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1. Introduction

1.1.   The challenges of historical inquiry, multiperspectivity, and source credibility in post-conflict societies

Educators often find it challenging to deal with the conflictual past as it is considered a sensitive or controversial topic (Zembylas & Kambani, 2012). A discussion of the recent violent past in societies emerging from conflict is often avoided. Amongst adults, there is a fear that such discussion will open up division (Psaltis et al., 2017). This may be attributed to the perception that people living in areas of intractable conflicts experience extreme negative emotions, which ultimately lead to support of aggressive policies (Porat et al., 2020). Intractable intergroup conflicts are highly resistant to resolution, involve well-entrenched hostile perceptions of the out-group, drag on for an extended period of time, and are prone to escalation over and over again (Kampf & Stolero, 2014). Students are often not encouraged to inquire, yet they are often curious and confused about what has occurred and why (Carretero et al., 2017). Suppose we accept that it is the duty of educators to break the cycle of violence and move society forward. In that case, young people must understand the nature of conflict and its consequences (Psaltis et al., 2017).

According to Psaltis et al. (2017), "students, as lay historians, are particularly vulnerable to framing their interpretations relating to the history of conflict from a position [...] that largely adheres to collective memory, popular culture, and official narratives of conflict. This is due to one-sided contents included in curricula and textbooks and to influences from parents and peers" (Psaltis et al., 2017, p.5). According to the same researchers, "in post-conflict and divided societies, proper historical inquiry is often obstructed by the inaccessibility of crucial sources of information or archives due to linguistic, physical, legal or mental barriers. This situation reinforces the mono-perspectival master narratives in a single community and hinders the emergence of counter-narratives or alternative representations of the past" (Psaltis et al., 2017, p.6) and, therefore, conflict resolution.

A major problem that teachers and practitioners working in the field of conflict resolution face in their daily work concerns the lack of motivation to participate in conflict-related interventions and to rethink existing

entrenched attitudes (Adamou et al., 2013, Porat et al., 2020). Interventions should be developed and scaled up to reach a massive target audience that is not necessarily motivated to participate in a conflict resolution activity (Porat et al., 2020). Training people on how to overcome troubled pasts using a serious game that is easily accessible on mobile devices has the potential of a relatively easy dissemination to reach a mass audience in an engaging way.

Meta-analyses documented the impact of serious games in different domains and on different age groups (Clark et al., 2016; Lamb et al., 2018; Vogel et al., 2006). Serious games have been shown to have positive effects on engagement, motivation, and learning (Breien & Wasson, 2021; Author 2 et al., 2006; Huang et al., 2013; Vlachopoulos, 2017; Vlachopoulos & Makri, 2017). They constitute effective and powerful tools for facilitating learning and encouraging behavior change (Cheong et al., 2011; Lamb et al., 2018). A subset of serious games, which are used for their social impact and ability to influence attitudes positively (Ratan & Ritterfeld, 2009) are known with the term "serious games for a social change" (De Angeli et al., 2018; Author 2 et al., 2019). Building on positive attributes of games, previous scholarly work has utilized serious games and gamification in history (Zirawaga et al., 2017; Schrier, 2014) and, more specifically, in conflict resolution. Serious games enable people, more than do other intervention methods to be exposed to information about the other party in the conflict (i.e. contradicting information), because playful activities can reduce the tension and charged atmosphere around a difficult issue (Kampf & Stolero, 2015). Serious games often aim at reframing conflict narratives to resolve conflict through the promotion of trust and empathy, and the reduction of prejudice (Kampf & Stolero, 2015). Games are increasingly used for negotiating conflict situations (Cheong et al., 2011) and for teaching conflict resolution (Cheong et al., 2015), peace-building, raising awareness, and promoting empathic perception (Wu et al., 2020).

Previous research studies have documented positive effects of serious games in the context of conflictual pasts (Porat et al., 2020) for changing attitudes toward national groups (Alhabash, 2012), for knowledge acquisition about a conflict (Cuhadar & Kampf, 2014; Kampf & Stolero, 2015) and for perspective-taking (Cuhadar & Kampf, 2014; Gonzalez et al., 2013). Most of the systematic assessment literature on serious games for conflicts focused on knowledge acquisition for the specific conflict as measurement rather than the change of attitudes (Kampf & Stolero, 2015) and failed to show attitude change for direct parties of the conflict (Cuhadar & Kampf, 2014; Kampf & Stolero, 2018).

Two games examined within the context of intractable conflicts are Peacemaker (Impact Games 2007) and Global Conflict (Serious Games Interactive, 2008). The computerized role-playing simulation PeaceMaker was examined within the context of the Israeli-Palestinian conflict in a cross-national experimental study conducted among American, Turkish, Israeli-Jewish, and Israeli-Palestinian students using a pre- and post-intervention experimental design with questionnaires (Cuhadar & Kampf, 2014). The purpose of their study was to evaluate the game's effectiveness as a pedagogical tool in teaching about conflict and its resolution, especially with regard to generating knowledge acquisition, perspective-taking and attitude change. Results showed that the game significantly improved participants' level of knowledge about the conflict in all groups. All four groups became more knowledgeable about the conflict after playing the game. Second, the game changed the attitude of third-party participants concerning the Gaza operation and contributed to perspective-taking. It led Turkish and American participants to adopt a more impartial attitude compared with their pre-game attitudes. In a similar experimental study with the participation of 185 Israeli undergraduate students of Jewish and Palestinian origin using the same game and the same conflict, Kampf and Stolero (2015) showed that the knowledge gap between participants who held high levels of knowledge about the conflict and those who held low levels of knowledge about it before playing the game narrowed after playing it.

Focusing on the same intractable conflict but using a different game, Kampf and Stolero (2018) examined the game Global Conflict. They found that the game minimized the knowledge gap between third parties to the conflict (Americans and Turks) but not between direct parties to the conflict. In addition, direct parties to the conflict did not change their attitudes toward the conflict and the Gaza operation of 2012, while the attitudes of third parties became more balanced (Kampf & Stolero, 2018).

