for the analysis. I made no modifications or deviations from the approved study plan.

The study population was private school adolescents in Trinidad. All participants were adolescents ages 12 to18 who attended private secondary schools. Participants included no demographic information to protect their identity. The site administrators agreed to release the data only if they were deindentified. Moreover, the study needed no demographic information to answer the question or test hypotheses.

The sample was comprised of adolescents from three secondary schools located in different school districts of the same private institution instead of randomly selecting from all private institutions in Trinidad, a convenience sample. A significant representation from each district in the study institution had the opportunity to participate. Consequently, the data are representative of adolescents from the study institution in Trinidad. Although the data represents the participated school population, the study participants and results are not representative of the adolescent population of all

private schools or the wider adolescent population in Trinidad. Because of the large sample size, the results have some generalizability to other adolescents in similar private institutions in the Caribbean in a similar population.

Results

In this section, I report the results of my analysis to answer the research question. This quantitative correlational study was based on data gathered from two surveys. Therefore, the results reported are based on Pearson's *r* correlation between DC and adolescents' ORB and the descriptive statistics of the participants' scores from the two instruments. The results are reported in two sections: descriptive statistics, which summarizes the participants' scores, and Pearson's *r* correlation, which explains the correlation between DC and adolescents' ORB.

Descriptive Statistics

Descriptive statistics helps a researcher describe, summarize, and share patterns in data based on individual and collective scores. Because demographic data were not made available, descriptive statistics are limited to the scores and do not include the participants' demographic characteristics. Participants completed the SAFE and PRIUSS surveys to measure their DC and ORB, respectively. The SAFE scores test DC on four factors: (a) self-identity, (b) activity online, (c) fluency for the digital environment, and (d) ethics for the digital environment. These factors are based on the SAFE framework for DC in adolescents (Kim & Choi, 2018). The PRIUSS scores show adolescents' internet problematic and risky internet use on three factors: (a) social impairment, (b) emotional impairment, and (c) risky/impulsive internet use (Jelenchick et al., 2014). In

this section, I describe the scores. The scores show the sum of each item's scores on the SAFE instrument's four subscales and the PIRUSS instrument's three subscales, along with their mean scores, standard deviation, and variance.

SAFE Scores

On average, participants showed self-identity at a level of 4.12 (SD = .628, V = .394) and activity online at an average of 3.49 (SD = .719, V = .517). Participants, on average, reported fluency for the digital environment at 3.17 (SD =.626, V = .392) and ethics for the digital environment at 3.68 (SD = .744), V = .553). Table 1 shows the SPSS output of these scores. The mean SAFE scores indicate that participants agreed they moderately participated in positive self-identity, online activity, and ethics for the digital environment activities. However, participants were undecided about their fluency in the digital environment. Participants showed an average engagement of digital DC activities at 3.46 (SD = .469, V = .220). On average, participants agreed that they moderately participate in DC activities (M = 3.46, SD = .469). See Table 2 and Figure 2.

PRIUSS Scores

As shown in Table 1, on average, participants reported that they rarely participated in social impairment activities (M = 1.41, SD = .871, V = .759) and in emotional impairment activities (M = 1.27, SD = .958, V = .917). However, they sometimes participated in risky/impulsive internet use (M = 1.68, SD = .899, V = .809). Participants rarely to sometimes participated in adolescents' ORBs (M = 1.47, SD = .745, V = .555); see Table 2 and Figure 3.

Table 1

Scores Showing Mean, Standard Deviation, and Variance (N=597)

		DC			ORB		
	Factor 1	Factor 2	Factors 3 & 5	Factor 4	Factor 1	Factor 2	Factor 3
N	Valid	597	597	597	597	597	597
	Missing	0	0	0	0	0	0
Mean	4.1161	3.4958	3.1677	3.6790	1.4115	1.2740	1.6849
SD	.62801	.71876	.62578	.74350	.87098	.95767	.89938
Variance	.394	.517	.392	.553	.759	.917	.809

Note. DC: Factor 1 is self identity, Factor 2 is activity online, Factors 3 & 5 are fluency of online environment, and Factor 4 is ethics in digital environment. ORB: Factor 1 is social impairment, Factor 2 is emotional impairment, and Factor 3 is risky/impulsive internet use.

Table 2

Descriptive Statistics of SAFE and PRIUSS Scores

N	Valid	597	597
	Missing	0	0
Mean		3.4656	1.4796
SD		.46946	.74497
Variance		.220	.555
Minimum		1.11	.00
Maximum		5.00	3.89

Figures 3 and 4 show a pictorial representation of the mean scores for DC and adolescents' ORB based on the SAFE and PIRUSS scores.

