The Influence of Decaying the Representation of Older Social Media Content on Simulated Hiring Decisions

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ABSTRACT

Decaying representations gradually make social media content less visible to readers over time, which can help users disassociate from past online activities. We explore whether shrinking, one decaying representation, influences managers' assessments and simulated hiring decisions of job candidates, compared to seeing a *full* profile or an *empty* profile with no posts. Our 3 × 2 between-subjects crowdsourced survey (N = 360 US managers) shows that shrunk or empty profiles led to more positive decisions than profiles in their original full format. However, shrunk profiles also further contributed to more positive impressions of the candidates. Shrinking did not help the candidate of either gender more than the other and demographics of managers had limited impact on their assessment. Further, our managers regularly search job candidates' social media profiles in real life, suggesting that shrinking could support users' privacy. We finally present implications for individuals' privacy on social media.

Author Keywords

online social networks; online privacy; online reputation management; decaying representations; hiring context

CCS Concepts

•Security and privacy → Social network security and privacy; Privacy protections; Usability in security and privacy;

INTRODUCTION

Many employers use online social network (OSN) data to inform their hiring decisions, in part as inexpensive source for unofficial background checks [11, 46, 50, 24]. Up to 91% [53] of employers search OSN data during the hiring process and 70% of US recruiting professionals have rejected job candidates because of their online data [47, 31]. Nearly half of these employers use Facebook data in particular [15]. To our knowledge, the US has no federal/state laws against using public OSN profiles in hiring [53].

While there are benefits to searching OSNs during the hiring process [26, 50] (e.g., connecting firms with the right candidates [46, 53]), it can also be harmful [11]; current employees

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can be fired and new candidates not hired, sometimes as a result of relatively minor incidents or irrelevant posts [30, 11, 46, 27, 44, 53, 4, 45, 20]. The practice lacks well-grounded legal [53, 46, 47, 14, 24] or ethical [46, 50] guidelines. Further, it infringes on individuals' right to privacy, which is a main reason for disapproving of this practice.

The lines between what is private and what is relevant to work is blurred with the existence of OSNs [47, 50, 11, 24]. Moreover, users may have misconceptions about the availability of their data and who can access it [47]. Meanwhile, existing privacy and Online Reputation Management (ORM) tools do not adequately support user needs [57, 56]. Recently, researchers have been designing for digital forgetting, suggesting that data has a life cycle where it is eventually deleted [30, 29, 41, 57]. One approach, decaying representations [38, 33], gradually decays older OSN content to make it progressively less visible to audiences, but it has not been fully evaluated for privacy.

We explore how *shrinking*, a decaying representation [33], might affect managers in a simulated hiring situation. We test whether the application of shrinking on a *female* or *male* candidate's profile impacts managers' decisions. We focus on an US context and probe the current use of online reputation by US managers, since it is unclear how priorities may have shifted (e.g., in light of recent international changes in data protection laws, such as the General Data Protection Regulation (GDPR)). Through a 3×2 between-subjects crowdsourced survey with 360 US managers, we address these research questions:

RQ1: how does decaying a candidate's OSN profile influence managers' hiring decisions?

RQ2: does decaying OSN profile content help one gender more than the other in a hiring context?

RQ3: how do managers' demographics such as gender and age influence their hiring decisions?

RQ4: how do OSNs and online reputation influence managers' real-life hiring decisions?

In general, decaying representations led to more positive assessments of the job candidates (RQ1); we discuss the importance of these representations for managing online reputation. Secondly, we found that the candidate's gender had no impact on the hiring decision (RQ2), but managers' age and gender had a limited impact (RQ3). We further report our managers' real-life practices, which show that online reputation is influential (RQ4) and suggest a need for tools that help users dissociate from their past online activities.

RELATED WORK

We review the use of OSN data and the influence of demographics in hiring, and current gaps in privacy/ORM strategies.

Online Content Influences Hiring Decisions

The nature of personal information on OSNs can contribute to discrimination or bias [46, 26, 24], and it is unclear whether checking OSNs is necessary [14] or helpful [24] for the employment. Moreover, it may result in unfair decisions as data on OSNs might be inaccurate [14] due to online self-representation concerns [43, 16, 48, 11]. Proponents of using OSNs data in hiring argue that employers should do so to avoid being accused of negligent hiring [47, 50]. But is it appropriate to determine one's future based on their personal activities or to infringe on someone's right to privacy? Ethical and privacy issues [46, 50, 47, 24] have been major reasons others argue against this unfettered access.

Online content has compromised the professional future of many individuals [30, 11, 46, 27, 44, 53, 4, 45, 20]. The top reasons in the literature for rejecting a candidate were based on content that shows: (1) concern about publicness of personal content [15], (2) concern about lifestyle [27, 31, 15] or personal appearance/portrayal [15], (3) poor communication skills [50, 27], (4) false qualifications [50], (5) inappropriate photos/comments [50, 27, 31], (6) use of alcohol or drugs [27], (7) offence to previous employers or coworkers [27, 34], (8) low levels of professional appearance [50].

Demographics Influence Hiring Decisions

The literature suggests gender differences in usage of OSNs [54] and self-representation [55], but we focus on viewers' judgment of users based on gender. A previous study [7] showed that a young woman is not only judged more harshly in terms of content, but also for the degree of publicness of her online content. In another employment context [25], female candidates who published content that is considered negative were more harshly viewed by people trained in Human Resources (HR) than when the same content was published by males. Such findings suggest that using OSN data results in discriminatory decisions by HR personnel, even if this was unintentional. It further suggests that social constructs related to gender in the workplace still play a role in the selection process. Managers' demographics may also influence decisions. Differences in attributes such as ethnicity [22], religion [3], gender, or age between managers and employees or potential candidates can influence employment status [21] or hiring decisions [18, 22]. Managers tend to prefer applicants matching their own ethnicity/gender/age.

Privacy Representations

To enhance online user privacy, the literature [29, 30, 41] recommends designing for "forgetting". One approach to forgetting digital artifacts visualizes time within the UI to de-emphasize older content. This approach enables users to either manipulate their past content [38] or control how content should be displayed in the future [23]. For example, Gulotta et al. [23] used three representations, including methods that decay content, to explore how users would like their content to be displayed in the future. Others [38, 33] looked at visually

representing the aging of digital artifacts within OSNs and tested different representations.

Decaying representations can help users dissociate from obsolete content [38] and can minimize users' effort when applied by default [33]. Novotny [38] proposed a taxonomy of visual representations, including *shrinking*, that can be used to deteriorate content with time. However, he only partially tested one representation (shrinking). Mohamed and Chiasson [33] expanded Novotny's work and tested three different representations; *fading*, *shrinking*, and *pixelation*. Results look promising as users found both the *fading* and *shrinking* representations intuitive and successful at representing the metaphor of decayed memories [33]. Nevertheless, none of the representations [38, 33] have been tested in the context of an important selection process, such as in a hiring process that involves managers assessing OSN profiles of candidates.

Privacy and Online Reputation Management

Users are concerned about information revelation because they fear that a future employer might look at their profiles [58]. However, users' privacy protection strategies are limited, and require user engagement. These strategies sometimes include faking data [26] or presenting an unauthentic image of themselves [58, 15], which might compromise their well-being [48] or interfere with their self-presentation strategies [28, 19]. However, some data is obtained through other sources [26, 15, 27, 51] beyond a user's control and might compromise a user's attempt to manage their online presence.

Contrarily, and supported by the privacy paradox [35, 1, 12, 40, 2], users appreciate privacy as a preventive measure, yet they do not sufficiently restrict access to their content and rarely perform active ORM. Information can be accessed even with privacy management [11], for example when HR managers access the candidate's private profile [24, 46, 53] by sending a friend request to the candidate [46].

Users experience frustration and uncertainty with existing ORM tools [57]. Yang recommends [57] that the usability of privacy settings become the first priority of OSN providers. Moreover, Woodruff [56] suggests design principles for more usable ORM strategies. These principles focus on prevention mechanisms, minimizing user engagement, and developing feasible solution for everyday reputation problems [56].