Further research is necessary to understand under what conditions technology can be used as an effective peacebuilding intervention, particularly in the context of intractable conflicts (Kampf & Stolero, 2018). Only a few studies systematically focused on the effectiveness of serious games for conflict resolution, and even fewer have examined games in cross-cultural settings (Cuhadar & Kampf, 2014; Kampf & Stolero, 2018). Kampf and Stolero (2018) indicated that this should be further explored in the future. Moreover, as previous studies showed that direct parties' attitudes toward the conflict are difficult to change, a challenge that remains unresolved is how we can design and use games within the context of intractable conflicts to affect the attitudes of direct parties to the conflict.

None of the previous studies focusing on conflict resolution specifically addressed or scaffolded students' skills concerning the evaluation of the credibility of historical sources. However, previous research showed that young students typically lack advanced information literacy skills (Author 1, 2013), especially skills that involve searching for and evaluating the credibility of different sources (Nygren & Guath, 2019) in domains such as science (Dawson & Venville, 2009; Author 1 et al., 2011), and history (Carretero et al., 2017). Therefore, supporting students in evaluating the credibility of multiple historical sources while they engage in historical inquiry in the context of intractable conflicts is crucial.

The RePAST Fact Finders game was created to: a) address the aforementioned gaps identified in the literature, b) address the limitations associated with ethnocentric narratives focusing on a specific intractable conflict (the Cyprus conflict), and c) address the need for the development of scalable, evidence-based interventions aimed at credibility evaluation and multiperspectivity in history, in the context of intractable conflicts. The Fact Finders game was designed to motivate the general public (especially school children and young people) to engage with contested pasts and ongoing conflicts by exposing themselves to contrasting narratives, engaging with different sides of the conflict, and developing skills toward the renegotiation of troubled pasts. The game was therefore designed to directly challenge students' views and allow for questioning master narratives. It included multiple types of historical sources, such as testimonials/interviews, artworks, monuments, books, and newspaper articles, coming from both sides of the conflict to support historical source credibility evaluation and multiperspectivity.

The goal of this study was to describe the design and test the feasibility of RePAST Fact Finders, a mobile game designed to teach and train its users to evaluate the credibility of multiple historical sources, to realize that history is constructed, to realize multiperspectivity in conflicts and to become more willing to overcome troubled pasts. The first evaluation of the game focused on undergraduate students and aimed to examine the extent to which undergraduate students' perceptions of conflicts in history change due to their interaction with the digital game Fact Finders. Students' perceptions of conflicts in history in this study refer to their views on a) the credibility of different historical sources, b) the constructedness of history, c) accepting multiple perspectives in a conflict as valid, and d) their ability to overcome troubled pasts.

Moreover, we were interested in examining whether learning about a specific conflict is context-dependent by having students belonging to different national groups play the same conflict scenario. This allowed us to examine whether there are differences between direct parties to the conflict (in this study, Greek-Cypriots) and third parties to the conflict (in this study, Slovenians) in the way they experience the game and in the way the game affects their perceptions of conflicts in history.

1.2.   The Fact Finders game as a way to teach source credibility evaluation and multiperspectivity in history

The Fact Finders game was designed as part of the requirements of a Horizon2020 research project as a tool to motivate users to engage with different sides of ongoing conflicts through exposure to contrasting narratives and to develop skills toward the renegotiation of troubled pasts. The game follows a constructivist inquiry-based approach

of history teaching, which focuses on the development of students' understandings, abilities, and dispositions concerning the following areas: a) how we think about the past, b) interpretations of specific events and issues of the past, c) historical inquiry, and d) organization and communication of the results of historical inquiry (Psaltis et al., 2017).

A transformative history teaching approach was used to design the Fact Finders game (Psaltis et al., 2017). The design of the game followed co-design principles in an interdisciplinary collaboration bringing together different stakeholders involved in the design process. Those included subject matter experts, historians, educational technologists, researchers, programmers, game designers, graphic designers). The game is accessible as an app for Android and IOS and through a browser and is available in 8 languages.

The game had the following learning objectives: a) to support young students' evaluation of historical source credibility, b) to support awareness-building about the constructedness of history, c) to promote multiperspectivity in conflicts, and d) to help users overcome troubled pasts.

In the game scenario tested in this study, students are asked to provide an answer to the question, «How was life in Cyprus immediately after 1974?». Cyprus has been and remains a deeply ethnically divided society due to the protracted nature of the political conflict between Greek Cypriots and Turkish Cypriots during the last five decades (Zembylas & Kambani, 2012).

In history curricula and textbooks in Cyprus, the presentation of both recent and old intergroup conflicts seems to be following the "ingroup" approach, "a selective approach where nation-states or groups keep silent about aspects that involve wrongdoing of one's own group and offer either a positive presentation of the "ingroup" or a preservation of the memory of the conflict by reiterating master narratives of one-sided victimization of the "ingroup" (Psaltis et al., 2017). This approach is highly problematic as it becomes an obstacle to conflict transformation by peaceful means and the cultivation of historical thinking. What is suggested as a way to overcome this problem is "an interdisciplinary approach of transformative history teaching, which attempts a critical understanding of the conflictual past through the cultivation of historical thinking, empathy, an overcoming of ethnocentric narratives and the promotion of multiperspectivity" (Psaltis et al., 2017).