Figure 2

Citizenship Mean Score

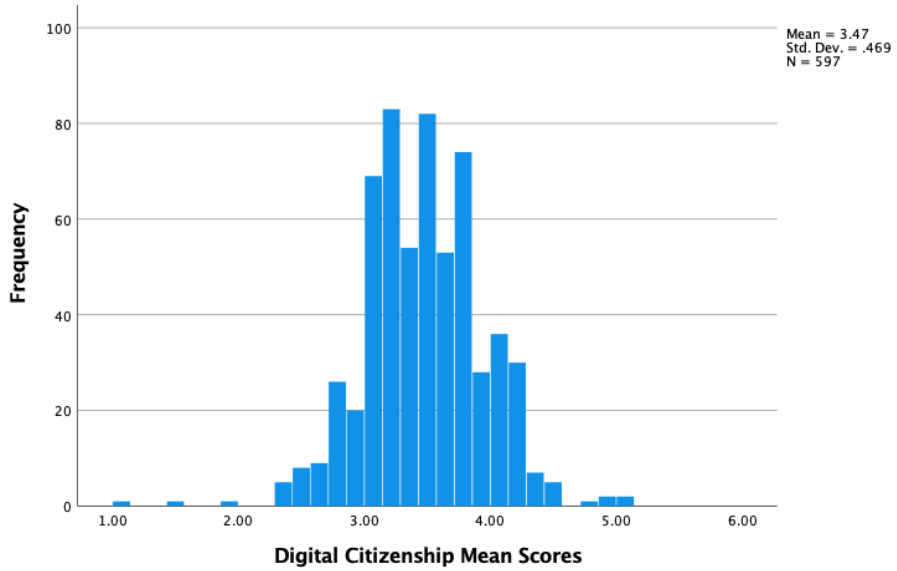
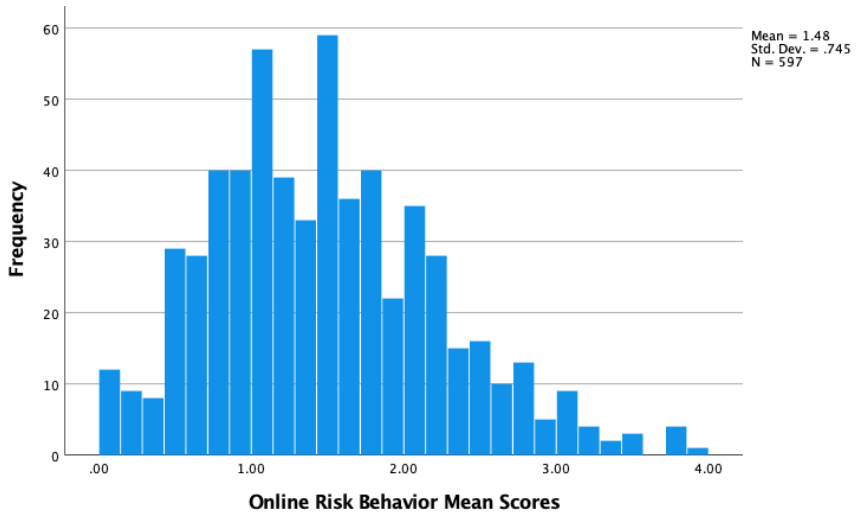


Figure 3

Online Risk Behavior Mean Scores



Pearson's *r* Correlation

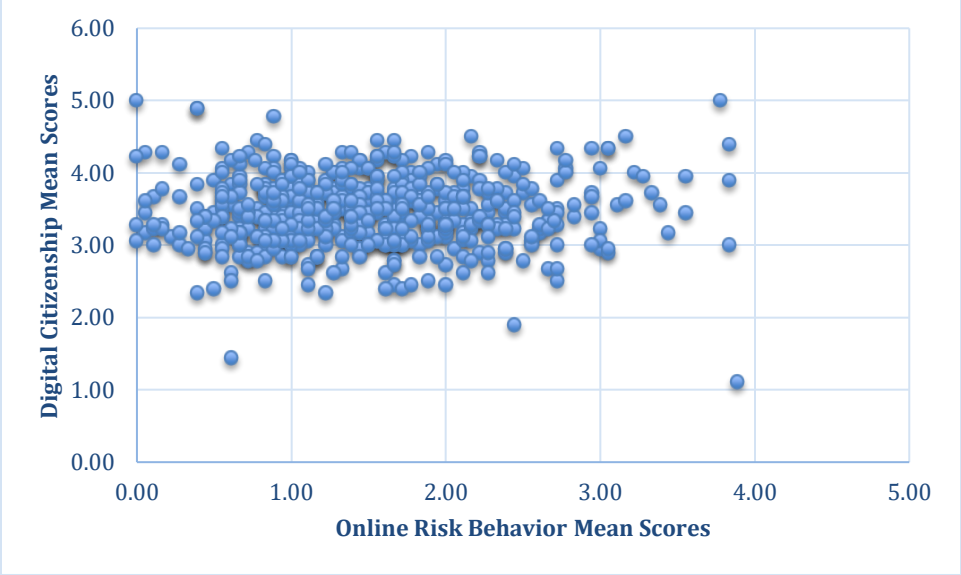
To test the correlation between DC and adolescents' ORB, I ensured that all responses were valid by removing all surveys with missing or confusing responses, responses that had unanswered items, items with more than one response for the same question, or ambiguous markings. Inclusively, 12% of instruments were invalid.

Statistical Assumptions for Pearson's r Correlation

There are three major statistical assumptions that the data should meet for researchers to conduct Person's r correlational statistical analysis: the data set must have a linear relationship, no outliers, and bivariate normality (Laerd Statistics, 2022). Testing the assumptions was necessary to ensure the data were fitting for a Pearson's *r* analysis to achieve a valid result. Preliminary analysis to test these assumptions established a linear relationship between DC and adolescents' ORB. The scatterplot confirmed a linear relationship between the two variables, although not positive or negative. Moreover, there should be no significant outliers in Pearson's *r* correlation statistical analysis. As the scatterplot shows, there are a few outliers in the data set. However, because there were 597 participants—more than the required 148 for a Pearson's *r* correlation—the outliers may not impact the results of the study. Moreover, though different from the average, the outlier scores fall within the range of 1–5 for DC and 0–4 for ORB and are, on average, 0.5% representative of the participants. See Figure 4 for the scatterplot. This implies that the data set can be used to conduct a Pearson's *r* correlation and a few response irregularities are less likely to change the study's outcome.

