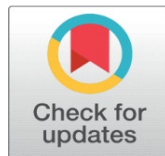


IMPACT OF TECHNOLOGY DURING COVID-19 PANDEMIC ON ADOLESCENTS' IDENTITY DEVELOPMENT

Dr. Olivet Kiranmayi Neethipudi ¹  , Chloe Fann, M.S. ²  

¹ Ph.D., Adjunct Professor, Department of Counseling, Educational Psychology, and Research, College of Education, The University of Memphis, Memphis, TN, USA

² Doctoral Student, Department of Counseling, Educational Psychology, and Research, College of Education, The University of Memphis, Memphis, TN, USA



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Corresponding Author

Dr. Olivet Kiranmayi Neethipudi,
knthpudi@memphis.edu

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ABSTRACT

Identity development is significant during adolescence, which requires strong peer relationships through social interactions. The recent COVID-19 pandemic has created havoc in human life, where people distanced from each other to save themselves. To overcome this situation, adolescents already born into a digital era who used technology for fun previously increased their dependency on it to learn and develop.

This literature review study was conducted using specific criteria that included literature before and after the pandemic and addressed the problem of how adolescents could develop their identity while shifting from face-to-face to virtual platforms during the COVID-19 pandemic. So, this study aimed to observe the adolescent's identity development before and after the pandemic while considering Erikson's theory of eight psychosocial stages and Marcia's identity statuses.

Research findings revealed complex positive outcomes and significant negative consequences. The authors argued that whether positive or negative, adolescents' identity development became weak and pushed them to a new social and historical context that impaired their ability to develop their identity.

Keywords: Technology Impact, COVID-19 Pandemic, Adolescent's Identity

1. INTRODUCTION

Technology has become a part of today's world, with online gaming being a common phenomenon without barriers for adolescents worldwide. Games are not new to humankind, where social interactions begin, and connections can be made among individuals, leading them to form friendships. Through these social interactions, individuals seek either fun or feel connected, which is essential for

human growth and development. These social interactions can be emphasized differently at different periods of human life, yet they boil down to playing games in every period in the lifespan of humans. For example, infants can play with hanging toys, and adolescents can play physical sports, board games, or online video games. Even as adults, they can continue to involve themselves in the play for fun or to feel connected with others. That being said, this article researched the effects of technology and online gaming during the adolescent period. It was investigated through a literature review process and revealed the results of adolescents' identity development during the COVID-19 pandemic.

This article argued that the historical rise of technology and virtual platforms combined have restricted in-person social interactions in adolescents. This situation during the COVID-19 pandemic has created a unique social context that has impacted the identity development of today's adolescents. Adolescence is a vulnerable age in development, where parental influences will be shifted to peer interactions. According to [Hill \(1983\)](#), adolescence is the period with its unique flavor, as it signifies the onset of puberty, the emergence of more advanced thinking abilities, and the transition into new societal roles. Since these changes occur in adolescence, establishing an identity is more prominent. While establishing their identity, adolescents prominently emphasize their self-conceptions, self-esteem, and their sense of self.

Irrespective of the society in which they are being raised, adolescents undergo these universal changes, which are biological, cognitive, and social, by questioning everything and testing what was learned in their childhood. According to [Steinberg \(2017\)](#), adolescence is when individuals restructure and reorganize their sense of self and identify themselves based on their development in those different developmental domains. So, identity development can be understood as a series of interrelated developments rather than development in any single domain. This complex, interrelated development can be viewed as identification in relation to others and the larger society where the adolescent is being raised. If these changes are positively completed, adolescents identify themselves as someone they are proud of. If they are not positively completed, they will experience an identity crisis that can lead them to confusion, which can be observed in the theoretical framework.

1.1. THEORETICAL FRAMEWORK

The conceptualization of identity formation was mainly built on the work of researchers Erikson and Marcia. Therefore, the authors of this article utilized both Erikson's Psychosocial framework and Marcia's identity statuses as a guide while researching this literature review. According to Erikson's psychosocial theory, there are eight stages in the lifespan of Humans from Infancy to Older Adulthood, and the theorist explains what happens during each aging period. Based on the theory, if a stage is positively completed, an individual can develop positive psychosocial developmental outcomes, whereas, in contrast, if an aging period is not completely satisfied, an individual will develop a pathology of crisis.

