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Rich digital media as a tool in post-conflict truth and reconciliation

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Abstract
Modern rich digital media (such as interactive systems with audio and video as well as text) have not been robustly deployed as a tool in the processes of peace-building, healing and reconciliation in nations emerging from civil conflict. This article studies the use of rich digital media in Liberia, a country that has only recently emerged from a protracted and intense civil war. The authors demonstrate that, when rich digital media are used to target processes of truth and reconciliation, they enhance Liberians' feeling of self-efficacy – their self-assessed sense of personal competence to deal effectively with stressful situations. This increased self-efficacy was not present in a control group. The authors argue that self-efficacy is a critical component for forgiveness and truth-telling which, in turn, is a fundamental process in reconciliation and healing. These results are based on a survey of over 100 Liberians in Monrovia, the capital city. Participants interacted with a rich digital media system, took pre- and post-interaction self-efficacy inventories, and responded to additional questions. The findings suggest that rich digital media focused on truth and reconciliation can contribute to post-conflict healing.

Keywords
generalized self-efficacy, interactive media, video media

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Introduction

Reconciliation and emotional healing are principal needs of people emerging from states of civil war. Fundamental to these psychological processes of healing, which are particularly critical if a long-lasting peace is to be sustained, are public activities of 'truth-telling' where official parties, former belligerent actors, victims, and indeed all affected parties are able to access formalized information, tell their own stories, and engage in public dialogue (Lerche, 2000; Long and Brecke, 2003). This process has been described as 'remembering in order to forget' (Hayner, 2002) and the custom of convening Truth and Reconciliation Commissions (TRC), with the precise aim of supporting this truth-telling activity, has become a common and generally well-regarded international practice (Hayner, 1994).

Even in seemingly intractable conflicts, there is evidence that countries that go through a painful and protracted national reconciliation process can restore lasting social order that does not devolve into further violence. These national reconciliation processes, while individually distinctive in some ways, often include four overlapping phases: (1) public truth-telling; (2) a redefinition of the identities of the belligerents and the roles and relationships of important social groups and institutions; (3) limited justice (i.e. justice short of full retribution for all harms); and (4) an explicit call to break with the past and show dedication to a new relationship and a new social and moral order (Long and Brecke, 2003). A public, officially sanctioned Truth and Reconciliation Commission (TRC) is often one of the first and most indispensable elements of a successful national reconciliation (Zalaquet, 1997).

Liberia, politically established in 1847 by freeborn black Americans, freed slaves of African descent from the USA, and Africans freed from captured slave ships, is situated on the Atlantic coast of West Africa. Unrest has been a staple there for more than 14 years with two major civil wars during the period from 1989 to 2003. These years of conflict have seen nearly one third of the population displaced and been responsible for the death of approximately 250,000 people. A UN-supervised peace was established in 2003 and democratic elections were held in fall 2005, resulting in the selection of Africa's first elected female head of state, President Ellen Johnson-Sirleaf (see Ellis, 2006, for a comprehensive review of the Liberian conflict).

Like many other post-conflict states before it (Hayner, 1994), Liberia has established a Truth and Reconciliation Commission in an effort to bring about a sustained national peace. Its principal mandate is the establishment of a factual record of events in order to foster healing and reconciliation via constructive interchange, and to recommend to the Government of Liberia suspected perpetrators for prosecution (National Transitional Legislative Assembly, 2005). The role of public dialogue and interaction is stressed in the TRC's mandate which states that 'introspection, national healing and reconciliation will be greatly enhanced by a process which seeks to establish the truth through a public dialogue' (National Transitional Legislative Assembly, 2005).

Liberia's TRC issued its final report in December 2009 (Republic of Liberia Truth and Reconciliation Commission, 2009) and has since been winding down operations, transferring some of its activities to an emerging Independent National Human Rights Commission. The Technologies and International Development Lab at Georgia Tech has been working with Liberia's TRC to develop and deploy rich digital media systems (such as interactive systems with audio and video as well as text) in support of their mission of post-conflict reconciliation.

Truth-telling, however, is not synonymous with reconciliation. Rather, it opens up a public space for reconciliation by allowing a formerly taboo subject to become amenable to the action of political bodies and future policies. Truth-telling is 'one part of a broader process ... [to] help spark a longer-term process of national healing and reconciliation' (Hayner, 1998: 2). Both objective (factual) and subjective (personal and narrative) truths are thought to contribute to individual and social healing (Boraine, 2000).

Objective truth means reaching a public with an official acknowledgement of what happened during the period under review by the TRC. In this instance, the Liberian TRC is called upon to gather information and evidence of human rights abuses and identify those responsible through both public and confidential hearings and testimonies. Discovering truth in a forensic sense helps a society redefine itself by 'conducting a critical review of Liberia's historical past in order to address falsehoods and misconceptions' (TRC Act, 2005, Article IV, Section 4d). Furthermore, by virtue of officially acknowledging what has happened, this form of truth can begin a process of personal healing because it unmasks past crimes, strips away impunity, and legitimates those who have suffered.

