Evaluating an online-game intervention to prevent violent extremism

Felix Lippe[a], Rebecca Walter[b1], Veronika Hofinger[c]

[a,b,c] Researchers at the Department of Applied Sociology of Law and Criminology, University of Innsbruck, Austria

Abstract

As gaming and gamification play an increasingly important role in recruitment processes and radicalisation, there is an urgent need for evidence-based research in this field. One aspect is the use of games and gamification in prevention work. The article presents a project in which an online-game against extremism was developed and focuses on its evaluation using a pre-post design and a combination of quantitative and qualitative methods. The aim of the game is to educate young people about radicalisation processes in order to increase their resilience. The pre-post comparison showed that young people changed their attitude towards extremist narratives after playing the game: they agreed significantly less with statements that referred to extremist narratives, e.g. legitimising violence or spreading conspiracy theories. When they played the game in the course of a workshop, they also showed lower approval rates for authoritarian attitudes afterwards. The self-assessment of their learnings was consistently high, whereby even greater effects could be observed for those who had played the game in the course of a workshop. Despite some limitations in data collection due to the COVID-19 pandemic, the evaluation provides interesting insights into the impact of the game on the prevention of radicalisation.

1. Introduction

1.1 The Role of Gaming in Extremist Contexts

In 2020/2021, there was an estimated number of approximately 2.5 billion gamers worldwide (Schlegel, 2021). Considering this trend and its expected growth, it is not surprising that extremist groups try to take advantage of these developments. Research has shown that extremist organisations with different ideological backgrounds have seized online gaming platforms such as *Discord* or *Twitch* for the purpose of online radicalisation (O'Conner 2021;

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[1] Corresponding Author Contact: Rebecca Walter, Email: rebecca.walter@uibk.ac.at, Department of Applied Sociology of Law and Criminology, University of Innsbruck, Museumstraße 5/12, AT-1070 Vienna, Austria.

Gallagher et al., 2021; Europol, 2021; Ebner 2019). Schlegel (2021, p. 9) even concludes that "[t]here is extremist content on almost all gaming (adjacent) platforms". Additionally, Islamist-extremist/jihadist groups and far-right extremists have even developed their own video-games (Hausmann, 2022; Schlegel, 2020; Al-Rawi, 2018) to spread their fanatic views among a young, predominantly male and gaming enthusiastic target group (Schlegel, 2018). Next to that, extremist groups have resorted to the strategy of gamification by misusing elements of commercially successful online video-games such as *Call of Duty* (Dauber et al., 2019) for their online propaganda. Originally applied in the commercial sector, gamification describes the use of elements from gaming culture in non-gaming contexts. It aims at influencing the behaviour of individuals by making engagement more appealing by, for example, incorporating a reward system in the form of collecting points as it is common in video-games (Robson et al., 2015). Though studies have been conducted on the impact of video-games on the players' behaviour, e.g. with regard to fake news (Roozenbeek & van der Linden, 2019), aggression (Shao & Wang, 2019), or violence against women (Simpson-Beck et al., 2012), little is yet known about the use of games in Preventing and Countering Violent Extremism (P/CVE).

There is a notable and recent exception to the scarcity of scientific research on video-games in P/CVE. In 2021, Saleh et al. developed and tested "Radicalise", an online-game which aims at undermining extremist online recruitment strategies by resorting to the principles of active psychological inoculation: the players are exposed to severely weakened doses of the key techniques used to recruit and radicalise individuals via social media platforms (Saleh et al., 2021, p. 1). Like the game developed in DECOUNT and presented in this article, the online game "Radicalise" unfolds in a social media environment and players are confronted with several response options, which in turn influence the pathway through the online game. Through undergoing this simulated recruitment process, players' attitudinal resistance against such recruitment practices is supposed to be increased. By conducting a 2×2 mixed (pre–post) randomized controlled experiment with two outcome measures, the authors found that playing the online-game significantly improved participants' ability and confidence in detecting short messages, which included extremist manipulation techniques, as well as their ability to determine factors of individual vulnerability to extremist recruitment (Saleh et al., 2021, p. 12ff.).

Against this background, an adequate response to the gamification of extremist recruitment on behalf of practitioners might thus be the gamification of P/CVE. To address the question of how gamification can best be used in P/CVE interventions, this paper seeks to demonstrate, based on empirical data, that a well-designed online game can have a positive impact on audiences, particularly with regard to their approval of extremist narratives and when being embedded in a P/CVE workshop.

1.2 Evaluating P/CVE Interventions

In recent years, several programmes and interventions for P/CVE have been implemented on national and local levels. Institutions funding such initiatives, researchers and practitioners alike have emphasised that, in order to analyse their advantages and disadvantages, evidence-based evaluations need to be conducted and made available to the field. Yet even though a vast range of programmes have been implemented globally, scientifically supported concepts and the evaluation thereof did not keep pace. Based on their literature review on the evaluation of P/CVE programmes, Feddes and Gallucci (2015, p. 17) concluded that "hardly any empirically based evidence of preventive or de-radicalisation interventions exist[s]" and that primary quantitative or qualitative data was only presented in 16 out of 135 samples (ibid.). Two years later, Köhler (2017, p. 10) stated that "the counter-extremism situation falls short of all academic standards with regard to quality benchmarks, transparency and evaluation". Though the situation slowly changes for the better, there is still room for improvement with regard to the quality and quantity of the existing evaluations.

Evaluations that have been conducted in the field of P/CVE interventions follow different approaches. Process evaluation focuses on performance standards and examines whether an intervention has been implemented as planned (Gielen et al., 2018, p. 5). Formative evaluation is characterised by the possibility of incorporating findings from an ongoing evaluation into the implementation process of an intervention. Effect or impact evaluation examines if an intervention has reached its goal(s), which is of particular interest to practitioners and those funding P/CVE interventions (ibid.). However, as Mattei and Zeiger put it, impact is "often the most difficult component to measure" (Mattei & Zeiger, 2018, p.32) and requires a rigorous collection of empirical data by means of quantitative and/or qualitative research.