This article focused on the fifth stage among the eight psychosocial stages of human development. The fifth stage is the Adolescence stage, and the age range of this stage is approximately between 12 and 18 years. At this stage, according to [Erikson \(1968\)](#), adolescents focus on social relationships and utilize those relationships to identify who they are by questioning what they have learned in their childhood. So, based on [Erikson \(1968\)](#), if this stage is positively completed, adolescents identify themselves as who they are by embracing the virtues of

devotion and fidelity; alternatively, if this stage is not positively completed, they will be confused and develop the pathology of abandonment. We conducted a literature review exploring Erikson's framework and Marcia's identity statuses to address this study's problem and purpose.

Marcia expanded on Erikson's adolescence stage by discussing the identity processes in which adolescents form their identities. In his discussion of identity processes, Marcia laid out four identity statuses based on the dimensions of identity exploration and identity commitment. Identity exploration refers to considering and exploring various goals, ideals, values, and roles, while identity commitment refers to personal investments in those various goals, objectives, values, and available roles. The level of exploration and commitment determines the identity status of an individual. There are four statuses based on Marcia's Identity Statuses theory, which are Identity Achievement, Identity Foreclosure, Identity Moratorium, and Identity Diffusion. *Identity achievement* describes individuals who have extensively explored and have made a commitment. *Identity moratorium* describes individuals who have explored but have not made a commitment. *Identity foreclosure* occurs when an individual has not explored but has made a commitment. Finally, *identity diffusion* occurs when an individual has not explored and has not made a commitment. Generally, it is more adaptive to have experienced exploration, so *identity achievement* and *identity moratorium* are the preferred identity statuses that theoretically lead adolescents to a strong sense of self. This identification of self in adolescence is explored in this literature review research with the increased technological usage through online gaming in the wake of COVID-19.

1.2. THE PROBLEM AND THE PURPOSE OF THE STUDY

The problem that this research addressed was adolescents' quest for identity development without face-to-face social interactions with their peers during the COVID-19 pandemic. So, the purpose of this study was to investigate the experiences of adolescents by reviewing the past and recent literature regarding digital usage and online social interactions with their peers.

1.3. RESEARCH QUESTION

The research question that guided our research was about the factors contributing to establishing identity formation among adolescents when they shift from face-to-face to virtual interactions. So, our research question was,

What factors contribute to adolescents' identity formation when they shift their learning to virtual spaces during the COVID-19 pandemic, and how do they identify themselves without face-to-face interactions?

2. LITERATURE REVIEW

Since this was a Literature Review, we used a specific method with inclusion criteria of certain words and selected the articles. We searched the articles using these unique keywords: adolescents, peer relationships, technology use, COVID-19 impacts, and the transition of social interactions. The first part of the Literature was based on the first part of the Research Question, which looked at social experiences surrounding adolescent identity formation. Much of the literature looked at here was dated before the pandemic. This part of the Literature Review aimed to gain a broad understanding of what went into adolescent identity formation.

Figure 1

Topic	Authors and year of publication	Main tenets	Key Findings
Adolescents Identity Development	<ul style="list-style-type: none"> • Arnett (2000) • Schwartz et al. (2005) • Luychx et al. (2008) • Erikson (1968) • Marcia (1966) 	<ul style="list-style-type: none"> • Increased adolescent exploration with access to the internet and information • The central struggle during adolescences is an identity crisis with identity development and a development of a coherent sense of self as the main objective 	Even before the COVID pandemic, adolescents are experiencing forming their identity in a unique context.
Influence of Peers	<ul style="list-style-type: none"> • Shin & Ryan (2014) • Flashman (2012) • Andrews et al. (2020) • Sioni et al. (2017) 	<ul style="list-style-type: none"> • Direct effects on on academic performance, educational plans, decisions related to risky and antisocial behaviors, lack of face-to-face peer interactions can impact adolescents' self-esteem and sense of self 	Peers carry a lot influence in what adolescents explore in relation to their identity formation
Social Interactions	<ul style="list-style-type: none"> • Chen et al. (2007) • Brown et al. (2009) • Brechwald et al. (2011) 	<ul style="list-style-type: none"> • During identity formation, adolescents are also attempting to find a social environment • Social interactions and social changes with peers during adolescents • Impact social status and peer group 	Adolescent's experience social changes within peer groups and social status
Other important experiences	<ul style="list-style-type: none"> • Luychx et al. (2015) • Luychx et al. (2013) • Sica et al. (2014) 	<ul style="list-style-type: none"> • Identity confusion is positively correlated with depressive and anxiety disorder 	Positive experiences with identity formation is important for adolescent overall mental wellbeing

Figure 1 Figure of the First Part of the Literature Search

2.1. LITERATURE REVIEW – PART ONE

As observed in the above figure, the first part of the search was again divided into four categories: adolescents' identity formation, the influence of peers, social interactions, and other meaningful experiences that do not fit into the above three categories. These are the Key Findings of the first part of the literature review. Much literature about the importance and influence of peers in adolescents' identity formation was reviewed. Peers were found to directly affect an adolescent's academic performance, educational plans, and risky and antisocial behavioral decisions. The literature review also revealed that social interactions are significant to adolescents, and these social interactions can be made through online gaming in virtual spaces. A couple of studies also found a correlation between depression and anxiety, with identity confusion, suggesting that negative experiences must be addressed to improve positive experiences, which are essential for identity formation and adolescents' overall mental well-being.