Subjective truth, that is personal or narrative truth, emerges in the stories told by victims, witnesses, and perpetrators before the TRC and elsewhere. In public hearings and through broadcasts to the wider society, these personal truths also become part of a larger societal discourse. Explicit in the Act is an affirmation of the healing power of personal narrative. One of the objectives of the Liberian TRC is

> helping restore the human dignity of victims and promote reconciliation by providing an opportunity for victims, witnesses, and others to give an account of the violations and abuses suffered and for the perpetrators to relate their experiences in an environment conducive to constructive interchange. (TRC Act, 2005, Article VII, ß26f)

This article considers the role of new media in assisting this process of truth-telling and intra-psychic healing by developing participants' sense of self-efficacy – their self-assessed sense of personal competence to deal effectively with stressful situations. Research has shown that self-efficacy is critical in establishing a personal capacity to perform social and subjective truth-telling. This truth-telling, as established earlier, then sets the public space for reconciliation.

Related works

Not surprisingly, media often factor prominently in national efforts of post-conflict reconciliation and healing. Nearly all modern post-conflict peace-building efforts have included media programs (Kalathil et al., 2008); for instance, in the past two decades, the UN has spent an estimated US$1 billion on such activities (Howard, 2005). There is much to be learned from these experiences.

Several typologies of peace-building media interventions have been proposed (Curtis, 2000; Howard, 2002), and each situates various interventions along a spectrum from the general (basic media assistance and development) to the specific (targeted programs dealing directly with the conflict). Here, we focus on Howard's (2002) typology, which proposes five distinct intervention types.

Interventions of types 1 and 2 are concerned with basic journalistic training and development of a competent media sphere in a conflict-affected society. Type 3 interventions encourage journalists to take a more pro-active stance in reporting on conflict issues, citing their ability to influence outcomes. Peace journalism – a sub-field within peace and conflict studies – embodies this idea (Lynch and McGoldrick, 2007). Wolfsfeld (2004) has argued, however, that news media may have a structural bias towards sustaining or exacerbating conflicts.

Interventions of types 4 and 5 depart from conventional journalism and take an even more pro-active stance, producing content directly related to the conflict at hand. Type 5 interventions, sometimes dubbed 'intended outcome programming', are explicitly designed to transform attitudes and promote reconciliation. This last type best describes the work reported here.

Even within this single category of Howard's (2002) typology, a host of previous work has been done. Radio soap operas and dramas have been especially popular (Curtis, 2000; Howard, 2003; Kalathil et al., 2008). Two projects – Video Dialogues from the Media and Peace Centre (e.g. Matshikiza, 1997) and the Videoletters project in the Balkans (Videoletters Project, nd) – facilitated video-mediated discussions between parties on each side of a conflict. Further examples abound (see, e.g., Howard, 2002, 2003).

The track record of this family of interventions has been mixed, with some claiming reconciling effects, others remaining more skeptical, and all agreeing that any such effects are notoriously difficult to measure (Botes, 2000: 105; Curtis, 2000). In any case, we claim that a significant portion of the modern media landscape remains virtually unexplored for the purposes of post-conflict peace-building – this is the set of tools sometimes referred to as 'interactive digital media', including video-sharing systems, user-generated content, online discussion fora, social networking platforms, and so on. We believe that these new forms of rich media may hold special potential in this area.

Interactivity and generalized self-efficacy

A broad literature has established the basis for interactivity, participation, and the interchange of sender–receiver roles as critical elements of development and empowerment, especially in areas of 'underdevelopment' (Freire, 1993; Melkote, 1991). Also, as Long and Brecke (2003) and others (e.g. Ropers, 2004) argue, interactive individual storytelling and community dialogue are important components in the specific case of post-conflict reconciliation. As argued by Brantmeier and Richardson (2009: 216):

> In an ideal form, reconciliation requires that individuals are at liberty to freely and openly interact, have the freedom to communicate via means and processes that aim to establish common understanding, have the ability to develop a respect of differences, and ultimately learn to forgive.

As an outcome to these findings, we submit that interactive digital media could well be fundamental tools for healing and peace-building. However, only a very few media-based peace-building initiatives have made use of such tools. One such interactive project is the Gurtong Peace Project, which provides an internet-based platform for information and

discussion on peace issues in Southern Sudan (Aeberhard et al., 2006). The United Nations Alliance of Civilizations has employed interactive new media to help build intercultural understanding and thus broad conditions for peace (http://www.soliya.net/). However, in our own exhaustive study, we found that, prior to our work, no official Truth Commission had employed interactive digital media as a component of their own work (although some have used the internet to distribute reports and announcements, see Muñoz, 2007).

