Understanding Video Rewatching Experiences

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ABSTRACT
New video platforms have enabled a wide variety of opportunities for rewatching video content. From streaming sites such as Netflix, Hulu, and HBO Now, to the proliferation of syndicated content on cable and satellite television, to new streaming devices for the home such as Roku and Apple TV, there are countless ways that people can rewatch movies and television shows. But what are people doing? We set out to understand current rewatching practices across a variety of devices and services. Through an online, open-ended survey to 150 diverse people and in-depth, in-person interviews with 10 participants, we explore current rewatching behaviors. We quantify the types of content that are being rewatched as well as qualitatively explore the reasons and contexts behind rewatching. We conclude with key implications for the design of new video systems to promote rewatching behaviors.

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Video; Transmedia; Television; Movies; Rewatching

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous

INTRODUCTION
The willingness of viewers to watch the same video content multiple times has been foundational to television as an industry and as a cultural form. [3,14] Rewatching of television content has been possible since the 1950s, when it was based on scheduled re-runs of serialized content, allowing broadcasters additional advertising revenue from the same content. As television stations increased, first as broadcast and then as cable, reruns became an important commodity with television shows seeking to stay on the air long enough to reach the 100-episode level at which they became marketable in the secondary serialization market. The dependable appeal of previously aired popular series from many eras has supported multiple cable channels, and is identified as an important cultural phenomenon that helps to shape collective memory, generational identity, and cross-generational communication and understanding. [15]

The advent of the VCR opened up wider possibilities for timeshifting broadcast and cable offerings, but also for rewatching content, and for purchasing and consuming television not as weekly episodes but as yearly series. Digital technologies have further intensified these possibilities, creating hardcopy archives of DVDs and on-demand access to streaming archives of series which may originate online instead of on broadcast or cable channels, and may be released as a complete season rather than a discrete episode. This "publishing model" of television provides more control to the viewer and encourages closer attention to the content, supporting formal strategies that create greater narrative complexity. [6]

Digital delivery is now ubiquitous, creating the practice of "binge viewing," encouraging still-frame and replay investigation of television content, and encouraging episode-level amateur and professional commentary distributed online. YouTube has further expanded the possibilities of repeatable TV experiences by allowing targeted replay and sharing of excerpts, with easy access to commenting and distribution on social media. [13] Although the internet has introduced economic disruption into the cable business model [12], it has only increased the public's access to the repeat viewing experience [4], turning the second decade of the 21st century into an age of "spreadable" media. [2] In short, television is no longer an ephemeral experience, and access to on-demand retrieval and replay is now an assumed aspect of our consumption of digital video, marking a significant change in a cultural practice that is foundational to traditional sources of viewing pleasure and to the role of shared moving images as a form of social connection.

Given this new accessibility, what do viewers choose to rewatch? What motivates re-viewing and what rewards does it offer? We set out to answer these questions and to explore the rewatching habits of 160 individuals through an online survey and in-depth, in-person interviews to understand recent occurrences of video rewatching.

RELATED WORK
Previous work has explored aspects of rewatching specific forms of video content. Metcalf explored the changing practices of television consumption that came with the consumption of series on DVDs. [5] He saw the boxed set of DVDs as making the experience of viewing a television series as similar to reading a novel, starting with a hard copy object that sits on a shelf, always available to rewatch. Bentley and Groble [1] allowed viewers to rewatch sports

highlight videos in their TuVista system and identified the fan practice of celebratory rewatching of key moments in the game after a win.

Several researchers have explored how increasingly complex narratives are encouraging people to rewatch video content. Mittell describes a "publishing model" of television replacing the broadcast model of ephemeral content, and he includes digital files distributed online as instances of publishing along with boxed sets of DVDs. Both afford more control to the viewer and encourage consumption of serial content as repeatable and part of larger continuous story arcs. [7] Murray created custom-built applications to allow following complex narratives in programs such as Justified and Game of Thrones. [8, 9] These applications allowed users to rewatch key scenes and follow particular characters through the episodes.

Other researchers have theorized the cultural significance of rewatching [15, 5, 6]. In particular, Weispfenning [15] observed that shared television viewing can shape generational identity as well as develop shared points of understanding between generations, contributing to our collective memory and helping to provide social continuity, making reruns particularly reassuring in changing times. In addition, familiar programs provide a type of parasocial activity, connecting viewers with characters that they learn to know and love throughout a long running series. Finally, Weispfenning noted that watching an episode can provide a "dependable pleasure" since the story is constructed to evoke certain emotions.