In the scenario focusing on life in Cyprus immediately after 1974, students gradually unlock as many historical sources as they want, from a collection of 12 sources, within 30 minutes (Figure 1). The 12 sources within the game include: three articles (two from local newspapers representing the two communities and one from the international press), five interviews (two from each community representing the experience of people who lived during the war, two from each community representing the transmitted experience of young people and one describing a bicommunal love story), one book and three different sources which included artworks, historical photos and monuments.
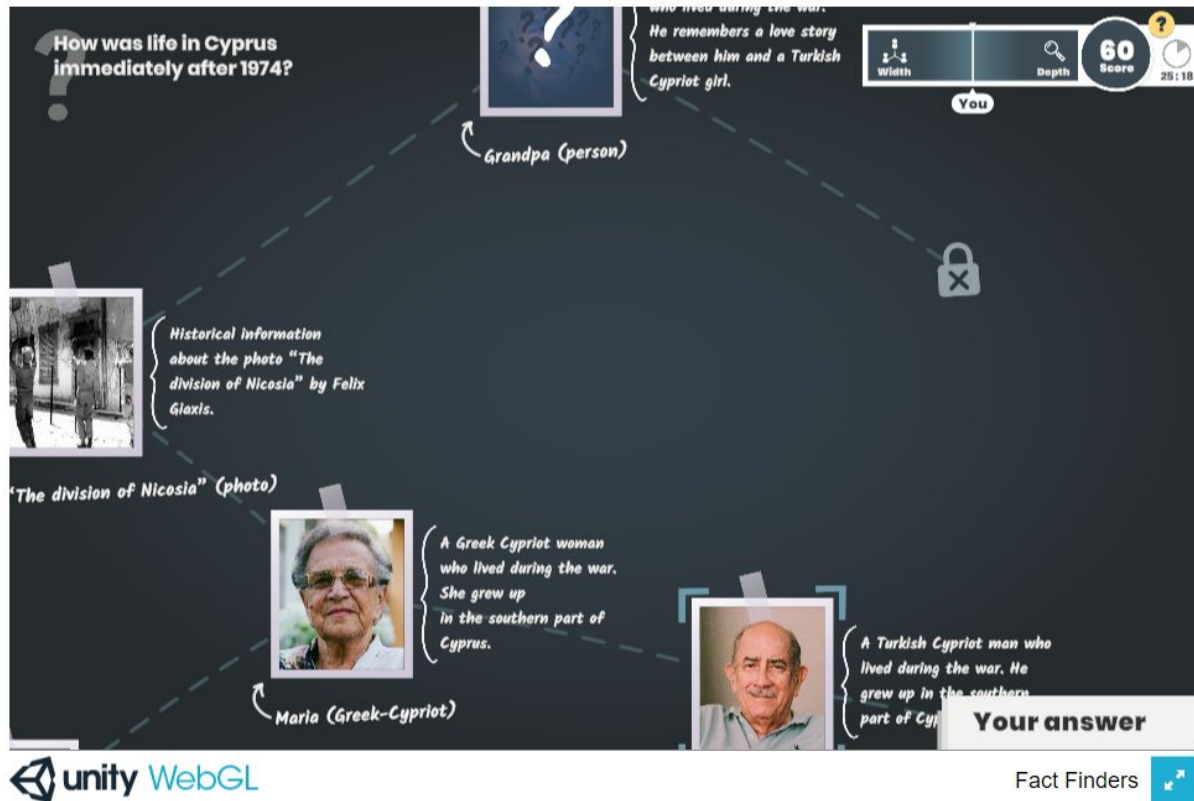
Figure 1: Players gradually unlock different historical sources on the conflict using a source map

The students are first exposed to *historical source credibility*. Once the students choose a source, they can unlock up to four pieces of information as a background check of that source. As a first step, they need to evaluate the credibility of the source using one of the following ratings: a) very low, b) low, c) undecided, d) high, e) very high. In each case, students receive feedback with the allocation of positive points if their answer is correct and negative points if their answer is not correct. They also receive instant feedback that explains why historians consider each source as a source of low or high credibility. (Figure 2).

Figure 2: Users receive points and feedback after evaluating a historical source's credibility on a five-point scale from very low to very high

As a second step, students evaluate the usefulness and relevance of the information provided by each source for answering the research question, which is always visible in the top left corner. If the information is relevant, they can select it for their final report. If it is not relevant, they can dismiss it. In every case, students receive points and feedback on their choice (Figure 3). Students can choose to address the topic in depth (select a few sources and spend more time on them) or in width (select many sources and spend little time on them). Students also receive instant feedback about where they are with respect to the continuum of depth and width, as can be seen in the top right corner of Figure 3. The game's goal is a balance between depth and width.

Figure 3: Users evaluate the usefulness and relevance of the information each source provides for answering the research question

The students are exposed to *multiple perspectives* (De Angeli et al., 2018) and conflicting narratives through the game. For example, sources of information within the game come from both Greek-Cypriots and Turkish-Cypriots who lived during the war (Figure 1). Exposing the players to the suffering from the war that both communities experienced is expected to help them be more empathetic and more open to the idea of *overcoming their country's troubled past*.

Students are exposed to the *constructedness of history*, as each player can answer the same research question differently depending on the types of sources they consider as the most important and the most credible. This is evident from a final report automatically created (as a PDF file) through the game once this is completed, which can be different every time the game is played. This serves to show that history is "constructed" and often exploited to serve specific goals.

The purpose of the study was to evaluate the digital game Fact Finders concerning its effect on students' perceptions of conflict in history, more specifically its effect on helping users a) to develop evaluation credibility skills for different historical sources, b) to realize that history is constructed, c) to accept multiple perspectives in a conflict as valid and, consequently, d) to be more positive with respect to overcoming troubled pasts. A second aim was to evaluate the effect of the game on people who are direct or third parties in a conflict.

2. Methodology

2.1 Research questions

The research questions of the study were the following:

1. How do undergraduate students' perceptions of conflicts in history change due to their interaction with the digital game Fact Finders?

2. Is the effect of the game different on undergraduates who are direct parties of a conflict as compared with third parties of a conflict?

2.2. Data sources

The primary data sources of the study were: a) a 17-item online questionnaire on users' perceptions of conflicts in history and b) users' gameplay, which was provided as an automatically created report from the game.

The questionnaire on users' perceptions of conflicts in history was created for the purpose of this study, and an expert historian examined its content validity. Dimensions that were examined are the following: historical source credibility (4 items), constructedness of history (4 items), multiple perspectivity in conflicts (4 items), and overcoming troubled pasts (5 items). Participants responded using a 5-point Likert scale ranging from completely disagree to completely agree. The same questionnaire was administered after students' interaction with the game.