Our hypothesis has connections to the practice of dialogue methods (Ropers, 2004) that focus on the importance of communication in dealing with conflict. As it has been popularly phrased, 'as long as you are talking you cannot be shooting'; and these methods, in turn, rest on the early work of Allport (1979[1954]) who argued that prejudice and conflict can be reduced through 'good contact' which is regular, balanced, and equal.

Our study, conducted in Liberia over the first six months of 2009, consisted of having participants interact with rich media (interactive with multimedia components) systems inspired by our two field interventions described in the next section. A treatment group of 72 participants engaged with and contributed content related to the war and national reconciliation while a control group of 61 participants used similar but more common computer systems dealing with general daily activities. Participants took a pre- and post-exposure psychological test, the General Self-Efficacy (GSE) Inventory (Schwarzer and Jerusalem, 1995), designed to measure their self-assessed sense of personal competence to deal effectively with stressful situations (Sherer et al., 1982). The inventory consists of 10 questions with which respondents assess their own belief in their capacity to cope with difficult demands in life.[1] These self-assessments are not a reflection of their optimism but their agency, their abilities to affect change.

General self-efficacy is believed to be important when establishing conditions for post-conflict reconciliation. This relationship between self-efficacy and ultimate healing and reconciliation is premised, in the first instance, on the 'forgiveness hypothesis' of Long and Brecke (2003). Based on this framework, reconciliation is an emotionally cued process in which specific problem-solving mechanisms move people in conflict from shame and anger to empathy and a desire for affiliation. This process is known to be stressful and exercising these individual problem-solving activities requires confidence in one's own competence to do so (Lederach, 1999). Research shows that people with high degrees of self-efficacy are more motivated to make sustained, substantial (Zimmerman et al., 1992) and active problem-solving efforts of this sort with reduced anxiety (Bandura and Adams, 1977). Hence, self-efficacy forms one critical component of the emotional cueing and capacity underlying the forgiveness hypothesis; without self-efficacy, the reconciliation mechanisms are unlikely to get underway.

While the forgiveness hypothesis suggests a broad connection between self-efficacy and someone's ability to engage in healing and reconciliation through action, social learning theory (Ormrod, 2007) supports self-efficacy's link to specifics of social and narrative truth-telling. Evidence shows that self-efficacy requires emotional and practical skills that allow individuals to interact in social settings such as those required for subjective and narrative truth-telling (Gecas, 1989). As discussed earlier, truth-telling, including subjective and narrative processes, opens up a space for reconciliation to take place.

Thus, under the forgiveness hypothesis and through social-learning theories, we link self-efficacy to truth-telling and ultimately to spaces for reconciliation and healing. If we

can demonstrate that interacting with rich media dealing with Liberia's civil conflict and reconciliation can increase participants' generalized self-efficacy, then we will have taken an important step towards establishing our own broader hypothesis, that rich digital media are an important tool in post-conflict reconciliation.

Furthermore, the GSE scale is particularly suitable in this setting as it has been shown to be stable and effective across a wide range of cultures, to have strong predictive powers, and to have a statistically normal (Gaussian) distribution (Luszczynska et al., 2005). We have not found similar inventories that are directly focused on issues of reconciliation.

The Technologies and International Development Lab at Georgia Tech has been examining this connection through a series of interventions in the Republic of Liberia in West Africa (Best et al., 2009; Smyth et al., 2010). In this article, we briefly report on the two principal systems developed and then describe a psychological study showing that systems of this sort can build individual feelings of confidence and self-efficacy. Based on our hypothesis, such psychological impacts can assist in truth-telling and ultimately in national reconciliation. We submit that, if this finding is robust and scalable, rich media technologies should become central tools in post-conflict reconciliation.

Overview of deployed systems

Our work with Liberia's truth commission has focused on two principal systems as well as a broader range of engagements. First, we collaboratively developed an interactive TRC website (www.trcofliberia.org), which included several Web 2.0 features. For instance, it is the first online environment to allow a truth commission to accept formal sealed statements securely over the internet. The site also features multimedia repositories where a wide range of content arising from the TRC's operations, such as videos of hearing proceedings and official TRC messages, is available. In addition to formal statements, users can contribute content through discussion forum posts, photos, and audio messages. The website, designed collaboratively with the TRC and with Liberians in the diaspora (Best et al., 2009), has received considerable traffic with its rich media content being among the most popular.