Against this background, a theoretical foundation in the form of a Theory of Change (ToC) can prove to be pivotal in order to "examine explicit drivers and root causes of violent extremism in the hyper-local context of [the] target audience and explain the causal assumptions of why and how the campaign would achieve its aim" (Ritzmann et al., 2019, p. 2). When based in empirical research and grounded in in-depth exchange with the target audience, a theory-driven impact evaluation based on a solid ToC is "considered as good practice in the evaluation field" (Feddes & Gallucci, 2015, p. 15).

The methodology applied in evaluation studies in the field of P/CVE has been subject to controversial discussions, particularly with regard to the question what constitutes "evidence-based" research (Armborst et al., 2018). Scholars have emphasised the importance of quantitative studies, applying research designs including randomised control groups or similar experimental designs. For example, Bellasio and colleagues (2018, p. xiv) concluded in their review of existing evaluations in the field of P/CVE and Counterterrorism (CT) that "greater efforts should be made to ensure that wherever possible (quasi-)experimental designs are employed within CT and PCVE evaluation". They argue that "without experiments or quasi-experiments, it is impossible, for example, to rule out other mechanisms that could have been responsible for the effects of repressive CT measures" (ibid., p. 64).

Other scholars argue that qualitative research designs are more suitable for evaluation purposes. Kelle (2006, p. 129), for example, noted that standardised evaluation designs are not capable of measuring side effects or unexpected effects of interventions and thus emphasises qualitative research designs that leave room for measuring different causalities. In the field of P/CVE, a standardised evaluation could, for example, relate the effect of a certain intervention to the content of a workshop, while the relationship building done by the social workers conducting the workshop actually *caused* the effect. Furthermore, the circumstances necessary for quasi-experimental designs are often difficult to create in educational settings (Kelle 2006). As it is challenging and sometimes even not desirable from a methodological standpoint, some scholars have taken a different point of view, i.e., that evaluations of P/CVE interventions can best be conducted by resorting to qualitative methods.

1.3 The DECOUNT Project and Online-Game

The two-year EU-funded project "DECOUNT – Promoting democracy and fighting extremism through an online counter-narratives and alternative narratives campaign" was an evidence-based online campaign against extremism. By developing an online-game, the project reacted to the alarming trend of games and gaming elements being misused by extremist groups. The main outcome of the project was a browser-based serious game aiming to illustrate radicalisation processes, create awareness of recruitment strategies and extremist narratives, introduce counter- and alternative narratives and strengthen critical thinking. Furthermore, an alternative narrative video ("The Experiment") against prejudices and polarisation was produced.[2]

The development of the online-game was the project's core piece and realised by an interdisciplinary team composed of researchers and online-game producers in Austria (Hartinger & Pisoiu 2020). It was developed on the basis of a theoretical model highlighting individual choices in individual radicalisation processes (Pisoiu 2011). The game contains four individual and complex stories designed to raise awareness of radicalisation processes and recruitment strategies of extremist organizations. Each story is based on a series of interviews with former members of extremist groups that were conducted within the project. Two of the stories take place in a right-wing extremist subculture, two others are situated in an Islamist-extremist/jihadist subculture, with a male and a female protagonist represented in each. The course of play takes place predominantly within the simulation of a social media platform that incorporates various interactive elements, such as a newsfeed, a messenger simulation, voice messages, videos and minigames. The player interacts by choosing one of the different options of scripted responses which can change the course of play. As radicalisation rarely happens exclusively online, offline components were included by featuring variations of so-called cut-scenes in the form of comics, text elements and videos. In addition, offline dialogues were scripted whereby the player is able to choose a reply by swiping left or right and thus, further alter the course of play. Interestingly the game thus, in certain aspects, resembles the

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[2] The video is available on YouTube via https://youtu.be/TX94T3T6o3w [accessed: 26.07.2022].

"Radicalise" online-game, which was not public at the time of the production of the DECOUNT online-game.

The story of Marco follows a young man who wants to leave his life of petty crime behind and gets involved with members of an Islamist-extremist group. His female counterpart, Jasmin, faces different changes in her life and among her closest friends and is looking for advice and guidance online. Both pathways of Islamist-extremist radicalisation prioritize the need for affiliation and recognition as well as certain vulnerabilities of the characters. The story of Jens portrays a potentially smooth progression into the far-right scene and incorporates fragments of far-right music and violence. The fourth story introduces Franziska, who finds herself at risk of far-right radicalisation, due to her struggle between her wish of becoming an influencer on environmental challenges and her search for acceptance, belonging, and friendship.

In reference to the above presented lack of evaluation studies, the project dedicated an entire work-package exclusively to the formative, qualitative and quantitative evaluation of this game. The evaluation was conducted by other members of the project team than those who developed the game. Similar to the study by Saleh and colleagues (2021), which provides evidence that video-game interventions can work well in P/CVE, this study focused on the evaluation of the (short-term) impact the game had on the target group. Furthermore, the current paper adds to the question to what extent the DECOUNT online-game benefits from being embedded in a workshop. The applied mix-method design included a pre-post questionnaire as well as qualitative research methods. This form of "triangulation of evidence" has been recommended by scholars concentrating on pragmatic approaches to evidence-based evaluations (de la Chaux et al., 2018). Initially, an analytical framework was formulated, based on the ToC model proposed by the RAN (Gielen et al., 2018).

2. Evaluating the DECOUNT Game

2.1 Theoretical Concept

Target Group and General Objective

The game is a primary prevention intervention targeting male and female adolescents between the ages of 15 and 25. Initially, the game only contained text elements in German, therefore

primarily aiming at a German-speaking target group vulnerable to Islamist-extremist/jihadist and right-wing extremist propaganda.[3] The general objective of the online-game is to initiate a change in attitudes by illustrating the consequences of certain choices and possible alternatives, as well as to offer alternatives to extremist narratives.

Assumptions

Research on radicalisation has demonstrated that the phenomenon is best conceptualised as a process that varies greatly between individuals. Furthermore, it has been argued, that trying to answer the question *why* individuals radicalise has proven to be an inconclusive endeavour. Thus, scholars have concentrated on finding answers to the question on *how* individuals become members of extremist groups (Horgan, 2005). Some authors have thereby concentrated on individual choices, and how they are affected by different factors (Horgan, 2005; Pisoiu, 2011). This strain of research has shown that radicalisation can be conceptualised as a process in which individuals make choices that lead them to engage in ever more radical roles within extremist groups (ibid.). Additionally, interviews with radicalised individuals, conducted as part of the DECOUNT project, underlined how the interviewees were not aware of their gradual radicalisation and the consequences of their actions.