Seven demographic questions were also included in the questionnaire administered before students interacted with the game, including the following: gender, age, ethnicity, whether students had a parent who was a refugee or an internally displaced person, whether they had previous knowledge of the Cyprus problem and what were their sources for this knowledge, e.g., whether their parents or relatives talked to them about the Cyprus conflict. Additional closed-ended questions were included in the questionnaire administered after students interacted with the game. These questions examined whether the game increased their curiosity and intention to search for additional sources about the Cyprus war in the future and examined whether they felt that their perceptions about history have been challenged after playing the game.

Users' gameplay, resulting from an automatically created report from the game, provided a) students' performance in the game (the players' rank and the total number of points), b) the number of pieces of information students included in their report as relevant (broken down into the number of facts and the number of opinions included in their report as relevant), d) the number of sources students examined (broken down to the number of articles, interviews, books, and other sources), and e) the credibility score of each source that users examined.

2.3. Design of the study

The study followed a pre-test, post-test experimental design. Convenience sampling was used to identify 97 participants (54 male, 43 female) from Cyprus and 79 participants from Slovenia (36 male, 43 female) to interact with and evaluate the game. Due to restrictions imposed by COVID-19 and social distance measures that prohibited face-to-face interaction during that time, participation was done online during the fall semester 2020 (November to December 2020) in Cyprus and during the spring semester 2021 (April 2021) in Slovenia.

At the first stage of the study, students were informed in writing and verbally about the study's objective by the first author in Cyprus and by the third author in Slovenia. The study followed American Psychological Association (APA) ethical standards and General Data Protection Regulation (GDPR) guidelines. It meets the ethical guidelines, including adherence to the legal requirements of the two countries where the study was conducted. Participants provided their consent online by selecting boxes indicating that they are adults (older than 18 years old), that they understand the study's objective, and that they agree to voluntarily provide anonymous data using a

self-selected 6-digit number instead of their name. Participants anonymously completed a pre-test online, interacted with the game for at least 30 minutes, exported and submitted their report to the first researcher using their identification number, and then completed the same instrument as a post-test online. Students belonging to two different national groups played the same conflict scenario (Cyprus scenario). In both countries, a researcher was "present" using a video call or audio call to guide participants through the process as a facilitator and to solve any technical problem that might arise. Still, the researchers did not influence participants in any way, nor did they discuss their findings. This was an intentional part of the design of the study to allow a focus on "students' interaction with the game" as an independent variable and to be able to examine its effect on students' perceptions.

2.4.   Participants
In both samples, students had a young age and an approximate average age of 21 years old for both Cypriots (M=21.4 years old, SD=2.14, n=97) and Slovenians (M=20.94 years old, SD=1.68, n=79).

Concerning students' background, the background of Slovenian students was homogenous as they all majored in Political Sciences and came from four different political science programs of the same faculty (International relations, Defence Studies, Public policies and Administration, and Studies of Politics and the State. On the contrary, there was heterogeneity with respect to Greek-Cypriots students' background as this included diverse programs such as Communication and Internet Studies, Journalism, Education, and Computer Science.

2.5.   Data analysis
Data from the pre- and post-questionnaires was input in a statistical package (IBM SPSS Statistics 25) for analysis. Pre- and post-questionnaires could be matched with the use of a 6-digit number that participants selected. Cumulative scores were computed by adding the items corresponding to each dimension examined in the questionnaire of users' perceptions of conflicts in history. Paired sample t-tests were used to analyze the change in students' perceptions pre and post.

All available individual PDF reports resulting from students' gameplay were analyzed to extract: a) students' performance in the game (calculated as the percentage resulting from the players' rank divided by the total number of points), b) the number of pieces of information students included in their report as relevant (broken down into the number of facts and the number of opinions included in their report as relevant), d) the number of sources students examined (broken down to the number of articles, interviews, books, and other sources), and e) the sum of the credibility score assigned to them by the game. All data from students' gameplay was input into the same dataset for analysis.

The alpha level was set a priori to 0.05 for all statistical analyses.

3. Results

3.1. Research question 1: How do undergraduate students' perceptions of conflicts in history change due to their interaction with the digital game Fact Finders?
The first research question examined whether a change could be detected when comparing undergraduate students' perceptions of conflicts in history before and after they interacted with the digital game Fact Finders. Students' perceptions of conflicts in history consisted of the computation of the average of students' answers in all 17 statements. For both national groups, the perceptions changed significantly due to the game. Cypriots' perceptions of conflicts in history changed significantly (t_{92}=-3.55; P=.001) from M=3.47 (SD=0.32) before playing the game to

M=3.59 (SD=0.29) after playing the game. The same finding was observed for Slovenians' perceptions of conflicts in history, which changed significantly (t_{73}=-3.34; P=.001) from M=3.87 (SD=0.27) before playing the game to M=3.98 (SD=0.35) after playing the game. These general findings show a shift from a somewhat neutral position to a position signaling more agreement with the statements on historical conflicts.

More specifically, students' perceptions of conflicts in history focused on four dimensions: a) the evaluation of historical sources' credibility, b) the "constructedness" of history, c) multiple perspectives in a conflict, and d) the ability to overcome troubled pasts. Findings are presented separately for the two groups: Cypriots and Slovenians, for each of the four dimensions examined, focusing on specific statements within each dimension that had a statistically significant change for at least one of the two groups.

3.1.1. Effect of the game on undergraduate students' evaluation of historical source credibility

The first analysis examined whether a change could be detected when comparing undergraduate students' perceptions of *historical source credibility* before and after interacting with the digital game Fact Finders. For this analysis, the four items corresponding to the dimension *historical source credibility* were added, and the average was computed for both groups.