While the website is primarily intended to serve the large Liberian diaspora and other interested parties, we have developed a second system to reach Liberians in their own country, where internet access is scarce and many people lack print literacy (Best et al., 2007). Dubbed MOSES, for MObile Story Exchange System, the system consists of an interactive computer kiosk, similar in appearance to an arcade game, which allows users to browse through videos recorded by other Liberians and to record videos of their own (Figure 1). Videos can be about the reconciliation process, current affairs, personal thoughts about Liberia, or any other subject. The chief goal of MOSES, which has been used throughout most of the country, is to support story-telling and rich media user-generated content. The system serves areas with no communications infrastructure and caters for people who have never used a computer before, are print illiterate, and do not generally have opportunities to engage in national dialogue. An animated cartoon character guides users through the system and no written text appears

Figure 1. The MOSES kiosk (left) with Liberians gathered around it (right). Photograph: John Etherton.

on the screen, making the system usable for both computer novices and illiterate users. MOSES has been in the field for over a year and over 1000 videos have been recorded (Smyth et al., 2010).

Study methods

Participant recruitment

The study was designed for adult subjects with modest to advanced computer experience. In order to find candidate subjects, we recruited in locations where people were most likely to have these skills, such as cybercafés.

Recruitment and interviews of the treatment group were conducted from 7 January 2009 to 25 February 2009. The survey was conducted at two universities in Monrovia, as well as at a variety of cybercafés or small private computer training facilities. The control group interviews were conducted from 11 April 2009 to 23 June 2009 at the same set of locations as the treatment group.

At the cybercafés or small private computer schools, the researchers set up a laptop computer pre-loaded with the computer system at a desk provided by the café or school. Subjects were recruited as they left the café or passed by the researchers and asked if they would like to participate in a research study. Most people did not agree to participate in the survey, citing a lack of time.

In both the school and café settings, after a positive response to the initial recruitment process, subjects were taken through a standard informed consent procedure. The survey was confidential and anonymous and participants were given 65 Liberian dollars (about US$1) for participating, whether or not they completed the entire interview. If, during the first few minutes of the survey, it became clear that the respondent was not proficient in using computers, the survey was terminated.

Treatment group

After subjects were identified and selected for the treatment group, they were brought to where the researcher had set up their laptops. Once subjects were situated in front of the research laptop they were asked to read the informed consent materials, which was available on the laptop. Alternatively, they could ask to have the material read and explained by the researcher. Once subjects indicated their consent, the researcher activated the pre-exposure General Self-Efficacy Inventory test on the laptop and subjects were asked to complete this schedule.

When participants had completed the pre-exposure self-efficacy schedule, the researcher launched the locally stored rich media system in a standard web browser. The researcher then explained to subjects that they would be asked to perform a series of simple tasks with the site. There were six scenarios designed to offer subjects rich media exposure to the truth and reconciliation content. These scenarios were mostly designed to be common interactions that visitors to the TRC website experienced. The only exception to this was the last scenario where subjects created their own personal video to share, similar to the MOSES experience. Complete scenario descriptions for the treatment and control group are given in Table 1.

After the completion of the scenarios, participants were thanked and then asked to retake the self-efficacy survey, followed by some demographic questions and general questions on their thoughts about the rich media system. Subjects were also asked questions that sought to determine how directly affected they were by the war. This included questions as to whether they were displaced, had lost family members, or participated in post-conflict rehabilitation programs. Prior to these questions, all subjects were reminded that their answers were confidential and that they could choose to refuse to answer any question or could end the interview at any point. Finally, the respondents were given 65 Liberian dollars and thanked for their participation.

Control group

For the control group, recruited participants were similarly brought over to the researchers' laptops, which again were set up on desks with chairs and out of direct sunlight. After agreeing to the informed consent, the respondents were asked to take the self-efficacy survey. Then they were asked to complete a series of scenarios. All the scenarios were designed to mimic common online web usage patterns seen in Liberia and all the sites were locally popular internet locations. Subjects were given four scenarios to complete.

After the respondents had completed these tasks, they were thanked and asked to complete the self-efficacy survey again. They were then asked to answer a series of demographic questions; these were the same demographic questions that the treatment group had been given, except that the questions about their involvement in the war were omitted. After this, they were again thanked for their time and given 65 Liberian dollars.

Again, the control group scenarios were designed to be usual and common activities that people in Liberia who used the web would find familiar but that also

Table 1. Scenario descriptions for treatment and control groups

Step	Treatment group	Control group
1	Participants were asked to simply familiarize themselves with the home page of the TRC website. They were asked to scroll around, view the entire page, and click the mouse over the various graphical elements of the page.	Participants were asked to check a mail account that they were to imagine was their own. They were told to find an email and reply to it. They were asked to send the mail and then confirm that they had indeed sent it.
2	Participants were asked to find and read a TRC press release which asked that alleged perpetrators come forward to the commission.	Participants were asked to locate and read a news story about a new road being built in Liberia on an African interest website.
3	Participants were asked to find and watch a video of the TRC hearing with Prince Johnson, one of Liberia's most notorious warlords.	Participants were asked to locate and read a story about books and school supplies in Liberia.
4	Participants were asked to find and read the biography of TRC Commissioner John Stewart.	Participants were asked to find the latest soccer scores on a sports site. They were told to find the list of scores for African teams, then read the comments left by other users, and finally to leave their own comment. Soccer score checking is a very popular activity with many people across the country.
5	Participants were asked to find and watch a CNN video interview with the Chairman of the TRC, Jerome Verdier.	
6	Participants were asked to record a video for the system's forum on any topic they wished. They were given two minutes to record their thoughts. A webcam and video recording software on the laptop allowed the subjects to view themselves as they recorded their video.	

