

# Gamification and family leisure to alleviate the psychological impact of confinement due to COVID-19

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## Abstract

This study presents a quasi-experimental longitudinal mixed-methods research about the participation in leisure activities, physical activity, and games, as part of the family leisure programme (“Lunae Magic School”) for Spanish families with children under 12 years old during COVID-19 lockdown. The impact on parents and their perception of the psychological well-being of their children is evaluated. The results show that leisure activities reduce the parent’s anxiety levels measured with STAI scale ( $p = .0001$ ) and their perception of the physical and emotional discomfort of their children, measured with PSC scale ( $p < .0001$ ). It is qualitatively argued that despite the confinement situation, the gamification, the variety of activities and the fact of being able to enjoy quality time with the family have allowed the creation of spaces of fun and flow. Therefore, although the findings on the importance of family leisure were encouraging, more research is needed on the implementation of similar programmes.

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**KEYWORDS**

COVID-19, family leisure, gamification, lockdown, mental health

**INTRODUCTION**

COVID-19 began as infectious pneumonia in Wuhan at the end of 2019. It was classified as a global pandemic by the WHO on March 13th, 2020, affecting both physical health and mental health (Zhang et al., 2020). In March 2020, it reached pandemic proportions, spreading rapidly to most of the world. The easiness of transmission, the lack of immunity of the population, as well as the delayed responses in tests, the lack of equipment, and the challenges in implementing community measures to limit contact are taking an unprecedented cost in our collective health-care, political, economic, and social welfare systems (Fadlallah & El-Jardali, 2020).

Early studies on the psychological impact of COVID-19 (Cao et al., 2020) report the psychological consequences of this pandemic, including symptoms of post-traumatic stress, confusion, and anger. The main stressors of the pandemic are lockdown, fear of infection, frustration, boredom, anger, inadequate supplies, inadequate information (scarce, untrue, or over-information), financial losses, and stigma (Brooks et al., 2020). In addition, other key factors such as interruption of the usual routine and possible loss of loved ones must be considered (Jahnavi, 2020). These psychological responses affect the well-being of the individual and society during the epidemic and can persist long after (Onyeaka et al., 2020).

In Spain, the measures adopted by the state of alarm were necessary. However, the prolonged closure of educational centres and strict home lockdown during the outbreak of a disease can have negative effects on physical, mental, and emotional health of the family. The impact on the personal well-being of childhood in times of crisis should not be neglected, since it can considerably increase their scores in anxiety or post-traumatic stress (Shahyad & Mohammadi, 2020). It should also be considered that due to lockdown, their physical activity can drastically decrease and have irregular sleep patterns due to not having the possibility of outdoor activities or interaction with their peer group (Bates et al., 2020).

The COVID-19 pandemic is posing a serious challenge for families. Most parents have difficulties when it comes to reconciling their new way of working (working online or continuing to work in their usual workspace with new hygiene measures) and the educational responsibility of their children at home. The pandemic may further exacerbate children's psychological well-being and worsen their behaviour problems (Zhang & Ma, 2020).

To mitigate the consequences of home lockdown, it may be beneficial for all members of the family to engage in activities that they can enjoy together and to talk about the negative feelings and emotions they are experiencing in this period. Prolonged lockdown can lead to increased sedentary behaviours, leading to increased risk and possible worsening of chronic health conditions and deterioration of physical condition. Chen et al. (2020) mention the importance of continuing physical activity with safe, simple, and easy-to-implement exercises at home to stay healthy. At the motivational level, the theory of self-determination theory (Deci & Rayn, 1985; Rayn & Deci, 2000) explains the reason why physical activities, in addition to being beneficial for health, are motivating. This theory conceptualises motivation as a continuum between intrinsic motivation (more self-determined) and extrinsic motivation (less self-determined) (Vansteenkiste et al., 2010). This theory includes the mediators called basic psychological needs, which respond to needs for autonomy, competence, and social relationships. The greater the degree of satisfaction of these needs,

the greater the degree of self-determination that the person will achieve (González-Cutre et al., 2011). By reaching high levels of self-determination, positive psychological states and healthy lifestyles are achieved that can remain in the future (Leyton et al., 2020).

