

**The Effectiveness of a Parental Control
Application (Canopy.us) and Parental
Mediation in Reducing Problematic Internet
Use of Adolescents**

Research Report

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The main mental health challenges of internet use among young kids and adolescents

The use of the internet has become an integral part of many aspects of adolescents' daily lives, such as entertainment, academic performance and social networking (Anderson, Steen & Stavropoulos, 2017; Prievara, Piko & Luszczynska, 2019). This trend became intensified in the last decade due to the pervasive use of smartphones (Škařupová, Ólafsson & Blinka, 2016). Despite its benefits, the internet can also be noxious, leading to excessive use and exposing adolescents to problematic contents or interactions. These risks are characterized respectively as Problematic Internet Use (PIU), and Unsafe Internet Use (UIU).

Problematic Internet Use (PIU) is defined as internet use that is risky, excessive or impulsive in nature, leading to functional impairment (Moreno, Jelenchick & Christakis, 2013). Specifically, PIU is associated with a deterioration in the emotional (Lin et al., 2016; Zhou et al., 2020), academic (Lepp, Barkley & Karpinski, 2014), and social functioning of adolescents (Kuss & Griffiths, 2017).

Negative internet use may not be limited to excessive time online, but also could be manifested as Unsafe Internet Use (UIU) which occurs when young children or adolescents expose to disturbing online content (such as pornography or violence), contacts (such as cyberbullying or online predators) or risk behaviors (such as online gambling) (Gamez-Guadix, Borrajo & Almendros, 2016).

Parental mediation strategies to reduce online risks

Parents serve as primary agents of children's socialization. Hence, they have a significant impact on the acquisition and development of social attitudes and behaviors. Additionally, it is their responsibility to monitor their children's media consumption to ensure a balance between the opportunities and potential risks of the internet. To this end, parents use two main parental mediation strategies: active and restrictive mediations (Chen & Shi, 2019):

(1) *Active mediation* occurs when parents show a positive interest and readiness to discuss their child's online activities. Active parental mediation reflects the assumption of socialization theory (Maccoby, 2007) that the parent–child dialogue about media helps children to protect themselves from online-risks (Kirwil, 2009). This view is supported by studies showing active mediation is effective in reducing UIU (Chen & Shi, 2019; Collier et al., 2016), as well as promoting trust, competence, problem-solving strategies and a positive family climate (Sela, et al., 2020). However, active mediation alone may not be sufficient in preventing PIU (Chen & Shi, 2019). Some children continue to spend excessive time online in ways that negatively affect their functioning, in spite of parental attempts to explain to them why this is noxious.

(2) *Restrictive mediation* occurs when parents set rules that limit the child's online time or access to specific contents. The rationale for restrictive mediation is the assumption that parental monitoring is fundamental for risk prevention (Stattin, Kerr, & Tilton-Weaver, 2010). The more knowledgeable parents are regarding to risky behaviors of their children, they can increase their parental presence in order to prevent or mitigate the involvement of their children in such behaviors. Meta-analytical findings show that restrictive mediation is effective in reducing the amount of time children spend online (Chen & Shi, 2019; Collier et al., 2016).

To effectively impose restrictive mediation, some parents use parental control applications. Data show that 75%¹ of parents of children aged 5-11, but only

¹ <https://www.pewresearch.org/internet/2020/07/28/parenting-children-in-the-age-of-screens/>

39%² of parents use parental controls for blocking, filtering or monitoring their teen's online activities. The use of these tools enables parents to increase their digital presence, become more knowledgeable about their children's online activities, and also to take certain action in case of over-use or premature exposure to online content. However, the effectiveness of parental controls apps differs according to children's age. Studies show that these tools are most effective in lowering the probability for PIU and UIU among children up to age of 14 (Ybarra, et al., 2009). On the other hand, among adolescents, there has been limited success in preventing exposure to unwanted content, or limiting time online (Livingstone & Helsper, 2008). Restrictive mediation in general, and the use of parental control apps, might lead to resistance and conflicts, harms the adolescent's sense of autonomy and self-confidence (Moilanen & Manuel, 2019)

² <https://www.pewresearch.org/internet/2016/01/07/parents-teens-and-digital-monitoring/>

Parenting in the Digital Age (MRP Model)

Previous findings that examined the effectiveness of parental mediation strategies showed that the conjunction of restrictive and active mediation is more effective than each modality on its own. In other words, the use of parental control tools (as an important manifestation of restrictive mediation) could be more effective with the appropriate parenting guidance. Hence, in order to provide kids and adolescents safe and healthy digital lifestyle parents should hold engage with three main roles, according to child's age and level of risk –(content) mediation, (media) regulation and protective actions (Sela, & Omer, 2018):