demonstrated elements of rich digital media such as Web 2.0 interactivity and sharing of user-generated messages. They were also designed to be as engaging as possible, similar to the treatment group scenarios except that there was clearly a difference in subject matter. Two of the control scenarios were interactive, in one they sent an email and in another they responded in a threaded discussion bulletin board. They also engaged in search activities and in reading locally relevant and engaging content. We did not, however, have a control scenario that included video watching or recording as we did for the treatment group. This is because video watching and recording is *not* at all a common activity for Liberians using the internet. We wanted the control group to experience an engaging yet *usual* rich digital media activity set.

General demographic characteristics of treatment group

A total of 94 percent of the respondents were male, echoing the significant gender misbalance among computer users in Liberia. Ages ranged from 16 to 50 with just over half of the subjects falling within the 21–25 age range. The relative youth of the subject pool echoes the youth of computer users, our recruitment at universities, and the fact that Liberia is a very young country generally with 44 per cent of the total population below the age of 15 and a median age of 18 (Central Intelligence Agency, 2010).

A total of 89 percent of the subjects reported that they were 'native Liberians'. This is opposed mostly to 'Americo-Liberians', people descended from settler populations in Liberia. The Americo-Liberian population has traditionally been the political and economic elite of the country and currently represents about 2.5 percent of the total population. One would therefore expect that computer users in cybercafés and universities would over-represent Americo-Liberians due to their enhanced economic status. We found nearly 6.5 percent of the respondents identifying as Americo-Liberians. When asked their religion, all responded that they were Christian except for two who responded that they were Muslim.

Most subjects identified as regular computer users with 84 percent reporting that they used a computer daily or weekly. However, the subjects expressed a fair range of computer expertise. A similar range of responses were offered when subjects were asked their experience level with the internet. A small set of respondents (25%) stated that they had a computer in their home, and only two reported using the internet at home. Four reported accessing the internet at work and ten accessed it on their phones while seven reported 'other' (including at their school, the US Embassy, or a family member's house); 48 of the 62 respondents to this question cited cybercafés as their principal place for accessing the internet. Finally, 90 percent of participants reported never having visited the TRC website.

We found, perhaps surprisingly, that none of these demographic variables could explain variation in pre- or post-exposure GSE scores nor did they explain variation in the other principal measures, including self-reported assessments of the technology, war effects, and so on.

Study 1 results: pre- and post-exposure GSE

Treatment group

A total of 72 participants in the treatment group initially took a pre-exposure GSE Inventory and were then asked to perform a series of six simple scenarios using a purpose-built rich media system modeled after the TRC website and the MOSES user-generated video sharing system. The computer system was designed to offer participants exposure to a range of content related to the war and reconciliation as well as the opportunity to contribute their own user-generated video. After completion of the scenarios, participants were asked to retake the self-efficacy survey and were then asked demographic questions as well as questions on their general thoughts and reactions to the system. Finally, participants were asked questions designed to gauge how directly affected they were by the war.

Table 2. Pre- and post-exposure GSE summary statistics for control and treatment groups

		Min.	Max.	Mean	Standard deviation	Fully completed GSE inventories (sample size)
Treatment group	Pre-exposure score	22	39	31.4	4.43	46 (of 72)
	Post-exposure score	24	40	33.0	4.25	53 (of 72)
Control group	Pre-exposure score	24	39	32.3	4.58	45 (of 61)
	Post-exposure score	22	40	32.4	4.76	54 (of 61)

The GSE Inventory assigns participants a score on a range from 10 to 40 with a higher value suggesting stronger self-efficacy. In Table 2 we show results from both the pre- and post-exposure GSE scores for the treatment group and the control group.

Control group

Just as in the treatment group, 61 participants of the control group initially took a pre-exposure GSE Inventory; they were then asked to perform a series of four simple scenarios using a purpose-built rich media system. The computer system was designed to offer participants exposure to a range of rich media content related to common everyday tasks. Participants answered social emails, checked popular news sites, participated in an interactive discussion on sports topics, etc. After completion of the scenarios, participants were asked to retake the self-efficacy survey and were then asked demographic questions.