Regarding creative activities and games, they are usually perceived as fun. In the design of playful experiences, it is important to get the fun of the players since, generally, the main motivation that leads a person to play is the fun that is obtained during the playful activity (Calvo, 2018). Encouraging personal development is favourable in the design of playful experiences, for that reason beyond rewarding or punishing behaviours with different stimuli (points, medals, etc.), the fun perceived by the players is sought, which consequently activates their intrinsic motivation (Knaving & Björk, 2013). On the other hand, when cooperative games are proposed, the strengths of each team member can be highlighted. In games, positive conflict stimulation is addressed (moderate level of tension and task-based conflict), this allows team members to face and learn to positively manage different cognitive conflicts that can be enjoyable. In addition, the game maintains constant feedback that allows the team to know its performance (Vegt et al., 2015). When a game is perceived as fun and challenging, it can generate a state of flow in the players. Flow is a state of total immersion and fusion of action and consciousness (Csikszentmihalyi, 2008) associated with positive emotional, motivational, and cognitive experiences. In the quarantine situation, the flow achieved through family activities can be important to improve psychological well-being. While families play, they may perceive that time passes faster, manage to focus their thoughts on the game, and momentarily reduce their stress levels caused by COVID-19.

From the beginning of the Spanish state of alarm, it was proposed to carry out a gamified family leisure programme with the aim of reducing the impact of the psychological consequences of lockdown for Spanish families. Gamification consists of the use of playful techniques to engage people, motivate actions and promote learning and problem solving (Kapp, 2012). It is proposed to use gamification due to the intrinsic interest of children in the aesthetics of play (Alsawaier Raed, 2018) and because of its ability to motivate toward healthy lifestyle habits (González-González et al., 2018).

The purpose of this study is to determine the effectiveness of a gamified family leisure programme to mitigate the negative effects of confinement on children under 12 years and their parents. Specifically, the objectives of this study are (a) to determine the effect on the gamified family leisure programme applied in the lockdown situation in the reduction of negative emotional states in children under 12 years old; (b) determine the effect in the gamified family leisure programme applied in the lockdown situation in reducing negative emotional states in parents; and (c) determine if the intervention of the gamified family leisure programme has the same effect regardless of gender.

## METHODS

### Participants

The context of this study was the implementation of a socio-educational family leisure programme during the quarantine period by the Spanish state of alarm between March and April 2020. 58 parents (44 women and 14 men) with a mean age of 39.46 years ( $SD = 7.39$ ) participated in the study who carried out the programme with their 82 children (47 boys and 35 girls) with mean age 8.35 years ( $SD = 3.80$ ). For qualitative analysis, semi-structured interviews were conducted with a subsample of 32 parents (23 women and 9 men with 37.3 mean age) who decided to participate voluntarily. The criteria for participation in the study were to be a parent with children under 12, participate in the gamification leisure programme, and deliver signed, informed consent. This

study complied with the recommendations of the American Psychological Association and the Declaration of Helsinki. Ethical approval was obtained from the Research Ethics Committee of the University of Almería (Ref. UALBIO2021/001).

## Measures

This study employed mixed-methods quasi-experimental longitudinal design. This design implies that the researchers use quantitative and qualitative techniques at the same time, staying separate and independent during the analysis and finally combining the results in a joint interpretation for a better understanding of the phenomenon (Castro et al., 2010).

Participants were invited to complete a sociodemographic questionnaire through a web platform, where the participants' personal information, including names, was anonymised to maintain and protect confidentiality. The instruments used were as follows.

STAI Spanish version (Guillén-Riquelme & Buela-Casal, 2015). The scale consists of 40 items so that 20 measure State Anxiety and the other 20 measure Trait Anxiety. It is a self-applied Likert-type scale with four response options "not at all, somewhat, quite a lot," scoring 0, 1, 2 and 3. With respect to internal consistency, Cronbach's alpha is between values of 0.83 and 0.92 in the original studies, which were obtained in various populations. The Spanish adaptation of TEA Ediciones S.A. was used, this version preserves the item number and the structure of the original scale. Its internal consistency is between 0.90 and 0.93 in the anxiety-state factor and 0.84 and 0.87 anxiety-trait.

Parental Competence and Resilience Scale for mothers and fathers in contexts of psychosocial risk (Martin et al., 2013). The scale consists of 5 dimensions, for this study only two dimensions were used which were Educational Competencies with 13 items. This area measures the affective quality and the emotional effect with the children, as shown quality and affection in the relationships between parents and children. For example some items, "Stimulates and supports the learning of their sons and daughters," "It is observant and shows flexibility to adjust to evolutionary changes" and "Has expectations of achievement towards their children."