(1) *Mediation* – The primary role of parents is to actively mediate digital content to their children, in a positive, friendly and non-intrusive way by maintaining a continuous dialogue about the child's digital world. By doing so, parents encourage self-efficacy and autonomy of their children, establish meaningful parental presence in their children's digital world, and remain relevant and attentive in case of dilemmas or difficulties their children might encounter. The mediation role includes three main ongoing parent-child activities: (a) engaging a joint activity with their child (for example playing a video-game together), (b) encouraging expression of thoughts and feelings about online activities to help children cognitively and mentally process online contents (for example discussing their child's social network profile), and (c) planning coping strategies in face of potential online risks (e.g. cyberbullying).

(2) *Regulation* - The second role of parents is to practice media regulation strategies, in order to balance between digital and non-digital activities. The main psychological assumption is that parents should demonstrate or *temporarily* regulate their children's internet use, with the purpose of the child to internalize the importance of these strategies. To engage this role parents should gradually expose children to the digital world (for example by providing them first mobile phone with a limited internet access), help them planning online activities and screen time, and using parental control applications with informing the child about the time and content filtering rules.

- (3) *Protective actions* - The third role of parents in case of functioning impairment due to internet over-use or online risk behaviors is to protect the child by reducing accessibility to internet services, and helping the child to improve his/her coping and problem solving skills regarding the challenges he/she avoids (which are reinforced by unsupervised internet activities). In some cases, to successfully impose these actions, parents are advised to use relatives and friends who serve as mediators between parents and child.

Overall, MRP model is a parental approach that aims to increase children's online safety through the integration of open dialogue and active monitoring. It enables parents to avoid excessive intrusiveness, when there are no clear signs of danger, while increasing their involvement when such signs are detected. MRP is thus a graded model of parental involvement: when there are no clear signs of risk the parents remain at the basic module of *mediation (M)*; when such signs appear, they move to *media regulation (R)*; and if it becomes clear that the child is engaged in risk behaviors (internet addiction, or unsafe internet use), they move to *protective measures (P)*.

The effectiveness of Canopy parental control tools and parental mediation strategies on mental health and internet use

Objective:

To examine the effectiveness of Canopy parental control tools and parental mediation strategies on adolescents' impairment of function and harmful use of the internet, Sela and Omer (2020) conducted a large-scale Random Control Trial (RCT) study.

Methodology:

297 families were recruited for this study. Families were chosen based on parental report on functioning deterioration of their child (age 12-16 y/o) due to online activity in the past 6 months in at least one of the following domains: school, social relationships, participation in family activities, sleeping patterns and mood. None of these families used parental control application prior to this study. Participants were randomly allocated to one of the following groups:

- (1) *Parental mediation* group according to MRP model (mediation, regulation, protection). Parents in this group participated in a three-week parental training program, which helped them to learn and implement the three parental roles (mediation, regulation and protection).
- (2) *Parental control application* group. Parents assigned to this group were asked to establish a set of rules about internet time and filtering prohibited contents. These rules were digitally designed into the Canopy platform (Parental control application), and were activated in study initiation.
- (3) *Parental mediation + parental control application* group. Parents assigned to this group were asked to use the Canopy platform, and undergone the MRP training program. Specifically, these parents learned how to adjust the use of the parental control application according to MRP model, and how to discuss their children about the importance of using Canopy.
- (4) *Control* group. Parents assigned to this group did not use any parental control applications or undergone the parental training program.

Parents and their children completed study questionnaires at three time points: (T0) Baseline assessment – one week prior the treatment’s beginning (week 1); (T1) Post-intervention assessment – at the treatment’s termination (week 4); (T2) Follow-Up assessment – 8 weeks after treatment’s termination. In addition, information on online activities (time and content) was continuously gathered for 12 weeks (first week for baseline, three weeks of intervention, and 8 weeks of follow-up).

Results

1. The effectiveness of Canopy's parental control application and parental mediation on adolescents' harmful use of the internet

Internet over use (problematic internet use)

Results showed that adolescents whose parents were in the parental apps group (red line in the figures) showed a significant decrease (about 50%) in **internet over-use** during the activation of the Canopy app (week 2 to week 3), in comparison to baseline. However, this effect was limited to the period in which the app was activated and did not last during the follow-up (week 5 to week 12).