The assumption at the outset of the project was therefore, that adolescents vulnerable to radicalisation can profit from extended knowledge on the dramatic consequences particular choices can have on their lives. Considering that the choices an individual makes in extremist subcultures are affected by the narratives prevalent within this subculture (e.g. Pisoiu, 2011), it was furthermore assumed that deconstructing these narratives and putting them in relation to the individual choices would be beneficial for these individuals.

Against this background, and with particular regard to the above-mentioned developments in the field of gaming and gamification, it was assumed that the target group could be reached best if the intervention applied the same means of communicating alternatives to certain choices and narratives, as extremist groups. Thus, an online-game was developed to

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[3] In a later stage of the project, the game was translated into English: https://gamebeta.extremismus.info/ [accessed: 29.08.2022].

transport the message of the DECOUNT project. Alongside the game, a guideline on how to use it in a pedagogical workshop condition was developed (Danner et al., 2020).[4]

Expected Outcomes

According to the guideline developed by Danner et al. (2020) individuals from the target group should

- reflect democratic values of our social coexistence and understand that they contradict extremist ideologies;
- understand radicalisation as a process, which can be caused by different factors and is not necessarily tied to certain dispositions;
- be aware of mechanisms of manipulation and the recruitment efforts of extremists online and offline;
- understand the narratives and ideas of extremist groups and be able to deconstruct them; reflect their own opinion and be aware of the perspectives of others;
- understand the rhetoric and appearance of extremist groups and the instruments they use to create a certain atmosphere and to recruit new people;
- understand the needs behind individual radicalisation processes, such as seeking orientation and meaning, a sense of injustice, to be committed for something, or new friends; and
- discuss personal experiences and different realities of life.

Different goals were formulated at different stages of the production process of the intervention (proposal, accompanying educational material, etc.). Following discussions with the team involved in the production, for the purpose of evaluating the intervention, these goals were grouped into five dimensions, which were subsequently operationalised as single items for the questionnaire (see also below table 1).

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[4] The booklet contains background information on extremism and radicalisation as well as a selection of activities and exercises around the intervention. It can be downloaded from [accessed: 26.07.2022]: https://www.beratungsstelleextremismus.at/wp-content/uploads/2020/06/Begleitmaterial_Game_DECOUNT.pdf.

Table 1: Goals of the online-game intervention formulated in five dimensions

Goals of the online-game intervention
Promoting the reflection of *democratic values* for our social coexistence
Guiding the understanding and deconstruction of *extremist narratives*
Fostering the development of *critical media literacy*
Fostering *autonomy* and *critical thinking*
Promoting an understanding of *radicalisation as a process*

2.2 Methodology

The evaluation was set up as a pre-post design within two different conditions: on the one hand, young people from the target group who played the game in a workshop condition and, on the other hand, young people who only played the game. In order to assess the game's impact in these different conditions a mixed-method research design was applied: A pre-post measurement of attitudes was conducted to assess the change in participants' attitudes before and after playing the online-game in two different conditions. To gain more in-depth insights on the resonance of the target group regarding the intervention, a focus group was held as well.

Originally it was planned to also include a control group in the study design. This would have provided valuable data on the effectiveness of the online game itself. However, due to the COVID-19 restrictions in educational institutions and youth centres in Austria, not enough participants could be recruited for the control group.

Pre-post Design

Representatives of the target group participated in the online-game intervention in two different conditions, i.e. playing the game accompanied by a workshop (condition 1) and playing the game only (condition 2). The different forms of the intervention were accompanied by self-report questionnaires, which were distributed before and after the intervention.

Participants

The participant pool consisted of 74 teenagers, young adults and students (mean age = 18,7, *SD* = 2,85, 33 female, 40 male) from Austria. They were recruited from a job training programme (n=6), a secondary school (n=26), and a university of applied sciences course (n=27) in Vienna

as well as from a youth centre in Upper Austria (n=15). Except for the 15 participants from the youth centre, the questioning was conducted by members of the research team.[5] 32 participated in condition 1 (game + workshop), 42 in condition 2 (game only).

Questionnaires

In order to be able to quantitatively measure the effects of the game and its embeddedness in a workshop, the central goals were operationalised. Accordingly, the five dimensions mentioned above were extended by ten subdimensions. The single items within the (sub)dimensions were selected from well-established self-report questionnaires. Participants could rate how much they agreed with the statements in the questionnaire on a 5-point Likert scale (1= I strongly disagree to 5= I strongly agree).

Table 2: Goals of the online-game intervention formulated in five dimensions and ten sub-dimensions

Dimensions	**Subdimensions** (from literature)
democratic values	• *human rights* • *democratic engagement* • *diversity*
extremist narratives	• *conspiracy theories* • *gender roles* • *legitimisation of violence*
critical media literacy	• *awareness* • *reflection* • *empowerment*
autonomy and *critical thinking*	• *authoritarian submissiveness*
radicalisation as a process	

In the following, the construction and operationalisation of the five dimensions "*democratic values*", "*extremist narratives*", "*critical media literacy*", "*autonomy and critical thinking*", and "*radicalisation as a process*" with their ten subdimensions will be described.

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[5] Due to the COVID-19 regulations in Austria it was not possible to conduct the evaluation under the conditions the project team had wished for. Even though educational institutions such as schools and youth centres remained open during the time of the data collection, external visitors were only allowed on very rare occasions. Therefore, the questioning in the youth centre was conducted by its youth workers.

a) Democratic values

Well-established items from different batteries were compiled to form three sub-dimensions in the questionnaire: "*human rights*", "*democratic engagement*" and "*diversity*". These dimensions were selected because they reflect democratic values of social coexistence and relate to the goals to be achieved with the intervention.

