Children and Screen Media Effects: Theoretical Underpinnings, Empirical Observations and Policy Implications

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Abstract: The paper critically explores the body of research on screen media effects on children as an emerging frontier of scholarship. Screen media is used in reference to media that are both non-interactive (eg TV) and interactive (games) that present a variety of modalities including images, graphics, video, audio and text. Using narrative review as a strategy and based on core databases, media and pediatric resources, studies that encompassed observational research, randomised controlled trials, quasi-experimental trials, cohort studies, case-control studies and cross-sectional studies are critically analyzed in respect of categories of screen media issues and debates, first globally and then nationally. Whilst there are areas of consensus, the review shows that the media effects literature is also characterized by inconsistency of findings. The review further indicates that, although there is burgeoning literature on children by Ethiopian scholars, there is a dearth of child-focused screen technology related studies to be of help in policy formulation, protection and promotion of the wellbeing of Ethiopian children. To address the identified lacunae in the children and screen media research spectrum, directions for research are outlined to consider emerging screen media realities unfolding in Ethiopia and their effect on children at home and in school contexts. Further, it is proposed that the area of children and screen media deserves attention from policy makers and media authorities.

Keywords: Children; Digital technologies; Media; Policy; Television

1. Introduction

According to McQuail (2005: 456), "the entire study of mass communication is based on the premise that there are effects from the media, yet it seems to be the issue on which there is least certainty and least agreement." One important area of controversy is screen media effects. The screen media category includes any media that is produced for or distributed via the screen, including the entire spectrum of what constitutes 'the screen': the cinematic screen, the television screen, the computer screen, and the small screens accessed on a smartphones and other handheld devices (Harrison, 2015). Media technology has been an important aspect of children's lives and its effects have attracted scientific enquiry ever since the advent of media technology. During the turn of the last century, the introduction of mass media was simultaneously able to spark scientific interest into the fascinations of modern mass communication technologies in view of their engrossing capabilities and transformative potential. In particular, with the coming of TV interest into the effect of the media started drawing formal scholarly attention, which was evident in the studies of Lazars field and colleagues (Katz and Lazarsfeld, 1955; Lazarsfeld and Merton, 1948). The interest has included more specifically effects that arise from exposure to media called media effects that relate to attitudinal, affective, cognitive and other outcomes that are attributed to exposure (Valkenburg and Oliver, 2020).

   In the decades that followed TV, in particular, was able to draw progressively more scientific enquiry in connection with relevant child effects (Liebert, Sprafkin, and Davidson, 1982). Since the earliest researchers were sociologists and psychologists, interest was for the most part behavioral, attitudinal, emotional and cognitive and often driven by concerns of adverse effects. The interest has been driven by children's presumed heightened vulnerability. In particular, the idea of moral panics relating to the morally degenerative influences as they relate to children has been a subject of predominant focus (Pearson, 1983).

   The volume of relevant literature examining media effects that has accumulated is beyond any attempt to squeeze although there are a number of good summaries (e.g. Livingstone, 1996; McDonald, 2004) that have attempted to put the effects conversation in some organized classificatory order. Lasswell's (1947) early definition of communication: 'Who says what to whom in which channel and to what *effect*?' was an early acknowledgement of mass-communication effects as more abundantly noted in subsequent propaganda and advertising studies (O'Neill, 2011). Early interest in the effect of media on children is recorded in media history texts in the Unites States[1] in particular (Addams *et al.,* 2004), showing the prevailing direct effects models (e.g. the needle model) that formed interventions in the form of the often quoted Payne studies, which investigated whether the media effects on children were direct and powerful (Wartella and Reeves, 2003).

   In more recent literature, in a generic sense and to a degree as may be applicable to children as media consumers, media effects have been understood to occur at the following levels (Potter, 2012: 35).

   1. *Cognitive*: The most apparent and measurable effect; includes any new information, meaning or message acquired through media consumption. Cognitive effects extend past knowledge acquisition: individuals can identify patterns, combine information sources, and infer information into new behaviors.
   2. *Beliefs*: A person cannot validate every single media message, yet might choose to believe many of the messages, even about events, people, places, and ideas they have never encountered first-hand.

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[1] Examples of the earliest effects studies were

   1. Addams, J., Adorno, T., Allport, G., Anderson, S., Bauer, R., Bell, D., ... and Wright, C. 2004. *Mass communication and American social thought*. Rowman and Littlefield Publishers.
   2. Charters, W. W. 1933. Chairman's preface. Motion pictures and the social attitudes of children: A Payne Fund Study. New York: Macmillan and Company.