The strongest beneficial effect was observed for adolescents whose parents used Canopy application and also *instructed* by the psychological intervention of MRP model (green line in the figures). Specifically, these children demonstrated a significant decrease (about 50%) during the activation of the Canopy app (week 2 to week 3), and this effect remained also to the follow up period. Parents in this group reported that Canopy app enables them to define and impose time limitations, which can be adjusted according to the regulation capabilities of their child. This parental emotional attunement to the child's emotional distress, which could be expressed by internet over use, assisted to better internalization of safe digital lifestyle by the child (see Figure 1).

Unsafe Internet Use (harmful content)

Examining the effectiveness of Canopy on mitigating unsafe internet use, showed

similar findings. Specifically, the use only in Canopy significantly decreased time online of adolescents of **online gaming** (Figure 2), **pornography** (Figure 3) and **online gambling** (Figure 4) during the activation of the app, but without a long-lasting effect. However, adolescents whose parents used Canopy application and also *instructed* by the psychological intervention of MRP model showed both a significant decrease of using harmful content, both in the short and the long term.

Overall, results indicate that using Canopy parental control application contributes to a more balanced and safer internet use. Helping parents to gain parental mediation strategies and communication styles regarding their children's online activities improve the beneficial effect of Canopy application on internet use (time and content).

Figure 1: Effectiveness of Canopy's parental control application and parental mediation on adolescents' internet over use

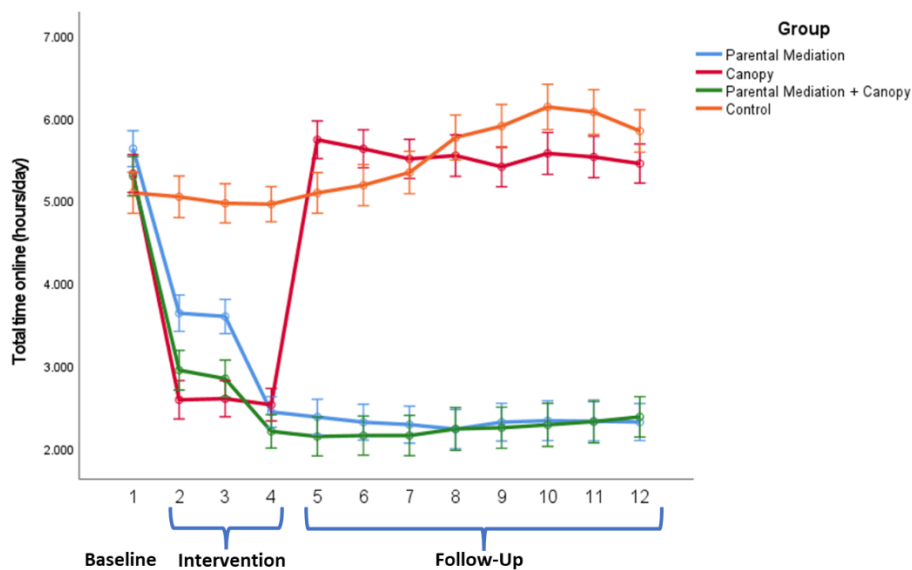


Figure 2: Effectiveness of Canopy's parental control application and parental mediation on adolescents' online gaming