Figure 4

Scatterplot of Digital Citizenship Mean Scores and Online Risk Behavior Mean Scores



Another critical assumption is bivariate normality (Laerd Statistics, 2022). Inferential statistics must test the null hypothesis' significance. Not all variables were normally distributed as assessed by Kolmogorov-Smirnov's test ($p > .05$). DC had a normal distribution ($p > .05$). In contrast, adolescents' ORB had an abnormal distribution ($p < .05$). Table 3 shows the results. While the data set somewhat failed to meet the assumptions of normality for both variables, Pearson's *r* correlation is a robust test. Consequently, if the data set does not meet the basic assumptions, singly or collectively, it may not affect the generated distributions of rs (Havlicek & Peterson, 2016). Therefore, Pearson's *r* analysis is appropriate for the study and will not jeopardize the integrity of the results.

Table 3

Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
DC mean scores	.042	597	.015	.985	597	<.001
ORB mean scores	.063	597	<.001	.978	597	<.001

a. Lilliefors Significance Correction

Pearson's r Correlation Analysis

Pearson's *r* correlation analysis was used to test the relationship between DC and adolescents' ORB. The analysis revealed there was no significant correlation between DC and adolescents' ORB $r\ (595) = .03$, $p = .409$ (see Table 4). There are two values to measure the correlation by +1, which indicates a positive relationship, to -1, which indicates a negative relation. A value of 0 indicates that there was no association. The closer the result is to 0, the weaker the relationship. In a correlation, $0.1 < |r| < .3$ denotes a small relationship; $0.3 < |r| < .5$, a medium relationship; and $|r| > .5$, a strong correlation (Cohen, 1998). Thus, for this study, the correlation was .03, which is very close to 0, indicating there is no correlation between the variables.

Table 4

Correlations of Digital Citizenship and Online Risk Behavior (N = 597)

		DC total	ORB total
DC total	Pearson Correlation	1	.034
	Sig. (2-tailed)		.409
	N	597	597
ORB total	Pearson Correlation	.034	1
	Sig. (2-tailed)	.409	

Adolescents' ORBs do not statistically show an association with their characteristics of DC. DC statistically explains 0% of the variability in adolescents' ORB. Consequently, I cannot reject the null hypothesis—there is no correlation between DC and adolescents' ORB—and cannot accept the alternative hypothesis- there is a correlation between DC and adolescents' ORB. Because $p > .05$, there is insufficient evidence to accept the null hypothesis. If a researcher replicated this study with a different population, for example, students from other private schools, the test statistic would generate a similar value to the one studied.

Summary

This study aimed to examine the relationship between DC and adolescents' ORB using the SAFE scores (Kim & Choi, 2018) and the PIRUSS scores (Jelenchick et al., 2014). Descriptive statistics showed that, on average, 37% of adolescents rarely or sometimes engaged in ORB-related activities. On average, 69.2% of them engaged moderately undecided or agreed that they participated in DC activities. Moreover, most adolescents in the sample showed competency in the self-identity factor of DC, and the fewest of the participants showed competence in the fluency of online environments factor. Most responded that they frequently engaged in risky/impulsive ORBs. The fewest adolescents reported that they frequently engaged in emotional impairment ORBs. Most responded with the frequency of use in the risky/impulsive factor of ORB and least in the emotional impairment factor.

Pearson's *r* correlation analysis indicated no correlation between DC and adolescents' ORB. Therefore, I accept the null hypothesis because there is insufficient

evidence that if the researcher applied this study to a different sample, the results might be as comparable as observed with this sample. Chapter 5 highlights a discussion of these results.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

This correlation quantitative study was conducted to examine the relationship between DC and adolescents' ORB measured using the SAFE and PRIUSS instruments. The findings can help policymakers, educators, and parents make informed decisions about interventions and prevention programs to foster effective and responsible internet use. Although the findings indicated no relationship between DC and adolescents' ORB, findings may vary in different settings and different study populations. Future researchers can examine other variables that might have influenced ORB and DC.

The findings show that while most adolescents reported participating in DC activities, especially those relating to self-identity, 37% indicated they rarely or sometimes participate in ORB activities. Moreover, respondents most frequently conveyed participating in risky/impulsive behaviors more than all other PRIUSS behaviors. Pearson's *r* failed to show a significant relationship between DC and adolescents' ORB.

Interpretation of Findings

In this section, I interpret the descriptive analysis results and Pearson's *r* correlation compared to previous studies and analyze how the findings align with the theoretical framework. These sections are followed by an explanation of how study findings extend the body of literature on DC and ORB.

DC is an essential standard for responsible and safe digital actions. The purpose of DC is to help digital users have responsible, positive digital experiences for themselves

and for the collective good of all users (Ribble, 2015). DC enables users to access information and make positive choices during interactions with resources and other users (Common Sense Education, 2020). This is the goal of DC, which seems to have an implicit relation with ORB.

Because ORBs are behaviors that go against established norms and standards in online spaces and have the potential for objectionable outcomes measured by formally enacted rules (Kim & Han, 2020), it is evident that when adolescents assimilate and apply the DC way of life, there is a related response of adolescents' ORB. Furthermore, researchers believe there is a need for studies in DC because parents are concerned about the increased risks associated with online activities (Buchholz et al., 2020; Gámez-Guadix et al., 2018); many schools have not explicitly included DC and, by extension, ORB in the curriculum (Aldosari et al., 2020). The literature reviewed in Chapter 2 established an apparent relationship between DC and ORB with insufficient evidence of that relationship. Therefore, I conducted this study to examine and explain this relationship between DC and adolescents' ORB.