As shown in Table 1, with respect to *historical source credibility*, Cypriot students' perceptions increased significantly (t_{92}=–2.67; P=.009) from M=3.54 (SD=0.56) to M=3.74 (SD=0.58).

Table 1: Cypriot and Slovenian students' perceptions for historical source credibility before and after the game

Perceptions on:	Nationality	Before the game		After the game		Change in perceptions
		M	*SD*	*M*	*SD*	Paired samples t-test
Historical source credibility	Cypriots	3.54	0.56	3.74**	0.58	t_{92}=-2.67; P=.009
	Slovenians	3.97	0.46	4.19**	0.43	t_{73}=4.08; P=.000
A testimony by a person who survived the war provides first-hand information but can be biased.	Cypriots	3.80	.90	4.19**	.95	t_{92}=–3.50; P=.001
	Slovenians	4.26	0.68	4.18	0.85	t_{73}=0.76; P=.45
An article that includes both perspectives of a conflict is a high credibility source.	Cypriots	3.80	.904	4.19*	.947	t_{92}=–2.34; P=.021
	Slovenians	4.28	0.69	4.38	0.64	t_{73}=-1.09; P=.28
Artworks, photos, and monuments are (not) valuable sources for historians.	Cypriots	3.69	.989	3.98*	.967	t_{92}=–2.09; P=.039
	Slovenians	3.98	0.96	3.67**	1.16	t_{73}=2.14; P=.036
Original letters and diaries written during a war are not valuable sources for historians.	Cypriots	4.1	0.92	3.8	0.98	t_{92}=1.63; P=.105
	Slovenians	4.27	0.67	3.66**	0.91	t_{73}=5.78; P=.000

** indicating p<0.01, * indicating p<0.05

More specifically, as shown in Table 1, Cypriot students' perceptions changed significantly (t_{92}=−3.50; P=.001) with respect to a) realizing that *a testimonial from a person who lived during the war may be a valuable source that gives first-hand information, but it could be biased* from M=3.80 (SD=0.90) before playing the game to M=4.19 (SD=0.95) after playing the game. Cypriot students' perceptions changed significantly (t_{92}=−2.34; P=.021) concerning b) realizing that *an article that includes two perspectives of a conflict is a reliable source of information* from M=3.8 (SD=0.94) before playing the game to M=4.19, (SD=0.95) after playing the game. Cypriot students' perceptions changed significantly (t_{92}=−2.09; P=.039) with respect to c) learning that *artworks, photographs, and monuments are valuable sources for historians* from M=3.69 (SD=0.99), to M=3.98 (SD=0.97), after playing the game.

As shown in Table 1, concerning evaluating historical sources' credibility, Slovenian students' perceptions increased significantly (t_{73}=4.08; P=.000) from M=3.97 (SD=0.46) to M=4.19 (SD=0.43). With respect to historical source credibility, the game significantly changed Slovenians' views concerning realizing that *artworks, photographs, monuments* (t_{73}=8.32; P=.000), as well as realizing that *authentic letters and diaries written during a war* (t_{73}=5.78; P=.000) *are valuable sources for historians* (Table 1).

Table 2 shows the results of the analysis of undergraduate students' gameplay. With respect to gameplay, Cypriots examined an average of 7 sources (M=7.17, SD=3.08) out of a total of 12 sources that were available within the game. Slovenians examined an average of 9 sources (M=9.17, SD=2.17). The majority of sources examined by both groups and selected for their game report includes interviews. This may indicate the players' preference towards testimonials by people who have lived during the war and describe their experience and hardships to the player.

Table 2: Cypriot and Slovenian students' gameplay analysis showing the number and type of sources examined through the game

Types of sources	Ethnicity	M	SD
1.Articles	Cypriots	1.79	1.15
	Slovenians	2.46	.93
2.Interviews	Cypriots	3.36	1.30
	Slovenians	3.92	1.07
3.Books	Cypriots	.60	.49
	Slovenians	.81	.39
4.Other	Cypriots	1.42	1.02
	Slovenians	1.94	.74
Total number of types of sources	Cypriots	7.18	3.08
	Slovenians	9.17	2.17

Table 3 shows the results of the analysis of undergraduate students' gameplay, focusing on the number of pieces of information, including facts and opinions that students selected as relevant to include in their inquiry.

Table 3: Cypriot and Slovenian students' gameplay analysis showing the number of pieces of information, including facts and opinions that students selected as relevant to include in their inquiry

Facts vs Opinions	Ethnicity	M	SD
1.Facts	Cypriots	8.78	7.59
	Slovenians	13.32	5.51
2.Opinions	Cypriots	13.08	8.68
	Slovenians	14.67	6.01
Total number of pieces of information	Cypriots	21.86	15.74
	Slovenians	27.97	10.78

With respect to the number of pieces of information students selected as relevant to include in their inquiry, Cypriots selected an average of 22 pieces of information (M=21.86, SD=15.74) out of which the majority (M=13, SD=8.6) included opinions. Slovenians selected an average of 28 pieces of information (M=27.96, SD=10.78), and had a balance between facts (M=13.32, SD=5.5) and opinions (M=14.66, SD=6). This finding seems to point out a preference by people who were directly involved in the conflict (Cypriots) to base their findings on interviews and testimonials, as those were the sources of information that provided opinions instead of the hard facts that could be found in an article of the press.

3.1.2. Effect of the game on undergraduate students' perceptions on the constructedness of history

The second part of the first research question attempted to examine whether there is any change with respect to young people's perspectives concerning the constructedness of history as a result of their interaction with the game (Table 4). For this analysis, the four items corresponding to the dimension *constructedness of history* were added, and the average was computed for both groups.