Figure 2

Topic	Key Findings
Adolescents Identity Development and Frameworks	Even before the COVID pandemic, adolescents are experiencing forming their identity in a unique context.
Influence of Peers	Peers carry a lot influence in what adolescents explore in relation to their identity formation
Social Interactions	Adolescent's experience social changes within peer groups and social status
Other important experiences	Positive experiences with identity formation are important for adolescent's overall mental well-being

Figure 2 The Key Findings of the First Part of the Literature Search.

The key findings of part one of the literature review revealed that even before the pandemic, adolescents established their identities uniquely and were always influenced by peer interactions while exploring their identities. Their identity formation primarily depended on their peer group acceptance and social status while interacting with each other personally, face-to-face during sports, board games, or even online games. Research revealed that even though they played online games, they used to talk about it when they met in person. So, these interactions helped them to establish their identities successfully with the virtues of devotion and fidelity.

2.2. LITERATURE REVIEW – PART TWO

The second part of the Literature review was based on the second part of the research question, which was how adolescents identify themselves in virtual spaces without physically interacting with each other. This raises concern about what happens when something important to identity development is taken away from adolescents. This part of the literature was divided into four categories: social interactions, virtual platforms, the COVID-19 pandemic, and establishment of identities to answer how adolescents establish their identity in the virtual platform during the COVID-19 pandemic.

Figure 3

Topic	Authors and year of publication	Main tenets	Key Findings
Social Interactions	<ul style="list-style-type: none"> Bakhtawar et al. (2020) Hadjipanayis et al. (2019) Khlovov et al. (2018) Li et al. (2020) Sioni et al. (2017) 	<ul style="list-style-type: none"> Internet addiction, sleepless nights, low social connectedness, and depression. Along with positive benefits, there are potential risks. 	Negative consequences of internet addiction, depression, sociopsychological maladjustment
Virtual Platform	<ul style="list-style-type: none"> Chen & Chang (2019) Gallegos et al. (2021) Kircaburun et al. (2020) Lieberoth & Fiskaall (2021) Rapinda et al. (2021) 	<ul style="list-style-type: none"> Video games and internet gaming disorder (IGD) Emotional Intelligence is inversely proportional to IGD Definition of IGD IGD is frequently occurs with depression. 	Due to shifting to virtual platforms, increased technological usage led the users to internet gaming disorder.
Covid-19 Pandemic	<ul style="list-style-type: none"> Andrews & Green (2021) Ehren et al. (2021) Fang & Wickersham-Fish (2020) Williams & Moser (2021) 	<ul style="list-style-type: none"> Novel teaching challenges Innovating new techniques in teaching and learning Rapid implementation and adaptation to overcome challenges 	Due to COVID-19, there was a rapid shift to remote learning which accompanied with new challenges to overcome
Establishment of Identities	<ul style="list-style-type: none"> Cwil & Howe (2020) Granic et al. (2020) Harrell & Lim (2017) Hygen et al. (2020) Moehlen (2021) Stone (2021) 	<ul style="list-style-type: none"> Disability, gender, and culture are the social constructs with exclusion Physical, Virtual, and Blended Identities Gamer and non-gamer identities Identity development in the digital age 	Identity development is a complex process in the virtual spaces as it depends on many aspects

Figure 3 Figure of the Second Part of the Literature Search

These were the key findings of the second part of the literature. Literature on social interactions and virtual platforms during COVID-19 revealed positive and negative outcomes. Positive outcomes included connectedness, learning, and fun online playing, whereas the negative consequences were addiction to online games and depression. During the COVID-19 pandemic, the virtual platforms previously used for fun became mandatory. Adolescents were forced to learn and use new technologies remotely due to the shift from face-to-face to virtual platforms. As technology usage has increased during the pandemic, adolescents have only one

option of using online virtual platforms for everything, from social interactions with peers to schoolwork submissions.