METHODOLOGY

We conducted a 3×2 between-subjects study with US managers, with type of representation (original, decayed, control) and the candidate's gender (male, female) as the independent variables. The *decayed* representation showed a Facebook profile with posts gradually shrinking in size. The *original* representation showed a Facebook profile with all posts full size. The *control* representation showed a Facebook profile with no posts. We explore the interaction between the candidate's gender and the representation by having parallel *male* and *female* profiles. Other attributes such as age, ethnicity, or cultural background were left out of our current study design (see discussion). We chose Facebook since it is often used during hiring [15] and often contains personal details.

We prototyped six fictitious Facebook profiles: female-decayed (FD), female-original (FO), male-decayed (MD), male-original (MO), female-control (FC), male-control (MC). In our scenario, the owner of each profile was applying for a job. We designed an online crowdsourcing survey where participants received a link to a video displaying one profile corresponding to their study condition. Participants were randomly assigned to one of six conditions. We launched small batches of the survey in parallel (to even out the number of male/female managers viewing the survey link).

We answer RQ1 through Likert-scale questions probing managers' simulated hiring decision and evaluations of the candidate's character and online reputation. We also look at what influenced their decisions through an open-ended question. We answer RQ2 by analyzing if there was an interaction effect on responses between the gender of the candidate and the representation type. We answer RQ3 by testing if managers' gender and age had an interaction effect with representation type. We answer RQ4 through Likert-scale questions and an open-ended question that explored managers' likelihood to search job candidates online or hire them despite of having previously published negative content, timeframe of past activities relevant to hiring, and use of online reputation in the hiring process in general during their current real-life practices.

The study was cleared by our Research Ethics Board. The study was pilot tested with four participants. Three of four pilots were run with individuals who had performed managerial or recruitment duties on behalf of their employers. We found no major concerns from the pilot sessions.

Prototypes and Videos

Using Mockplus 3.3.2.4 [32], we prototyped six Facebook profiles containing fictitious data. The layout matched the look and feel of the Facebook UI as of June 2018. The control profiles (FC, MC) showed no posts on the timeline, as if the user had made all posts private. The content of the four prototypes with visible posts was identical except for small changes to match the user's gender, such as the name, profile picture, and image uploads. Where needed, we used images that closely mirrored each other, except for the gender of the person in the photo. All the images used on the prototype were downloaded from Unslpash [49] which offers freely usable images. Each profile had 26 posts in total. Posts' dates were separated by 2-10 months, and spanned 11 years (2018 to 2007). The posts are based on previous work [15, 27] on participants' (including US managers) positive and negative impressions and interpretations of various FB posts. We included posts that might suggest neutral or positive connotations (e.g., the user doing outdoor activities, expressing gratitude, and socializing with friends/family). We also included posts that might suggest negative connotations. We chose three types of online content that have previously led to rejection among employers [50, 27, 31, 15]: drinking alcohol and comments showing irresponsible behaviour, offending a past employer, and partaking in a controversial activity. Positive, neutral, and negative content was interspersed throughout the profile.

The prototypes were presented to our participants as videos. According to Buchenau and Suri [9], videos are a viable pro-

totyping method to illustrate future design conditions. We created a separate HD video (resolution = 1080p) for each prototype¹. The videos showed the photos/friends page (with text stating that the friend list is only visible to the user's friends) and slowly scrolled through the user's timeline content. The control videos were around 30s and between 3:14 and 3:34 minutes in the other four conditions. The control videos are shorter since a user is unlikely to spend much time on an empty profile in real life. The videos let the managers view the content (and pause/move back/forth) without directly interacting with the fake profile (which was not fully functional).

The original condition: Posts of the Original condition had equal size across the timeline. All posts were displayed and none were compressed by year². The size of images and the textual attributes of the post (e.g, captions, date, usernames, comments, tags) were not manipulated.

The decayed condition: Previous literature [33, 38] recommended *shrinking* content to represent aging of digital content. In such representation, Facebook posts on a user's timeline become gradually smaller and less legible as they become older. Shrinking is a gradual removal of content and its contextual details; viewers cannot "unshrink" content. We implemented shrinking in the two prototypes that *decay* content. The *shrinking* rate was applied linearly across posts from completely undecayed to illegible because of its small size. All posts gradually shrunk over time at the same rate; shrinking encompassed images and all textual attributes (e.g, captions, date, usernames, comments, tags). In a full implementation, clicking on posts would not return them to their full size (except if accessed by the profile owner). Similarly, shrunk posts would not have improved resolution if the viewer tried to zoom in.

Content that showed alcohol posts and comments indicating irresponsible behaviour were much deteriorated in the decayed condition because they were old posts on the timeline. Other older posts with positive or neutral behaviour were also deteriorated (e.g., a picture of a device developed in a course project, or reminiscing over university). Posts showing controversial activities (e.g., participating in a protest and sharing political opinions) or an offence to a past employer were more legible as they were newer posts.

Figure 1 shows a partial snapshot of the older posts on the male and female profiles, and how it was displayed on the female decayed prototype. The selected content reflects older posts (towards the end of the profile and video), illustrating how content has shrunk over time in the decayed condition.

The control condition: The two control profiles with no posts were identical expect for the user's name and the profile picture. On Facebook, if a user decides to limit access to all of their past history, the user's timeline becomes blank (only a dot is displayed instead of posts) when accessed by non-friends. The profile picture and personal information on the left hand-side of the profile can be displayed as configured by

¹The six videos can be accessed at: http://tiny.cc/62ushz

²Facebook used to compress posts by year, where a clickable bar with a year label was displayed instead of posts. The posts were only displayed when the user clicked the bar to expand them.

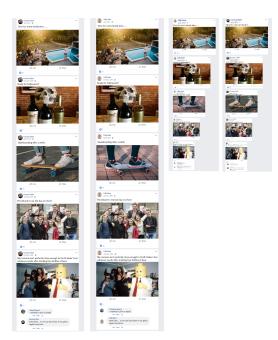


Figure 1: The same partial content in 4 study conditions. From left to right: male-original (MO), female-original (FO), female-decayed (FD), male-decayed (MD). Posts started the same size at the top of the Original and Decayed profiles. This image illustrates posts further down the profile, showing their smaller size in the Decayed condition.

the user. Our control profiles showed no posts and no personal information, as shown in Figure 2.

There could be other variations for the control profile. For example, it could have shown only a few posts. However, this approach has several issues. It is unclear what the cut-off should be, particularly because it would be impractical to decide at which point the post becomes illegible in the equivalent decayed profile. In practice, Facebook currently provides the option for users to turn all their past posts to private. Users in real life who are revising their privacy settings are more likely to choose this option rather than retroactively adjust the privacy setting [59, 5] of individual posts. A blank control profile seemed to be the most straightforward choice.

Candidates' Persona: Our candidates are Caucasian, in their late-twenties, and have graduated from electrical engineering. They have work experience at Ericsson and are currently seeking employment. Their interests include traveling, skateboarding, and spending time with family and friends.

Questionnaire

We had a total of 75 questions covering 7 categories (A-G) described below. Managers completed Sections A and B, watched the video, then completed the remaining sections. After the video, we told the managers to assume that they had already interviewed the candidate and determined that they had the required skills and qualifications. They subsequently visited the applicant's Facebook profile and were deciding whether to hire them.

A. Demographics: We collected participants' gender, age, highest level of education, field of expertise, years of work

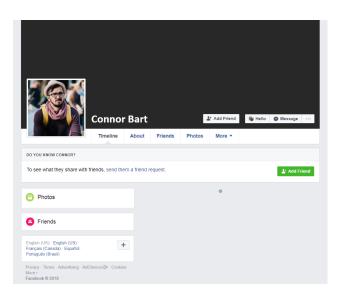


Figure 2: Candidate's profile in the Male Control (MC) condition.

experience, example duties for their job, average number of hiring decisions they make per year, and familiarity with OSNs.

B. Ratings: We gauged participants' perception of desirable traits for job candidates in general. Participants rated ten traits using 5-point Likert-scale questions ('extremely important' to 'not at all important'). These traits had been identified as desirable in previous literature [37, 10, 39]. The traits were: (1) hard working, (2) self-motivated, (3) loyal, (4) dependable, (5) team-oriented, (6) confident, (7) adept communicator, (8) respectful to work ethics, (9) flexible, (10) cautious.