Table 4: Cypriot and Slovenian students' perceptions for the constructedness of history before and after the game

Perceptions on:	Nationality	Before the game		After the game		Change in perceptions
		M	SD	M	SD	Paired samples t-test
Constructedness of history	Cypriots	3.70	0.44	3.86*	0.44	t_{92}=-2.55; P=.012
	Slovenians	3.83	0.38	3.80	0.42	t_{73}=0.58; P=.56

* indicating p<0.05

Overall, paired samples t-tests showed a statistically significant (t_{92}=-1.24; P=.023) positive change of Greek-Cypriot young learner's perceptions concerning the *constructedness of history.* More specifically, with respect to the *constructedness of history,* students realized that *history is constructed and often exploited to achieve various objectives* (pre-test M=3.45, SD=0.81, post-test M=3.73, SD=0.87, n=93). There was no significant change in Slovenian students' perceptions of the constructedness of history after playing the game.

3.1.3. Effect of the game on undergraduate students' perceptions on multiple perspectives in a conflict

The third part of the first research question attempted to examine whether there is any change with respect to young people's perspectives concerning the multiple perspectives in conflicts as a result of their interaction with the game (Table 5). A paired samples t-test showed a statistically significant (t_{89}=-3.54; P=.001) positive change of Greek-Cypriot young learners' perceptions regarding *multiple perspectives in a conflict.* Greek-Cypriot students realized that *it is important to include multiple perspectives in a historical investigation* (pre-test M=3.92, SD=0.89, post-test M=4.14, SD=0.89, n=91) and that *Greek Cypriots and Turkish Cypriots have different viewpoints concerning the Cyprus problem and this is legitimate* (pre-test M=3.41, SD=0.96, post-test M=3.64, SD=0.83, n=92).

Turkish military troops invaded Cyprus in 1974 after a short-lived coup engineered by the junta in Greece that aimed at the union of Cyprus with Greece. This created feelings of insecurity to Turkish Cypriots and led to Turkey's invasion of Cyprus. A fact often neglected in the Cyprus conflict portrayed in Greek-Cypriot textbooks is that "*in 1974, Greek Cypriot nationalists wanted the island to become a part of Greece*». Greek Cypriots' level of agreement with this statement significantly increased from M=3.66 (SD=0.88) to M=3.88 (SD=0.75) after playing the

game. This shows a positive attitude towards accepting an opposing perspective in a historical conflict, which comes in contrast with the master narrative.

Table 5: Cypriot and Slovenian students' perceptions for multiple perspectives in conflicts before and after the game

Perceptions on:	Nationality	Before the game		After the game		Change in perceptions
		M	*SD*	*M*	*SD*	*Paired samples t-test*
Multiple perspectives in conflicts	Cypriots	3.76	0.61	3.95**	0.54	t_{89}=-3.54; P=.001
	Slovenians	4.20	0.48	4.36**	0.54	t_{73}=-3.02; P=.003
It is important to include multiple perspectives in a historical investigation	Cypriots	3.92	0.88	4.14*	0.89	t_{90}=-2.46; P=.016
	Slovenians	4.51	0.63	4.50	0.68	t_{73}=1.42; P=.888
Greek Cypriots and Turkish Cypriots have different viewpoints with respect to the Cyprus problem and this is legitimate.	Cypriots	3.41	0.96	3.64*	0.83	t_{91}=-2.06; P=.042
	Slovenians	4.15	0.70	4.39**	0.68	t_{73}=-3.08; P=.003
In 1974, Greek Cypriot nationalists wanted the island to become a part of Greece	Cypriots	3.66	0.88	3.88**	0.75	t_{91}=-2.77; P=.007
	Slovenians	3.72	0.77	4.11**	0.77	t_{73}=-4.36; P=.000

** indicating p<0.01, * indicating p<0.05

A paired samples t-test also showed a statistically significant positive change for Slovenian young learner's multiple perspectives in a conflict (t=-3.022, df=73, p=0.003). With respect to multiple perspectives in a conflict, Slovenian students significantly increased their agreement with the same two statements described for Greek Cypriots (Table 5).

3.1.4.   Effect of the game on undergraduate students' perceptions on their ability to overcome troubled past
The fourth part of the first research question attempted to examine whether there is any change with respect to young people's perspectives concerning their ability to overcome troubled pasts as a result of their interaction with the game (Table 6). A paired samples t-test showed a statistically significant (t_{92}=-3.24; P=.002) positive change of Greek-Cypriot young learners' perceptions regarding *overcoming their country's troubled past.* Greek-Cypriot students realized that *"The way people remember conflicts that happened in the past is typically based on memories and recollections (e.g. of people who experienced the conflict and transferred this experience to their children) and not only on facts"* (pre-test M=3.97, SD=0.82, post-test M=4.05, SD=0.63, n=93). Greek Cypriot students also significantly increased their agreement with respect to *the ability of Greek Cypriots and Turkish Cypriots to live together harmoniously if a solution to the Cyprus problem can be found* (pre-test M=3.33, SD=1.09, post-test M=3.61, SD=1.04, n=93), which is a very promising finding.

There was no significant change observed among Slovenians with respect to this dimension.

Table 6: Cypriot and Slovenian students' perceptions for overcoming troubled pasts before and after the game

Perceptions on:	Nationality	Before the game		After the game		Change in perceptions
		M	SD	M	SD	Paired samples t-test
Overcoming troubled pasts	Cypriots	3.72	0.57	3.91**	0.54	t_{92}=-3.24; P=.002
	Slovenians	3.73	0.43	3.70	0.46	t_{73}=0.79; P=.435
The way people remember conflicts that happened in the past is typically based on memories and recollections (e.g., of people who experienced the conflict and transferred this experience to their children) and not only on facts	Cypriots	3.87	0.82	4.05*	0.63	t_{92}=-2.05; P=.043
	Slovenians	4.07	0.63	4.12	0.64	t_{73}=-0.73; P=.469
Greek Cypriots and Turkish Cypriots can live together harmoniously if a solution to the Cyprus problem can be found.	Cypriots	3.33	1.09	3.61*	1.04	t_{91}=-2.44; P=.017
	Slovenians	3.55	0.85	3.61	0.89	t_{73}=-0.55; P=.58

** indicating p<0.01, * indicating p<0.05

A substantial percentage of Cypriots (63%, 58/92) and Slovenians (65.8%, 52/79) indicated that the game increased their curiosity and, as a result, their intention to search for additional sources about the Cyprus 1974 war in the future. A significant percentage of Cypriots felt that their perceptions about history had been challenged after playing the game (58.7%, 54/92). A significant percentage of Slovenians felt their perceptions about history have been challenged to some extent (54.7%, 41/75) or challenged after playing the game (28%, 21/75). Even though based on self-reported data, this finding shows that the game was successful in challenging players' perspectives, even though it was only played once, for a limited time, without any interaction among players.