While this existing literature has identified particular behaviors of rewatching, it has been mostly focused on professionally-produced broadcast and cable television programs, and was mostly conducted in the era before streaming services with large catalogs were in wide use, and before social media offered alternate channels for distributing and commenting on video. Many questions remain after this review of the literature. We were interested in knowing the types of videos that were rewatched using today's platforms, which devices were used for rewatching, as well as the motivations for, and outcomes of, rewatching incidents.

STUDY DESIGN
Our study contained two main components, an online open-ended survey distributed to 150 diverse participants and in-depth, semi-structured interviews with 10 diverse individuals in the San Francisco Bay Area. Data from both studies was combined and analyzed to produce the findings below, which explore current video watching behaviors both quantitatively and qualitatively.

The survey was deployed online, and participants represented a wide range of the American population. Participants lived in 24 different states, were 46% female, 42% were college graduates, and they held varied occupations such as a Risk Manager, Freelance Artist,

Theater Staff Member, Writer, Preschool Teacher, Holistic Canine Nurse, Janitor, Librarian, Lawyer, Casino Dealer, Bank Teller, Accountant, Chemical Engineer, etc.

We asked survey participants to think about the past two times that they rewatched any piece of video, from TV shows to movies or online videos. For each instance, we asked for details of the particular situation: what prompted the rewatching, who they were with, how many times they had seen the video before, etc. We also asked them to list up to five television shows and movies that they have watched multiple times, to get a better idea of how genre, release date, or actors might play into rewatchability.

Ten interviews were conducted in the San Francisco Bay Area. Similar to the online survey, we asked participants to think of several recent examples where they had rewatched videos. In addition to the basic questions about what prompted the event and whom they were with, we followed up in more detail about each situation to better understand the circumstances of rewatching in greater detail than we could obtain from a few sentence response in a survey. Interview participants ranged in age from their early 20s through mid-50s and included six women and four men.

Qualitative data from both studies were combined and studied in a grounded theory based affinity analysis. Exact quotes from participants were used as the item-level nodes in the analysis, and were iteratively combined to find themes. Overall, we had 657 items for analysis. The sections in the findings below derive from these themes, and exemplary quotes are used in parallel with the quantitative data from the survey.

FINDINGS
We will begin by exploring what people rewatched and the circumstances of the rewatching. Each subsection will combine data from our survey and interview-based study to explore both current behavior as well as reasons for their current actions. Overall, video rewatching was a common occurrence, with 79% of participants having rewatched some type of video content in the past week, rising to 92% in the past month. No participant was recruited based on any aspect of previous video behaviors.

What People Are Rewatching
Participants rewatched a wide variety of video content. Figure 1 shows the types of videos that were watched again and the devices that were watched on. We defined these categories to be non-overlapping with YouTube videos consisting of non-TV, non-movie content posted on the site. Television shows and online videos were most commonly rewatched while computers (41%) and televisions (41%) dominated the devices used for rewatching across categories. Surprisingly, phones (8%) and tablets (10%) were not frequently used to rewatch, likely because 62% of video rewatching occurred with other people, making larger screens on computers and televisions more comfortable devices for people to watch together.
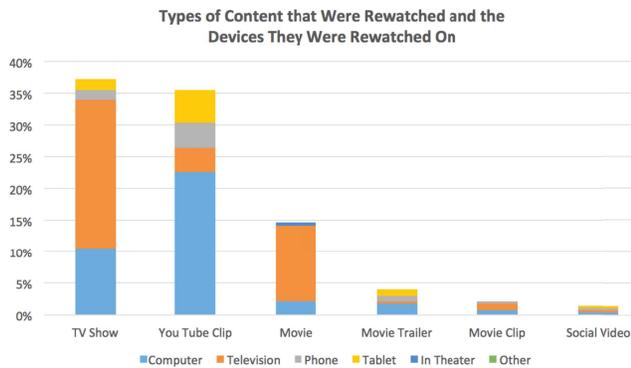
Figure 1: The content types that were watched and the devices that they were watched on. TV shows made up 36% of all videos watched, and most notably phones and tablets were rarely used for rewatching content.
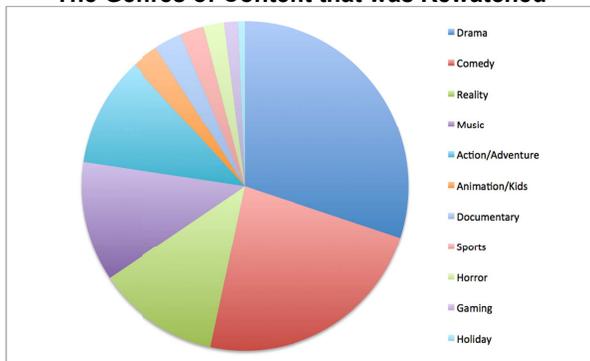