The other scale is Personal Development and Resilience with 14 items, it is a Likert-type scale with 5 options ranging from "nothing to a lot" with a score ranging from 1 to 5. This area responds to the ability of parents to face different challenges or multiple tasks. Some items: "Is flexible in the face of difficulties," "Persevere in the face of difficulties" and "do you have the ability to respond to multiple tasks and challenges?" The internal consistency of the dimensions is 0.89 for Educational Competencies and 0.92 for Personal Development and Resilience.

Paediatric Symptom Checklist PSC (Jellinek et al., 1988). It is a 35-item hetero-applied questionnaire in which family members answer different questions about the psychosocial behaviour of their children. The questionnaire has a specificity of 0.68 and a sensitivity of 0.95. It is a Likert-type questionnaire with three answer possibilities "never, sometimes and often," scoring from 0 to 2. With a score equal to or greater than 23, it indicates that the child would require special attention and be observed by a professional. This scale serves as a screener for some mental problems. Specifically, it is used for mood disorders, conduct disorders and anxiety disorders. It has been decided to use this scale since in a situation such as confinement, it is expected that these are the disorders that appear most frequently (Behar-Zusman et al., 2020). Some examples of the items are "Feels sad, unhappy," "Has trouble sleeping" and "Takes things that do not belong to him or her."

The decision to use a hetero-applied scale is justified by the fact that some children participating in the programme have a wide age range and it was not possible to unify criteria for the evaluation, which is why it was decided to use a scale that was completed by parents.

Qualitative data were collected from semi-structured interviews (Esterberg, 2002) with parents who participated anonymously, freely expressing their opinions about the leisure programme and how it has affected them during the quarantine.

## Procedure

This study employed mixed-methods quasi-experimental longitudinal design, making use of both quantitative and qualitative approaches to explore the research objectives. At the time of designing and implementing this intervention, March 24<sup>th</sup>, 2020, the Spanish population had been in confinement for 10 days, unable to leave their homes except for essential activities. To alleviate the negative effects of lockdown, a free online family programme “Lunae Magic School” was proposed for families with children under 12 years old. The programme lasted one month and consisted of 9 weekly activities distributed among these different themes: physical activity and music (for example, magic yoga or creating sports circuits with footsteps); creative activities with materials they had at home (for example, messages with invisible ink and experiments); emotional education activities where they had to learn emotions through a monster aesthetic game, where they expressed moments in which they felt those emotions through drawing and storytelling; and print-and-play games and creating their own games with recycled materials.

This programme was carried out online with edu-version of Genially. Each family needed a smartphone, tablet, or computer to access the information and carry out the activities. The programme was gamified, since it had an aesthetic of a magic school, where all the activities maintained this aesthetic and each family obtained a weekly online card where they could get medals with each activity carried out and receive emails from the organisers encouraging their participation and offering extra activities (see Figure 1). Also, psychological support was offered to families who requested it free of charge by a team of specialised psychologists.

## Data analysis

Continuous variables were described using mean and standard deviation or median and inter-quartile range, while categorical ones using *n* and proportion. Shapiro-Wilk test was used to test the assumption of normal distribution. Paired *t*-test was used in this study to compare both STAI and PSC questionnaire scores before intervention and after completing the programme. If a score was not distributed normally, paired Wilcoxon test was used. Study results were interpreted to be significant at  $p < .05$ . As sample size was limited by participation, we conducted power analysis for each test. Data were analysed with Stata 15 (Stata Corporation College Station).

Regarding qualitative research, all the information was organised for analysis and treatment through the Atlas.ti software (version 8.4.2). The analysis process was based on the grounded theory (Charmaz, 2014).

After collecting the answers to the semi-structured interviews, open encoding was performed first. This consists of a careful examination of the data to identify the meanings of the parents' responses. Then, in axial coding, the categories and subcategories of the stories were related. Once the categories and subcategories were collected in the axial coding, selective coding was carried out. In this phase, the categories found in the narrations were organised into a relationship table (Hernández, 2014). This table represents possible structures or systems of relationships between categories or codes. The table allows reviewing of all the elements that can support one





FIGURE 1 Points card, program start screen and examples of activities

or another argument or conclusion. This phase was carried out based on the discussion of two researchers and, in the case of disagreement, a third researcher was contacted.