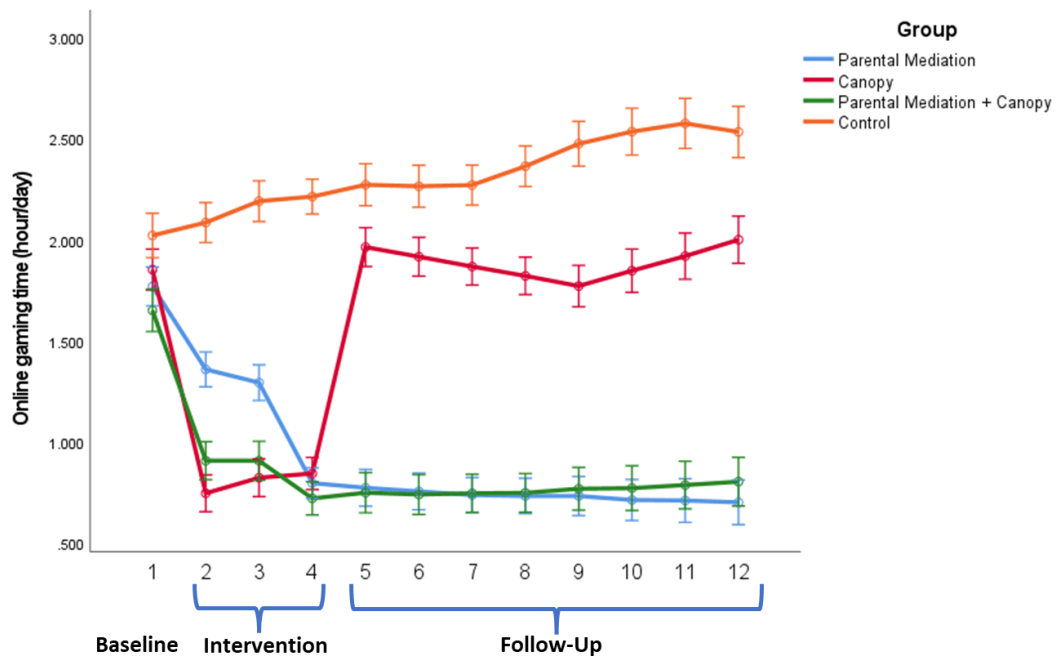


Figure 3: Effectiveness of Canopy's parental control application and parental mediation on adolescents' pornography

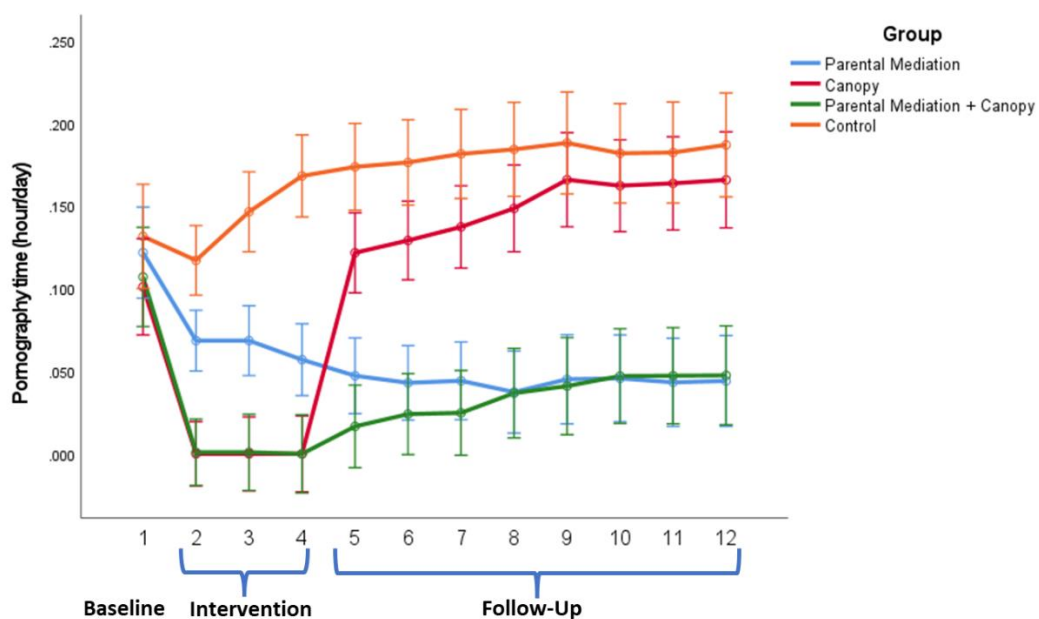
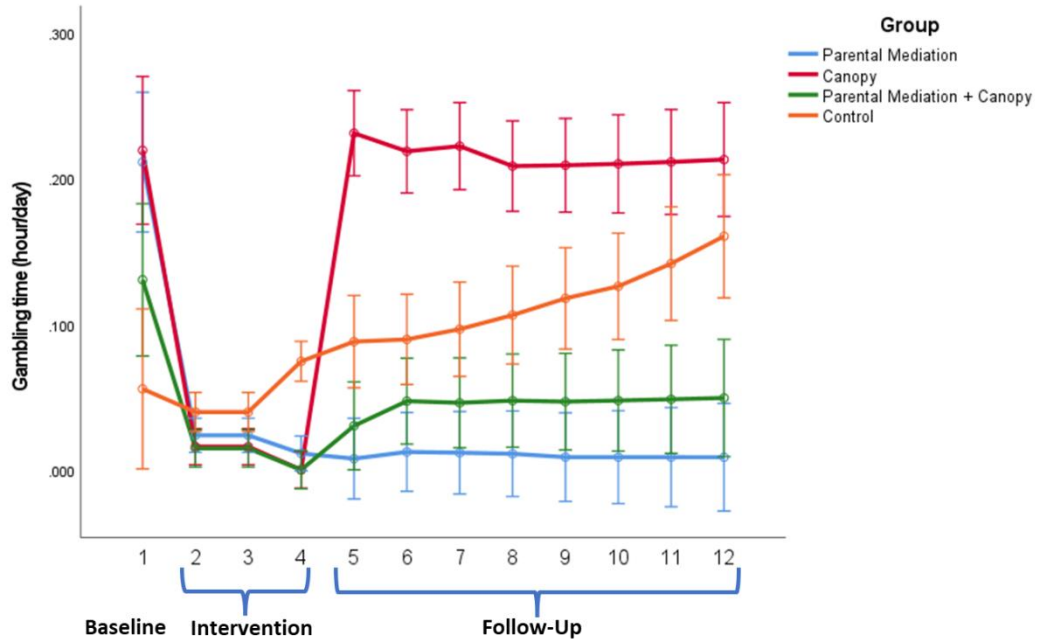