3. *Attitudes*: Media messages, regardless of intention, often trigger judgments or attitudes about the presented topics.
4. *Physiological*: Media content may trigger an automatic physical reaction, often manifested in fight-or-flight response or dilated pupils.
5. *Behaviors*: Researchers measure an individual's obvious response and engagement with media content, noting any change or reinforcement in behaviors.

Effects theories are also typologised as micro-level, focusing on the effect on the individual in regard to the spheres outlined above and macro-level, using collective formations and institutions as units of effects analysis, which may be exemplified by the culturalist theory of effects (Valkenburheueg, Peter and Walther, 2016) (for a detailed taxonomy of effects, see Potter, 2012). A careful untangling of the effects would require specifics of "type of effects (e.g. fear, aggression, understandings), significance of the effects (long or short term, small or large effects), on the particular children (vulnerable or not, boys or girls, different ages or cultural/economic backgrounds), on the media content (cartoons, the news, films, comics, pornography), on the mode of involvement (active or passive, fan or casual viewer, playful or serious), and so on" (Livingstone, 1996: 14). The present paper presents a narrative review of existing local and international literature on diverse dimensions of screen media effects on children.

2. Review Methodology

Following Bearman *et al.* (2012), the methodological strategy chosen was narrative review to suit the purpose of capturing an overview of themes in the area. The strategy was chosen based on a scenario analysis and landscape mapping pertaining to the empirical context in Ethiopia relating to the subject of children's media experiences. Thus, because there are very limited empirical reports, a narrative review would be more appropriate to draw themes from the international literature to inform the necessary research agenda formulation in Ethiopian child media scholarship. Along the lines of the PRISMA guidelines, subsequent review steps included scope definition (which delimited subject to screen media), identification of studies, adoption of inclusion criteria (English language, published, child-focused and screen media studies only), exclusion parameters (gray literature, unpublished sources, non-English literature), and content analysis of studies. The review involved keyword searches employing strings of "media and children,", "media child effects", "screen media and children", "children and media technology", and "media and child schooling" which had to be fine-tuned based on search outputs. A total of 104 studies were consulted, spanning the period 1947-2021, with the oldest sources cited to show the trajectory of the history of the media effects scholarship and their scientific position as landmark studies. Most work reviewed is contemporary.

3. Results and Discussions

The body of screen media effects literature is massive. For this reason, it needs to be organized according to certain modalities that help to streamline the scholarship. One way is to look at the effects using thematic areas of effects as has been adopted in this study. However, the empirical and policy issues need to be foregrounded using an exploration of the theoretical landscape that has underpinned the screen media effects research literature.

3.1. Theoretical Ramifications

The earliest effects theories belonged to what became known as the 'strong effects tradition' represented by the classic magic bullet theory which likened media influence to the effect of the syringe in terms of directness and immediacy. In other words, the effects of the media were taken as being linear and limitless (Castel, 1996). Eventually, it was brought to light that media were not as powerful as they were originally thought to be. As fresh evidence seemed to show, their effects were rather limited (Katz, 1980). The emergent view further suggested that audiences were not passive recipients of mediated messages, but were on the contrary important actors characterized by agency.

A representative of the new line of thinking was the two-step flow theory of communication which posited that another level operated to modify message effects on audiences. Accordingly, it could be argued that the effect of media on children may not be direct as it could be mediated by parental intermediary roles. This would mean that, as co-viewers, parents could influence the way children received and interpreted media messages (Fujioka, and Austin, 2003; Lievrouw, 2009).

As continuing scholarship seems to suggest (Griffin, 2006), most theories of communication are not complex enough to account for media effects that typically are explained by a network of a miscellany of factors. Even Lasswell's model of communication is simplistic, although it does address the core issue of effect. For instance, direct effects theories (strong effects models of the early period of theorizing) predict that the influence is both linear and strong. However, the perspective was not tenable for too long except perhaps in the context of children who would be considered manipulable in view of their cognitive development limits as explained by the limited capacity model of message processing (Lang, 2000)**.** Of particular relevance to children could be cultivation theory which predicts that television content can powerfully influence attitudes as a medium of socialisation under certain conditions. The theory is conceptually superior to the antecedent hypodermic model (Riddle, 2009). Thus*,* research investigating strong media effects, based on the strong effects conceptual lens, most notably the often-quoted Payne Fund Studies (Jowett, Jarvie, Fuller, and Fuller, 1996) seemed to suggest media were powerful. However the studies had serious design flaws, rendering their claims suspect in consequence which pointed to the need for sophistication in theorizing. By comparison, cultivation theory demonstrably had far more validity (Morgan and Shanahan, 2009).