## RESULTS

### Findings in parents

We compared measurement of STAI scale on the 58 parents before intervention and after it using paired *t*-test method. The paired *t*-test results (See Table 1) show a mean STAI score before and after intervention as 30.10 and 26.87, respectively, which give mean difference (D) as 3.22 units (CI95% 1.57–4.87). In our case,  $p$ -value = .0002 suggests statistical evidence of difference in mean STAI score before and after initiation of the intervention. The power for this comparison with this size was 97.8%.

TABLE 1 STAI paired comparisons

Subjects (n)	Pre-intervention	Post-intervention	D (CI95)	p-value
All parents (58)	30.10 (9.1)	26.88 (7.6)	3.22 (1.57–4.87)	.0002*
Women (44)	32 (8.6)	27.88 (7.6)	4.11 (2.29–5.94)	<.0001*
Men (14)	21.5 (18–29)	23 (17–29)	–1.5	1

\*Statistically significant.

In our sample, the starting point of STAI score was statistically different between genders. Women had a mean STAI pre-intervention score of 32 units (*SD* 8.6), while men had a mean score of 24.14 units (*SD* 8.2), with a 7.85 mean difference and a *p*-value of 0.005 in a *t*-test comparison. We chose then to perform paired analysis stratified by gender, which showed the different result in each stratum (see Table 1). On the woman's group (*n* = 44), *D* was 4.11 units (CI95% 2.29–5.94) with a *p*-value on a paired *t*-test <.001. In the men's group (*n* = 14), we used a non-parametric approach due to low size and *p* < .05 on Saphiro-Wilk test. The median difference was –1.5 units with a *p*-value of the non-parametric paired test *p* = 1.0 suggesting no evidence of difference in STAI score before and after intervention.

## Findings in children

We compared the measurement of PSC scale reported by the parents on the 82 children before intervention and after it is using paired *t*-test method. The paired *t*-test results (See Table 2) showed a mean PSC score before and after intervention as 55.45 and 18.02, respectively, which give mean difference (*D*) as 37.43 units (CI 95% 35.89–38.96) and a *p*-value < .0001. The power for this comparison was 100%.

We also compared the score results stratifying by gender of the parents, to see if there was a difference in their perception of the children; with similar results for both strata (See Table 2). Men's reports (*n* = 18) had a median difference of 37.5 units and the *p*-value of the paired non-parametric test was *p* < .0001, while women's reports had a mean difference of 37.56 units (CI95% 35.81–39.32) and a *p*-value on a paired *t*-test *p* < .0001.

Finally, we compared the score results stratifying by gender of the children (see Table 2). Boys (*n* = 47) had a mean difference of 36.68 units (CI95% 34.48–38.88) and the *p*-value of the paired *t*-test test was *p* < .0001, while girls (*n* = 35) had a mean difference of 38.42 units (CI95% 36.29–40.5) and a *p*-value on a paired *t*-test *p* < .0001.

After the analysis of the interviews conducted with the parents, the following categories were identified (see Table 3). To respect anonymity, each family member is identified as F and a number chosen in linear order.

The main qualitative findings are collected in the following categories:

## Quarantine and confinement status

The quarantine and its consequent confinement had consequences on the mental and physical health of the general population (Bourdass & Zacharakis, 2020; Wang et al., 2021). The

TABLE 2 PSC paired comparisons

Subjects (n)	Pre-intervention	Post-intervention	D (CI95)	p-value
All children (82)	55.45 (10.5)	18.02 (8.0)	37.4 (35.9–39.0)	<.0001*
Woman parent (64)	55.89 (10.2)	18.32 (8.0)	37.6 (35.8–39.3)	<.0001*
Man parent (18)	53.5 (44–62)	16 (9–24)	37.5	<.0001*
Boys (47)	55.21 (9.7)	18.53 (7.8)	36.68 (34.5–38.9)	<.0001*
Girls (35)	55.77 (11.7)	17.34 (8.4)	38.43 (36.3–40.6)	<.0001*

\*Statistically significant.

participating families have also perceived this deterioration. More than half of the families (53.1%) have commented on the increase in negative states and emotions such as sadness, stress, tiredness and irritability since the quarantine and confinement began, as well as a deterioration in their physical and emotional state (12.5%). In addition to these threats, due to the quarantine, many parents are forced to telework or work at their usual job, while the children are at home and “feel overwhelmed” for not being able to adequately care for their children (21, 9%) and not being able to help them do their homework, considering their disproportionate amount (25%).