As discussed earlier, the literature has identified aspects of online reputation that influence managers' hiring decision. We used these characteristics for a set of 10 rating questions relating to online reputation. However, this list is not exhaustive and other aspects may exist. Using 5-point Likert-scale questions, participants rated how important it is that a candidate's online reputation *shows* each of the following five desirable³ aspects: (1) positive lifestyle, (2) positive attitude, (3) professionalism, (4) volunteering and charitable giving, (5) openness and willingness to experience.

We followed with how important it is that a candidate's online reputation *avoids* each of the five *undesirable*³ aspects: (1) a history of using drugs, (2) a history of drinking alcohol, (3) offence or criticism to past employer or coworker, (4) inappropriate content, (5) controversial content.

C. Video verification: We included five questions about specific content seen in the video to ensure that our managers have watched the video. These questions asked about content from the start, middle, and end of the video. We automatically timed how long participants spent on the page containing the video and its verification questions. The video was also available for reference on 3 subsequent survey pages when answering Sections D, E, and F of the questionnaire.

³The survey did *not* identify these as *desirable* or *undesirable*.

- **D. Hiring decision:** We asked questions relating to hiring the candidate after managers had viewed the candidate's profile in the video. Using two 5-point Likert-scale questions, we asked how likely they were to *hire* and *do more research* about the candidate before hiring them. We also asked an open-ended question to understand what influenced their hiring decision.
- **E.** Candidate evaluation: To explore our managers' opinions of the candidate, we asked them to evaluate the candidate against the personality traits (ten 5-point Likert-scale questions) and aspects of online reputation (ten 5-point Likert-scale questions) from Section B. In total, we had twenty 5-point Likert-scale questions for managers to assess the candidate.
- **F. Visual representation and privacy:** Because this was not central to our research questions, we leave this section out.
- **G. Real-life practices:** We asked about managers' own reallife practices as people responsible for making hiring decisions. We asked if they look up candidates online (5-point Likertscale) and to list OSNs they check before hiring decisions We included an open-ended question to probe how online reputation influences their hiring decision. We also asked them to identify the most important factor in their hiring decision: online reputation, skills and qualifications, or both equally. Similar to previous work [34], we examine how likely our managers were to hire a real-life job candidate whose online activities: (1) could damage the company's reputation, (2) are against the company's values, (3) show participation in illegal activities, (4) show inappropriate content, (5) show controversial content, (6) show negative comments about past employers. These were 5-point Likert-scale questions. We also explored what timeframe of online content our managers would consider relevant when making a hiring decision.

Recruitment and Participants

We used Qualtrics [42] and TurkPrime [52] to administer our surveys. TurkPrime is an internet-based platform that facilitates online crowdsourcing recruitment through Mechanical Turk. TurkPrime workers are ranked according to their previous history at accurately completing tasks and giving responses accepted by requesters (namely, approval rate). We included workers who have an approval rate of at least 97%. We also required workers with specific demographics: (1) aged between 25 and 65 years old⁴, (2) employed in managerial positions, (3) residing within the USA. TurkPrime provides advanced filtering criteria and only made the survey visible to workers who pre-identified as "managers" from a long list of occupations. Responses to the open-ended question about work duties performed indicate that our managers were in administrative roles including managing, recruiting, or leading employees. We note that "manager" is a broad category, and may not necessarily reflect users in high-paying executive positions. While targeting higher-level or HR managers is interesting, we chose to target a broader representation since many people are not applying for high-level white-collar positions, particularly younger applicants with active OSN accounts.

Table 1: Managers' demographics per condition.

	Category	FD	FO	MD	МО	FC	MC
	Male	38	33	31	28	26	24
Gender	Female	30	27	30	34	29	29
	Other	-	1	-	-	-	-
	Total	68	61	61	62	55	53
	Minimum	23	25	23	28	26	25
1 00	Maximum	63	64	62	63	64	63
Age	Mean	39	39	39	39	40	41
	Std Dev.	10	10	10	8	9	10
Average	Minimum	0	0	0	0	0	0
number of	Maximum	200	500	300	140	100	30
hiring decisions	Mean	19	26	15	18	9	8
per year	Std Dev.	36	78	39	29	15	7
Years	Minimum	1	1	1	1	1	< 1
of	Maximum	23	33	30	25	40	31
work	Mean	9	10	9	9	9	8
experience	Std Dev.	6	7	7	6	7	6

The surveys took approximately 20 minutes to complete. Our participants were paid following the current US federal minimum wage and received USD\$2.25. With administration fees, we paid a total of USD\$3.59 per participant. TurkPrime had the option to exclude workers who have completed previous surveys. Therefore, we collected unique responses only.

Data collection took place between August 2018 and January 2019. We collected a total of 369 responses. After validation of the video verification questions and handling of irregular responses, we had a total of 360 valid responses.

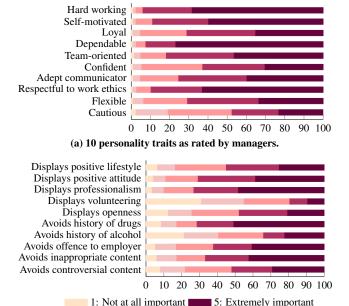
Most managers had at least a 4-year college degree. They were also "very familiar" with social media. They came from 40 various fields, but most were in business, finance, manufacturing & production, the service sector, and technology & computers. Table 1 summarizes managers' demographics. Only eight out of 360 participants reported an average of 0 hiring decisions per year. The median values per condition were relatively similar: 6.5 decisions in FD, 4.0 in FC, and 5.0 in the other four conditions. The very large maximum values from Table 1 were reported by only a few participants. The total number of managers is lower in some conditions because we reached a saturation point where no more managers were participating, combined with having eliminated invalid responses.

ANALYSIS PLAN

Statistical analysis was performed using SPSS 25, with significance value set at p < 0.05. For analysis of Likert-scale questions, a score of 1 was assigned to the most negative response (i.e., managers were less accepting of the candidate) and 5 to the most positive response (i.e., managers were more accepting of the candidate). For our first three research questions, we focus on reporting results to the main questions relating to the hiring decisions: the hiring decision question (V1-HIR), the open-ended question from Section D, and all 20 questions from Section E. These questions primarily prompted our managers to evaluate their respective job candidate. For our fourth research question, we report results of all questions relating to real-life practices from Section G.

The 20 questions from Section E were grouped into 3 compound measures: evaluation of the candidate's *personality* traits, positive aspects of online reputation, and negative as-

⁴Although we configured TurkPrime to recruit 25-65 years old managers, 3 respondents subsequently reported being 23 and 24.



(b) 10 aspects of online reputation as rated by managers.

Figure 3: Managers' responses to 20 rating questions.

pects of online reputation. Each measure included at least five Likert-type ordinal questions. Following Boone and Boone's method [8], questions in each measure were combined by calculating a mean score before running statistical tests: a mean score of the 10 questions evaluating the candidate's personality traits (V2-PER), a mean score of the 5 questions asking about positive online reputation aspects (V3-POS), and a mean score of the 5 questions that considered negative online reputation aspects (V4-NEG). These compound variables were used in statistical analyses instead of the individual questions.

To answer RQ1–RQ3, we run statistical analysis on four variables: V1-HIR (hiring decision, ordinal Likert-scale data), and the three compound variables V2-PER, V3-POS, and V4-NEG (continuous data). Depending on the research question, and detailed in the following sections, we run one-way ANOVA on V1-HIR to V4-NEG responses to look for *main effects* or two-way ANOVA to look for *interaction effects*. We recognize that opinions diverge around the use of parametric tests (e.g., ANOVA) with non-parametric data (V1-HIR). Previous work similarly used parametric tests with ordinal data [36, 25]. As suggested by Norman [36], parametric tests are robust in regards to violations posed by non-parametric data. We believe that ANOVA tests seemed to be our best option.

For the two open-ended questions, we used inductive content analysis [17] to look for main themes. We summarized each response into a key message and started with open coding. One researcher first coded the data and extracted initial themes. A second researcher re-coded some of the data in follow-up rounds, and both researchers worked together to identify the main themes. A third researcher was involved in handling unclear cases and to better refine the coding.

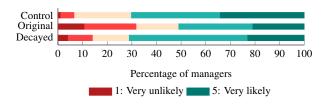


Figure 4: Likert-scale responses to the hiring decision question as provided by our managers per condition.