Figure 2: Genres of content that were recently rewatched by our participants. Note that Drama and Comedy make up greater than half of all videos, while Sports and Reality make up much smaller percentages.
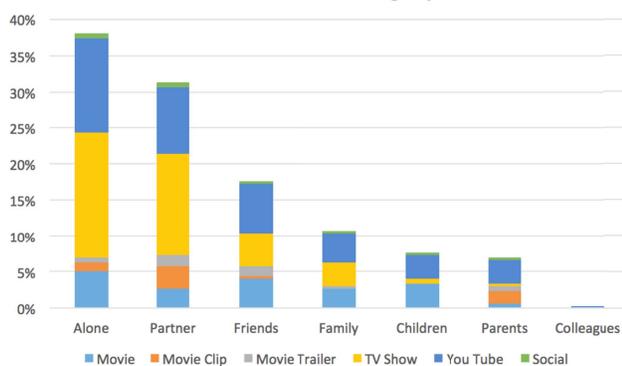

Figure 3: Social Context of Video Rewatching. 62% of the 300 total videos rewatched by our 150 diverse survey participants were watched with others present.

When we look at the specific genres that were rewatched in Figure 3, we see that Drama and Comedy cover more than half of all videos that were rewatched. However, this distribution is quite different from the content that is aired

Program Title	Viewers (M)
NBC Sunday Night Football	18.1
The Big Bang Theory	17.2
NCIS	15.5
The Voice	14.0
Sunday Night NFL Pre-Kick	13.4
The Voice (Tue)	12.7
60 Minutes	12.7
NCIS: New Orleans	12.1
Adele Live in New York	11.3
Life in Pieces	10.3

Table 1: Top Nielsen Ratings for US Broadcast Television from the week of December 14, 2015.
http://www.nielsen.com/us/en/top10s.html

Program Title	People
The Walking Dead	41
Game of Thrones	23
Breaking Bad	21
Friends	20
The Big Bang Theory	20
Star Wars	16
Seinfeld	16
The Office	16
The Simpsons	12
Lost	11
Family Guy	10
Roseanne	9
Titanic	9
Dexter	8
Parks and Recreation	8
Lord of the Rings	8
South Park	8
Scandal	8
Pulp Fiction	8
How I Met Your Mother	7

Table 2: Top 20 videos by participants who rewatched.

on television, which in recent years has skewed towards reality and sports content. If we look at the top television shows in the US according to Nielsen (Table 1), we can see that six of the top ten shows were reality, sports, news, or music, which only make up 26% of all rewatched content that we found in our study.

While cheaper to produce, much of this content does not have a high rewatch-ability. In contrast, many of the top rewatched programs in our survey (Table 2) have complex narratives and many characters, epitomized by *Game of Thrones*, the second most rewatched program, with 100+ active characters.

Social Rewatching

The most common motivation to rewatch video content was to show others, with 104 items of analysis under this theme. Of all videos that participants rewatched, 62% were watched with others (Figure 3). Motivations to show video content to others included getting others to like content, to see people's reaction to content, or to hand curate a particular piece of content for a particular person and situation.

Often, participants watched videos with others to get them to change their mind about the quality of a program. P149 wanted to get his friends excited about *Steve Jobs*: "I just wanted to show others the movie trailer. They thought it would be boring and had no desire to see the movie until they saw the trailer and learned it was about a lot more than Apple." P45 could not believe that her partner had not seen her "favorite movie" and felt compelled to show him.

This behavior was often related to a desire to see someone else's reaction upon watching video content for the first time. P13 rewatched some "bonkers, bonkers, bonkers YouTube" videos with a friend who had a "similar sense of humor." He "wanted to see the look on his face as the video played out." P147 talked about really enjoying rewatching a movie trailer with a friend as "my friend also seemed to like it, which enhanced my enjoyment even further."