## Perceived advantages in the “Lunae Magic School” programme

Families have rated the programme as very fun (96.9%), valuing it as a space where they can enjoy family time (87.5%). The fact of enjoying quality time with the family can allow for greater family cohesion (Zabriskie & McCornick, 2011). In turn, family cohesion is a protective factor against depressive symptoms due to the pandemic (Li et al., 2021).

This disconnection from reality can be understood as flow (40.6%), a state in which people experience deep enjoyment, creativity, and a feeling of total participation (Csikszentmihalyi, 2008). During the programme, the family members have had fun and enjoyed the game; therefore, it has been a stimulating activity where there is no space to address past or future problems or any other temporarily irrelevant stimulus, current problems due to the pandemic and confinement are relegated until the game is over. It has been mentioned that one of the reasons why the programme was fun is that the programme was gamified and focused on playful strategies and different from academic tasks (32.35%). Other perceived advantages were the variety of activities proposed (32.25%), that it was interactive (12.5%), and it was free (9.4%).

## Gamification and components of the programme “Lunae Magic School”

The gamification programme has been widely accepted, positively commented on by more than 90% of families. Among the information obtained, it stands out that they liked the selected aesthetic (magic school), making the activities with this aesthetic more attractive and fun for children and families. The interactivity of the programme and its game dynamics has also been



mentioned. They liked that after completing all the challenges, they could unlock the magician's letter where he congratulated them and proposed hidden challenges by email.

The main activities of the programme were divided into three key areas (by times mentioned): creative activities (96.9%), physical activity (68.75%) and games (53.1%). In the programme, creative activities were related to emotional education. Creative activities allow the expression of both positive and negative emotions, (including gratitude, love, joy, sadness, anger, fear...) (Potash et al., 2020). This allows families to explore these emotions through art in a controlled way in a safe environment and facilitates communicating them to the rest of the family. During the interviews, most of the family members mentioned that doing art crafts

TABLE 3 Qualitative data

Main category	Subcategory	Number of declarations	Example of statements
Quarantine and confinement status	Physical and emotional state	4 of 32, 12.5%	It is very difficult to do sports at home, it is as if you did not have the strength to get up from the sofa (F4) My daughter finds it difficult to sleep at her usual time these days, she is very irritable... staying home is being difficult for her (F6)
	Increased negative emotions	17 of 32, 53.1%	The activities of the monsters have been the perfect excuse to talk with our children about our emotions, these days have been very hard with the quarantine, so the magician's monsters ate the fear and sadness. Thanks for the programme!! (F12) These days we feel nervous and tired, the children too, this has been like disconnecting from everything (F7)
	Difficulty in family conciliation	7 of 32, 21.9%	[We need] more activities for children to be autonomous and to make work compatible (F10) Being in lockdown is very difficult for parents who work outside the home, so this has helped us to have entertainment at home (F24)
	Excess schoolwork	8 of 32, 25%	We really liked the programme because it was original, my son likes magic very much, he has seen all the Harry Potter movies but now they send him a lot of homework at school and the last two weeks we could not finish it [the programme activities] (F8)

(Continues)

TABLE 3 (Continued)

Main category	Subcategory	Number of declarations	Example of statements
Perceived advantages in the “Lunae Magic School” programme	Enjoy family time	28 of 32, 87.5%	What we liked the most was being able to enjoy moments with the family without worrying about everything else... (F24)
	Fun	31 of 32, 96.9%	The activities have been very fun and enjoyable (F1) [What I liked the most is that] it works on different aspects in a fun way: movement, creativity, crafts, etc. (F12)
	Flow	13 of 32, 40.6%	As if by magic, doing the different activities made lockdown more enjoyable (F23) [What I liked the most is] playing with my children and for a moment stop thinking about the coronavirus (F7)
	different activities to academic tasks	8 of 32, 25%	The best thing is everything that is not associated with things at school: physical activity, cooking recipes... (F15)
	Interactive	4 of 32, 12.5%	The interface was very nice and interactive, my daughter liked it a lot (F5)
	Free	3 of 32, 9.4%	Thanks for creating such a powerful free tool, we really enjoyed it (F18)
	Variety	8 of 32, 25%	I am satisfied with the programme and it has provided me with a large number of activities (F2)
Gamification	Aesthetic	29 of 32, 90.6%	What my children liked the most is that it seemed magical, they loved putting stamps on their magic card, creating their wands, fighting, eating the sugar crystals... everything, they love magic! (F20)
	Dynamics and mechanics	7 of 32, 21.9%	He was excited when the letter from the magician Marcus arrived (F32) [The programme] has helped my son to stop asking me for my mobile phone and ask me to do the activities to get the medals of the card instead (F16)