3.2. Research question 2: Is the effect of the digital game Fact Finders different for direct parties in a conflict compared to third parties?

The second research question attempted to examine whether there are differences between those who are direct parties to the conflict and those who are third parties in terms of historical inquiry as this was reflected in gameplay and in self-reported perceptions of conflict in history.

We should first acknowledge that there were some crucial differences between the two samples concerning demographic characteristics and, as expected, prior experience with the conflict presented in the game. Even though none of the young Greek-Cypriots of this study had direct experience of the war, almost half of the Greek-Cypriots (48.5%, 47/97) had at least one of their parents who was a refugee (internally displaced person due to the war). On the contrary, the overwhelming majority of Slovenians (97.4%, 76/78) did not have a refugee or internally displaced person in their immediate family.

As the 1974 conflict has not yet been resolved, non-surprisingly, the majority of Greek-Cypriots (82.5%, 80/97) had their parents or relatives talk to them about the 1974 war. On the contrary, only 11/5% (9/78) of Slovenians, as third parties to this conflict, had their parents or relatives talk to them about the 1974 war in Cyprus.

Greek-Cypriots, as direct parties of the conflict, felt that they knew significantly more about the Cyprus 1974 war (M=3.23, SD=1.03) compared to Slovenians (M=2.22, SD=1.02) as the results of an independent samples t-test showed (t=6.49, df=173, p=0.00).

As gameplay analysis shows, Slovenians had examined significantly more sources compared to Cypriots (t_{157}=4.46; P=.000). This is an observation valid for all different types of sources. Slovenians also had a significantly higher credibility score (M=13.31, SD=3.09) compared to Cypriots (M=9.92, SD=4.92) t=4.87, df=157, p=0.000). This can perhaps be attributed to their background in Political Science, which may suggest greater familiarity with concepts presented in the game, including a familiarity with the evaluation of different historical sources.

With respect to the number of pieces of information students selected as relevant to include in their inquiry, Slovenians selected a significantly bigger number of pieces of information (M=28, SD=10.78) compared to Cypriots (M=21.86, SD=15.74). Slovenians also showed a more explicit preference towards facts (M=13.31, SD=8.78) compared to Cypriots (M=8.78, SD=7.59). This may indicate that third parties can more easily be impartial in a conflict that does not affect them directly.

To examine the effect of the game on Cypriots' and Slovenians' perceptions of conflicts, the equivalence of the two groups (Cypriots and Slovenians) was first examined. Slovenians scored significantly higher in three out of four dimensions (a) the *evaluation of historical sources' credibility* (M=3.69, SD=0.36), b) the *constructedness of history* (M=3.84, SD=0.38), and c) *multiple perspectives in a conflict* (M=4.17, SD=0.49) compared to Cypriots. This can again probably be attributed to their political science background, which was closer to the topic of the game. There was no difference among the groups concerning their perceptions about their *ability to overcome troubled pasts* before playing the game. Even though the two groups were equivalent with respect to their perceptions about their *ability to overcome troubled pasts,* findings presented as part of the first research question showed that the game seemed to be effective in affecting young people's perceptions about their ability to overcome their country's troubled past only for Cypriots. Cypriots chose to include more opinions rather than facts in their game reports. This indicates a preference of direct parties of the conflict for including testimonials of people sharing their experience of the war rather than including factual information contained in newspaper articles. This may be signaling that testimonials might be more valuable in showing that both communities, Greek-Cypriots and Turkish-Cypriots, have suffered because of the war, and as such, they can potentially be more impactful in games for social change.

4. Discussion
According to Psaltis et al. (2017), "Children and young people come to classrooms influenced by the history absorbed from the family and the streets. Their historical images and representations of the past are usually enwrapped in contemporary attitudes and politics. Students may express misunderstandings, make unsubstantiated assertions about historical events, or leave out aspects of the past that have been deemed inconvenient within their community" (p.7). Our hope is that, as Kampf and Stolero (2015) put it, perhaps through digital games people can "learn to legitimate the other's collective narrative and see events through both lenses; can critically examine their ingroup's contribution to the conflict and challenge their perception of sole victimhood; and perhaps develop empathy in order to appreciate the other's pain and loss and generate mutual humanization" (Kampf & Stolero, 2015, p.645).

This study described a serious game design that can potentially be used as a tool for conflict resolution and for overcoming troubled pasts. The first research question aimed to examine the extent to which the game can affect young people's perceptions of conflicts in history in the context of intractable conflicts. The study indicated that the game is effective with respect to the goal for which it was designed, at least for young adults in Cyprus and Slovenia, as shown by statistically significant positive changes of player's perceptions of conflicts in history. More specifically,

the game significantly changed both groups' perceptions for *historical source evaluation*. The game implemented several innovative design features to scaffold students' attempts of historical inquiry using authentic data in the context of intractable conflicts. These design features are: a) including multiple historical sources of various levels of credibility, b) prompting students to reflect on these sources' credibility, and c) providing instant feedback on students' evaluation of credibility. This finding has important implications for game designers who can use these design guidelines for the development of effective games for young adults irrespectively of whether they are direct or third parties of a conflict.

The game significantly changed only Cypriots' perceptions of the *constructedness of history*. It seems that young people involved in a conflict and lacking a background in Political science may not easily realize that history is constructed and often exploited to achieve various objectives. The game seems to have helped them change their views on the constructedness of history. This finding was not observed for young Slovenians having a background relevant to the game topic (Political Science), who had a higher starting point in their perceptions, and therefore a smaller potential for change. This finding indicates that background knowledge, not necessarily of the conflict presented in a game (Cuhadar & Kampf, 2014) seems to influence players' perspectives on the constructedness of history.