Other times, participants had chosen a particular video or series to watch with a specific person. P113 was "telling my son about the show, as he is getting interested in survival shows and science fiction. He wanted to watch it, so we decided to stream it and watch it together, an episode or two every or most nights." P78 talked about some friends who had never seen *Breaking Bad*, and that he "couldn't believe it" so tried to get them hooked on the show as he knew they would like it. Sharing video content that they had enjoyed, and getting the other person excited about content that the sharer thought that they would like, is a prime motivation for rewatching content.

Rewatching to Change Mood
Frequently, specifically chosen video content was played to get the participant into a desired mood, covering 92 of the items for analysis in this broader theme. Most frequently, participants wanted to laugh and watched something that would lift their spirits, however, other times participants sought out content that would get them in other moods.

P108 discussed rewatching a sitcom: "It made me laugh all over again, as *Boy Meets World* always does." P49 discussed a similar incident of watching content to laugh: "My significant other thinks this video is so funny. I also do. It makes me laugh every time." P2 told us that "Really only comedies can be rewatched. The other stuff, once you watch it once, it lessens that impact of the show."

Other emotions were elicited by specific types of video content, and these were sought out to get the participant into a desired mood. P71 discussed watching a documentary: "I wasn't feeling tired and thought of how peaceful it is to watch *Planet Earth*...it's specifically great to watch and fall asleep to." P6 discussed watching a skateboarding video in preparation for going skating himself: "I just rewatched it to get pumped up to go skateboard." P61 watched a music video: "It was a mood. The maudlin music I was craving since I needed to calm down." Meanwhile, P27 watched some anime because "it just puts me in an excited good mood." Specific, previously-viewed content is often chosen to rewatch because of the specific moods it will produce.

Nostalgia
Highly related to mood, we often found participants talking about "nostalgia" as a reason for rewatching video. This was a word that they often used with us on their own, in a total of 31 items for analysis which fell under this category.

P121 told us that she "felt like watching stuff I liked when I was a kid last night." Watching older content was very entertaining for participants. P47 was driven to watch an old movie because he had "a feeling of nostalgia and wanting to be entertained."

Older content can also allow viewers to remember related people and a time in their life. P133 rewatched a sports clip and years ago he "was at the particular game the clip shows and it brings back good memories." However, sometimes these memories can be bittersweet. P148 watched a movie and was "reminded of when I watched it with a loved one that has now passed on." P146 decided to put on the movie *Las Vegas Bloodbath* "for nostalgic reasons" as "it's the best bad 80s movie ever made" and he used to play it whenever he had a party. P3 discussed rewatching the Soup Nazi episode of *Seinfeld* as "it's just kind of classic. It's really old, but it's still funny." And P111 rewatched a movie with her best friend "because it reminds us of our childhood." Movies and television shows have a great power to invoke reminiscing and nostalgia and take people back to other times in their lives.

Contexts for Rewatching
We will now turn to address the most frequent three contexts that promote rewatching described by our participants. We observed 28 participants choosing to rewatch content in order to prepare for a new season of a show or a sequel as a primary reason for rewatching one of the last two videos that they rewatched. P18 said: "When the new *Mockingjay* movie was coming out we wanted to refresh our memories" and rewatched the first part. P123 was getting ready to watch *Fast and Furious 7* and "wanted to remind myself of the last movie" so watched part 6. Frequently, we observed this behavior for television shows. P109 told us that "At the beginning of each *House of Cards* season, I will binge watch all of the prior seasons." Several participants were getting into the Netflix series *Jessica Jones* and wanted to watch a related Marvel show. P128: "Someone my wife works with mentioned that coming to this fresh off *Daredevil* might have some advantages and we really couldn't remember the show too well [so they rewatched it]." P119 was getting ready for a new season of a show to start and watched the previous season again "just to remind myself where the story was after not watching it for a period of months."

Sometimes, this rewatching occurred in preparation for upcoming experiences unrelated to new video content. P17: "My boyfriend and I are getting ready to go to Universal Studios Wizarding World of Harry Potter and thought it would be fun to do a Harry Potter movie marathon before hand." Related experiences such as theme parks or travel often can prompt rewatching. P27 was "feeling nostalgic about London [in preparation for a trip there] and wanted to watch someone drive through it."