Figure 4

Topic	Key Findings
Social Interactions	Negative consequences of internet addiction, depression, sociopsychological maladjustment
Virtual Platform	Due to shifting to virtual platforms, increased technological usage has led users to suffer from internet gaming disorder.
Covid-19 Pandemic	Due to COVID-19, there was a rapid shift to remote learning which accompanied with new challenges to overcome
Establishment of Identities	Identity development is a complex process in the virtual spaces as it depends on many aspects

Figure 4 Figure of the Key Findings from the Second Part of the Literature Search

The key findings from part two of this literature review process were that during the COVID-19 pandemic when face-to-face interactions were shifted to virtual spaces along with the increased usage of technology, negative consequences like internet addiction, depression, and social and contextual maladjustments were observed among adolescents. These negative impacts were more rather than the positive outcomes through improved technology. This was observed by reviewing the literature through an example in part two of the research.

Tommy, who was positively engaged with online video games and used to have fun with them, turned the other way around and lost interest because of the switch to completely virtual spaces. He became depressed because he no longer shared fun or engaged with his friends as he had no face-to-face social interactions with his peers. Everything became online, and he could not be in a position to meet his friends any longer. So, even though there were positive experiences before the pandemic for him, they became less meaningful.

3. RESEARCH FINDINGS

Research findings included both complex positive outcomes and, at the same time, significant negative consequences. Positive outcomes are those actions whose effects are fun, pleasing, and helpful to an individual. If we observe the positive outcomes for adolescents, they get the help needed to learn new technologies through virtual spaces and remain connected with their peers simultaneously. Negative outcomes are those actions whose effects are not so pleasing and even hurtful or harmful to an individual. If we observe the negative outcomes for adolescents, they are being pushed into confusion. Adolescents were forced to live in virtual spaces without any face-to-face interactions. When these virtual spaces became the new normal for their living, they were confused between reality and the virtual spaces they lived in.

If we observe the complexities of positive outcomes, although adolescents experience fun and connectedness required for identity formation through online video gaming, according to [Steinberg \(2017\)](#), identity formation also requires face-to-face social interactions with peers and identifying a peer group into which they

want to be accepted. Since these face-to-face peer group identifications and interactions were lacking in the online virtual platforms, their identity establishment has become weak. Their risk of abandonment increased, leading them to a greater risk of confusion in self-identification and sociopsychological maladjustment based on Erickson's theoretical model.

Negative outcomes are anxiety and depression, which were already unpleasant and hurtful. So, the consequences of negative outcomes have pushed adolescents to more confusion and abandonment, leading them to a decreased sense of exploration based on Marcia's identity statuses. These adversities have increased during the pandemic, finally impacting their ability to identify themselves.

Therefore, in line with our argument, adolescents' identity development became weak irrespective of whether there were positive outcomes or negative consequences of online interactions. These positive or negative outcomes may occur regardless of either gaming or online learning. Based on Erikson's psychosocial theory, if adolescents cannot identify themselves during their crucial development period of adolescence, they experience the pathological crisis of confusion and abandonment rather than embracing the virtues of devotion and fidelity. This situation made online interactions meaningless for adolescents and pushed them to enter a new historical and social context that impaired their ability to develop their identity. When these virtual spaces became the new normal for their living, they were confused with reality and virtuality as these online interactions became the platform for both gaming and learning. Therefore, their identity establishment weakened, leading to an increased risk of confusion in their self-identification. Thus, in either case, whether they are positive or negative outcomes, adolescents' identity establishments were weakened.