For the dimension "*human rights*", items on "*Gleichheits- und Pluralitätsnormen"* (norms of equality and pluralism) from the *Leipziger Autoritarismus Studie 2018* (Decker & Brähler, 2018) were included. The authors originally developed the items against the background that a multitude of conceptions can be connected to the term "democracy". The rationale was to measure to what extent respondents identify with the concrete democratic norms of equality and pluralism (ibid.). The dimension "*norms of equality and pluralism*" is originally comprised of five items, two of which have been included in the questionnaire:[6]

- *Equal rights for all are an important political goal*, and
- *The rights of the individual should take a second place to the interests of the community*[7].

For the measurement of "*democratic engagement*" items from the dimension "*politische Deprivation"* (political deprivation) of the same study were selected. Political deprivation is described as the perception of being excluded from actively influencing politics and of not being able to fill the democratic constitution of society with life (ibid.). Since the online-game aims to promote the reflection of democratic values, civic engagement and taking an active stance in democratic processes, the following items were included:

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[6] The items were translated by the authors for the current publication.

[7] The original German term Gesellschaft (society) was replaced by Gemeinschaft (community) for two reasons: First, in the teachers' feedback on the questionnaires it was mentioned that the language of the items had to be simplified. Second, the term community more closely resembles the formulations used in extremist propaganda. Three further items which are originally part of the dimension "*norms of equality and pluralism*" were not included as their specific formulation was not suitable to measure a change in attitudes the online-game intervention was designed for. For example, the statement "People who do not work should not have the same rights as others" is a typical argument in right-wing extremist propaganda, but it is not mentioned in the scripts of the online-game.

- *People like me cannot influence what the government is doing anyway*, and
- *I think it does not make any sense to become politically involved*.

For the dimension "*diversity*", the following items from the "*Reflexion sozialer Stereotype*" (reflection of social stereotypes) scale by Christoph & Reinders (2012) were included in the questionnaire:

- *It is just that there are certain groups who are stronger than others,*
- *I simply prefer people who are in the same group as I am,*
- *When certain groups are disadvantaged, it is their own fault,*
- *Actually, it is pretty simple to categorise people: People, who are like me, and people, who are different,*
- *It does not bother me, how people in other groups are doing,* and
- *I often have the feeling that I do not belong to one or the other group*.

b) Extremist narratives

Items on "*extremist narratives*" addressed several aspects of the various narratives of right-wing and Islamist-extremist/jihadist groups that occur in the online-game. As the protagonists experience different extremist phenomena, cross-cutting aspects of these narratives were included in the questionnaire. Due to methodological considerations, it was not possible to individually test the effect of each of the four scripts. Consequently, this study refrained from measuring the participants' agreement with statements on narratives specific to one form of extremism such as "the great replacement" or "jihad".

Included items on aspects of the dimension "*extremist narratives*" were, among others, addressing the dimension *"conspiracy theories",* as these can be found in both right-wing extremist and Islamist-extremist/jihadist narratives. In order to measure the participants' agreement with elements of conspiracy theories, items on the dimension "*Verschwörungsmentalität*" (conspiracy mentality) were adopted (Imhof & Decker, 2013). Conspiracy mentality is an element of the authoritarian syndrome and describes a mentality which is marked by the belief that individuals or groups secretly control political and societal

processes in the hidden (ibid.). Authoritarianism is a well-established concept used in scientific research in order to analyse those developments within society, lurking to unfold their destructive potential in the form of rising right-wing extremism (Decker & Brähler, 2018). However, the theoretical approach has also been connected to individual radicalisation processes in the Islamist-extremist/jihadist spectrum (e.g. Frindte et al., 2011).

The following items on "*conspiracy mentality*" were included in the questionnaire:

- *Politicians and other leaders are only tools, used by forces, hiding in the background*, and
- *There are secret organisations which have a major influence in political decision-making*.

Further items on "*conspiracy theories*" were adopted from the "*Neurechte Einstellungen"* (new-right attitudes) scale by Küpper et al. (2016). More specifically, the two items forming the dimension "*anti-establishment attitude"* in the original study were adopted:

- *The government is hiding the truth from the people,* and
- *The governing parties are deceiving the people*.

The "*Neurechte Einstellungen"* scale was developed for the *Gespaltene Mitte, feindselige Zustände* study (Zick et al., 2016), a large-scale quantitative study on right-wing extremist attitudes in German society, which is conducted on a regular basis. The scale was included in 2016, as the authors sensed that new-right attitudes would supersede openly expressed right-wing extremist attitudes in German society. According to the authors, conspiracy theories accompany the occurrence of anti-establishment attitudes (Küpper et al., 2016).

Besides conspiracy theories, certain specific *gender roles* are an additional aspect of extremist narratives and were therefore included in the item battery for the questionnaire. The rationale was that, just as conspiracy theories, certain gender roles are an overreaching element, covered both in right-wing extremist and in Islamist-extremist/jihadist narratives.

Items on gender roles were adopted from the dimension "*Sexismus traditionell*" (traditional sexism) from the *Gespaltene Mitte feindselige Zustände* study (Zick et al., 2016). Traditional sexism is associated with ascribing women domestic duties and emphasising the natural superiority of men over women. The following items were adopted for the item battery of the questionnaire:

- *It should be more important for a woman to help her man with his career than to concentrate on her own*, and
- *Women should focus again on their role as wife and mother.*

In order to cover more modern facets of sexism, which are generally expressed more subtle, but still deny the equality of men and women, the authors of this study formulated and added the following item to the questionnaire:

- *The similarities between men and women are bigger than the differences*.

A further aspect of extremist narratives of both the right-wing extremist, as well as the Islamist-extremist/jihadist spectrum, is the *legitimisation of violence*. In order to measure the effect of the online-game regarding the participants' "*attitude towards violence*", the following items were included in the questionnaire:

- *In certain situations, I am willing to use physical force to assert my interests*, and
- *I would never resort to violence, but I think it is good that there are people who use their fists when there is no other option.*

These items measure the willingness to resort to violence in order to assert certain interests, as well as the extent to which individuals accept violence that is inflicted by others. Originally constructed by Ulbrich-Hermann in 1995, both items are also included in the *Leipziger*

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Autoritarismus Studie, complementing the questionnaire on right-wing extremist attitudes within German society.