There are two further theories relevant to children and media. Of these, social cognitive theory stipulates that while children do imitate violent acts from media their imitation is based on the characteristics of the violence shown, principally the way it is scripted. The other- the *psychoanalytic theory-* predicts that children become less violent after watching violent content due to the cathartic effect of viewing violence (Smetana, 2006).

Thus, these theoretical developments suggest that a theoretical reorientation took place discounting the claimed direct effects in earlier periods and introducing conditionality. As a result, it was now thought media effect was not automatic and involved selectivity of attention, perception and retention, and communication that served to strengthen preexisting positions. Given the complexity involved, more sophisticated theories that explain how effect occurs and under what conditions and in what degrees and for whom have become necessary**.** The limited effects theory that emerged was in part able to add a level of complexity to the explanation of how effects occur. Nevertheless, it was not in the main related to children's media consumption but instead to adult audiences in political contexts. In subsequent periods the third phase saw a return to re-embracing strong media effects from the 1960s-70s. A fourth phase of theorizing led to the emergence of a negotiated understanding of media effects making the audience an important factor in media message deconstruction (McQuail, 2005: 461).

However, more complex models that involve moderators and mediators serving to account for the paths of influence that lead to children becoming affected negatively as consumers of unhealthy media diets including violence may be needed. The growing theoretical complexity is captured in the theoretical overviews of Bryant and Miron (2004) and Walter, Cody, and Ball-Rokeach (2018) who have documented a comprehensive profile of effects theories of the last nearly 70 years. Several studies and meta-analysis into the effect on children include (Katz, 1980; McQuail, 1987; Liebert *et al*., 1982; Roberts and Bachen, 1981; Rubinstein, 1983). However, for the most part, media effects have ranged between small to moderate (Ferguson and Kilburn, 2009; Sherry, 2001). Challenges for comparison have come from design differences in studies. Irrespective of the differences in the magnitude of effects reported, the literature generally has addressed concerns relating to child wellbeing and safety from a variety of perspectives. Chief among these concerns is the effect of mediated violence on children.

Children and screen media violence

Perhaps, the most enduring topic of research and policy conversation as reported in the literature has been mediated violence and its effect on children. Based on empirical evidence, the US National Institute of Mental Health (1982) —concluded -that violent content on television may lead children to have less empathy to people experiencing pain and distress, to experience the world as a fearful environment, and to develop aggressive tendencies in their relations with others. Researchers found that those who watched more televised violence as elementary school students tended to be more aggressive later in life and similarly children who watched more violence were more likely to have criminal records as adults (Huesmann and Eron, 1986). Another study on video game violence demonstrated that exposure to violent video games led to physically aggressive behavior across cultures (Anderson *et al.,* 2008). Subsequent research into video games violence led to the conclusion that "the evidence strongly suggests that exposure to violent video games is a causal risk factor for increased aggressive behavior, aggressive cognition, and aggressive affect and for decreased empathy and prosocial behavior" (Anderson *et al.,* 2010: 151). Over all, these findings seem to suggest that screen media can have an impact on the psychosocial trajectory of children, indicating the subject should draw the stakeholders involved –parents, schools, psychologists, the media etc. to find ways of addressing impacts.

3.2. Sleep, Screen Time and Academic Effects

The stresses and strains on children seem to have shown a spike with the result. For instance, children now sleep less and less soundly (Dollman, Ridley, Olds, and Lowe, 2007) owing to heavy TV viewing (Gupta, Saini, Acharya, and Miglani, 1994) or computer games (Van den Bulck, 2004). Cell phone electromagnetic emission has been shown to alter sleep patterns and the dilatory effect on the production of melatonin- a hormone which helps regulate sleep-wake cycle (Hamblin and Wood, 2002). As a result, in addition to the affective disorder noted, school performance decline effects have been noted arising from the deleterious effect of sleep deprivation on cognitive functioning (Curcio, Ferrara, and de Gennaro, 2006). The lack of sleep may also be causatively linked to behavioral issues of affected children in school settings and produce a knock-on effect on classroom climate and academic vitality in numerous pedagogical arrangements and learning tasks that require cohesion and connectedness (Sadeh, Gruber, and Raviv, 2002). Therefore, the academic effect may be dysfunctional at the individual school child level, but there is also a deleterious whole class effect. However, the meditational role of parents has been highlighted as an important consideration. Parental mediation styles have included: supervision, co-use, active mediation, restrictive mediation, and technical restrictions and pacifying (Nikken and Schols, 2015).