Figure 4: Effectiveness of Canopy's parental control application and parental mediation on adolescents' online gambling



2. The effectiveness of Canopy's parental control application and parental mediation on adolescents' mental health

Results showed that adolescents whose parents were in the parental apps group (red line in the figures) showed a significant improvement (decrease) in **problematic internet use** during the activation of the Canopy app (week 2 to week 3). Meaning, these adolescents demonstrated stronger self-regulation in media consumption. However, this effect was limited to the period in which the app was activated and did not last during the follow-up (week 5 to week 12).

The strongest beneficial effect was observed for adolescents whose parents used Canopy application and also *instructed* by the psychological intervention of MRP model (green line in the figures). Specifically, these children demonstrated a significant decrease in problematic internet use during the activation of the Canopy app (week 2 to week 3), and this effect remained also to the follow up period. This effect is explained by the improvement in parent-child communication, which helped children to strength self-regulation capabilities that demonstrated in more balanced internet use.

Previous studies show that problematic internet use is associated with functional impairment in emotional (Lin et al., 2016; Zhou et al., 2020), academic (Lepp, Barkley & Karpinski, 2014), and social domains (Kuss & Griffiths, 2017). As shown in Figure 6, adolescents whose parents used Canopy application showed a significant improvement (decrease) in **functional impairment** during the activation of the Canopy app (week 2 to week 3). Meaning, these adolescents demonstrated better psychological functioning facing their main developmental tasks.

Adolescents whose parents used Canopy application and also *instructed* by the psychological intervention of MRP model demonstrated similar effect during the activation of the Canopy app. Among these adolescents the effect was more stable over time.

Overall, helping children to regulate screen time and to adjust the content they consume (both by parental control applications, and/or by parental mediation) assist

them to build better psychological resilience. By supervising digital content, parents encourage their children to face mental challenges (for example social anxiety) rather to avoid them and escape to the digital world.

Figure 5: Effectiveness of Canopy's parental control application and parental mediation on adolescents' problematic internet use