Interpretation of the SAFE and PRIUSS Scores

The adolescents reported that of the four SAFE measurement categories: (a) self-identity, (b) activity online, (c) fluency to the digital environment, and (d) ethics in the digital environment, they were most aware of and practiced self-identity activities, which include rights, responsibility, obligation, and etiquette online (Kim & Choi, 2018). This report on greatest awareness of self-identity activities might have resulted from participants having more information on protecting themselves while online, especially

during the COVID-19 pandemic that elicited a mandate for online schooling, requiring that teachers and parents reinforce the need for online safety, ethics, and security.

Aldosari et al. (2020) found that more schools use ISTE standards, and middle and high school students showed high levels of digital identity, ethical behavior, and internet self-efficacy when matched against ISTE DC standards. The use of ISTE standards may be a result of the pandemic's shift toward online education. Additionally, Aldosari et al. did not examine ORB. Though this result has some variations compared to my study, the general trend is similar in that some schools require some form of implicitly DC-related instruction that leans toward safety and ethics out of the recent heightened internet use. However, more research is needed about its association to ORB.

Some Christian schools espouse DC-like characteristics in their operations. For example, a Christian school integrated a theoretical concept of discernment to address issues of technology use (Smith & Sevensma 2020). The knowledge and application of some DC and ORB principles may have been similar to the Christian private schools used in this study. The administrators, teachers, and students might have integrated them into school life. This also might have been attributed to participants basic knowledge of DC and their choices of online activities.

Further, the concept of digital intelligence or digital intelligence quotient (DQ) purported by Fediy et al. (2021) could have contributed to the results of knowledge in digital identity, online activity, and ethics of online activities. DQ is the notion that digital users are aware of applying principles of safety and ethics online, though not explicitly stated as DC principles. The adolescents in this study might have possessed

some form of DQ. The results, therefore, confirm the research literature where this is concerned.

Although they reported participation in ethics online and activity online factors, study respondents also reported that they participated less in *ethics in the digital environment* activities and *activity online* activities, respectively. *Ethics in the digital environment* concerns establishing and managing adolescents' digital identity and reputation. *Activity online* denotes their knowledge and literacy skills that enable them to interact in the digital environment (Kim & Choi, 2018). Perhaps, students had some information or training about safe online behavior and, to a lesser extent, on the technical skills needed to be effective in their online interactions. However, teachers or parents might have required less or provided fewer opportunities for learning and developing skills related to ethics in a digital environment factor. Educators and curriculum designers should place equal attention to all factors of DC if adolescents should be informed and responsible digital citizens.

Furthermore, the study participants' least reported behaviors were those related to fluency in digital environments. This factor deals with users being able to display positive, safe behaviors online unconsciously. Digital fluency is more than knowing how to use digital tools. It is the ability to naturally solve real-world digital problems using digital tools and critical and creative thinking skills, data collection skills, and integration of ideas (Kim et al., 2013; Miller & Bartlett, 2012; Wang et al., 2013). Digital fluency is also necessary for access and evaluation of information, fluent communication, dissemination of ideas creation of digital content (Pluss, 2018), and for leveraging of

technological tools to enhance learning (Hui & Campbell, 2018; Pluss, 2018). Fluency, the least reported activity category, connotes the lack of emphasis on proficiency in understanding and applying positive behaviors as a way of life. Adolescents may have learned enough to manage online interactions or be able to gain access when stipulated or guided by parents and educators, primarily through the hyped sensitization of online safety and ethics during the COVID-19 pandemic but insufficient to make it habitual in their everyday online activities. This has great implications for parents, educators, curriculum reformers, and policymakers.

The results revealed that the participants' ORBs, measured by the PRIUSS were generally higher than DC, measured by the SAFE. When juveniles show experience in higher risks domains and lower protective domains, they show a greater inclination to engage in both offline and online offenses (Rokven et al., 2018). The risks in digital spaces are greater than the protective skills reported by adolescents. For example, the participants disagreed with participating in or sometimes participated in activities that require fluency in the digital environment. The digital environment requires fluency to enhance protection (Rokven et al).

Adolescents need improved online experiences to develop social, technical, and emotional skills (Hargittai & Michel, 2019). This is a true conclusion when compared to my study's results, adolescents reported average performance in these experiences. The PRIUSS instrument measured three factors related to adolescents' ORB: (a) social impairment, which deals with difficulties forming and maintaining relationships because of excessive internet use and challenges communicating and socializing in offline

interactions; (b) emotional impairment, which describes adolescents' maladjustment in their psychological connection to the way they use virtual spaces; and (c) risky/impulsive internet use, which emphasizes the adolescents' inability to constrain themselves in activities relating to the internet and interference of their daily activities by internet use.

Adolescents reported that they rarely used the internet in a way that contributed to *social and emotional impairment*, with *emotional impairment* being the lesser. However, they reported they sometimes participated in *risky/impulsive* related activities. Overall, participants indicated that they rarely/sometimes participated in ORBs. The fact that they reported rarely participating in *social and emotional impairment-related* activities suggests some level of impairment generated by internet use. Although the participants reported that they rarely participated, it is a problem that parents, and educators need to address. Adolescents participating in one risky online activity are at risk of experiencing another (Kırcaburum et al., 2019). These behaviors become progressive if not addressed early. Every impairment or challenge starts small, and if adolescents do put this in check or address it early, it can become severe or chronic.

In terms of *risky/impulsive use*, more adolescents reported they were sometimes affected in this area. This report could attest to the notion that some adolescents spend too much time engaged in virtual activities to the point that they may neglect their typical everyday responsibilities and activities. No adolescent should participate in risky/impulsive internet use. It, therefore, warrants some attention. The *risky/impulsive internet use* factor may be the highest reported frequency area because adolescents' lives have now become programmed/engrossed by the internet. The COVID-19 pandemic has

contributed to increased use of the internet and may have caused adolescents to become dependent on it. Kuchma et al. (2022) found that youths had an increase in risky internet use behaviors during pandemic restrictions compared to the previous year. Kuchma et al. used the same scale, PRIUSS, and found an increase in social and emotional impairment by 2.7 and 2.1, respectively.