In particular, the supervision and direction of school children can indeed address concerns noted in guidelines on media use, follow up of sleep patterns of children, monitoring of screen media in the home, time spent on screen including games. The following is a temporal recommendation which parents may consider to ensure their children have ideal experiences (Sigman, 2014).

As per recommendations, ideal screen time limits are:
- o   3 - 7 years: 0.5 - 1 hour per day
- o   7 – 12 years: 1 hour
- o   12 – 15 years: 1.5 hours
- o   16+ years: 2 hours

It should be noted that the particular set of recommendations is one of many, pointing to the absence of universally accepted guidelines. Further, the screen time fails to account for level of activity (active vs. passive use) and whether the video is educational or has other characteristics (Peake, 2021). Besides, experts have noted that parents need to look into their own media habits and the influence on toddlers. It is furthermore important to indicate to the child that parents are not equally negatively affected due to their neurological strength. In the context, schools can help through awareness creation for parents and children alike to put in place heightened cognizance. There is also a more

national level set of guidelines. In the US, discretionary screen time (DST) has been set as a national disease prevention and health improvement objective (Minnesota Department of Health, 2016). Similarly Australia's department of health has set a maximum of 2 hours of non-homework discretionary screen time for school children aged 2-18.

Whilst the above national guidelines are generic, in a meta-analysis of studies involving 106653 participants, it was found that the effect on academic performance of media use was dependent on the particular media employed. In particular, TV viewing and gaming had the biggest effect on academic performance, while there was no association found between mobile phone use and academic performance in the included studies. In the meta-analysis, there was no statistical association between overall screen use and academic performance (Adelantado-Renau et al., 2019).

In the context of new technologies, research has addressed mediation given its scientific utility in the context of complex associations. In particular, research studies have looked at parental mediation of media use by children. These have reported positive outcomes enabling children to have a more careful experience of screen media such as TV. Studies also examined mediation relating in particular to mobile media (e.g., Smartphones, tablets). In a relevant study, Domoff et al. (2019) found that there were several interesting themes surrounding mediation. These included parental role being focused on limiting and reacting to children's screen technology use. The role of siblings was far more important in mediation than their parents. It was also reported that child media use involved child-parent negotiation on the benefits and risks involved. It was also noted that media use was concurrent with children tuning in to TV while simultaneously engaged in personal screen time. However, Nikken and Schols (2015) showed that the child's media skills were more potent predictors of parental mediation and children's media ownership. The findings in general reflected current family and child media experiences.

Further, although media usage guidelines have been issued (Rideout, 2013), child media use is subject to the effects of cross-cultural variability as well as socio-technical development levels. In However, data from developing countries are hard to obtain, which makes vicarious recommendations based on European and American contexts unlikely to make scientific sense. Other factors may add to the complexity including issues of media ownership, culture of media sharing and the dynamics of collective media use as well as differences between local and foreign content. We do not know how local content providers fare in relation to more established international counterparts. More research is necessary to have a clearer base line for interventions.

3.3. Screen Time, Obesity and Academic Performance

The body of evidence seems to suggest that obesity is related to screen time (Banks, Jorm, Rogers, Clements, and Bauman, 2011). Studies have further documented correlation between screen time from a wide range of technologies viz. cell phones, tablet computers, video games, TV etc. and sedentary life and implied obesity. The association between the immobile physical experiences of viewing may lead to weight gain (Robinson, 1999). Also, while people may be on the move, media consumption would still have led to obesity in other ways. An association between a unit of time in TV viewing and obesity risks of 2 % is reported among more than 10, 000 children as signaling a risk which is supported by an experimental study of children's viewing and weight gain (Dietz and Gortmaker, 1985). Obesity may also be explained by the absence of vigilance while viewing leads to overindulging. More worrisome is the finding indicating that a one hour daily experience of gaming may lead to weight gain of more than a 100% (Stettler, Signer, and Suter, 2004).

What is less clear is the association between obesity and academic performance. The Fragile Families and Child Wellbeing Study and the National Longitudinal Study of Youth 1997 reported that obesity is related to poor academic performance but less is known about the pathways (Brooks-Gunn, Garfinkel, McLanahan, and Paxson, 2011). A resulting hypothesis is that social pathways may be implicated suggesting that obesity may lead to poor self-esteem and lower performance compounded

by discrimination. The lower performance reported apparently is related to poor reading habits of obese children.