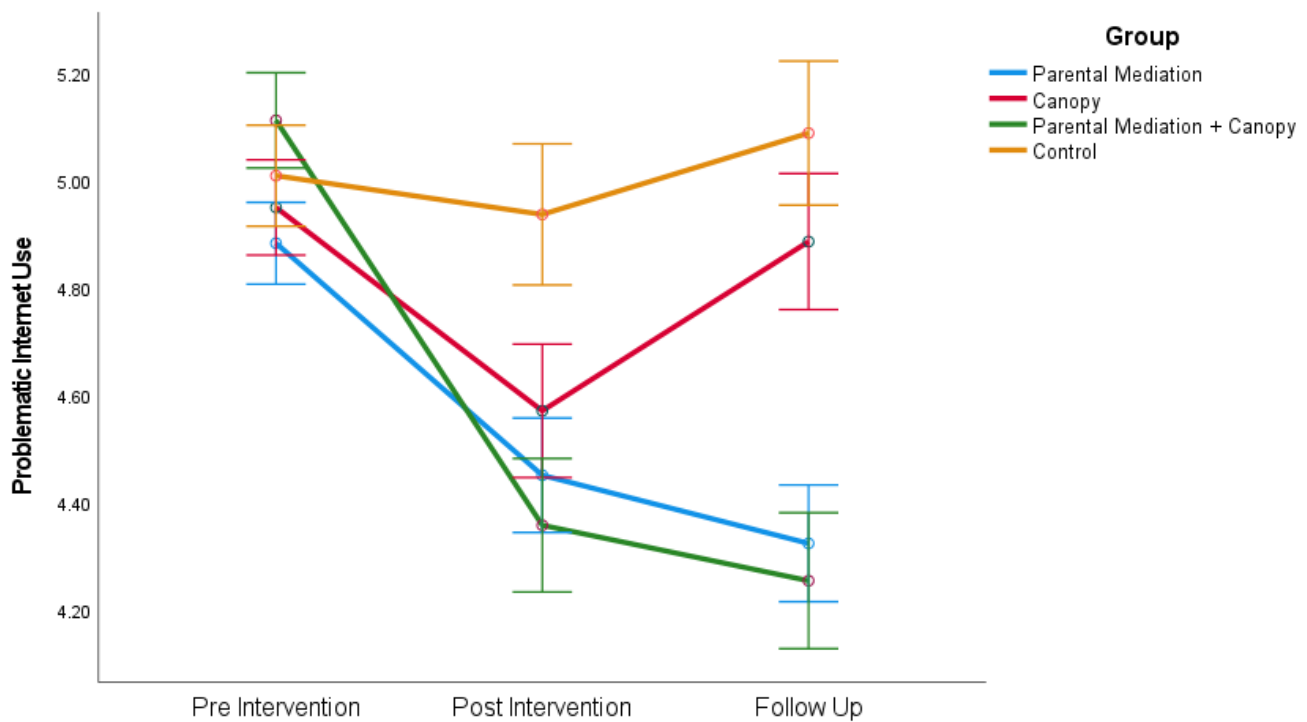
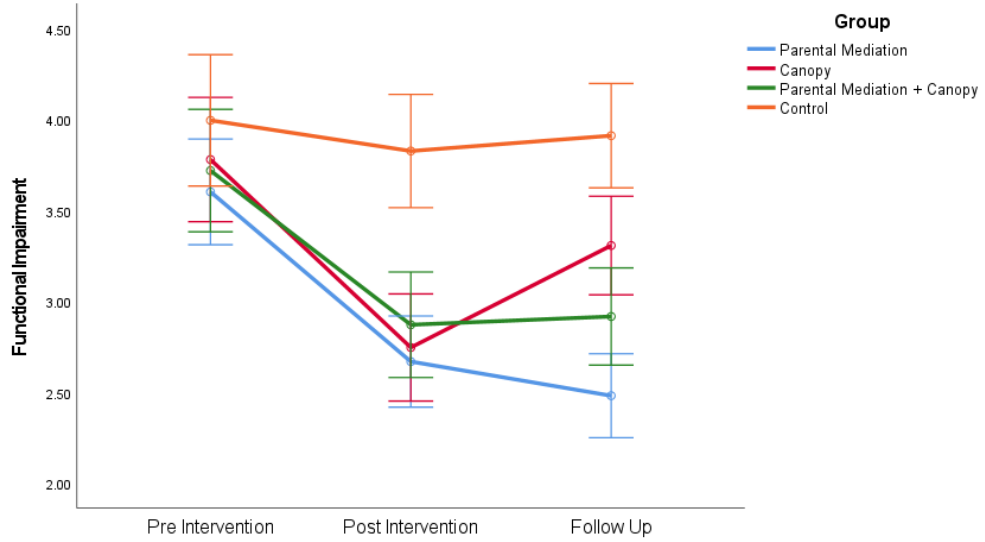


Figure 6: Effectiveness of Canopy's parental control application and parental mediation on adolescents' functional impairment



3. The effectiveness of Canopy's parental control application and parental mediation on parents' mental health and family climate

Examining the effect of parental involvement regarding children's internet use on parental efficacy, showed that parents who used Canopy and also *instructed* by the psychological intervention of MRP model showed the strongest improvement in their ability to cope with challenging situations of their children's problematic internet use. Specifically, these parents demonstrated a 50% decrease in **parental helplessness** after the intervention, while this effect remained also during the follow up period (see Figure 7).

Moreover. Parents in the combined group also demonstrated the most beneficial effect in increasing **family cohesion**, meaning family members felt stronger emotional bonding, belongingness and support (see Figure 8).

Finally, these parents also reported better family expressiveness, meaning more open and direct communication of their feelings, thoughts, and opinions (see Figure 9). This improvement at parent-child relationship was also expressed by more spontaneously disclosure of children in regard to problematic content they were exposed while surfing the internet (see Figure 9).