In contrast, the *risky/impulsive* factor mean score increased from 7.8 to 16.4. Problematic internet use has become prominent in adolescents' lives, affecting their normal functioning (Cerniglia et al.,2017; Uddin et al., 2016). Like *risky/impulsive internet use*, PIU is one of the OBRs that tested higher in adolescents, at 27% (Klavina et al., 2021). This result confirms the descriptive analysis of my study using the same scale as Klavina's et al. and Kuchma's et al. (2022). The *risky/impulsive internet use* factor might have had the highest frequency because it is a general attribute prompting social and emotional impairment (Kuchma et al., 2022). *Risky/impulsive internet use*, which they reported as the most frequent factor, confirms Venuleo et al. (2021) claims that adolescents engage in PIU because they seek different ways to solve developmental challenges and use the internet to address them. Some use it negatively because they believe this is the only medium they know through which they can manage or cope with the challenges. Though adolescents reported that they rarely or sometimes used the internet in ways that produced ORBs, it is a matter that needs the attention of parents, educators, and education policymakers to provide ways adolescents can solve their developmental challenges and support those who are struggling.

Interpretation of the Relationship Between DC and Adolescents' ORB

The findings of this study did not confirm its research hypothesis that there is a significant relationship between DC as measured by the SAFE score and adolescents' ORB as measured by the PRIUSS scores. The findings confirm the study's null hypothesis that there is no significant relationship between DC as measured bt the SAFE score and adolescents' ORB as measured by the PRIUSS score. The correlation was centered on SAFE scores (Kim & Choi, 2018) to measure DC and PRIUSS scores (Jelenchick et al., 2013) to measure ORB. Based on the assessment of the descriptive statistics of the SAFE and PRIUSS scores, adolescents reported moderate participation in DC-related activities and rare to sometimes frequency in activities that prompt OBRs, an indication that a relationship may exist. Still, Pearson's *r* correlation did not confirm this. Consequently, there might have been an unknown variable that could have affected the results. Wang and Xing (2018) found a positive correlation between DC's digital etiquette and digital safety with parental involvement. The inclusion of the parental involvement variable may be valuable to add clarity.

Additionally, having skills in DC attracts opportunities for greater risks. Adolescents who possess greater DC skills or knowledge are less likely to engage in risky behavior or receive harm from the risks (Livingstone et al., 2011). There is an apparent correlation between tenets of digital citizenship theory and the tenets of problem behavior theory based on the descriptives analysis of the SAFE scores and the PRIUSS scoresres and confirmed by Livingstone et al. (2011). When parents participate in their children's

lives through digital participation and knowledge, adolescents become better digital citizens and are less prone to ORBs.

Jessor et al. (2016) noted that parental involvement is a protective factor that may mitigate against risk behaviors RBs. The findings of this study disconfirm the notion regarding the correlation between DC and ORB. However, I did not address the parental digital knowledge and participation variables which future esearchers should consider. Jessor and Jessor (1977), in their problem behavior theory, supposed that adolescents' life envelopes several systems, for example, the personality, perceived environment, and behavior systems. Each system has variables that may instigate problem behavior—risk factors, and those that mitigate problem behavior—protective factors. Based on Jessor and Jessor's supposition, DC is considered a protective factor for the personality, perceived environment, and behavior systems.

These results do not support the general trend in the literature. Researchers suggested that DC is needed in schools to help learners act safely and responsibly in digital environments and when engaging with digital tools (Livingstone et al., 2017; Magis-Weinberg, 2021; Wang & Xing, 2018). In a similar study, Blažević and Klein (2022) found that prevention programs with positive applications to everyday life positively correlated with the positive application for everyday life and internet danger prevention. Ribble (2015), in his digital citizenship theory, purported that when students understand appropriate and inappropriate digital behavior, they will recognize these behaviors and respond accordingly. For example, if adolescents know and understand how to use a digital device appropriately, they will use it appropriately when needed.

Further, if they understand that their behavior can jeopardize their safety and the safety of others, when they are faced with relevant situations, they will choose activities that will enhance their safety and the safety of others. The Pearson's *r* correlation results suggest that this is not the case among the participants in this study because DC has no association with adolescents' ORB. However, when I analyzed it using the descriptive data generated in the study, I found that Ribble's (2015) observation was true. The level of understanding and use of DC activities aligned with adolescents' ORB actions as measured by SAFE and PRIUSS instruments. Both scores indicated an average knowledge and application.

Consequently, there should be a correlation between DC and adolescents ORB. This study disconfirmed the DC and adolescents' ORB correlation supposition. A causation study of these two variables may generate a different result. It is possible that some degree of error of measure could have influenced the results. A measure of error is possible with self-reported data instances when the participants do not understand the questions, fail to communicate an accurate response, or do not know where to retrieve the information necessary to construct an answer (Miller, 2008).