3.4. Screen Media and Reading

Way back, Feinberg (1977: 78) reflected that "mass media have singularly shaped and molded this generation of students, and television, more than any other medium, has created passive, disinterested learners who have abdicated responsibility for their own education." Similarly, Rutstein (1972: 137) maintained that:

> Teachers should learn to appreciate how TV shapes their students' views of themselves, their friends, school, and the world. Most importantly, teachers should discover how TV conditions students for formal education. Nurtured on TV since infancy, today's child is a picture and image oriented student who sits in a classroom being taught by a word oriented teacher.

While the effect of television on reading was a subject of interest since the early days of television, the debate is far from closed. More recent evidence shows television viewing harms reading (Childwise Monitor, 2008), hampers reading skills development (Rideout, Vandewater, and Wartella , 2003). According to a European study of 15-year-old students in 31 countries, more frequent computer users had statistically significantly lower performance in both math/arithmetic and reading than those less frequent computer users (Fuchs and Woessmann, 2004). Similarly 'the introduction of home computer technology is associated with statistically significant and persistent negative impacts on student math and reading test scores (Vigdor and Ladd, 2010). Thus, contrary to popular belief, computers may actually reduce reading development. This evidence replicates earlier observations of the negative effect of watching TV on academic achievement with more hours of TV leading to lower attainments (Hornik, 1981).

Whilst the TV-reading association was robust, it was interesting that

> Students from advantaged groups tend to exhibit TV watching patterns of students older than themselves (that is, watching less than average), while those from disadvantaged groups often display patterns characteristic of younger students (that is, watching more TV than the average for their age group (Searls, Mead, and Ward, 1985: 160).

There were also arguments that TV did not significantly affect reading performance or achievement (Neuman, 1980). Further, Reinking and Wu (1989), who quote several studies, conclude that the association between TV and reading performance was inconclusive. A review of the research painted a picture of adverse TV effects but the effects were moderated by a number of variables (Beentjes and Van der Voort, 1988).

3.5. Sleep and Children

Studies indicate that sleep deprivation among school children is rampant with an estimated 50-90 % of children being affected. A major culprit in this deprivation is the use of screen media (National Sleep Foundation, 2004). Meta reviews of nearly 70 studies (Sadeh, Tikotzky, and Kahn, 2014) have shown that screen time had an adverse effect on sleep health, resulting from sleep delay, reduced sleep, caused by temporal displacement, mental activation due to media content and radiant light (Hale and Guan, 2015; Gregory and Sadeh, 2016). LeBourgeois *et al.* (2017) have summarized extant knowledge using a taxonomy that includes media use and the relationship with timing and duration of sleep, screen time and sleep quality, light effect on circadian physiology and sleep health, limitations of current research literature, recommendations for stakeholders, and areas for continuing research . In more specific detail, the authors indicated that school children (7-17) screen time was linked with a variety of sleep disorders. In fact, in more than 90% of studies reviewed, use of television, computers, videogames and mobiles was related to shorter and delayed sleep conditions. These findings hold across geographic zones and differing levels of socioeconomic development that included countries in Asia, Europe and the United States. In all, screen technology was to blame for sleep delay, loss or quality. Scholars further report that sleep quality problems lead to fatigue during the day that results in attention problems in school which may lead to irritability and aggression, which may have an effect

on other students (Hisler, Hasler, Franzen, Clark, and Twenge, 2020). In other words, the 'executive function' of the brain's organizing and planning functions are undermined (Zimmerman, 2009).

   Existing research is impacted by a number of factors given that most reported studies are observation-based and not experimental, which would not lead to more definitive causal associations between screen time and sleep quality and quantity issues that have bearings on school children's school performance. Further, complications arise when we consider the multiple use of screen media often simultaneously, together with screen size effect which may have a differential effect, and applications that come in a variety of forms and have presumably significantly differing effects for different children.

   Propositions for further research arising from the limitations of current knowledge have included the need for a design that addresses complex associations between screen technology, sleep cycle, age of school children, gender, and association with health outcomes including behavioral and emotional issues. Together with developmental stage, it may be necessary to ferret out specific technology effects in interns in particular of software particulars (content, structure, affect, level, graphics, etc).
Then there is a set of recommendations based on pediatric organizations on the use of technology at home and in school that regulates impact on psychosocial wellbeing and aids better learning. This includes self-awareness, proactive attitudes to child TV watching or other screen media use, and mindfulness around optimum experiences for the child that takes into account the issues of health, education and entertainment (American Academy of Pediatrics, 2017). However, parental monitoring and supervision has its limits considering the complexity that arises when one considers a child's peers, interactions, personality, and other factors (Canadian Pediatric Society, 2017).