RESULTS

We first present our managers' general preferences when it came to the 20 traits for Section B of the questionnaire (answered before watching the video). Figure 3 shows the 10 personality traits and the 10 aspects of a candidate's online reputation and their importance to our managers. Overall, managers report being more interested in a candidate's personality than his/her online activities.

The timer confirmed sufficient time spent watching the videos (Decayed: $\mu = 418$ s, SD = 164s; Original: $\mu = 337$ s, SD = 154s; Control: $\mu = 84$ s, SD = 49s). Since the video was available for re-watching in other un-timed pages, participants likely spent more time than observed. The mean time spent on the survey including video viewing was 916s, SD = 438s.

RQ1: How does decaying a candidate's OSN profile influence managers' hiring decisions?

We ran one-way ANOVA on V1-HIR, V2-PER, V3-POS, and V4-NEG to look for main effects of our independent variable, representation type.

The hiring decision made by managers in each of our three study conditions is shown in Figure 4. Managers of both the decayed (71%) and the control (70%) representations were either somewhat or very likely to hire the candidate compared to those (51%) who saw the original representation.

V1-HIR: The one-way ANOVA test ⁵ showed a significant effect of representation on V1-HIR, p < 0.0001. We used Games-Howell post-hoc analysis for pairwise comparisons. We found a significant difference between the Original–Control pair (p = 0.0001) and the Original–Decayed pair (p = 0.006), but not between Control–Decayed. The control ($\mu = 4.0$, standard deviation (SD) = 1.0) and decayed ($\mu = 3.8$, SD = 1.0) representations most positively influenced managers' decision, followed by the original representation ($\mu = 3.3$, SD = 1.3).

We also ran Ordinal Regression to see if participants' average number of hires per year (in Table 1) affected their hiring decisions and found no significant effect (p = 0.715).

V2-PER - V4-NEG: We found a significant effect of representation on all three variables (p < 0.0005). We followed up with Games-Howell post-hoc analysis for pairwise comparisons. Managers who saw the Decayed representation (D) gave the most positive responses when evaluating the candidate's

⁵We also ran independent samples Kruskal-Wallis (KW) tests. KW showed the same main effects as the ANOVA.

Table 2: RQ1: Effect of representation type on each of the 4 dependent variables. The table shows descriptive statistics (median, mean, and standard deviation (SD)), one-way ANOVA test results, and Games-Howell pairwise results. The highest means are in bold red and significant results are highlighted in gray. F: f-distribution, p: significance value, Partial η^2 : effect size, D: Decayed, C: Control, O: Original representation.

	Median, Mean (SD)			ANOVA			Pairwise Comparison		
V#	D	С	О	F(2, 357)	p	Partial η^2	D - O	D - C	O - C
V1-HIR	4.0, 3.8 (1.0)	4.0, 4.0 (1.0)	4.0, 3.3 (1.3)	11.254	< 0.0005	0.059	< 0.006	0.253	< 0.0005
V2-PER	3.8, 3.7 (0.7)	3.0, 2.8 (0.8)	3.1, 3.2 (0.8)	44.704	< 0.0005	0.200	< 0.0005	< 0.0005	< 0.0005
V3-POS	4.0, 4.0 (0.6)	3.0, 2.8 (0.8)	3.4, 3.4 (0.9)	67.535	< 0.0005	0.274	< 0.0005	< 0.0005	< 0.0005
V4-NEG	3.8, 3.7 (1.0)	4.0, 4.0 (0.9)	2.8, 2.8 (0.9)	56.081	< 0.0005	0.239	< 0.0005	0.046	< 0.0005

Theme	FO (n= 61)	MO (n= 62)	FD (n= 68)	MD (n=61)
Positive Personality Traits	8%	29%	60%	39%
Positive Lifestyle	7%	6%	24%	20%
Has Matured	16%	19%	6%	5%
Qualifications & Intellect	30%	23%	26%	23%
No Red Flags	7%	10%	19%	21%
Unprofessionalism	61%	50%	29%	20%
Politically Active	10%	16%	9%	7%
Partying Lifestyle	10%	21%	-	1

(a) The Original and Decayed conditions.

Theme	FC (n=55)	MC (n=53)
Qualifications & Interview	42%	47%
Privacy	31%	21%
Nothing Negative	18%	26%
No Enough Information	25%	23%
Assumptions About User	15%	17%
Questioning Lack of Content	7%	11%

(b) The Control condition.

Table 3: RQ1: Factors influencing managers' hiring decision. Responses indicating a positive assessment are in green and negative assessments are in red. Colour intensity corresponds to the response's popularity.

personal traits (V2-PER) and his/her positive aspects of online reputation (V3-POS) compared to the Original (O) and Control (C) representations, with statistically significant results for all pairwise comparisons (D>O>C,p<0.0005). On the other hand, managers who saw the Control representation gave the most positive responses when evaluating the candidate's negative online reputation (V4-NEG), a statistically significant result between the Decayed–Original and the Control–Original pairs (($C\approx D$) > O,p<0.0005). Table 2 shows descriptive statistics, ANOVA test results, and Games-Howell post hoc results for the four variables.

The open-ended question from Section D gave us more insight into what influenced our managers' decision. We found that the themes identified in the four conditions with visible content (FD, FO, MD, and MO) were different from those identified in the two control conditions which had no posts. We calculated the percentage of managers in each condition who mentioned responses falling under each theme. We include the themes having at least 10% in one or more study conditions. Table 3 illustrates the main themes and the percentages of managers per condition with responses in each theme. The cells in each table are colour-coded to show where the most positive and the most negative impressions existed.

For the conditions with visible posts, we extracted a total of 14 themes; eight met the 10% threshold. Managers inferred positive qualities about the candidate: having positive per-

sonalities, having a positive lifestyle, having matured over time, having an intellect which indicated that they have the required qualifications for a job, and having no 'red flags' on their profile. These were more prevalent in the conditions with *decayed* representations. On the other hand, managers also inferred negative qualities about the candidate: unprofessionalism, concerns about participation in protests, and disapproval of their partying lifestyle. These were more prevalent in the conditions with *original* representations.

We identified eight themes in the control conditions; six met the 10% threshold. Nearly half of our managers reported that their hiring decision was based solely on details from study scenario (i.e., that the candidate possessed the qualifications, and passed the interview). A quarter of managers viewed the fact that the candidate's profile is private as a positive trait, while another quarter thought there was not enough information available to make a judgment. Some managers mentioned that there was nothing negative on the profile, while others made assumptions about the user (e.g., moved to another platform, had problematic content in the past, or had deleted all of their content). A small percentage questioned the lack of content; they thought it was as worrisome as having inappropriate content and they would have appreciated more transparency.

In summary, we saw more negative comments in the original conditions. In the control conditions, managers ignored social media or made assumptions, and in the decayed conditions, they were more likely to have a positive impression.

RQ2: Does decaying OSN profile content help one gender more than the other in a hiring context?

We examined the interaction effect of our two independent variables (*representation type* and *gender of candidate*) on V1-HIR to V4-NEG using two-way ANOVA. We found no significant interactions between the two independent variables on any of the four dependent variables.

RQ3: How do managers' demographics such as gender and age impact their hiring decisions?

We looked for interactions between the *age* or *gender* of the managers and our *two independent variables* on our four dependent variables. We ran two-way ANOVA to look for an interaction effect on V1-HIR, V2-PER, V3-POS, and V4-NEG. We categorized age into three classes. We had a minimum age of 23 and a maximum of 64. Given this range and based on the distribution, we coded the variable into the following three classes: 23-36 years old (class 1 with n= 155), 37-50 (class 2, n= 153), and 51-64 (class 3, n= 52). Instead of coding

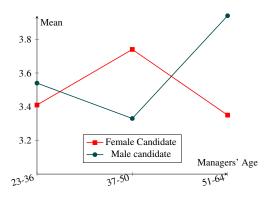


Figure 5: RQ3: Interaction of managers' age and candidates' gender on negative aspects of online reputation (V4-NEG).

the variable based on equal age ranges (i.e., 13-year blocks: 23-36, 37-50, 51-64), we could have coded based on equal numbers of participants per block, but we would have had very skewed ranges. Our choice seemed to more accurately reflect generational differences, and seemed reasonable given that the smallest group still had 52 participants.