Overall, these results suggest that using Canopy and teaching parents how to integrate it to parent-child communication regarding the internet, could lead to better psychological functioning of the family. Many families nowadays are characterized by the Technoference phenomenon, meaning that the intense use of digital devices interferes interpersonal relationships and emotional experiences between family members (Meeus et al., 2021). However, the findings of the current study suggest that by using the right parental strategies of adjusting to screens, family climate might significantly improve.

Figure 7: Effectiveness of Canopy's parental control application and parental mediation on parental helplessness

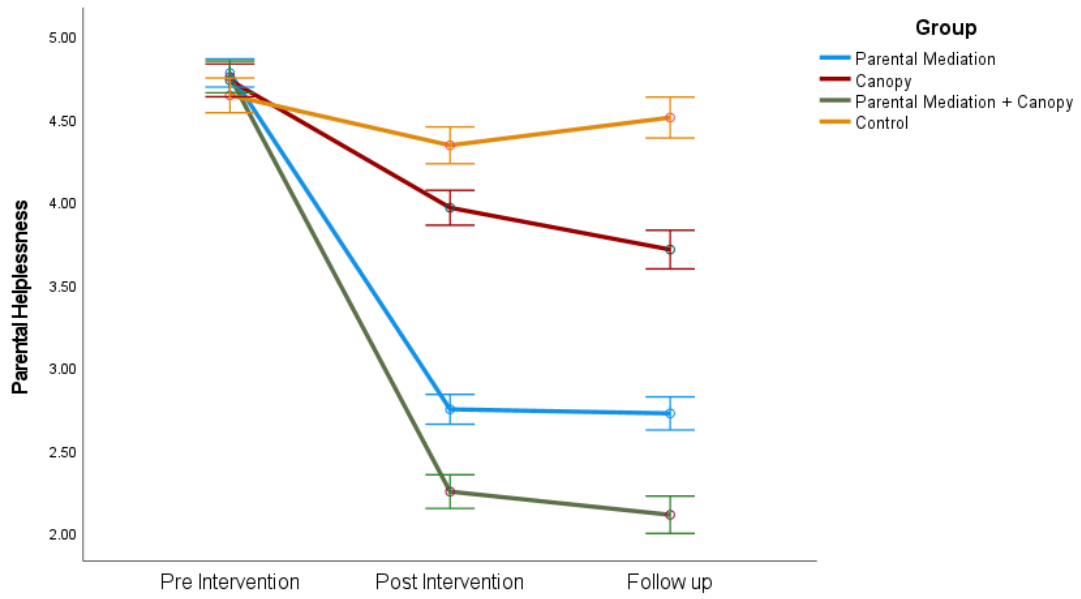


Figure 8: Effectiveness of Canopy's parental control application and parental mediation on family cohesion

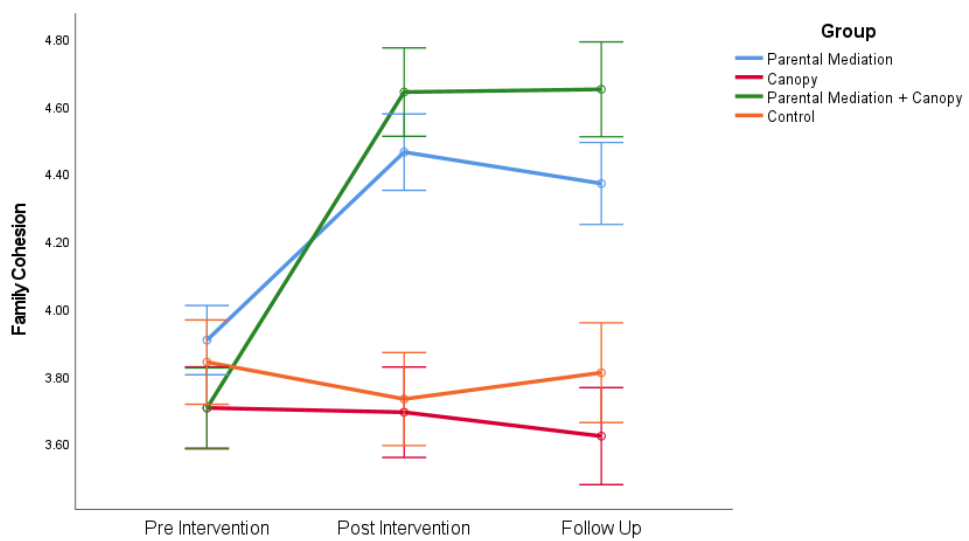


Figure 8: Effectiveness of Canopy's parental control application and parental mediation on family expressiveness