Limitations of the Study

After I analyzed the results of this study, I identified several limitations. First, for this study, I used self-reported survey instruments to measure both DC and adolescents' ORB. In self-reported data, there is the element of response bias (Moskowitz, 1986); participants tend to show themselves positively, which is the sociability bias. This bias may result from participants' self-perceived outlook (Fiske & Taylor,1991), which may

be a distortion of reality (John & Robins, 1994). Participants may also engage in some form of acquiescent responding, where they respond without giving much thought to what the question is soliciting, and extreme responding, where participants provide extreme ratings on the scale (Paulhus & Vazire, 2007). For example, one participant responded "strongly disagree" to all of the questions on the SAFE instrument and "never" for all the questions on the PRIUSS instrument. Self-reported data is also limited because participants may not always be aware of themselves enough to provide accurate answers to the questions the self-reported instruments require (McDonald, 2008). This limitation was evident in the DC response, where some participants responded as undecided. Using self-report only is a limitation of this study. Researchers conducting similar research should consider using other forms of data collation along with the self-reported questionnaire to gain a more objective view of the participants.

Second, the participants represented a convenience sample of adolescents from one private school system. Although participants were from three schools in different districts, they were all part of one governing body. However, the purpose of this study was to understand the relationship between adolescents' ORB in this private institution. Nevertheless, it is limited in its scope for generalization to other local adolescent populations and poses a threat to external validity. This limitation can be an opportunity for future research.

Recommendations

Understanding the relationship between DC and adolescents' ORB, and the SAFE and PRIUSS scores expands the current body of knowledge and informs practice,

research, and adolescent behavior. This study offers opportunities for future research to widen the scope of this topic and provide greater insights for researchers and practitioners.

Educators and parents will find the results beneficial in helping them to determine the nature of DC and online activities they should plan for adolescents. Educators may find it helpful to share with adolescents the results of this study to bring about awareness of the activities they are less likely to or need to participate in. Not accepting the null hypothesis means parents and educators must still be mindful of DC and ORB. Accordingly, educators, curriculum specialists, and program designers should develop activities and programs that align with DC's four factors: (a) self-identity, (b) activity online, (c) fluency in a digital environment, and (d) ethics in the digital environment. Educators, curriculum specialists, and program designers should place the greatest emphasis on fluency in digital environments. This emphasis is necessary for progressive growth in DC because, based on the results, adolescents need to advance to proficiency in DC-related activities instead of moderate or undecided performance so that DC will become a ubiquitous/unconscious part of their lives. If students develop a native-like fluency of DC, then they exceed basic functional literacy.

Although I used self-reported data in this study, I recommend that researchers conducting similar types of study should employ a mixed method approach with other data collection methods, such as document analysis of adolescents' DC and internet use. For a similar study, the researcher might analyze records from law enforcement institutions such as police and correction facilities, school reports on internet or DC-

related activities, and internet use tracking programs. Researchers sometimes use document analysis in mixed-method studies, such as surveys and document analysis, to clarify the study questions (Bowen, 2009). An experimental study to test causation may be warranted to extend this study. These additional methods may enhance external validity.

To expand this study, I recommend using the variable of parental involvement, which is supported by theory and literature. The inclusion of this variable may generate a different result and add further clarity.

As noted in the study's limitations section, the participants represented one private school system. I recommend that further research focus on a random sample of adolescents from all Trinidad private schools or the Trinidad public school system. This provides a greater opportunity for generalizability and reliability (Creswell, 2008; Frankfort-Nachmias & Nachmias, 2008)

Implications

Any research study should affect positive practice, community, or research changes. This section delineates the positive social changes that may ensue at different levels of the industry and society and for research.

Positive Social Change

Parents, educators, curriculum specialists, program designers, and policymakers want to understand, plan, and use strategies and activities to enhance the well-being of adolescents as they navigate the digital world (Finkelhor et al., 2021; UNESCO, 2020). This study has the potential to impact positive social change at the micro, macro, and

mega stages of the educational system. At the micro level, adolescents may become self-aware of where they are as digital citizens and what is required of them to progress into effective models of DC, particularly if the instruments are used over time as a reflection tool. They may also have a keener awareness of ORB, the specific factors that contribute to the ORBs, and where they rank in the ORB. Knowledge and understanding of these may spur them to positive actions for growth.

Further, educators and program designers may be able to design or select the appropriate activities and tools to enhance DC and those that may promote less frequency in activities that promote social and emotional impairment and risky/impulsive internet use. At the macro level, school administrators, curriculum specialists, and policymakers may use this study to inform them about curriculum reform changes that will promote development in self-identity, activity online, fluency in a digital environment, and ethics in a digital environment. For example, adolescents reported that they participated least in activities that deal with fluency in the digital environment. This result may inform curriculum design changes that facilitate a greater emphasis on digital fluency and the selection and design of tools and activities that promote digital fluency for adolescents. Positive mega changes may be possible when adolescents progress in their DC skills. They may consciously or unconsciously transfer these skills in their daily digital interactions and empower others in the digital communities to do so (Casa-Todd, 2018)

Methodological Implications

This was a quantitative correlational study designed to describe the SAFE and PRIUSS scores of adolescents and test the relationship between DC and adolescents'

ORB. Though the method was appropriate to answer the research questions and fulfill the purpose of the study, it was limited in its design in terms of scope and data collection method that could enhance the investigation regarding the depth of understanding of adolescents' DC and ORB activities. Therefore, a mixed method or quantitative experimental design may provide a different view or expanded information that will further inform practice and expand the body of knowledge. A mixture of methods allows the research to have data triangulation. Researchers can substantiate data across data sets using various techniques that may help reduce bias and add depth and breadth (Bowen, 2009). Another methodological consideration is including demographic information for adolescents. Having information on age, ethnicity, gender, and religion may help provide a deeper understanding of characteristics displayed by specific demographic. The researcher may be able to compare results. Researchers who ask demographic questions can derive participants' background information, which allows them to provide thicker descriptions and richer analyses (Dobosh, 2017).