- Representation type × Gender of manager: We found no significant interactions between these two variables on any of the V1-HIR – V4-NEG responses.
- 2. *Representation type* × **Age of manager**: We found no significant interactions between these two variables on any of the V1-HIR V4-NEG responses.
- 3. **Gender of candidate** × **Gender of manager**: We found no significant interaction between these two variables on any of the V1-HIR V4-NEG responses.
- 4. *Gender of candidate* × **Age of manager**: We found no significant interaction between these two variables on V1-HIR, V2-PER, and V3-POS responses.

We found a statistically significant interaction between gender of the candidate and age of the managers on V4-NEG (negative aspects of online reputation), F(2, 354) = 5.387, p = 0.005, partial η^2 = 0.030. Figure 5 shows the interaction between these two variables for V4-NEG. We followed up with an analysis of simple main effects for age. Managers in the middle age group were more accepting of the female candidate (i.e., they minimized her negative online activities) (p = 0.015), while managers in the older group were more accepting of the male candidate (p = 0.040).

RQ4: How do OSNs and online reputation influence managers' real-life hiring decisions?

We explore managers' reported use of OSNs and online reputation in their real-life practices (Section G of the questionnaire).

Looking up candidates online. Most of our managers look up job candidates online before hiring them. 45% reported they were "extremely likely" to look up their candidate online. 38% selected "very likely", 4% were "neutral", and 8% chose "very unlikely". Finally, only 5% said they were "extremely unlikely" to look up their candidates online.

Table 4: RQ4: Number of managers who check each OSN platform during real-life hiring decision.

OSN Platform	FD (n=68)	FO (n=61)	MD (n=61)	MO (n=62)	FC (n=55)	MC (n=53)	Total (n=360)	Total in %
Facebook	60	51	53	56	48	44	312	87%
LinkedIn	38	33	37	34	32	34	208	58%
Twitter	31	29	22	23	21	24	150	42%
Instagram	30	23	27	29	21	25	145	40%
Google+	13	5	5	8	9	6	46	13%
Snapchat	6	5	5	4	4	0	24	7%
Tumblr	4	2	2	1	2	0	11	3%

Table 5: RQ4: Main themes of how online reputation influences managers' real-life hiring decisions.

	To look for red flags	Reflects personality	To see how they would fit in work	General influence	No influence
FD (n=68)	38%	35%	15%	12%	16%
FO(n=61)	44%	46%	0%	26%	26%
FC (n=55)	55%	29%	18%	13%	20%
MD (n=61)	34%	38%	18%	16%	16%
MO(n=62)	47%	37%	18%	15%	19%
MC (n=53)	66%	25%	21%	19%	13%

Our managers also check the various social media profiles for job candidates, as summarized in Table 4. The number of managers checking Facebook was particularly high. LinkedIn came a distant second, followed by Instagram and Twitter.

How online reputation influences hiring decisions. We identified a total of eleven themes in responses to our openended question about how online reputation influences our managers. Six themes were excluded, since they were below the 10% threshold. Table 5 shows the remaining five themes. Most managers used social media to look for 'red flags' that would sway their hiring decision. Many thought that social media would enable them to know the person better as it reflects personality and lifestyle. Others thought it would allow them to see how the candidate would fit in the job and with the company's values. Some reported that it plays a role in general, while relatively small minority thought that social media played no role at all in the hiring process.

Qualifications vs. online reputation. Managers reported a candidate's skills and qualifications are mostly (38%) or generally (34%) more important than the candidate's online reputation. 25% reported that both weigh equally, and others said online reputation is generally (2%) or mostly (1%) more important. However, managers also said they were unlikely to hire a candidate who posts negative content (see Table 6).

Timeframe. 17% of our managers reported that all past online activities matter in terms of online reputation. 29% selected content from "1 year ago or less", 45% chose content posted "1-5 years ago", and only 1% said that content from "5-10 years ago" matters. Finally, 8% thought that "none" of a candidate's past online activities matter.

DISCUSSION

Our results confirmed and also contradicted previous research.

RQ1: Decay representations that apply shrinking positively impacted impression and the simulated hiring decisions, except for aspects of online reputation that could be perceived as negative where the Control representation led to a more positive impression.

Table 6: RQ4: Likert-scale responses for the likelihood that managers hire a candidate who posts specific types of content in real life (n= 360, 1= Extremely unlikely, 5= Extremely likely). Md: median, μ : mean, and SD: standard deviation

Online content type	Md	μ	SD
Could damage company's reputation	1.0	1.7	(1.0)
Against company's values	1.0	1.8	(1.1)
Shows participation in illegal activities	1.0	1.6	(1.1)
Shows inappropriate content	2.0	2.0	(1.1)
Shows controversial content	2.0	2.4	(1.0)
Shows negative comments about past employers	2.0	2.1	(1.0)

RQ2: There was no interaction of representation and the candidate's gender on hiring decisions nor evaluation of the candidate's traits or online reputation.

RQ3: The managers' gender had no effect, but the managers' age had limited impact on how male and female candidates were perceived.

RQ4: OSN content had considerable influence on real-life hiring practices.

We present implications of our results and suggestions for the privacy and HCI communities.

Online reputation shapes hiring decisions

Consistent with previous research [11, 31, 46, 50, 24, 27], we found that online reputation continues to inform hiring decisions today. However, our hiring decisions were simulated, and results might differ with other study methodology or if focusing on higher-level hiring executives. Further, we recruited US managers, where there are no federal or state laws prohibiting the use of public OSN profiles in hiring; other countries might differ. Nevertheless, we interestingly saw a disconnect between managers' reported priorities and their actual assessment.

Our managers indicated that skills and qualifications of a candidate are more important than online reputation. However, we saw that their hiring decision significantly differed based on whether the profile hid some or all negative content from view compared to having the same content fully visible. Moreover, their responses in Table 5 and Table 6 suggest that online activities are very likely to influence their judgment.

Our managers reported that only more recent online activities (within 5 years) are relevant for hiring. However, the significant difference between hiring decisions for the Original and Decayed profile indicates that posts dating 11 years ago were still relevant in their assessment. It is plausible that they did not carefully read the dates of the posts on the prototype. This may also happen in real life though, where managers could be unduly influenced by older posts without even realizing it. Decay representations could help address this problem. We note that it is unclear whether managers' chosen timeframe for relevance of content is due to their actual preferences or due to the fact that it is fairly difficult and time-consuming to scroll through profiles to access older content. Given our data, we cannot confirm which reason contributed to their responses.

Further, 84% of managers would look up their candidate online before hiring them. Managers are more likely to search the candidate's Facebook or "social" profile instead of LinkedIn or "professional" profile. While Facebook was previously reported as popular [15], it is interesting to see how much more popular it is than professional platforms such as LinkedIn.

Job candidates might actively update their professional profile, but managers are interested in profiles that candidates are less likely to actively manage [57, 5, 59]. The question remains, how can we eliminate negative consequences that might result from unintended OSN data availability? How can we empower users with tools that require their minimal engagement [56]?

Influence of Demographics

Candidates: The shrinking representation did not help one gender more than the other when applied to their profile. However, we did not explicitly specify the candidate's gender on the profile or in our scenario. Hence, gender was open to participants' own interpretation of the profile. Further, we controlled profile content so that only gender itself was varied. Managers saw the same shrunk content attributed to either a male or female candidate rather than different types of content that may show gendered behaviors [54]. The types of content generally posted by each gender may more strongly influence attitudes than gender itself when shrinking is used.

We intentionally avoided including other characteristics known to cause bias (e.g., candidates with different ethnicities [22, 21], younger/older candidate [18, 21]) to limit confounding factors, but these could also be explored.

Managers: The manager demographics we explored had limited impact on responses. Middle-aged managers minimized negative online activities of the *female* candidate, while older managers minimized negative online activities of the *male* candidate, suggesting that stereotypes still exist and can affect the hiring process. It was interesting to see an interaction between two different characteristics (gender and age) in our study. Other factors such as ethnicity, cultural background, or work domain might also be worth investigating, in particular because previous literature has shown bias [18, 22, 21, 3] when there are differences between gender, ethnicity, religion, or age of managers and candidates.

Decaying representations for ORM

Aligning with the literature [15, 27, 26, 14], our managers inferred characteristics related to the candidate's personality and lifestyle from social media, and their interpretations informed their simulated hiring decision.