Holiday seasons or traditions also prompted rewatching content, appearing in 11 items of analysis. Often, holidays

brought about time with family and traditions to rewatch particular content together. P17 rewatched a "*Friends* Thanksgiving episode that I thought the family would enjoy yesterday for the holiday." P36 discussed watching "the Holiday episodes" of her favorite shows "whenever that holiday rolls around." She had just watched the Thanksgiving episode of *Buffy the Vampire Slayer* with her brother, as was a family tradition. The Thanksgiving holiday also brought about rewatching of football clips from games in previous years in some households.

The release of new episodes or sequels, preparing for travel or other related experiences, and holidays all brought about occasions for rewatching video content. This creates opportunities for richer transmedia experiences related to upcoming content, travel, or holiday time with family.

Discovering Content to Rewatch

Often, a recommendation system or comment from a friend prompted the rewatching of content as was seen in 43 items of analysis. Increasingly, content is not often explicitly searched for, but recommended or reposted on various forms of social media. P40 discussed watching a show after he "enjoyed watching it the first time, and when it came up as a suggestion on Netflix, I decided to watch it again." P8 finds "funny clips" on Tumblr by reading through his dashboard. Many of these he has seen before, but will watch again. P5 received a recommendation on Netflix and "just hadn't seen it in a long time." And her reaction was "like sure" and she watched it again. Finally, P115 was "on IMDB looking at a different movie when it suggested that I might be interested in *Flatliners*. I had completely forgotten about that movie and I used to be crazy about it, so I watched it again." This highlights the large potential for streaming sites to drive people into nostalgic content.

Other times, participants had a specific task in mind, and sought to rewatch videos to help them with this task. One relatively new form of video that drove many to rewatch was the tutorial video, with 14 participants recently rewatching these types of videos. P135 was "happy that with the tips in the video, I was able to cut my own bangs with great success." It took her a few watchings before she felt confident. P73 was about to dye her hair and rewatched a tutorial "to make sure I had the recipe correct and to see [again] how it was applied to the hair." P8 talked about the need to rewatch makeup tutorials: "It goes by so quick that you can't pause it on Instagram so you're watching the whole 15 seconds all over again … You have to watch it a few times and view for technique or whatever." P120 rewatched a gun tutorial to "see what the shotgun can do and the different ammo and chokes to use." Tutorial videos are becoming extremely popular, with the top videos making it into the double-digit millions of views[1].

Deep Connections to the Content

Many participants were driven to rewatch because they considered themselves a committed fan of a specific actor, director, or narrative, represented by 87 items. These attachments may reflect connoisseurship, affiliation with a fan community, or fascination with a performer, a cult classic, or a nostalgic favorite

Participants often followed specific actors and watched, and rewatched, everything that they made. P99 told us: "Daniel Day Lewis' acting was suburb. I love rewatching excellent acting to savor it." P150 really enjoyed *Catching Fire* and called it "great entertainment. Jennifer Lawrence is really good and the cast surrounding her all turn in great performances as well." Often, an admired actor can make for a movie that participants wanted to watch again and again. Viewers also followed the work of particular directors, seeking out their other works and rewatching familiar ones. P74 just saw another movie by his favorite director and "wanted to watch a funny review of his other works."

Some participants discussed wanting to rewatch a favorite movie in better quality. P87 rented a small private movie theater with his friends. P113 discussed connecting his computer to a television and surround sound speakers, which was "a better experience than when I initially watched it on a 19" boxy low res TV." Similarly, P134 saw a Blu-ray version of an old favorite, "It was significantly a much better experience on my new speakers! The Blu-ray audio was much more refined and sounded so much better." A new cut or new equipment can create a desire to rewatch.

There are programs that participants would watch dozens of times over many years. P58 discussed a movie that she watches with her partner: "We definitely have many favorite lines in this movie. So now when we watch, we will speak these lines out just prior to them actually being said in the movie." These traditions keep the movie fun and new even after many viewings. P1 watched *Batman* "probably like a hundred times." For him, as long as "the same parts are just as funny and the action's just as good" he'll keep watching. He had "two movies on my iPad and I know them almost line by line. I usually watch almost every other night." P145 discussed *The Hobbit* as "a pleasant way to spend the afternoon" and that she could "watch it twice a month really."