**TABLE 3** (Continued)

Main category	Subcategory	Number of declarations	Example of statements
Components of the programme “Lunae Magic School”	Physical activity	22 of 32, 68.75%	My two daughters liked everything, especially magic yoga, and those days it seemed that they even slept better (F9) Physical activities [is what I liked the most], because it is very difficult to exercise at home and this is a fun way to do it. We had so much fun with yoga and the jump race down the hall (F27)
	Creative activities	31 of 32, 96.9%	THANK YOU for these creative activities, they have been good for us to clear our minds (F11)
	Games	17 of 32, 53.1%	My kids have loved creating their own board games with the materials we had at home (F3)
	Emotional education	10 of 32, 31.25%	[What I liked the most was] The activity of the monsters of the emotions because then I had an excuse to talk about how we felt about the whole coronavirus situation and being locked up at home (F26) It is a fun game, and it is very good to reflect on our emotional state (F30)
Proposals to improve the programme	Diary challenges	1 of 32, 3.1%	[I want to] Make daily challenges to get into playing every day (F14)
	More weekly activities	4 of 32, 12.5%	I would like more activities to be done per week (F28)
	Different aesthetic	5 of 30, 16.7%	I would like different characters, like superheroes (F21)

relaxed them, helped them to clear the situation and that in the activities of the monsters of emotions, they could take the opportunity to talk with their young children about their feelings.

Under normal conditions, physical activity during childhood was already insufficient, which is consequently reflected in the high levels of sedentary lifestyle and child obesity (Martín-Moya et al., 2018). Social isolation during confinement has caused these levels of physical activity to be even lower, resulting in an increase in sedentary behaviour and favouring physical deconditioning. This phenomenon has been widely mentioned by the participants, including also the deterioration in their sleep quality and that of their children. On the other hand, families also affirm that thanks to the programme they have done at least one hour a week of sports, and at the same time that these sports activities have been fun, and they have felt more active after doing them.

Finally, regarding recreational activities, creating and playing their own board games have also been a positively valued activity among families, experiencing moments of flow and fun during family leisure. Family leisure seeks to satisfy the needs of stability, cohesion and family adaptability (Zabriskie & McCormick, 2001), elements that improve the emotional state of each member of the family.

## Proposals to improve the programme

During the interview, family members were asked to mention what could be improved in the programme. It should be noted that 67.7% of the families considered that there was nothing to improve in the programme. The results found regarding possible improvements to the programme were the following: carry out challenges to connect daily (3.1%), greater number of weekly activities (12.5%) and another gamification aesthetic (16.7%).

## DISCUSSION AND CONCLUSIONS

The COVID-19 pandemic and the necessary lockdown measures for public health have led to a situation of stress, negative emotional responses and reduced physical activity in children (Alves et al., 2021).

The first assessments of the mental health of the population in the COVID-19 pandemic suggest that the general population may experience psychological problems, such as anxiety, depression, and stress (Huarcaya, 2020). Children benefit from daily routine and social engagement, and both have been eliminated or at least reduced during confinement (Vogel et al., 2021). The objective of this research is to analyse qualitatively and quantitatively if family leisure programmes can reduce the psychological impact of quarantine and confinement for Spanish families. In this sense, having empirically validated strategies for the prevention of psychological problems derived from the pandemic itself allows in part to provide solutions for the physical, emotional, and psychological well-being of children and their families.

The first studies with the Spanish population (Ozamiz-Etxebarria et al., 2020) show that at the beginning of the alarm, the younger population with chronic diseases has referred higher symptoms than the rest of the population. A higher level of symptoms has also been detected from lockdown, and it is expected that the symptoms will increase as the confinement progresses. The authors also mention the importance of psychological prevention and treatment interventions to reduce the psychological impact that this pandemic may create. The quantitative results confirm that in general the levels of anxiety-state of the parents improve significantly after the programme. However, a remarkable fact is that while the results in women acquire a statistically significant improvement and in men, it worsens after the programme but not significantly. The differences by sex found may be due to different behaviour patterns in anxiety management (Gutierrez-Garcia & Landeros-Velázquez, 2018) as well as in coping with the stressful event itself, in which women are more likely to perceive adverse events as traumatic (Arenas & Puigserver, 2009). These results are difficult to generalise due to the lack of a control group and a larger sample.