3.6. Inconclusive Evidence and Critique of Studies
In view of the role of mediating and moderating factors involved whose role may be difficult to precisely pinpoint the effects, body of research continues to be inconclusive at times. The lack of confidence and generalizability has been documented since earlier periods. For instance, decades back, the effect of television was summarized as follows in one particular study.

> …for some children, under some conditions, some television is harmful. For some children under the same conditions, or for the same children under other conditions, it may be beneficial. For most children, under most conditions, most television is probably neither particularly harmful nor particularly beneficial (Schramm, Lyle, and Parker, 1961: 11).

   There is also a continuing expression of doubt about the validity of scientific statements that are typically characterized by numerous conditionalties (Calvert, 1999; Villani, 2001). The absence of strong conclusions is, however, understandable considering the number of variables involved and the controls made impossible. As a result, many would support Cumberbatch's (1989a: 1) claim that "little consensus exists...[and] research which has examined audiences is rarely able to demonstrate clear effects of the mass media". Thus, while much research does show association between watching violent programs and aggressive tendencies, the correlation is far from clear. Assuming such an association exists, it may be next important to determine whether more violent children select to watch more violent programs, or whether other factors predispose such individuals to be more aggressive and to watch more violent content (Livingstone, 1996).

   Thus, some critical voices consider media effects research on children as flawed, biased or inconclusive. They claim that there are no significant correlations between media exposure and outcomes in proportion to the concerns and hypotheses of stakeholders from parents to pediatricians (Bushman, Gollwitzer, and Cruz, 2015). In other words, the magnitude of effect is not significant to warrant intervention at the policy level. They give the example of a large study of over 200 investigations which found that media had no substantial effect on psychological health. They also mention another study of 20 investigations which reported an effect indicating that multitasking led to a small cognitive performance decline, but there were other studies that reported the opposite effect.

   Leaving out differences in theorizing, the majority of studies on media effects seem to have limitations making comparison across samples difficult. Yet a studies map can help to shed light on

the possible limitations introduced into the search for comparative studies and broad claims. Broadly, a typology would approach the investigation of effects as design-based (experimental, correlational, field study), effect type (short-term or long-term effects, media-induced change or reinforcement effects, etc.), target population studied (children, with age brackets, etc), type of media studied (films, violent cartoons, adverts, news reports, etc) and media technology characteristics (Livingstone, 1996).

In view of the limitations noted, it has been recommended that a methodological shift would be essential. More scientific rigor is needed in studies investigating effect. For instance studying screen time alone is inadequate as it conceals much more than it shows. Thus, in the same screen time it is possible to switch between applications, games, communications that have different characteristics and attendant consequences.

Nothing less than a total record of the diversity of media experience within a given screen time can be fruitful scientifically. The totality of screen experience can be best studied as 'screenome', which is a collection of all media actions and transactions. The total screen behavior, consumption, production, text, sound, image and associated sequencing and dosing need to be recorded for every consumer for a meaningful study of effects to be justifiably conducted (Reeves *et al.,* 2021).

To date, much of the screen media effects literature is motivated by concerns that media content may harm children. However, it should also be noted that screen media can have positive effects in terms of children's development in some important ways.

3.7. Beneficial Screen Media Outcomes

Much effects research seems to focus on widespread concern i.e. negative effects. Thus through media effects research historiography commencing from the print era the focus has been on what is adverse, deviant, harmful etc. However, the question of beneficial outcomes is important that may draw insights from cultivation theory. In fact, considerably significant outcomes have been reported for pro-social programming as a positive strategy of socialization (Mares and Woodard, 2005) which should extend to new digital technologies being deployed to assist in children's cognitive, affective and moral development. A further question to ponder over is not just the size of effects positive or negative, but the duration of an effect on which question research seems to have fallen behind in explaining how long beneficial effects of technology last.

Much hangs, of course, on Huesmann and Malamuth's (1986) qualification that effects are only more 'likely' for 'some' and on Cumberbatch's (1989a) requirement that 'clear' effects must be demonstrated. The apparent debate -- over the balance of evidence for the effects of the media -- could be seen as relatively consensual, for many on both sides would probably agree with Schramm's *et al*. (1961) conclusion.