Story Complexity

The increasing complexity of narratives in television shows and movies [9] has led people to rewatch shows that they really liked, often to catch details that they missed the first time. P1 discussed Disney movies: "I love going back and just kind of like rewatching because you get a different meaning. A lot of people say when you watch Disney when you're younger it's a story. When you watch Disney as you're older it has a totally different meaning." She liked to "see new things in the movie and it kind of gives it a new meaning. Something else that may make you enjoy the

movie more." P130 rewatched the complex drama *Lost*: "When I watched *Lost* the first time I missed some episodes and found it hard to pick up on exactly what had happened since I last saw it, but watching it now on Netflix where I never miss an episode it's very easy to follow."

One of P142's favorite movies is *The Godfather: Part II*. He said that "it feels brand new to me every time I watch that movie. So many life lessons to be learned just by watching the characters in the movie play their roles. Truly a movie inspired by real life events and lifestyle." P53 frequently rewatches a zombie movie to "look for mistakes that are often made such as a zombie missing a limb, then a minute later he has that limb!"

The connection between complex storytelling and reviewing can also be seen in the quantitative data. Several of the most rewatched programs are complex dramas such as *Game of Thrones*, *The Walking Dead*, and *Lord of the Rings*. Many of these shows require repeated viewing to fully understand the plots or the trajectories of characters.

IMPLICATIONS FOR DESIGN
The findings from this work have clear implications for the design of digital tools to enable rewatching video content as well as for creating the content itself. We will explore three areas for future research and development in this section.

Encouraging Rewatching
We observed many situations when participants wanted to rewatch content. These included preparing for a new release in a shared storyworld, following series across seasons and seeking familiar experiences to create a particular mood. Digital systems can easily support these situations through well-placed recommendations and notifications. When new seasons are about to start, or when a new sequel is about to be released, content systems can highlight the previous seasons of the show in the interface and through marketing. Systems can also push notifications to users with links to catch up on the older content in preparation for the new releases. Systems can also curate holiday viewing lists, with specific holiday episodes from the content in their catalogs, or holiday-specific movies such as It's a Wonderful Life and Miracle on 34th Street for Christmas. Emotions can also be supported by curating lists of content for specific moods, similar to the Yahoo Video Guide application that was recently released. Connections can be made with travel itineraries from email to promote content related to an upcoming in-person trip, such as the Universal Studios/Harry Potter example above. This can create an even more intense transmedia experience, moving beyond text and video to real-world experiences related to the content. Specific guides to visiting movie locations could also be delivered alongside the video content. As in the London example, trips to London could be advertised along with movies that feature that location.

Making Sense of Complex Storyworlds
Furthering the research of Murray et al [9], it is clear that many rewatching incidents are driven by the complex storylines of today's television and movie industries. Building applications that help support not only catching viewers up and reviewing key plot points and characters, but that also encourage rewatching particular scenes and character arcs could help people engage more deeply with the content and story. This is especially important for episodic dramatic series that unfold over multiple seasons or movie releases separated by many months or years. It is often desirable to rewatch the entire content in advance, and especially to engage socially with other friends who might be present while watching the new content in the future. This also creates the opportunity for context-sensitive story recaps that are more complete than the brief "Previously on" clips shown at the start of an episode and but less time-consuming than rewatching an entire season.

Social Connoisseurship
This leads to a larger opportunity to help people to share the video content that they enjoy with others who might enjoy it, since we observed that 62% of rewatching experiences that participants reported were with other people present. As P147 said above, seeing someone else's positive reaction to watching a program can enhance their own experience of viewing it again. We see a large opportunity in creating systems that create social experiences out of viewing, making it so viewers become "Together Alone" [10]. Moving beyond the first generation of Social Television systems (e.g. [16]) or large public broadcasting spaces such as Twitter [11, 10], we see the opportunity for systems that support personal suggestions to schedule the viewing of content with specific people that a person thinks will most enjoy watching. More personalized viewing framewoks could enable the synchronous and asynchronous sharing of emotional reactions keyed to specific moments in a curated narrative with chosen companions to create more meaningful shared experiences than currently available from the larger, spoiler-ridden, and noisy assemblages of current social media platforms.

CONCLUSION
We have explored the types of video content that people currently rewatch, as well as the motivations and context for rewatching. Through this quantitative as well as qualitative analysis of broader video rewatching across platforms, we have identified implications for the design of future video platforms. Rewatching content is something that 92% of our participants had done in the past month, and presents a rich and still largely unexplored opportunity for new interactive video experiences. Our implications for design highlight promising areas to explore in further research to promote rewatching behaviors.

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