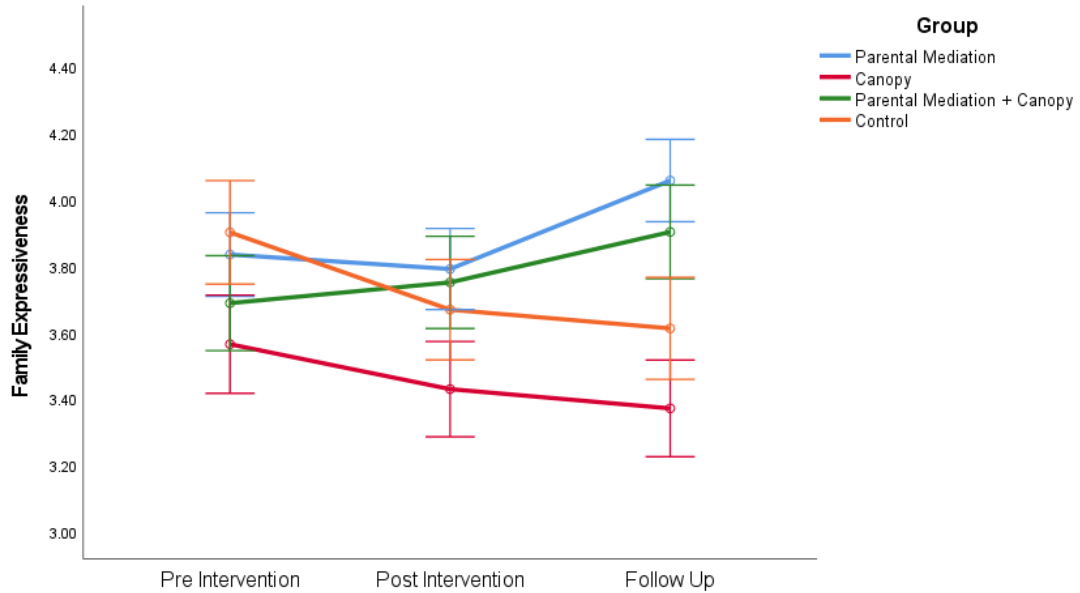
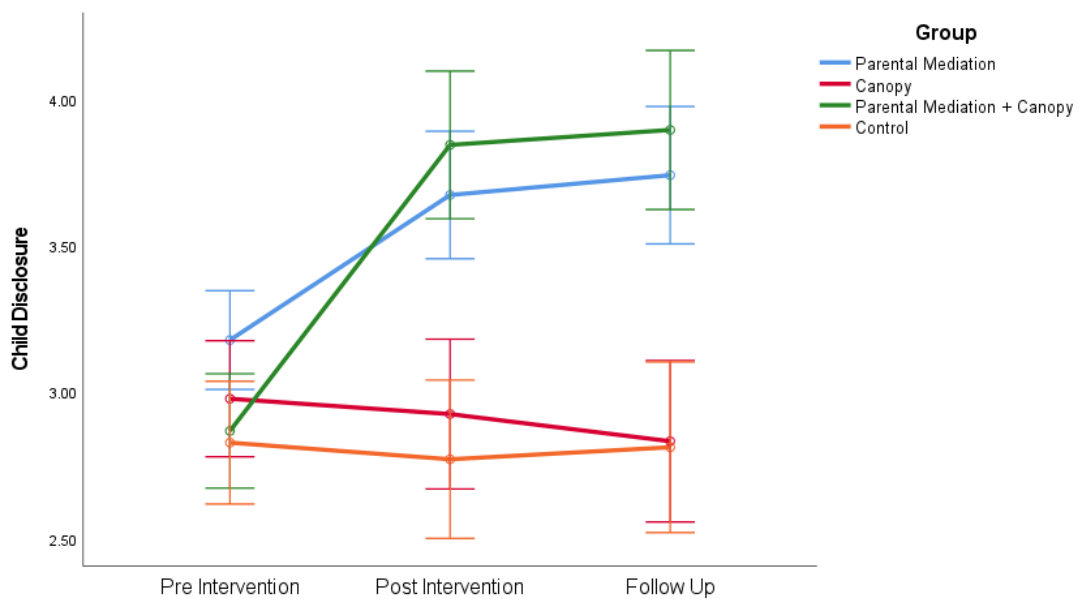


Figure 9: Effectiveness of Canopy's parental control application and parental mediation on adolescents' disclosure about online activities



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