3.8. Policy and Regulatory Issues and Relevant Ethiopian Empirical Scholarship

The effects of media, real or imagined, have propelled child protection measures and legislation globally especially in developed countries. Child media policies are based on the effects conceptualization of the media as outlined in particulars of media regulations. Even when there are no specific child media policies, there are specific provisions relating to child safety concern in national media legislations such as Ethiopia's Broadcast Law (Ethiopian Broadcasting Service Proclamation, 2003). This policymaking is a reflective materialization of the position of some scholars who have argued that the media's negative influence cannot be underestimated (Bittner, 1996; Castel, 1996) especially on children (Alalawi, 2015).

There is growing research literature on Ethiopian children and summaries that address the important subject of child media use have surfaced (e.g. Poluha, 2007). There are small inroads made into what is otherwise an academic jungle for now. One important narrative is parental mediation or co-viewing. While parental role is an important consideration, key questions linger around the degree and effect of co-viewing which has important implications for safe consumption of content by children. Yet studies have not examined compatibility of viewing choices and how much parents or children are willing to

give up or accommodate choices of the other. Further issues of ownership arise complicating the picture. For instance, how likely is the family to have multiple media including TV sets and mobiles which should impact co-use in certain ways? Even spatial issues come into the picture with more residential spaces suggesting more autonomy for the child and more risks. Likewise, parental level of education may introduce issues relating to child wellbeing in the audiovisual and digital environment.

Tefera and Solomon (2015) relevantly report that Ethiopian parents were transitioning from "accessibility' to 'responsibility', which suggests that there is probably involvement in children's media use although research has not investigated this dimension to date. More importantly, parental involvement was encouragingly transitioning from the 'availability/ accessibility' to the 'responsibility' dimension of fatherhood, but falling short of the 'engagement' dimension. The significance of childhood is underlined because this period of growth critically signifies physical, mental, emotional, moral and social dimensions (South African Department of Education, 2001b) that are related to the influence of media. More recent investigations into the media experiences of children are limited and only one study has addressed reception using focus groups (Workalemahu, 2007). Despite the Ethiopian educational media research that has shed some light (Gupta, 1995), the impact on children has been barely touched. However, it is possible that violence in Ethiopian schools could be linked to violent media exposure and modeling although no such speculation has been tested (Terefe, and Mengistu, 1997).

In one study, heavy TV viewing among Ethiopian children was found to be a predictor/suggestive of child obesity (Desalew, 2016). In another study, the video-gaming experience of Addis Ababa children is reported using focus group discussions, and the study falls short of indicating real impacts on children (Hassen, 2008). More recently, Mulisa and Getahun (2018) studied social media use among Ethiopian school students and found that the educational use was negligible. The study considers key risks and benefits identified in the literature. While African youth are the least connected with only 40 % having access to the internet compared to the European figure of 96%, connectivity in Africa is expanding fast as is mobile penetration, which has potential implications for both use and abuse of digital technologies.

On the whole, while Ethiopian children's screen media experiences have grown dramatically, the rise has not drawn parallel research attention and in fact the research seems to have been limited to the few early studies outlined, eclipsed apparently by subjects of core relevance including poverty, access and performance (Woldehanna and Hagos, 2015). There are hardly any studies examining educational, mental, social or affective states in correlational or cross-sectional fashion although the utility of such studies would be limited in the explanatory sense. The absence of answers can confuse parents and other stakeholders.

UNICEF (2017: 99) notes, "as children spend more and more time on digital devices, families, educators and children's advocates are growing more concerned – and more confused – by the lack of consensus among experts on the rewards and risks of connectivity." Locally, the problem is compounded by the evidence originating from highly differing sociocultural and technological contexts which disregard the centrality of local realities, calling into question the relevance and utility of the findings while there are important universals. Local perspectives may also introduce another variable which may place a premium on anything western on account of the assumption that more is better because the local child will have the opportunity to learn English and be more successful. Technology may also be taken as a status symbol and the attendant ills forgotten.

The COVID-19 pandemic introduced a new frontier in child media use with myriad variables changing the global communication and information topography. The locked down and school closures meant children would have increased exposure to digital media , and news and other programming about the threats posed by the pandemic including daily reports of new infections and deaths. These negative stories would naturally pose a threat to children's psychological wellbeing amid reports there was no cure for the virus and hospitals were inundated beyond capacity (Drouin, McDaniel, Pater, and Toscos, 2020). These negative stories would naturally pose a threat to children's

psychological wellbeing amid reports there was no cure for the virus and hospitals were inundated beyond capacity. Guidelines for dealing with the information climate during the pandemic were provided in many advanced countries but there were no definite answers considering the complex scientific and information deluge and the compounding uncertainties (Vanderloo *et al.,* 2020).