Conclusion

It is clear that adolescents in this school system have basic knowledge of DC and can sometimes avoid ORBs. Nonetheless, there is a need for programs, tools, and activities that will help them progress as digital citizens, becoming fluent in digital identity, digital fluency, activity online, and ethics online. Simultaneously, they may decrease their choice of activities that promote social and emotional impairment and risky/impulsive internet use to enhance their digital well-being and the well-being of other digital citizens.

The problem that prompted this quantitative correlational study is that adolescents engage in ORBs that can jeopardize their safety, for which they are unprepared. This study confirmed this problem. The adolescents' participation in DC and ORB activities does not complement the rate they use digital tools and spaces, and the risks involved. It is laudable that adolescents reported they are knowledgeable and apply some DC skills and avoid risky behaviors. However, they are exposed to risks they need to be adequately prepared for.

This study is necessary and valuable to inform education practitioners, parents, and the community that adolescents need help advancing digital mediocrity and improving their prosocial choices in online activities. Adolescents' DC skills are below the fluency functions that the digital age citizens require for optimal digital survival. The digital age requires instinctive applications of techniques to develop skills and understanding of relevant and appropriate tools, solutions, ethical considerations and choices, personal and community safety and responsibility, effective and timely communication and collaboration, and more. Furthermore, adolescents have the right to access digital spaces and be digitally protected as mandated by UNICEF (2022) in its conventions of the child's rights. Now that education policymakers, program designers, and educators are aware of the results of this study, they should put digital policies and programs in place to facilitate adolescents'rights and needs.

If education practitioners and parents do not take heed of the results and apply the recommendations for progressive DC growth, the problem that this study examined will

remain. Consequently, adolescents' potential to become fluent digital citizens will be obstructed and morbid.

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Appendix A: Permission to Use SAFE Instrument

M

minjeong69@dankook.ac.kr

Mon 2/21/2022 11:28 PM

To: Soushira Liverpoolmorris;Minjeong_Kim@uml.edu;airmania73@gmail.com

Dear Soushira Liverpool-Morris

Thank you for your interest in our research.
If the reference is accurately identified, it can be fully utilized.
I hope you conduct a good research.

Sincerely,
Minjeong Kim

****

Minjeong Kim, Ph. D.
Professor
Dept. of Teaching Education (undergraduate)
Dept. of Education (graduate)
Dankook University

****

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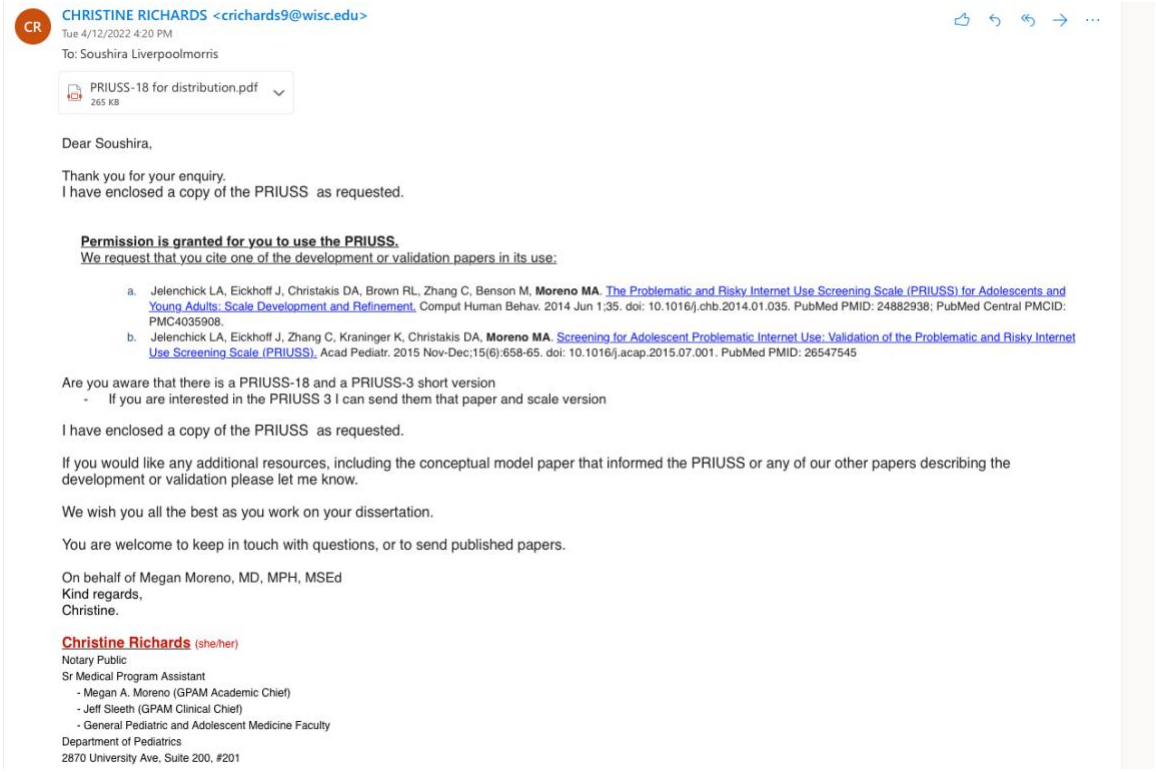
Appendix B: Permission to Use PRIUSS Instrument



CR

CHRISTINE RICHARDS <crichards9@wisc.edu>
Tue 4/12/2022 4:20 PM
To: Soushira Liverpoolmorris

PRIUSS-18 for distribution.pdf
265 KB

Dear Soushira,

Thank you for your enquiry.
I have enclosed a copy of the PRIUSS as requested.