4. CONCLUSION

Figure 5

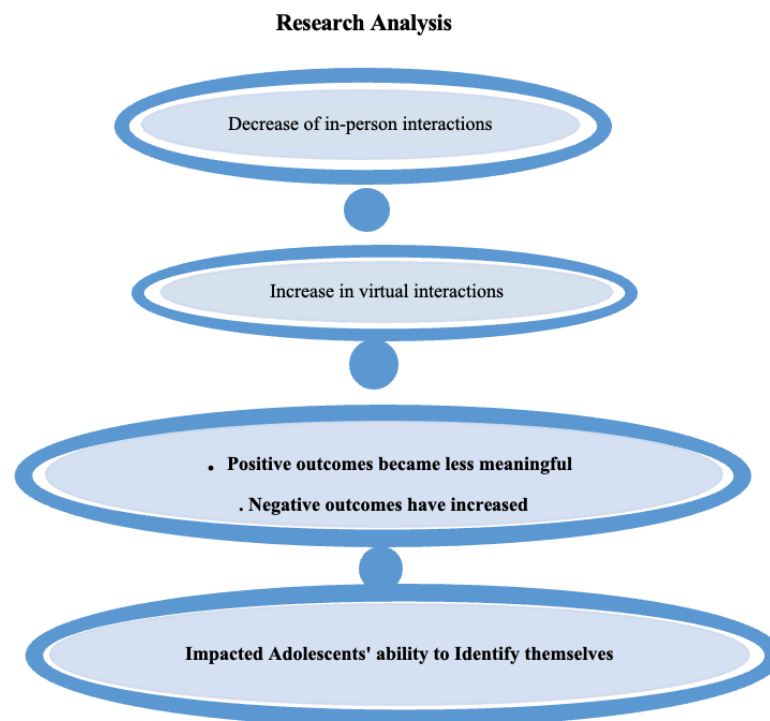


Figure 5 Visual Representation of Research Analysis.

Although the shift from in-person to virtual platforms during the COVID-19 pandemic was fun initially, it did not help the adolescents establish their identity. So, the big takeaways from this research are that even though adolescents in these virtual spaces experienced positive outcomes, they became less meaningful because identity exploration depended on many other factors that required face-to-face interactions with peers. The lack of face-to-face social interactions has also impacted adolescents' self-esteem and sense of self. When this face-to-face interaction was lacking in virtual spaces, adolescents experienced higher rates of anxiety and depression without the opportunity to establish their identity. Figure 5 represents the visual representation of the research analysis. The in-person interactions have shifted to virtual spaces, and the positive outcomes have become less meaningful because of the shift and lack of actual interactions with their peers.

Below is the overview of Identity formation before the pandemic Vs. the effects of Covid 19 during the pandemic. In the first pyramid, peer influences were improved with social interactions that helped the adolescents establish their identity. Virtual interactions in the second pyramid have pushed adolescents to confusion and decreased their ability to establish their identity, which has turned the pyramid upside down.

Figure 6

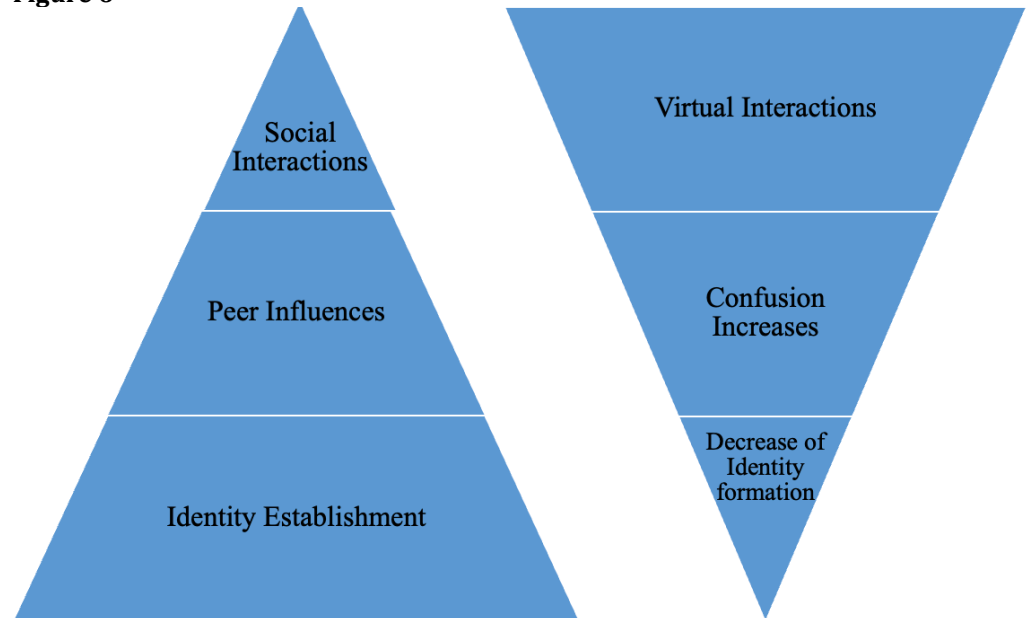


Figure 6 Identity Establishments Before and During the Pandemic.

5. RECOMMENDATIONS

This research recommends that more research be done about creating meaningful virtual peer interactions where adolescents can enjoy their time as if they were with their peers in reality. This means online interactions must be improved to make opportunities for exploration in virtual spaces where face-to-face interactions could be replaced. This research also recommends designing parental interventions to encourage adolescents to explore and use their virtual interactions and platforms meaningfully.

CONFLICT OF INTERESTS

None.

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