Striking a good balance between optimal exposure and overexposure would not be easy given the state of knowledge. While social distancing meant limits to natural communication, the use of social and digital media would also have necessary limits but such blank descriptions as excessive use of media would be difficult to determine. There have been associated child mental health issues relating to social media spread panic and feelings of anxiety arising from the deadly character of the Covid-19 virus coupled with the uncertainty of prescribed preventative methods. In a study by Drouin *et al.* (2020), it was reported that about 63.7% of children experienced anxiety associated with the pandemic. The rise in anxiety levels resulted in an increase of social media use to 82.3% showing an increased demand for communication and information. As a response to the sudden disruptions caused by the pandemic and the lockdowns elsewhere, new screen time and family media use plans have come into the picture (Sultana, Tasnim, Hossain, Bhattacharya, and Purohit, 2021).

The pandemic also led to harnessing existing technologies to meet new challenges introduced. Thus, children now had recourse to educational resources, platforms and technologies. Meeting the new challenge meant school activities and social time were migrating online. Kids were remote-learning with schools having to open digital access to their students under lockdown. Research has not kept pace but definitely the pandemic has led to a rich empirical world that is likely to generate huge diachronic research interest even after the pandemic is over. While the international picture is likely to be mixed, schools in developing countries have also had to grapple with meeting the challenge digitally.

4. Review Limitations

While the review presents an integrative exploration of studies, it nonetheless has limitations because of the particular characteristics of the narrative review as a qualitative procedure. Narrative reviews, as opposed to systematic and meta-analytic reviews, do not consider statistically driven generalizations as central features, although they may include studies that adhere to or report adherence to statistical quality parameters. They may, therefore, be impacted by methodological, sampling, design and other considerations that make study findings difficult to compare and draw inferences across studies. However, a comprehensive synthesis of scholarship that captures the pluralities and diversities of the sub-field has been done by way of integrating studies into topics and themes that may heuristically motivate local scholarship.

5. Conclusions

The study has explored studies that have investigated the effect of screen media on children, and which have the broad horizon of psychological, medical, educational and physical outcomes. While inroads that have formed the basis for safety recommendations by professional societies and international bodies such as the American Pediatric Society and UNICEF have been made, the area of effects research invites further scientific exploration as there are questions still unanswered and there is inconsistency in the body of scholarship on the subject. Until scientific research progress that generates more confidence is realized , the general advice from educational and media circles is that media literacy at all educational levels including primary schools is the answer to problems of deleterious media effects since media literacy serves to empower learners to receive messages more critically. The importance of media literacy also extends to child programs producers and parents, who can, together with their children, negotiate use of optimum levels of technology.

6. Recommendations

While the global debate on the subject is on course, local realities remain potential sites for research in tune with relevant digital developments in Africa in general, and Ethiopia in particular. Even though research has identified numerous opportunities and risks associated with screen media digital or otherwise, the relevant contextual realities are not necessarily addressed.

This research gap should be a stimulus to local research based on the digital and screen media-related developments affecting school children in Ethiopia. Such research would call for perspectives from a multitude of parties including parents, teachers, educators, researchers, administrators, policy makers and child organizations.

Further, developments taking place as a result of technological proliferation and media globalization have implications for children and regulatory and policy frameworks regarding this demographic group. Advanced countries have introduced attendant legislative and policy frameworks regarding television considered to be central in children's lives. The policy efforts also include protection measures against all communication targeting children including advertising and more personal technologies (Palfrey, 2010).

Internationally, the UN Convention on the Rights of the Child is referenced as a framework for child media legislation and national policy making as it is informative in regard to protection of children's rights that apply to children globally. It underscores the need for "special care and protection, and therefore obliges all parties to ensure such protection and care of children as it is necessary for their well-being, through appropriate legislative and administrative measures" (Council of Europe, 2019: 11-12).

In Africa, policy debates generally have been on adult concerns and issues of broad cultural concern and children's concerns have been virtually eclipsed. Yet, the time has come to address the issues that affect children elsewhere as the influences are progressively becoming global given the proliferation of technologies overcoming significant national barriers. In Ethiopia, as elsewhere in Africa, much work remains that uses local evidence as input for regulatory and policy interventions.

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