Regarding the perception of the physical and psychological well-being of their children, the results are remarkably encouraging, going from risk scores to ordinary scores. These results are supported by the positive comments of the surveyed parents, who suggest that it has been a very

fun programme, it helped them express their emotions to the rest of the family members and they resumed physical activities. The positive impact of aesthetics combined with gamified dynamics and activities is supported by the findings of previous studies where the implementation of gamification improves levels of physical activity (Kari et al., 2016) and that gamification programmes can significantly improve emotional competencies and decrease anxiety levels (Filella et al., 2016).

Furthermore, this phenomenon can be understood for various reasons. Leisure activities and physical activities in the family can satisfy the basic psychological needs of the self-determination theory. This fact would explain why the participants have felt motivated to continue with the activity and to be able to increase the sensations of well-being and satisfaction (Rayn and Deci, 2017).

Games have an educational and social value, and it favours the construction of interpersonal relationships (Marín, 2018), which in moments of confinement can be useful for the psychological well-being of the family. Play is an important part of learning, in addition to satisfying certain needs, promoting imagination, assimilating rules, and building affectivities and moments of pleasure and fun (Vygotski, 1978). Our results coincide with another study carried out on confinement in COVID-19 that highlights the importance of implementing recreational activities and family participation to mitigate the psychosocial effects because of contagion prevention measures (Ramírez, 2021).

COVID-19 has led to a stressful situation for children and a break from their usual routines (Usher et al., 2020). This study shows that gambling could be an effective resource to reduce stress. In line with our results, Fearn and Howard (2011) studied that in situations of extreme stress and deprivation, children can regulate emotional arousal and bring down anxiety levels during their play and that playing allows them to have an effective interaction with their social environment. Howard et al. (2017) mention the emotional importance of play in the emotional development of children, since even under normal conditions, children who usually play have strong positive emotions while those children who do not play may experience a greater number of negative emotions and anxiety.

Games produce fun and relaxation (Constantinescu et al., 2017), aspects related to flow, mentioned in qualitative research. When there is a state of flow, an aspect of challenge (concentration) and play (enjoyment) is generated and the family can fully enjoy the moment of the programme, without having negative thoughts caused by the epidemic. It should also be noted that physical activity improves the quality of sleep (Mendelson et al., 2016), so being more active and rested can have lower levels of stress and anxiety during COVID-19 (Chtourou et al., 2020).

Finally, being able to express feelings and being in a relaxed environment allows the family to talk about their concerns, facilitating the emotional management of these (Boss et al., 2016). Other studies mention the positive impact of performing artistic activities in the family, implying an increase in parental skills and a greater parent-child relationship (Choi et al., 2020; Mateos et al., 2021).

## Limitations and directions for future research

Finally, this study shows several limitations. In the first place, this quasi-experimental study does not have a control group, so we cannot affirm that the psychological improvements in relatives are exclusively due to the use of the programme, so the results may not be generalisable. Other variables could influence such as the best hygienic conditions at work (Tan et al.,

2020) or that in crisis situations such as a health emergency, cognitions and negative emotional responses tend to decrease over time (Qian et al., 2005). Second, the study was carried out from the beginning of the confinement in Spain, and an online survey and interview method were used to avoid possible infections, which meant that the sampling of our study was voluntary, and consequently, it should be considered the possibility of selection bias. Third, due to the sudden occurrence of the state of alarm, we were unable to assess the psychological conditions of the individuals before the outbreak to compare the mean. As proposals for future research, it is proposed to design and evaluate different family leisure programmes during times of confinement and post-confinement with control and experimental groups to be able to verify their effectiveness and to be able to offer playful strategies to face the psychological, physical, social, and affective impact of COVID-19.

In conclusion, it is necessary that in the coming months, the psychological impact of COVID-19 on the family population continues to be investigated, and economic, social, and educational strategies are offered to face the current situation. This study shows that directed leisure where physical activity, emotional education, games, and creative activities are carried out and can reduce the negative psychological effects in the family, with a greater influence on mothers than on fathers. The gamified leisure programme has allowed families to enjoy quality time sharing during confinement.

## CONFLICTS OF INTEREST

No potential competing interest was reported by the authors.

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