One further item on the legitimisation of violence was developed by the authors of the current study and included in the item battery for the questionnaire:

- *For the right goals you have to fight by any means necessary.*

c) Critical media literacy

It has been argued that critical media literacy has gained importance as a pillar of democratic resilience in times of fake news and online disinformation (Frischlich, 2019). Research on critical media literacy in the context of extremist propaganda provides three dimensions of the concept: "*awareness*", "*reflection*" and "*empowerment*" (ibid.), but until today no standardised items on this relatively new theoretical concept are available. Therefore, new items were formulated for the questionnaire. The item of the first dimension describes the "*awareness*" of the existence of online disinformation and the item on the second dimension the "*reflection*" of specific content before sharing it online. "*Empowerment*", the last dimension, describes an individual's self-confidence in using its skill to detect disinformation and to handle it appropriately. Based on this, the following items were formulated and added to the questionnaire:

- *It is important to carefully read an online article before sharing it,*
- *It is important to check the sources of an article before believing its content*, and
- *You rather find the truth on YouTube, than on ORF*[8].

To be able to measure the intervention's effect on critical media literacy more directly, another item was formulated and included. This item addressed the sharing of online material, including extremist propaganda, by different actors in the online-game and read as followed:

- *When friends send me information, I can undoubtedly trust it.*

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[8] Austrian national public service broadcaster.

d) Autonomy and critical thinking

In order to measure whether the online-game intervention had an effect on the perceived *"autonomy"* of the participants and their "*critical thinking"*, three items of the *Kurzskala Autoritarimus* (KSA-3; authoritarianism scale short) were included. More precisely, the dimension "*autoritäre Unterwürfigkeit"* (authoritarian submissiveness) was adopted, a theoretical concept which can be described as the submissiveness to established authorities and the general acceptance of what they say and do (Beierlein et al., 2014). The items were chosen as authoritarian submissiveness can theoretically be conceptualised as the opposite of autonomy and critical thinking. As mentioned above, the connection between authoritarianism and right-wing extremism is empirically well-documented. The following items were included:

- *We need strong leaders in order to be save in our society,*
- *People should leave important decisions to leaders,* and
- *We should be thankful for our leaders who tell us exactly what we can do.*

In order to tailor the statements more precisely to the content of the game, the following item was formulated and included in the questionnaire:

- *Groups are stronger when every member thinks the same way and does not have different opinions.*

e) Radicalisation as a process

So far, no standardised items capturing the understanding of "*radicalisation as a process*" have been developed. Thus, new items were formulated and listed in the questionnaire:

- *It could never happen to me that I become member of an extremist organisation,*
- *Only psychologically very weak persons become members of extremist organisations,* and
- *Single decisions that I make cannot have a big influence on my life.*

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The first item follows the argument that radicalisation is rather state than trait dependent, meaning that it does not depend on individual dispositions (Pisoiu & Hain, 2018). The second item emphasises this argument and, more precisely, reflects findings that suggest that radicalisation is a process that does not only affect individuals suffering from psychological illnesses (ibid, 2018). The third item relates to psychological literature on radicalisation, arguing that it is a process marked by individual decisions (Horgan, 2005; Pisoiu, 2011).

f) Additional self-assessment after the intervention

Besides measuring the effect that embedding the online-game in a workshop has on certain (political) attitudes among the target group via pre-post questionnaire, the evaluation further intended to examine attitudes directly connected to topics depicted in the four scripts of the game. More precisely, it was examined to what extend participants agreed to statements on the contents of the storylines. The statements were formulated along the defined goals of the game and the five dimensions of the pre-post-test questionnaires. In order to do so, one statement was formulated for each dimension's subdimension, e.g. "*The game demonstrates that it is not always easy, but important to make sure that different people can live peacefully together in a country (diversity)*" or *"The game encouraged me to reflect on gender roles in extremist groups" (gender roles)*. Participants could rate how much they agreed with the statements on a 5-point Likert scale (1= I do not agree at all to 5= I fully agree).

Design & Procedure

The evaluation was designed as a pre-post questionnaire; the independent variable was manipulated within subjects (before/after). The dependent variables were the mean score of the pre-post-test questionnaires as a whole and for the different (sub-) dimensions of the questionnaire. Furthermore, we compared the results between the two different conditions. The procedure consisted of three phases:
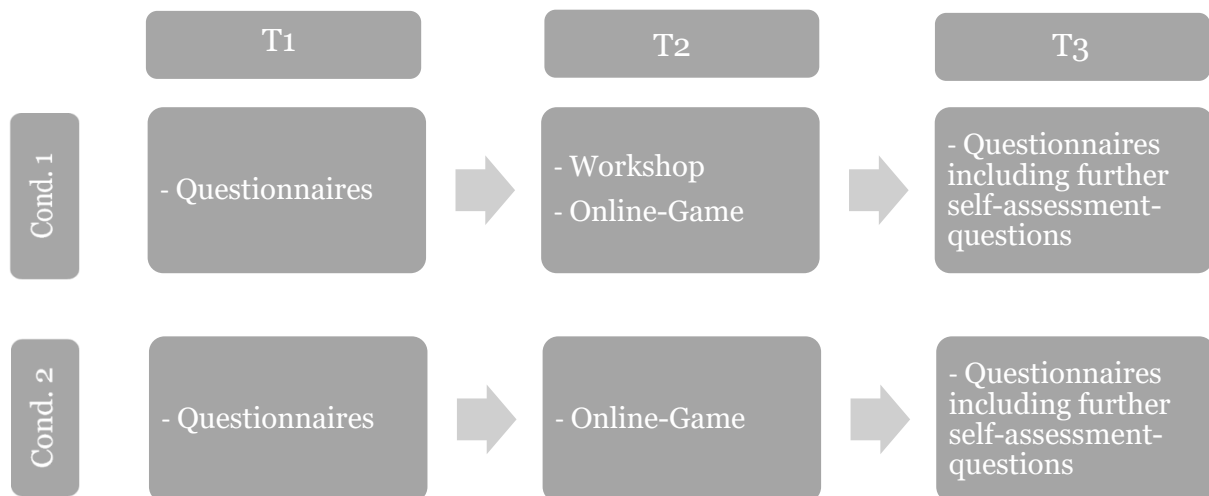
In phase one, participants were given information on the background of the study as well as instructions on how to fill in the first questionnaire. Afterwards they filled in the pre-test questionnaire. In phase two, participants took part in the different interventions. Participants

in condition 1 received a workshop conducted by a trainer of the *Extremism Information Centre* following the developed pedagogical material (Danner et al., 2020).[9]

In both conditions, the participants were instructed to play the online-game. Each participant was assigned one of the four storylines of the game and instructed to finish at least one of the pathways of their respective story. Afterwards, participants could play one or more additional storylines in the remaining time. Participants in condition 2 solely played the game for 20 minutes.