The decaying and control representations led to significantly more positive hiring decisions than the original representation. Managers also had an overall more positive impression of both personality traits and positive aspects of online reputation of the candidate with a decayed profile. Decayed profiles also performed well (Table 2) and have a clear advantage for the other two variables (hiring decision and negative aspects of online reputation). Although hiding posts appears to be the best option when online reputation contains negative content, it gave room for worrisome and potentially wrong assumptions

about the online history of the candidate. A perceived lack of information could sway managers against the candidate or lead to misjudgment. Overall, compared to hiding or showing the original content, managers who saw the decayed content gave the candidates the benefit of the doubt when they saw the other positive dimensions related to them.

Based on our findings, we suggest that decaying representations *can* be used for ORM. Users are unlikely to manage their Facebook privacy settings [59, 6, 5] or their online reputation because they lack usable ORM solutions [57]. Users are also apprehensive about outright deletion of content [59, 5, 6]. Meanwhile, managers are actively looking at candidates' OSN profiles. Compared to the original representation, decaying representations led managers to better appreciate the candidates' positive traits and positive content and focus less on their past negative content. Therefore, the decaying representation could increase users' online privacy when used on their OSN profiles and could eventually support users in dissociating from their past online activities.

While a user's past online activities may be positive, timebased decay shows the user's current personality, regardless of their past. Decaying would provide a path-of-least-resistance to users, which would be especially useful to those with questionable past content. Decay can also be based on criteria other than time [33], but this would require more user involvement.

In general, users are unlikely to perform retrospective privacy management [5, 59] and need a more seamless approach to manage past content. While decaying representations such as shrinking do not address every issue of online reputation [57], they can offer granular options to users when maintaining their privacy. Decaying representations reduce possible unintended consequences resulting from long-term data availability. They can be used as a preventive mechanism requiring only minimal user engagement to support their ORM.

LIMITATIONS AND FUTURE WORK

Crowdsourcing data is generally accepted within HCI communities, but biases may exist since our managers were comfortable using online platforms. Thus, results are not necessarily representative of the whole population. Feasibility questions remain with decaying representations [33], e.g, how effective would they be when copies of data exist outside OSNs?

In addition, our fictitious candidate's profiles were available to our managers as videos instead of interactive profiles. Video scrolling is different than having managers navigate the profile themselves. However, creating an interactive UI was not feasible because: 1) we could not enforce that everyone saw the same content, 2) we could not use an actual FB profile because we could not back-date posts by several years nor could we retroactively add older content. We also needed to implement the shrinking and not allow users in those conditions to access the full resolution posts; this was not possible using the FB API, 3) we could have reproduced a fake interface but encountered issues of how much needed to be functional because we did not want users to run into broken links. Eventually, a video seemed the most reasonable compromise, despite its apparent drawbacks. After completing the study, we pilot-tested a

scrollable static HTML version of the FD profile page with 3 managers. We found similar interaction behaviours as with the videos, so we think this methodological decision had limited negative impact.

Further, our sample did not explicitly target high-level hiring executives; it did, however, include only managers who could be in a position of making hiring decisions. Moreover, our scenario and the use of fictitious candidates might have been disconnected from a real employment context for our managers. Results might differ in real-life interviews (where managers might form a connection with their candidate). Additionally, in assuming that the candidate was qualified, the scenario may have introduced bias by making managers look for an excuse to "not hire" the candidate instead of looking for something that would sway the decision towards hiring the candidate. However, this seems to be how most employers use OSN checks [13, 30]. To prevent participant fatigue, we also did not ask about all factors impacting the hiring process. Moreover, we avoided restricting managers to a specific position in our scenario because they come from different domains. Further, limiting the sample to only one job type would impact generalizability of the results and possibly lead to other biases (e.g., implicit gender-bias from a specific job). Nevertheless, it would be worth exploring whether the nature of the job causes managers to be more critical with respect to OSN content.

We will further explore the social acceptability of decaying representations, i.e., how they are perceived when applied to a user's own data and their influence on interpersonal relationships among users. We plan to extend this work using different methodologies to collect more detailed responses and explore managers' interpretations of the decay representation.

CONCLUSION

Decay representations apply within OSNs by gradually decaying older posts. We explored how one decay representation, shrinking, influence managers in a simulated hiring situation and their evaluation of job candidates compared to a full profile or an *empty* profile with no posts. We tested the interaction between representation \times the gender of the profile owner. We further explored whether managers' gender or age influenced their responses. We conducted a 3×2 between-subjects study with 360 US managers. The shrinking did not help one gender more than the other and managers' gender and age had a limited impact on the results. Shrinking or hiding posts resulted in significantly more positive hiring decisions and assessment than the full profile. The shrinking representation also further promoted a positive impression of candidates, suggesting that this type of UI representation can be important to online reputation management. We further found that our managers check OSNs in their real-life practices, emphasizing the need for tools that help users easily dissociate from past online content.

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REFERENCES

- [1] Alessandro Acquisti and Ralph Gross. 2006. Imagined Communities: Awareness, Information Sharing, and Privacy on the Facebook. In *Privacy Enhancing Technologies*. Springer Berlin, 36–58.
- [2] Alessandro Acquisti and Jens Grossklags. 2003. Losses, gains, and hyperbolic discounting: An experimental approach to information security attitudes and behavior. 2nd Annual Workshop on Economics and Information Security (2003), 1–27.
- [3] Alessandro Acquisti and Christina M. Fong. 2012. An Experiment in Hiring Discrimination Via Online Social Networks. *SSRN Electronic Journal* (03 2012).
- [4] Eric Andrew-Gee. 2015. Gaffes: When candidates accidentally tell the truth. http://www.theglobeandmail.com/news/politics/elections/gaffes-when-a-candidate-accidentally-tells-the-truth/article26713595/. (2015).
- [5] Oshrat Ayalon and Eran Toch. 2013. Retrospective Privacy: Managing Longitudinal Privacy in Online Social Networks. In Symposium on Usable Privacy and Security (SOUPS). ACM, 1–13.
- [6] Oshrat Ayalon and Eran Toch. 2017. Not Even Past: Information Aging and Temporal Privacy in Online Social Networks. *Human-Computer Interaction* 32, 2 (2017), 73–102.
- [7] Jane Bailey, Valerie Steeves, Jacquelyn Burkell, and Priscilla Regan. 2013. Negotiating With Gender Stereotypes on Social Networking Sites: From "Bicycle Face" to Facebook. *Journal of Communication Inquiry* 37, 2 (2013), 91–112.
- [8] Harry N. Boone and Deborah A. Boone. 2012. Analyzing Likert Data. *Journal of Extension* 50, 2 (2012), 1–5.
- [9] Marion Buchenau and Jane Fulton Suri. 2000. Experience Prototyping. In Proceedings of the 3rd Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques (DIS '00). 424–433.
- [10] Career Builder. 2014. Overwhelming Majority of Companies Say Soft Skills Are Just as Important as Hard Skills, According to a New CareerBuilder Survey. http://www.careerbuilder.com/share/aboutus/pressreleasesdetail.aspx?sd=4/10/2014&id=pr817&ed=12/31/2014/. (2014).
- [11] Leigh A. Clark and Sherry J. Roberts. 2010. Employer's Use of Social Networking Sites: A Socially Irresponsible Practice. *Journal of Business Ethics* 95, 4 (2010), 507–525.
- [12] Kovila P.L. Coopamootoo and Thomas Groß. 2017. Why Privacy Is All But Forgotten: An Empirical Study of Privacy & Sharing Attitude. *Privacy Enhancing Technologies* 2017 (4) (2017), 97–118.