Analysis of group and subject difference

In order to examine whether there was a within-subject difference between the pre- and post-exposure GSE measure that varied between the treatment and control group, we applied a repeated measure univariate analysis of variance. We found that there was a significant interaction effect between the within-subject pre- and post-GSE scores of the treatment group and that of the control group ($F = 3.9$, $p = .049$). To understand the nature of this difference, and in particular which group (or both) demonstrated significant within-subject change, we made use of the matched pair *t*-test.

Using a paired sample repeated measure two-tail student's *t*-test we found a significant difference between a *treatment* group participant's pre- and post-exposure GSE score ($t[37] = 2.96$, $p = .005$). The mean difference between the pre- and post-test showed a greater than one point increase in self-efficacy (M = 1.2, SD = .39) with a maximum difference of 11 and a minimum of –3 representing, in the nine cases of a negative difference, a drop in self-efficacy. We therefore found that participants in the treatment group on average experienced a statistically significant post-exposure increase in their self-efficacy.

Similarly, using a paired sample repeated measure two-tail student's *t*-test, we compared the pre-exposure and post-exposure GSE scores of the *control* group and found that there was no measurable difference between them ($t[42] = .53$, $p = .6$).

Given the presence of an interaction effect, an increased within-subject pre- to post-exposure GSE score for the treatment group, and the absence of such a boost in the control group, we conclude that the particular distinctions of the treatment group – namely the focus of the rich digital media experience on war and reconciliation issues – best explains the boost in their post-exposure self-efficacy.

Study 2 results: moderating variables in treatment group

Treatment group participants were additionally asked a series of questions designed to determine the degree to which they were affected by the war. Questions included whether they were forced to flee or were displaced during the conflict, had lost family or friends, were personally victimized, or were themselves combatants. In respect to these eight questions, on average participants responded in the affirmative to half of them ($M = 4$, SD = 2.2) demonstrating the broad and significant impact of the war on the participant group. For instance, 83 percent of respondents self-identified as victims of the war, 76 percent reported having lost family, 51 percent had lost siblings, and 23 percent self-identified as former combatants.

For analysis, these eight questions were combined into a single impact scale by summing the number of 'yes' responses. We found that the more that participants reported being impacted by the war, as measured by this summed impact scale, the smaller the increase in pre- to post-exposure self-efficacy they experienced ($r\ [71] = -.57$, $p = .0001$). In other words, if a participant had been more deeply harmed by the conflict, he or she was less likely to enjoy a positive psychological boost, as measured by self-efficacy, after system interaction. For each additional 'yes' response to a war impact question, participants showed an average loss of .6 points in the difference between their pre- and post-exposure GSE scale ($F = 9.8$, $p = .005$).

Participants were also asked a series of questions designed to gauge their satisfaction with the experimental rich media system. Broadly, most participants reported favorable opinions. Two-thirds of the respondents were 'strongly satisfied' with the system and 25 percent were 'satisfied'. No participant reported being 'strongly dissatisfied' and only four (6%) claimed to be somewhat dissatisfied. Similarly, 85 percent stated that they found the system visually appealing and 93 percent said they hoped to use the system again. When asked what features were most valuable during their interactions, most participants (53%) responded that it was the 'information it provides', suggesting that the more informational elements of the content were the most appreciated. A smaller group of people (21%) mentioned interactive features as the most important, such as the ability to contribute their own user-generated content. Finally, 12 percent of respondents pointed specifically to the multimedia components of the content such as pictures, sounds and videos, as being the most valuable features (see Figure 2).

We found that the self-reported satisfaction with or enjoyment of the system described earlier did not, however, explain any of the variation in pre- and post-exposure

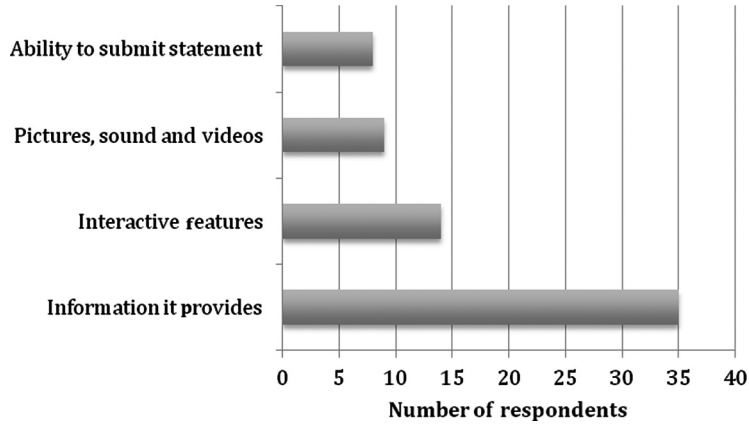

Figure 2. Participant responses on most valuable features of the system..

self-efficacy scores ($F = 0.39$, $p = .7$). Therefore participants' reported enjoyment of the experience was not shown to affect the measured self-efficacy psychological impact.