In phase three, participants of both conditions filled in the post-test questionnaire as well as additional questions on their self-assessment of the effects of the intervention. All in all, condition 1 took two hours, while condition 2 took about 50 minutes.

Table 3: Conditions and design

	T1	T2	T3
Cond. 1	- Questionnaires	- Workshop - Online-Game	- Questionnaires including further self-assessment-questions
Cond. 2	- Questionnaires	- Online-Game	- Questionnaires including further self-assessment-questions

Statistical Analysis

To calculate the effect of the online-game intervention on the mean scores of the pre-post-test questionnaires, dependent t-tests were conducted. Additionally, the analysis was repeated for

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[9] The workshop consisted of an introductory reflection on the terms "radical" and "extreme" (20 min.) After another 20 minutes, during which participants played the game, they were asked to discuss in groups the stories and content of the game and to elaborate on alternative endings of the stories. At the end of the workshop, a collective reflection should foster the consolidation of the learnings.

the mean scores of the five dimensions of the item batteries. All effects are reported as significant at $p < .05$. Data was excluded, when the following two conditions were met: 1) When the explorative data analysis revealed that a certain mean score was an implausible outlier in the sample and 2) when there were indicators, that participants had deliberately manipulated the data collection. Following this approach, ten questionnaires were excluded from the analysis.

The scores of the additional self-assessment-items were analysed by calculating the percentages of participants giving one of the five ratings on the 5-point Likert scale.

Focus Group

In order to obtain a more holistic set of data about (unforeseen) effects and the reaction the intervention caused among the target group, a focus group was conducted. Though several focus groups had been scheduled, the COVID-19 restrictions only allowed for one focus group to be held. The focus group consisted of eight participants (mean age=21,63; 1 female, 7 male) who were recruited from the respondents of the questionnaires. The focus group was held directly after the participants had finished playing the online-game without receiving an accompanying workshop. The focus group lasted for 30 minutes and was based on a specifically designed interview guide. This guide contained questions alongside the overall experience of playing the game (e.g.: "*What did you like about the game? What did you not like? Why?*"), the intervention's intended goals (e.g.: "*To what extend do you have a better understanding of how radicalisation processes unwind, after playing the game?", "What role do extremist narratives play concerning the radicalisation/recruitment of individuals?"*) and, additionally, focused on aspects difficult to cover by the questionnaires (e.g.: "*What did you learn about peer pressure/autonomy?", "How were the narratives of extremist groups deconstructed?"*).

3. Results

Pre-Post-Test Questionnaire

The dependent t-tests on the means scores of the pre-post-test questionnaires in condition 1 (game + workshop) revealed that, on average, participants scored significantly lower on the

post-test questionnaire (M^{10}=2,20; SE^{11}=0,08) than on the pre-test questionnaire (M=2,30; SE=0,09) when all dimensions were included in the analysis (t^{12}(29) =3,70; p=0,01). A significant result in that regard means that the difference between the mean scores on the pre- and post-test questionnaires cannot be attributed to chance. A significantly *lower* score in this context indicates that participants of condition 1 agreed significantly less to the statements in the questionnaire after participating in the workshop.[13] Thus, participants' political attitudes changed in accordance with the intervention's assumptions and goals.

In order to examine this finding in more detail, additional t-tests on the mean scores on the different dimensions of the questionnaire were performed. They revealed a significant difference between the mean scores (t(29)=2,30; p=0,29) of the pre-test questionnaire (M=2,30; SE=0,11) and the post-test questionnaire (M=2,18; SE=0,12), when the dimension "*extremist narratives*" was analysed. This result shows that participants agreed to statements deducted from extremist narratives to a significantly lesser degree after the online-game intervention in combination with a workshop. Again, this shift in attitudes is significant, thus it cannot be attributed to mere chance.

Furthermore, the analysis revealed that, on average, participants scored lower (t(29)=3,30; p=0,003) on the post-test questionnaire (M=2,53; SE=0,15) than on the pre-test questionnaire (M=2,80; SE=0,15) on the dimension "*Kurzskala Autoritarimus*" (KSA-3; authoritarianism scale short). This finding shows that participants who played the online-game in combination with a workshop agreed significantly less to statements expressing authoritarian attitudes after the workshop as compared to before the workshop.

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[10] Mean Score.

[11] Standard Error, i.e. the sample standard deviation divided by the square root of the sample size ($SE = s/\sqrt{N}$),

[12] The test statistic, t, is calculated by dividing the mean of differences by the standard error of differences. The size of t is compared against known values based on the degrees of freedom (29 in this case). When the same participants have been used, the degrees of freedom are simply the sample size minus 1.

[13] Items that were positively worded, such as "It is important to carefully read an online article before sharing it", were reversed.

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Table 4: Means and standard deviations (in parentheses) in condition 1 (game + workshop)

	Pre-test Questionnaire	Post-test Questionnaire
All dimensions*	2,30 (0,48)	2,20 (0,45)
Democratic values	2,11 (0,56)	2,06 (0,51)
Extremist Narratives*	2,30 (0,63)	2,18 (0,67)
Critical Media Literacy	1,89 (0,40)	1,83 (0,40)
Autonomy and Critical Thinking	2,80 (0,86)	2,65 (0,82)
Radicalisation as Process	2,79 (0,73)	2,68 (0,69)
KSA-3*	2,79 (0,83)	2,53 (0,82)

* indicates significant differences between pre-post-test questionnaires.

In condition 2 (game only), the dependent t-tests on the mean scores of the pre-post-test questionnaires revealed no significant difference between the mean scores of the pre-test questionnaire (M=2,43; SE=0,66) and the mean scores of the post-test questionnaire (M=2,40; SE=0,70) as a whole (t(33) = 1,28; $p >$ 0,05).