- [13] Diane Coutu. 2007. We Googled You. *Harvard Business Review* June Issue (2007), 1–12.
- [14] H. Kristel Davison, Mark N. Bing, Donald H. Kluemper, and Philip L. Roth. 2016. *Social Media as a Personnel Selection and Hiring Resource: Reservations and Recommendations*. 15–42 pages.
- [15] Vanessa A. de la Llama, Isabel Trueba, Carola Voges, Claudia Barreto, and David J. Park. 2012. At Face(book) value: uses of Facebook in hiring processes and the role of identity in social networks. *International Journal of Work Innovation* 1, 1 (2012), 114–136.
- [16] Michael A. DeVito, Jeremy Birnholtz, Jeffery T. Hancock, Megan French, and Sunny Liu. 2018. How People Form Folk Theories of Social Media Feeds and What It Means for How We Study Self-Presentation. In Conference on Human Factors in Computing Systems (CHI). 120:1–120:12.
- [17] Satu Elo and Helvi Kyngäs. 2008. The qualitative content analysis process. *Journal of Advanced Nursing* 62, 1 (2008), 107–115.
- [18] Didier Fourage and Raymond Montizaan. 2016. The impact of employer's characteristics on the willingness to hire older workers: Evidence from a stated preferences experiment. NETSPAR Academic Series, Network for Studies on Pension, Aging and Retirement (2016).
- [19] William L. Gardner and Mark J. Martinko. 1988. Impression Management in Organizations. *Journal of Management* 14, 2 (1988), 321–338.
- [20] Daniel R George, Michael J Green, Anita M Navarro, Kelly K Stazyk, and Melissa A Clark. 2014. Medical student views on the use of Facebook profile screening by residency admissions committees. *Postgraduate Medical Journal* 90, 1063 (2014), 251–253.
- [21] Laura Giuliano, David I. Levine, and Jonathan Leonard. 2006. Do Race Age and Gender Differences Affect Manager-Employee Relations? An Analysis of Quits Dismissals and Promotions at a Large Retail Firm. *Working Paper Series* (2006).
- [22] Laura Giuliano, David I. Levine, and Jonathan Leonard. 2009. Manager Race and the Race of New Hires. *Journal of Labor Economics* 27, 4 (2009), 589–631.
- [23] Rebecca Gulotta, William Odom, Jodi Forlizzi, and Haakon Faste. 2013. Digital Artifacts As Legacy: Exploring the Lifespan and Value of Digital Data. In SIGCHI Conference on Human Factors in Computing Systems (CHI). ACM, 1813–1822.
- [24] Debora Jeske and Kenneth S Shultz. 2016. Using social media content for screening in recruitment and selection: pros and cons. *Work, Employment and Society* 30, 3 (2016), 535–546.
- [25] Katherine Karl and Joy Peluchette. 2008. Facebook follies: Who suffers the most? (2008), 212–224.

- [26] Donald H. Kluemper and Peter A. Rosen. 2009. Future employment selection methods: evaluating social networking web sites. *Journal of Managerial Psychology* 24, 6 (2009), 567–580.
- [27] Nalini Kotamraju, Somaya Allouch, and Kirsten van Wingerden. 2014. *Employers' Use of Online Reputation and Social Network Sites in Job Applicant Screening and Hiring*. Greyden Press, 247–269.
- [28] Mark Leary and Ashley Allen. 2011. Self-presentational persona: Simultaneous management of multiple impressions. *Journal of personality and social psychology* 101 (06 2011), 1033–49.
- [29] Meg Leta Ambrose. 2013. Speaking of Forgetting: Analysis of Possible Non-EU Responses to the Right to Be Forgotten and Speech Exception. 38 (2013), 800–811.
- [30] Viktor Mayer-Schönberger. 2011. *Delete: The Virtue of Forgetting in the Digital Age*. Princeton Univ. Press.
- [31] Microsoft. 2010. Online Reputation in a Connected World. Cross-Tab Marketing Services, Microsoft.
- [32] Mockplus. 2019. Design, Prototype & Collaborate better and faster. https://www.mockplus.com. (2019). Last accessed on 23-12-2019.
- [33] Reham Ebada Mohamed and Sonia Chiasson. 2018. Online Privacy and Aging of Digital Artifacts. In Symposium on Usable Privacy and Security (SOUPS). 177–195.
- [34] Reham Ebada Mohamed, Thais Bardini Idalino, and Sonia Chiasson. 2017. When Private and Professional Lives Meet: The Impact of Digital Footprints on Employees and Political Candidates. In *Conference on Social Media & Society (#SMSociety)*. ACM, 48:1–48:5.
- [35] Patricia Norberg, Daniel R. Horne, and David Horne. 2007. The Privacy Paradox: Personal Information Disclosure Intentions Versus Behaviors. *Journal of Consumer Affairs* 41 (2007), 100–126.
- [36] Geoff Norman. 2010. Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education* 15, 5 (2010), 625–632.
- [37] Employment North. 2015. Top 10 Qualities and Skills Employers are Looking For. https://employmentnorth.com/top-10-qualities-andskills-employers-are-looking-for/. (2015).
- [38] Alexander Novotny. 2015. Signs of Time: Designing Social Networking Site Profile Interfaces with Temporal Contextual Integrity. In *Human Aspects of Information Security, Privacy, and Trust*. Springer International Publishing, 547–558.
- [39] Katharine Paljug. 2018. The Personality Traits That Will Get You Hired. https://www.businessnewsdaily.com/7950-personality-traits-hired.html. (2018).

- [40] Chanda Phelan, Cliff Lampe, and Paul Resnick. 2016. It's Creepy, But It Doesn'T Bother Me. In *Conference on Human Factors in Computing Systems (CHI)*. ACM, 5240–5251.
- [41] Eugenia Politou, Efthimios Alepis, and Constantinos Patsakis. 2018. Forgetting personal data and revoking consent under the GDPR: Challenges and proposed solutions. *Journal of Cybersecurity* (2018).
- [42] Qualtrics. 2019. The Experience Management Platform. https://www.qualtrics.com/. (2019). Last accessed on 23-12-2019.
- [43] Amon Rapp and Maurizio Tirassa. 2017. Know Thyself: A Theory of the Self for Personal Informatics. (2017), 335–380.
- [44] Sherry J. Roberts and Terry Roach. 2009. Social Networking Web Sites and Human Resource Personnel: Suggestions for Job Searches. *Business Communication Quarterly* 72, 1 (2009), 110–114.
- [45] Emily Shugerman. 2017. 10 students have Harvard acceptances withdrawn over Facebook memes. http://www.independent.co.uk/news/world/americas/harvard-facebook-memes-student-acceptance-taken-away-withdrawn-university-a7775991.html. (2017).
- [46] William P. Smith and Deborah L. Kidder. 2010. You've been tagged! (Then again, maybe not): Employers and Facebook. *Business Horizons* 53, 5 (2010), 491–499.
- [47] Robert Sprague. 2011. Invasion of the Social Networks: Blurring the Line between Personal Life and the Employment Relationship. 50 (02 2011).
- [48] Lee Taber and Steve Whittaker. 2018. Personality Depends on The Medium: Differences in Self-Perception on Snapchat, Facebook and Offline. In *Human Factors in Computing Systems (CHI)*. 607:1–607:13.
- [49] Unsplash Team. 2019. Unsplash License. https://unsplash.com/license. (2019). Last accessed on 23-12-2019.
- [50] Steven L. Thomas, Philip C. Rothschild, and Caroline Donegan. 2015. Social Networking, Management Responsibilities, and Employee Rights: The Evolving Role of Social Networking in Employment Decisions. *Employee Responsibilities and Rights Journal* 27, 4 (2015), 307–323.
- [51] Daniel Trottier. 2012. Social Media as Surveillance: Rethinking Visibility in a Converging World. (2012), 1–213.
- [52] TurkPrime. 2019. CloudResearch Powered by turkprime. https://www.cloudresearch.com/. (2019). Last accessed on 23-12-2019.
- [53] Margo Vroman and Karin Stulz. 2016. Employer Liability for Using Social Media in Hiring Decisions. 3 (2016).

- [54] Yi-Chia Wang, Moira Burke, and Robert E. Kraut. 2013. Gender, Topic, and Audience Response: An Analysis of User-generated Content on Facebook. In *SIGCHI Conference on Human Factors in Computing Systems* (*CHI*). 31–34.
- [55] Lynne Webb and Nicholas Temple. 2015. *Social Media and Gender Issues*. 638–669 pages.
- [56] Allison Woodruff. 2014. Necessary, Unpleasant, and Disempowering: Reputation Management in the Internet Age. In *SIGCHI Conference on Human Factors in Computing Systems (CHI)*. 149–158.
- [57] Shuzhe Yang. 2016. Understanding the Pain: Examining Individuals' Online Reputation Management Behaviour

- and Its Obstacles A Grounded Theory. In 49th Hawaii International Conference on System Sciences (HICSS). 3898–3907.
- [58] Alyson L. Young and Anabel Quan-Haase. 2009. Information Revelation and Internet Privacy Concerns on Social Network Sites: A Case Study of Facebook. In *Fourth International Conference on Communities and Technologies (C&T)*. 265–274.
- [59] Xuan Zhao, Niloufar Salehi, Sasha Naranjit, Sara Alwaalan, Stephen Voida, and Dan Cosley. 2013. The Many Faces of Facebook: Experiencing Social Media As Performance, Exhibition, and Personal Archive. In SIGCHI Conference on Human Factors in Computing Systems (CHI). 1–10.