Participants were also asked to respond on a 5-point Likert scale to a series of questions as to whether they believed the rich media system effectively assisted in processes of national healing and reconciliation. Questions were framed especially to capture the specific truth-telling goals articulated by the Liberian TRC. These questions included whether it allowed participants to learn about and better understand the war, dispelled myths of the war, allowed participants to hear the stories of others, permitted them to tell their own story, and contributed to repairing society. Figure 3 shows the responses to these questions. These responses show that a majority of participants responded that the system supported the reconciliation and peace-building goals they were being asked about. The one case where there was not a majority in strong agreement that the system supported a reconciliation goal was in its ability to dispel myths of the war.

We were interested to discover whether those people who thought the rich media system was most effective in serving truth and reconciliation goals were more likely to be impacted by the site as measured by our pre- and post-exposure GSE score. For each of these questions we created a dummy variable defined as 'true' if they had responded 'yes, most definitely' or 'substantially' to each of the previously described questions. We then summed the number of true-valued dummy variables for each participant. This aggregate score measures each participant's overall sense of the system's truth and reconciliation capacities. We found that this perceived impact score explained variation in the psychological impacts of the system on the participant as measured by the post-exposure gain in GSE ($r[71] = .33$, $p = .005$). For each additional 'true' dummy value, signifying their strong or substantial belief that the system met an additional reconciliation goal, participants showed an average additional gain of .3 points on the post-exposure GSE scale ($F = 4.6$, $p = .04$).

We did not conduct Study 2 with the control group since moderating variables were not indicated.

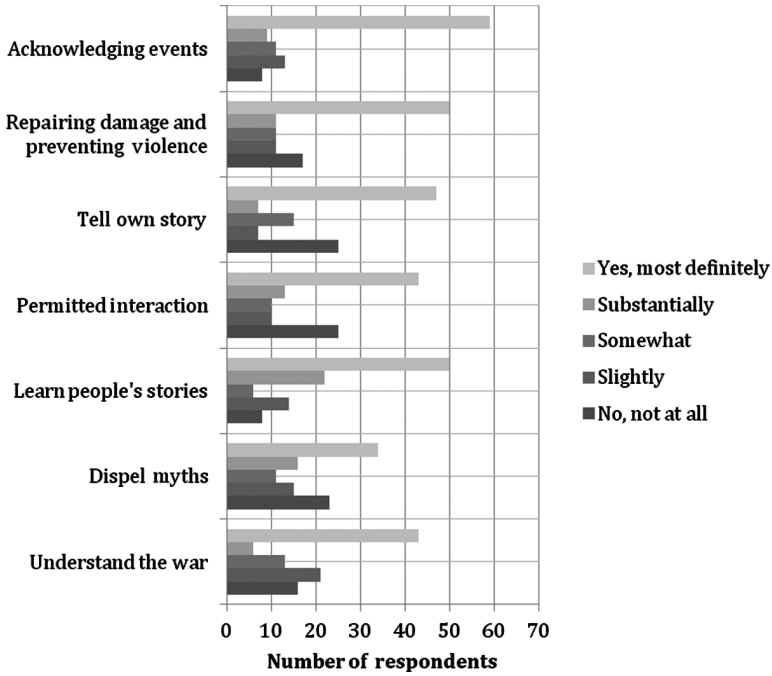

Figure 3. Participant responses on how the system met the goals of the TRC.

Discussion and conclusions

The results from this study suggest that rich digital media, including Web 2.0 capabilities such as user-generated content and video sharing services, can produce an increase in perceived general self-efficacy. Based on the 'forgiveness hypothesis', and the related empirical arguments that demonstrate the effectiveness of individualized truth-telling and story-telling, self-efficacy brought on by these forms of dialogue and narrative story-telling are critical components of the emotional cueing of post-conflict reconciliation and healing processes. Therefore, these results suggest that our hypothesis – that rich digital media are valuable tools in national processes of truth and reconciliation – is supported.

We are particularly interested to find that the degree to which a treatment group participant reported being directly impacted by the war negatively correlated with the observed increase in self-efficacy. Put simply, the more they reported being hurt by the war, the less the media system seemed to provide psychological help. (Every respondent, we should note, reported some significant harm from the war; for instance only 5 percent reported having *not* lost a friend and just 6 percent reported *not* having been displaced by the conflict.) This finding may be intuitive and suggest when rich media can be used to the strongest effect in post-conflict reconciliation and healing. For instance, those people most severely harmed by the war may be better suited for intensive individualized

counseling from mental health practitioners whereas those with lesser levels of harm may benefit from a mixture of work with professionals along with technological interventions such as those discussed here.