However, participants scored significantly lower on the post-test questionnaire (M=2,40; SE=0,90) than on the pre-test questionnaire (M=2,31; SE=0,90) on the dimension "*extremist narratives*" (t(33)= 2,24; p = 0,03). Again, a significant result in this context demonstrates that, statistically speaking, the difference in means scores cannot be attributed to chance. In fact, this finding shows that after playing the online-game participants agreed significantly less to statements deducted from extremist narratives, including statements in favour of violence, conspiracy theories and sexist gender roles. None of the other mean score comparisons was significant.

Table 5: Means and standard deviations (in parentheses) in condition 2 (game only)

	Pre-test Questionnaire	Post-test Questionnaire
All dimensions	2,43 (0,38)	2,40 (0,41)
Democratic values	2,29 (0,48)	2,33 (0,52)
Extremist Narratives*	2,40 (0,50)	2,31 (0,53)
Critical Media Literacy	1,93 (0,43)	1,92 (0,60)
Autonomy and Critical Thinking	2,94 (0,60)	2,79 (0,75)
Radicalisation as Process	3,00 (0,73)	3,02 (0,76)
KSA-3	2,97 (0,58)	2,77 (0,81)

* indicates significant differences between pre-post-test questionnaires.

Additional self-assessment after the intervention

For condition 1 (game + workshop) the analysis of the percentages of the participants rating statements in the self-assessment questionnaire on a 5-point Likert scale, revealed that nine out of ten statements were predominately rated with strongly agree or agree. This is an exceptional finding, as the statements were solely formulated in favour of the online-game intervention. Among this positive turnout, a considerably high approval rate was reached for the statements "*The online-game reminds you to also critically question your friends*" (93% strongly agreed or agreed); "*Through the game I learned which narratives extremist groups use to lure people*" (87% strongly agreed or agreed); and "*The game demonstrates that it is not always easy but important to make sure that different people can live peacefully together in a country*" (83% strongly agreed or agreed). In addition, around two thirds agreed or strongly agreed to the statements "*Now I have a better understanding of how individuals radicalise*" (77%) and "*The game showed me possibilities to fight injustice*" (73%). The only case in which the approval rate of the participants was less than 50% occurred with the statement "*Now I have a better understanding of why people join extremist groups*" (43% strongly agreed or agreed). It is unclear however, whether this result can be traced back to the already existing knowledge of the participants or to the finding, that the game did not fully succeed in delivering this message.

Though the three statements with the highest approval rates remained the same, the percentage of this approval differed distinctly when comparing results from condition 1 and 2.

The participants predominantly agreed or strongly agreed in the case of four statements in condition 2 (game only): *"The game reminds you to also question critically the views of your friends"* (67%); *"The game demonstrates that it is not always easy, but important to make sure that different people can live peacefully together in a country"* (59%); *"Through the game, I learned which narratives extremist groups use to lure people"* (59%); and *"The game shows that you cannot solve problems with violence"* (56%). Each other statement received less than a 50% approval rate, with the lowest being "*The game motivated me to more critically question what I read on the internet*" (27%) and "*The game draws your attention to the fact that every human being has the same rights*" (27%).

Overall, the results show that participants in condition 1 (game plus workshop) rated the intervention as much more successful in delivering the intended message than participants in condition 2. This observation applies for every single item on these items.

Focus Group

The analysis of the focus group demonstrated that participants appreciated the game's potential of delivering insights into the process of online and offline radicalisation, as well as recruitment strategies. At the same time participants noted that the intervention leaves room for improvement with regard to delivering alternative narratives concerning gender roles in extremist groups and democratic ways of fighting injustice.

Regarding radicalisation processes, participants acknowledged that, through playing the online-game (in condition 2), they learned about "how fast you can be radicalised online and how easily one can slip". They understood and reflected on radicalisation as a process based on individual decisions, realising that "even small decisions can have an impact/make a difference". Moreover, they recognized the impact other people can have on the radicalisation process. As one participant put it "I thought, people mostly radicalise by themselves but that's not the case, there are triggers, like a specific person".

A further topic which was discussed was the role of group dynamics in the recruitment process. According to the participants, the game successfully transmitted the appeal a radical group can have on "weak people who are alone and in need of support". The role that groups can play in consolidating an 'us' versus 'them' dichotomy became evident to the participants.

They understood how radical groups elevate themselves from all others "and in the end […] everything that is not your group is bad". Moreover, the participants discussed group-related psychological mechanisms on a more abstract level by realising that:

"These strategies of extremists are not exceptional. This is nothing specific to extremist groups. It is just that the group is extremist. It can be a neo-Nazi group, but it can be a completely different group too."

Another participant, however, observed a particularity of group dynamics typical to extremist groups:

"In the beginning, the enemies were just the foreigners, no matter which ones, sometimes Muslims in particular. And in the end, they beat up a leftist student. At that point, everyone who was not their in-group was bad."

This statement illustrates that the game has the potential to convey scientific concepts to the target group, such as the in-group-out-group bias and group polarisation. These observations are intriguing, because not only an increased understanding of radicalisation as a process, but also a greater awareness for the psychological needs at the beginning of individual radicalisation processes were central goals of the intervention.

In the game, the newsfeed of the protagonist's social media simulation changes according to the ongoing radicalisation. The more radical a protagonist becomes, the more radical are the postings on his or her timeline. Echo chambers and filter bubbles also were an additional topic of discussion in the focus-group. One participant stated that "if you see this all the time, subconsciously […] it will become normal at some point. Your resistance will become acceptance […] you will be dragged in further with no opposition and will lose your grip on reality".

Controversially discussed was the depiction of gender roles in the online-game. In order to design newsfeeds on the fictitious social media platform, content resembling that of real extremist online actors had to be created. Though attention was paid to not directly reproduce

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any extremist narratives, certain aspects could not be avoided. Thus, some postings on the protagonist's timeline or in the scripted chats tend to reproduce gender-specific stereotypes of extremist groups. While most of these stereotypes are addressed in the course of play, their deconstruction depends on the individual path a player enters and on the characters he/she meets. Consequently, one might play the online-game without ever meeting any of these characters and thus, does not undergo the deconstruction of the respective narrative. This demonstrates the challenge of creating authentic material that, on the one hand, appeals to the target group yet raises awareness for aspects of extremist narratives, and on the other hand, avoids an unreflected reproduction and dissemination of these narratives.