Permission is granted for you to use the PRIUSS.
We request that you cite one of the development or validation papers in its use:

a. Jelenchick LA, Eickhoff J, Christakis DA, Brown RL, Zhang C, Benson M, **Moreno MA**. The Problematic and Risky Internet Use Screening Scale (PRIUSS) for Adolescents and Young Adults: Scale Development and Refinement. Comput Human Behav. 2014 Jun 1;35. doi: 10.1016/j.chb.2014.01.035. PubMed PMID: 24882938; PubMed Central PMCID: PMC4035908.
b. Jelenchick LA, Eickhoff J, Zhang C, Kraninger K, Christakis DA, **Moreno MA**. Screening for Adolescent Problematic Internet Use: Validation of the Problematic and Risky Internet Use Screening Scale (PRIUSS). Acad Pediatr. 2015 Nov-Dec;15(6):658-65. doi: 10.1016/j.acap.2015.07.001. PubMed PMID: 26547545

Are you aware that there is a PRIUSS-18 and a PRIUSS-3 short version
- If you are interested in the PRIUSS 3 I can send them that paper and scale version

I have enclosed a copy of the PRIUSS as requested.

If you would like any additional resources, including the conceptual model paper that informed the PRIUSS or any of our other papers describing the development or validation please let me know.

We wish you all the best as you work on your dissertation.

You are welcome to keep in touch with questions, or to send published papers.

On behalf of Megan Moreno, MD, MPH, MSEd
Kind regards,
Christine.

Christine Richards (she/her)
Notary Public
Sr Medical Program Assistant
- Megan A. Moreno (GPAM Academic Chief)
- Jeff Sleeth (GPAM Clinical Chief)
- General Pediatric and Adolescent Medicine Faculty

Department of Pediatrics
2870 University Ave, Suite 200, #201

Appendix C: Five-Factor Digital Citizenship Scale, SAFE Model (Kim and Choi, 2018)

Please answer the questions below based on your agreement or disagreement with them regarding digital citizenship over the past 6 months. Please do your best to answer these questions based on your situation and feelings.

Place a check in the box which best describes your answer.	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1. I respect other people in the online environment and not engage in bullying behavior.	1	2	3	4	5
2. I am responsible for my own online activities.	1	2	3	4	5
3. I am aware of the order of others in the online digital environment and should obey the order.	1	2	3	4	5
4. I use digital technology to achieve various goals.	1	2	3	4	5
5. I immediately manage unnecessary files and programs on my computers.	1	2	3	4	5
6. I use the Internet to access more information about domestic and international issues	1	2	3	4	5
7. I express their emotions reasonably through communication when problems or inconveniences arise in the online digital environment.	1	2	3	4	5
8. I express their opinions online and learn and share their expertise.	1	2	3	4	5
9. I purchase legitimate goods during e-commerce activities	1	2	3	4	5
10. I am aware of their own health problems caused by the abuse of digital devices, such as addiction and stress.	1	2	3	4	5
11. I establish their own beliefs and values about the digital environment.	1	2	3	4	5
12. I immediately delete emails from suspicious senders.	1	2	3	4	5
13. I present my feelings, thoughts and opinions while posting text, photos, music, or videos online.	1	2	3	4	5
14. I belong to an online community related to social or political issues.	1	2	3	4	5
15. I always check the price on the Internet when purchasing goods.	1	2	3	4	5
16. I work with others online to solve regional or school problems	1	2	3	4	5
17. I take care of the computer immediately if something goes wrong.	1	2	3	4	5
18. I am active in SNS such as KakaoTalk and Facebook.	1	2	3	4	5
Add columns	+	+	+	+	=
Total score					

Appendix D: The Problematic and Risky Internet Use Screening Scale (PRIUSS) (Jelenchick et al., 2017):

Please answer the questions below based on how you have felt and conducted yourself regarding your Internet use over the **past 6 months**. Please do your best to interpret these questions as they apply to your own experiences and feelings.

When considering your Internet use time, think about **any time you spend online**, whether you are using a computer or a mobile device. Do not include time you spend texting unless you are **using text messages to interact with an online application** such as Facebook or Twitter.

Place an ✎ in the box which best describes your answer.

How often ...	Never	Rarely	Sometimes	Often	Very Often
1. do you choose to socialize online instead of in-person?	0	1	2	3	4
2. do you have problems with face to face communication due to your internet use?	0	1	2	3	4
3. do you experience increased social anxiety due to your internet use?	0	1	2	3	4
4. do you fail to create real-life relationships because of the internet?	0	1	2	3	4
5. do you skip out on social events to spend time online?	0	1	2	3	4
6. do your offline relationships suffer due to your internet use?	0	1	2	3	4
7. do you feel irritated when you're not able to use the internet?	0	1	2	3	4
8. do you feel angry because you are away from the internet?	0	1	2	3	4
9. do you feel anxious because you are away from the internet?	0	1	2	3	4
10. do you feel vulnerable when the internet isn't available?	0	1	2	3	4
11. do you experience feelings of withdrawal from not using the internet?	0	1	2	3	4
12. do you put internet use in front of important, everyday activities?	0	1	2	3	4
13. do you avoid other activities in order to stay online?	0	1	2	3	4
14. do you neglect your responsibilities because of the internet?	0	1	2	3	4
15. do you lose motivation to do other things that need to get done because of the internet?	0	1	2	3	4
16. do you lose sleep due to nighttime internet use?	0	1	2	3	4
17. does time on the internet negatively affect your school performance?	0	1	2	3	4
18. do you feel you use the internet excessively?	0	1	2	3	4
Add columns	+	+	+	+	=
				Total score	