While psychosocial work is probably beneficial for many of our respondents, it is worth noting that a country like Liberia hosts an extraordinarily small number of mental health professionals and indeed most Liberians, regardless of the level of harm they suffered from the war, do not have access to psychosocial services of any sort. It is claimed that, during the war, the entire country had only a single resident mental health worker. Mental health needs have been given very little attention in processes of reintegration and rehabilitation in Liberia (Medeiros, 2007). Moreover, those who identify a need for mental health assistance are heavily stigmatized within the Liberian culture (Tuley, 2009). Given this paucity of mental health services and the stigma associated with them, we submit that rich media services could play a role in these settings.

Furthermore, we were interested that the participants self-reported the system experience as contributing directly toward the truth and reconciliation goals explicitly identified by the Liberian TRC. The TRC was tasked with 'establishing and giving recognition to historical truths in order to address falsehoods and misconceptions' (National Transitional Legislative Assembly, 2005). Apropos this goal, we found that 49 percent of the 148 respondents to this question agreed 'definitely' or 'substantially' that the system 'contributed to [their] factual understanding of what happened during [the war]'. Another TRC objective was to 'provide a forum that will … provide an opportunity for both victims and perpetrators of human rights violations to share their experiences in order to get a clear picture of the past to facilitate genuine healing and reconciliation'(National Transitional Legislative Assembly, 2005). We found that 53 percent of respondents agreed definitely or substantially that the system allowed them to 'tell [their] own story' and 72 percent definitely or substantially agreed that the system allowed them to 'learn about the stories of victims or perpetrators in the conflict'. Furthermore, the TRC was called upon to create 'a process which seeks to establish the truth through a public dialogue that engages the nation' (National Transitional Legislative Assembly, 2005). In our survey, 55 percent of participants responded that the system definitely or substantially 'permitted [them] to interact, discuss, or debate with others about the events associated with the conflict'. Finally, when asked directly if the rich media system 'will contribute to repairing the damage inflicted by the conflict and the prevention of future conflicts', 61 percent of the participants responded 'yes, most definitely' or 'substantially so'.

We believe this is the first time such a strong positive link between using an interactive system, including rich digital media, and post-conflict reconciliation has been established through direct self-report survey work.

Alternative explanations and confounding variables

Some alternative possibilities exist that could explain or confound our study results. First, we tested the post-exposure effect of a single use of the rich media system. We did not examine the lasting effect over a prolonged period or the impact of prolonged use of the system. Certainly we might expect a fall-off of effect after use or, alternatively, a stronger effect given repeated or more prolonged use of the system.

While our control group study indicates that usual use of computer systems does not provide the same psychological effect as measured by the self-efficacy inventory, we did not control for the specific video media type that was made use of in the treatment group. It is not clear, however, why adding video modalities would make a measurable difference in the control group.

Because our treatment and control groups were recruited from cybercafés and university settings, and generally had computer experience, they do not represent average Liberians who have mostly never used a computer before. This sample bias may mean that results would not extend more generally to the Liberian population as a whole. However, in our experience, testing neophyte populations with no prior computer experience can bring up an even broader set of potentially confounding variables related to the completely novel aspects of the system interactions and also presents particular difficulties related to participant study compliance (noting that these difficulties are already significant even with our relatively educated participant pool). We find that studies of neophyte population interactions are better suited to qualitative methods as compared to the quantitative methods employed here. For example, a qualitative study of the MOSES system among computer neophytes found participants self-reporting enhanced feelings of personal capabilities after using the system (Smyth et al., 2010).

Table 2 shows that the treatment group had a lower minimum and average pre-exposure GSE score compared with the treatment group. If the control and treatment groups were indeed different from the start in their perceived self-efficacy, then perhaps that accounts for why one of them, the treatment group, showed a statistically significant increase in self-efficacy after exposure while the other did not. For instance, if participants start with a higher pre-exposure GSE, they may be more likely to show a larger positive difference between their pre- and post-exposure GSE. However, a two-tailed *t*-test shows that the two groups' pre-exposure GSE scores are actually not significantly different ($t[190] = -1.78$, $p = .08$). Furthermore, we note that those participants who started with a *higher* pre-exposure GSE actually tended towards a *smaller* difference between their pre- and post-exposure scores ($R = -.32$, $p = .006$); in other words, the weaker a participant's pre-exposure generalized self-efficacy, the more the system created a positive psychological impact. Thus, if this between-group difference actually affected the post-exposure difference in GSE, it would be to boost that difference in the control group relative to the treatment group and not the reverse.

Future work

While additional research is required to establish the complete links between rich media systems and post-conflict peace-building, reconciliation, and healing, the promise is clear. We believe that future work should focus on scaling similar interventions in order to study the long-lasting effect of rich digital media. A longitudinal study might also explore other measures beyond GSE, including coping skills, post-traumatic growth, and quality-of-life measures.

Note

1. Example questions include 'I can always manage to solve difficult problems if I try hard enough' and 'If someone opposes me, I can find the means and ways to get what I want.'

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