The focus group revealed that the online-game not always succeeded in its attempt to introduce alternative narratives of how to fight injustice with democratic means. While one participant pointed out that his character was "presented alternatives to stand up against injustice very well", another participant "didn't find that anyone or anything has pointed out alternatives" in his storyline. These mixed results, show how challenging it can be to communicate alternative options to a heterogenous target group.

To conclude, the focus group revealed one important unexpected finding. In the words of one of the participants:

"[…] what I learned today: What everyone can do about radicalisation when others are concerned. Just to know more about it. The game didn't influence my own attitude, but it helps me to better understand why people radicalise and what I can do about it."

Another participant agreed that after playing the online-game someone might be more receptive towards changes among friends. Based on these statements it can be assumed that the intervention can offer support to individuals whose peers or family members show signs of radicalisation. Having knowledge on the unfolding of radicalisation processes, they might be able to intervene in time and support the person at risk.

4. Discussion

The main objective of the evaluation was to measure the effect of the online-game on (political) attitudes before and after playing the game under different conditions. In order to do so, two different points in time and conditions were set: A possible change in attitudes was measured through pre-post-test questionnaires. In condition 1, participants played the game and received a workshop by experts in the field of P/CVE; in condition 2, participants merely played the game.

Out of the participant pool from condition 2, a focus group was recruited to provide for more in-depth information on the target group's reactions to the game and to deliver insights regarding any unexpected effects.

Whether embedded in a workshop or not, participants agreed less to extremist statements after having played the online-game. With regard to participants who only played the game, no further significant differences in attitudes before and after the intervention could be determined. In other words, no attitude changes appeared among the participants of condition 2 with regard to the dimensions *"democratic values", "critical media literacy", "autonomy and self-reflection"* as well as the *"radicalisation process"* itself.

Among the participants of the workshop (condition 1), a significant difference between the mean scores on the whole questionnaire before and after the intervention could be detected. The mean score was significantly lower after playing the game in the context of a workshop, which means that participants agreed significantly less to the statements in the questionnaire. When analysing the sub-dimensions, it became clear, that besides the effect on the "*extremist narratives*" scale, the significant difference can be attributed to the decrease of authoritarian attitudes (*KSA-3* scale) after the intervention. That is, participants in condition 1 scored significantly lower on the "*authoritarianism short scale*", a sub-dimension of the *"autonomy and self-refection"* scale of this evaluation, after playing the online-game in the course of a workshop. This finding is especially interesting against the background of observations made in the focus group, revealing that the game stimulates reflections on the appeal social groups can have on the individual, and on dynamics within a group more generally. Nevertheless, no significant effect on the pre-post mean scores concerning the dimensions "*democratic values*", "*critical media literacy*" and "*radicalisation as process*" could be identified.

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Concerning the self-assessment after both interventions, three statements stood out: *"The game reminds you to also question critically the views of your friends"*, *"Through the game, I learned which narratives extremist groups use to lure people"*, and *"The game demonstrates that it is not always easy, but important to make sure that different people can live peacefully together in a country."* This finding is an indicator that, at least according to the self-assessment of the participants, the game was successful in fostering critical thinking and autonomy; raising awareness for extremist narratives; and promoting the democratic value of diversity, especially when the online-game intervention was embedded in a P/CVE workshop.

The participants of the focus group agreed to have learned quite a lot on the radicalisation process as such and the way extremist organisations recruit individuals on- and offline. However, participants mentioned that the game could have performed better in offering players more alternative opportunities to fight injustices in a democratic way and in the deconstruction of extremist gender roles. These results suggest that the online-game intervention is successful in enhancing (digital) resilience and critical thinking, while it is still in need of improvement when it comes to growing civic engagement and motivating to take active stance in democratic processes. Considering that the criticism in the focus group mostly concerned the depth with which certain topics were treated and not on the choice of topics, also underlines the importance of embedding such interventions in workshops in which these issues can be reflected more thoroughly.

What were the limitations of the current evaluation? First and foremost, one considerable limitation has to be addressed, namely the missing control group. Including such a control group, in which participants play e.g. Tetris, would have provided valuable comparable data. Doing so, internal validity could have been maintained, because it would have reduced the probability that explanations other than the independent variable exist for changes in the dependent variable. As mentioned, the absence of a mere control group as part of the study design is due to the COVID-19 restrictions for external visitors at educational institutions in Austria, as it prevented the recruitment of a higher number of participants for this evaluation.

Also, due to these circumstances, the evaluation had to be conducted in four different institutions, which certainly influenced the validity of the findings. Conducting the evaluation with participants from one institution would have undoubtedly limited external factors.

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Also, having participants fill in the pre-test questionnaire some time before the intervention could have prevented spill-over effects. However, due to organisational issues in connection with the COVID-19 restrictions, the pre-post-test questionnaires were filled in by participants on the same day. This makes it quite likely that participants partly remembered their answers and tried to answer them in a stringent manner.

Generally, while there was no significant difference on the mean score on the whole questionnaire, only on the "extremist narratives" subscale, when participants only played the online-game, participants agreed significantly less to the statements of the questionnaire after participating in an accompanying workshop. Moreover, when directly asked about their learnings via self-assessment after the intervention, participants that received a workshop scored considerably higher across all statements. This indicates that, according to their self-assessment, the game embedded in a workshop significantly influenced their attitudes concerning extremist narratives, autonomy and diversity.

The current study adds to the findings of Saleh and colleagues (2021) The authors concentrated on the positive effect of online-games in P/CVE on the confidence and ability with which participants assessed the vulnerability of at-risk individuals to extremist recruitment as well as extremist recruitment strategies of extremists. The current paper, on the other hand, shows that online games, embedded in a P/CVE workshop can also have a desirable effect on (political) attitudes themselves.

Even though the methodology was affected considerably because Austrian COVID-19 restrictions exacerbated the recruitment of participants, the current study represents a much-needed addition to the body of mixed-method evaluation research. It also makes a small but interesting contribution to research on the intriguing new avenue in P/CVE to expand to the phenomenon of gamification.

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