APPENDIX: SURVEY QUESTIONNAIRE

Demographic Quest Please specify your g								
() F	() M	() Other(specify below	v) [Textfield]					
() Prefer not	to answer							
Please specify your a	ge (in years). [Tex	tfield accepting only nu	mbers]					
Please specify your h	ighest level of edu	cation completed or in-	progress.					
() Post-secon	() Post-secondary school or diploma () High School							
() Bachelor's	degree		() Master's degree					
() Doctorate	degree							
() Other (spec	cify below) [Textf	ield]						
() Prefer not	() Prefer not to answer							
Please specify in whi	ch field you are a	manager.						
() Agriculture	e () Art	() Business	() Communication					
() Education	() Engineering	() Environment	() Financial					
() Governmen	nt () Health Care	() Legal	() Manufacturing & Production					
() Service Se	ctor	() Technical	() Technology: computers					
() Technolog	y: non-computers	() Other (specify below) [Textfield]						
() Prefer not	to answer							
Please specify your c	ountry of residence	e.						
() US	() Other (specif	fy below) [Textfield]	() Prefer not to answer					
Please specify your jo	bb title. [Textfield]							
Please specify how m	any years of exper	rience you have in your	managerial position. [Textfield]					
Please list example de	uties you perform	in your position. [Text]	rield]					
Please indicate the av	erage number of h	iring decisions you mal	ke per year. [Textfield]					
How familiar are you	with online social	networks (e.g., Facebo	ok, LinkedIn)?					
() Very famil	iar	() Moderately familiar						
() Somewhat	familiar	() Slightly familiar						
() Not at all f	amiliar	() Prefer not to answer						

B. Ranking person's qualities/traits:

On a scale of 1 to 5, where 1 is not important at all and 5 is very important:

How important it is that a job candidate is:

- Self-motivated
- Hard working
- Loyal
- Dependable
- Team-oriented
- Confident
- Adept communicator
- Respectful to work ethics
- Flexible
- Cautious

Ranking person's online reputation:

On a scale of 1 to 5, where 1 is not important at all and 5 is very important:

How important it is that the candidate's online reputation shows:

- Positive lifestyle
- Positive attitude
- Professionalism
- Volunteering and charitable giving
- Openness and willingness to undertake new endeavours

How important it is that the candidate's online reputation avoids:

- A history of using drugs or drinking alcohol
- Offence or criticism to past employer/coworker
- Inappropriate photos or videos
- Inappropriate comments
- Controversial content

Play and watch the video

C. Video verification questions: [Control condition] What is the name of the owner of the profile shown in the video? () Connor Bart [Male condition] () Fred Rayerson () Dave McNeil () Fanny Rayerson () Lilly Bart () Diane McNeil [Female condition] What was the most recent status update on the profile? () Travelling is one of the best pleasures in the world. () One of the best holidays ever! () Any recommendations for a recent top-selling novel? () The profile showed no posts Where did this person go on vacation? () Florence () Milan () Verona () The profile showed no posts [Four other conditions] What is the name of the owner of the profile shown in the video? () Fred Rayerson () Connor Bart () Dave McNeil [Male condition] () Fanny Rayerson () Lilly Bart () Diane McNeil [Female condition] What was the most recent status update on the profile? () Travelling is one of the best pleasures in the world. () One of the best holidays ever! () Any recommendations for a recent top-selling novel? Where did this person go on vacation? () Florence () Milan () Verona Where was this person employed before? () Nokia () Blackberry () Ericsson Was the oldest post on the profile: a textual status update or an image upload? () textual status () image upload

D. Hiring decision based on the video:

Assume that Connor Bart has applied for a job. He possesses all knowledge, skills, and qualifications required for the job. You looked him up online and you came across their Facebook profile shown in the video and you are deciding whether to hire him.

How likely	are you to hire Con	nor [Lilly] Bart?	
Very likely	Somehow likely	Neutral	Somehow unlikely	Very unlikely
()	()	()	()	()
What most i [Textfield]	influenced your dec	cision to h	ire or not hire Conno	or [Lilly] Bart?
How likely	are you to do more	research a	about Connor [Lilly]	Bart's previous online activities
before maki	ng a final hiring de	ecision?		
Very likely	Somehow likely	Neutral	Somehow unlikely	Very unlikely
()	()	()	()	()

Text in [] in the following questions indicates rewording in the Female condition:

E. Evaluation of the person against the 20 criteria:

Rate the following on a scale of 1 to 5, where 1 is Strongly Disagree and 5 Strongly Agree. The content of the profile in the video shows that Connor [Lilly] Bart is:

- self-motivated.
- hard working.
- confident.
- an adept communicator.
- respectful to work ethics.
- flexible.
- cautious.

Rate the following on a scale of 1 to 5, where 1 is Strongly Disagree and 5 Strongly Agree. Connor [Lilly] Bart's online reputation shows:

- a history of using drugs or drinking alcohol.
- offence or criticism of past employer/coworker.
- inappropriate photos or videos.
- inappropriate comments.
- controversial content.
- a positive lifestyle.
- a positive attitude.
- professionalism.
- volunteering or charitable giving activities.
- openness and willingness to undertake new endeavours.

F.	Visual Repre	esentation a	and Priv	acy:				
	It was easy to	see that the	e posts w	ere gett	ting o	lder as the v	rideo scrolleo	d down the timeline.
	Strongly agree	ee Agree	Neutral	Disag	gree	Strongly di	sagree	
	()	()	()		()	()		
	Differentiatin	ng between o	older and	l more r	ecent	posts was:		
	Very easy	Easy	Neutral	l Diff	icult	Very diffi	icult	
	()	()	()		()	()		
	The owner of	f this profile	values t	heir onl	ine p	rivacy.		
	Strongly agree	ee Agree	Neutral	Disag	gree	Strongly di	sagree	
	()	()	()		()	()		
	Did the visua	l representa	tion of th	ne posts	on th	ne timeline ii	nfluence you	r hiring decision?
	Strong positive	ve Influence	2	Someho	w pos	sitive N	Neither posit	ive nor negative
	()				()		()	
	No influence	at all	, L	Someho	how negative Str		Strong negati	ve Influence
	()				()		()	
a	***		110				••	
G.	Hiring decis		_					9
	How likely as						_	
	Very likely							llikely
	()	()				()	()	
			_		_	_		before hiring them?
	Very likely							llikely
	()	()		()		()	()	
	How does online reputation influence your hiring decisions in your real-life practices [Textfield]						ıl-life practices?	
	What is the n	nost importa	ınt factor	in you	r hirir	ng decision?		
	Mostly online	e reputation			Gene	rally online	reputation	Both equally
	()					()		()
	Generally ski	ills and qual	ification	S	Most	ly skills qua	lifications	
	()					()		

A person's enti	re online	history is	relevant for	hiring decision	ons.				
Strongly agree	Agree	Neutral	Disagree	Strongly disa	agree				
()	()	()	()	()					
Content posted	before so	meone leg	gally becam	ne an adult is re	elevant for hiring decisions.				
Strongly agree	Agree	Neutral	Disagree	Strongly disa	agree				
()	()	()	()	()					
Which past onli	ne activi	ties really	matter in te	erms of reputat	tion when making hiring decisions?				
() None		()	From 1 year	ar ago or less	() From 1-5 years ago				
() From 5-10 ye	ars ago	()	All past ac	tivities matter					
On a scale of 5 How likely are	you to hi	re a candi	date whose	online activiti	•				
	_	_	y's reputation						
• are agai	inst the c	ompany's	values and	beliefs					
• show pa	articipati	on in illeg	al activities						
show inappropriate content									
• show co	show controversial content								
• show no	egative c	omments a	about past e	employers					

Do you have any more thoughts or comments that you would like to share with us? [Textfield]