The game significantly changed both groups' perceptions for *understanding multiperspectivity* irrespective of their background knowledge on the Cyprus conflict, which significantly differed as direct parties of the conflict were inevitably more knowledgeable of the conflict. The game successfully showed that the two communities associated with the conflict, Greek Cypriots and Turkish Cypriots, have different viewpoints regarding the Cyprus problem, which is legitimate. The game challenged Greek Cypriots players, in particular, to consider multiple perspectives and not only the ethnocentric mono-perspectival nationalistic master narrative that they are may be more familiar with from school through textbooks. Acknowledging the opponent's view as valid, especially by a person who is a direct party of a conflict, is a major step in conflict resolution (Cheong et al., 2015). Therefore these first indications of the effectiveness of the Fact Finders game for direct parties of a conflict, in particular, are very promising. Our findings have important implications for practitioners working in the field of conflict resolution, as they indicate that serious games focusing on intractable conflicts may motivate users to rethink existing entrenched attitudes, something also shown by Porat et al (2020).

The overall goal of serious games focusing on intractable conflicts is to lead to prejudice reduction and trust building. Young Cypriots who participated in this study were direct parties of the conflict and more knowledgeable about events of the past involving their own country. They were inevitably more influenced by their family, who talked to them about the war, than Slovenians who were third parties of the conflict. Despite these fundamental differences, the game seemed to effectively change young Cypriots' perceptions about their *ability to overcome their country's troubled past*. This is a significant finding as most previous studies provided evidence that games can potentially improve perspective taking but only in a limited manner and contribute to attitude change, but only for those who are not direct parties to the conflict (Cuhadar & Kampf, 2014; Kampf & Stolero, 2018). This study, therefore, extends the findings of previous studies (Alhabash, 2012; Cuhadar & Kampf, 2014; Kampf & Stolero, 2015, 2018; Porat et al., 2020) by adding valuable data showing that direct parties' perceptions of overcoming troubled pasts can be positively influenced through games. Games such as Fact Finders could potentially influence mass audiences and, subsequently, promote conflict resolution. Challenging learners' perspectives or changing their attitudes are seldom achieved via short-term interventions. With this in light, the fact that a single, 30-minute interaction of Cypriot users with the game, with no intervention affected their perceptions shows how powerful games can be as agents for social change.

4.1. Limitations

Although promising, the study's findings should be considered with caution and interpreted in light of the limited number of participants invited to participate in the study using convenience rather than random sampling. The study's design focused on participants from only two countries representing direct and third parties to the conflict.

The fact that the third parties of the conflict comprised of undergraduate students with a background in Political Science adds a bias because these particular students may be more interested in the conflict than the general public. Moreover, the sample of Greek Cypriots in this study is not representative of both communities on the island as this study did not include Turkish Cypriots. The small number of the sample and their characteristics limit the generalizability of the results.

Additional limitations of the study include the limited control of the data collection process, which took place online due to limitations posed by the COVID-19 pandemic, and the fact that students' interaction with the game was limited to one time, for thirty minutes of play and it was individual, as there was no interaction among participants either during or after playing the game. Participants did not get to practice their skills on a daily basis in a naturalistic environment. Therefore, it is difficult to determine the accumulated effect of playing the game for a longer time.

4.2. Future research directions

Students' perceptions of conflicts in history were measured immediately after playing the game. Thus it is unknown whether the game may have long-term effects. Future research should examine the effectiveness of Fact Finders over time in a more naturalistic setting. Furthermore, future studies need to include Turkish Cypriot players to validate that the game achieves balance in how the two communities and their relationships are portrayed in the game.

Lameras et al. (2017) showed the need for more qualitative research for serious games' design in an evidence-based review and synthesis on the design and use of serious games in higher education (Lameras et al., 2017). This study did not include any qualitative data. Future studies should incorporate in-depth interviews and focus groups as these will provide rich data for analyzing players' understanding, and examining changing perspectives, and attitudes.

Whether the game Fact Finders can be effectively applied to a larger and more heterogeneous population than undergraduate students should be studied in future research. Therefore, future research plans include the evaluation of the game with younger students of primary and secondary education coming from different countries, which will allow for a more systematic comparative analysis. There was no instructional intervention built into the research design of this first study targeting undergraduate students. The goal of realizing that history is constructed cannot easily be achieved through playing the game once. Suppose players interact with the game for a second time at an individual level. In that case, they will most probably reach a different construction of history based on a different selection of sources. At a group level, if a collaborative component is built into the game and other players' game reports are visible, this will support users in realizing that different people construct history differently. This collaborative effort may be necessary for younger students. It will allow evaluating the game's effectiveness as a pedagogical tool in teaching about conflict and its resolution in classroom settings. It is expected that if the game is tested out in schools in the future and if the evaluation incorporates an intervention requesting students to interact with each other and not only with the game, results may be positive for younger students as well.

Statements on open data and ethics

All sets of data collected for this research are stored and secured at the first author's university and its online data storage facility. The data that support the findings of this study are available on request from the corresponding author.

The data were handled in adherence to guidelines set out by the American Psychological Association (APA) ethical standards, General Data Protection Regulation (GDPR) guidelines, and legal requirements of each study country. All data used in this study used numbers in the place of names to protect participants' privacy.

Declaration of Conflicting Interests

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: [details omitted for double-anonymised peer review]. The game is provided for free [details omitted for double-anonymised peer review]. The game can be downloaded as an app through Google Play or the App Store or it can be played directly in a browser.

No conflict of interest is identified by the authors. The authors declare that the work described in this paper is original research that has not been published and is not under consideration for publication elsewhere, in whole or in part. All the authors listed have read and approved the enclosed manuscript for publication.

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