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YourTurn, again

Designing a mobile adaptation of the social impact game YourTurn

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Wien, 18. August 2021

Maximilian Mayrhauser

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[1]Everyone includes but is not limited to Professor Peter Purgathofer, and my family. The former I would additionally like to thank for providing excellent guidance and valuable feedback throughout; the latter for all being supportive and fantastic in general.

Kurzfassung

Im Jahr 2012 wurde an der TU Wien ein soziales Videospiel namens YourTurn mit dem Ziel entwickelt, soziale Klüfte zwischen Gruppen, die üblicherweise nicht in Kontakt treten, zu überbrücken, und somit dem Trend der sozioethnischen Isolation entgegenzuwirken. Das Spiel dreht sich darum, gemeinsam Videomixes zu erstellen: zwei Spieler hängen abwechselnd kurze Ausschnitte aus YouTube-Videos aneinander. Die Idee war neuartig und stoß auf Anklang, jedoch verhinderte unter anderem der technologische Umbruch jener Zeit eine größere Verbreitung.

Seither hat sich das digitale Umfeld durch die Allgegenwärtigkeit von Smartphones stark verändert, die allgemeine Medienkompetenz ist gestiegen, diverse Plattformen haben das Teilen kurzer Videoclips etabliert. Diese Rahmenbedingungen eignen sich denkbar besser, das Potential des Konzepts von YourTurn auszuschöpfen, weswegen wir der Neugestaltung des Spiels in Form einer Smartphone-Adaptierung nachgehen.

Mithilfe verschiedener Methoden wurden Entwürfe und Konzepte iterativ skizziert, implementiert und getestet. Nach einer Reihe von Konzepten verschiedener Interaktionsmodi wurde zunächst mit einem Prototyp die technische Machbarkeit und grundlegende Bedienbarkeit überprüft, mit einem weiteren Prototyp wurde in einer kleinen Gruppe an Testteilnehmenden ein Nutzungstest mit lautem Denken durchgeführt. Schließlich fand eine Testphase statt, in der etwa 30 Teilnehmende für zwei Wochen einen Prototyp mit vollständigem Funktionsumfang spielten. In dieser Zeitspanne entstanden 74 Videomixes, von denen 46 komplettiert wurden. Anschließend diente eine Umfrage, Feedback in quantitativer sowie qualitativer Form einzuholen. Das Spiel wurde über weite Strecken als kreativ und interessant wahrgenommen, während viele weitere Ideen, Meinungen und Kritikpunkte Aufschluss über weitere Designentscheidungen geben.

Anhand aus dem iterativen Designprozess gewonnener Erkenntnisse werden schließlich Empfehlungen zur Neugestaltung von YourTurn als ein Smartphone-Spiel präsentiert.

Abstract

In 2012, a social game called YourTurn was created at TU Wien, aiming to bridge the gap between groups that usually do not communicate, and counteract the trend of society dispersing into isolated socio-ethnic islands. The game revolved around partnering up to create video mixes: two players would take turns appending short snippets from YouTube videos. The idea was novel and well received at the time, but several factors withheld the game from taking off, one of them being that it was developed in the middle of several shifts in technology. Mobile surpassed desktop internet usage soon after, and the popularity of social media platforms kept shifting.

Since then, the digital landscape has changed drastically. Mobile devices are ubiquitous, media competence is increasing and several platforms that feature sharing of short video clips have risen to prominence. With the game's potential not fully realised, and in an environment that could imaginably be much more welcoming to the concept, we set out to overhaul and reimagine the game in a modern technological setting as a mobile adaptation.

Using a variety of methods, designs and concepts were sketched, prototyped and tested through multiple iterations. A series of interaction concepts were created, a proof-of-concept prototype was evaluated for basic usability concerns, and another prototype was tested with a small group using the thinking aloud protocol. Finally, a test phase was conducted with a feature-complete prototype: approximately thirty players played the game in a span of two weeks, starting a total of 74 mixes, 46 of which reached completion. A survey sent out after the test phase was used to gather both quantitative and qualitative data about participant's experiences with the game. It received positive feedback, being perceived as creative and entertaining, while many thoughts, suggestions and critique inform further design decisions.

The insights and experience gained throughout this iterative design process culminate in redesign recommendations for a modern adaptation of YourTurn as a mobile game, covering both game mechanics and user interface, the latter presented using mock-ups.

Contents

CHAPTER 1

Introduction

In 2012, a social game was created at TU Wien, with the intent of building communication bridges between groups that usually do not communicate[FKG+15][KSGP15][SGK15]. Titled YourTurn, the game mechanics revolved around pairs of players creating video mixes together – the players would take turns appending short snippets of YouTube videos, thus creating potentially fun video mixes while communicating through a non-verbal channel. An essential part was that players did not know each other's identities until a mix was completed. This enabled players to discard prejudice about the other person, while learning about foreign elements playfully.

In many places in the world, society is divided by economic standing, cultural background and political views, amongst others. This divide is exacerbated by the rapid progress of information and communication technologies throughout the past two centuries: on one hand, information is more easily accessible than ever, on the other hand, group dynamics and social classes greatly influence which information an individual is served. An unfortunate consequence, one that furthers the divide between different social groups, is the emerging of bubbles and echo chambers, a phenomenon where people increasingly make contact with like-minded individuals, while confrontation with views outside their own horizon is marginalised. While such a divide is worrisome, the same technology has the potential to close the gap between isolated social islands. With this master thesis, I seek to inform the design and prototypically develop a remake of a game that has the potential to cross sociocultural boundaries.

The original game was, at the time, developed by an external company, released via facebook, and was publicly playable for a while. The original version received positive feedback from most playtesters, praising its unique gameplay and facilitation of creativity. The game continued to see play for a while after the test period, but two obstacles blocked the way to a larger scale success: For one, the game mechanics included a scoring system, rewarding players for participating in video mixes. However, the original implementation had a few oversights that allowed abuse; the result was two players taking over the

entire game, scoring the most points but eliminating the game's purpose in the process. Secondly, the game was developed just before a critical shift occurred in the average user's web browsing habits, as is evident in platform choice. Especially the desktop PC, and facebook to a much lesser extent, have since been on their way out. The game mechanics themselves are predestined for a smartphone adaptation.

Today, the game concept might be more relevant than ever. Through the proliferation of smart phones presents itself an excellent platform for short play sessions, as intended by the original design. The societal gap has not shown any signs of closing, rather the opposite, in part due to afore mentioned technological progress. With that in mind, I set out to create a prototype of a smart phone adaptation, and test it in today's environment, to inform the design, viability and potential of a YourTurn remake.

1.1 Scope

The thesis' scope was to design, develop, test and discuss a prototype. Therefore, the first result was a mobile test version of YourTurn. Starting with sketches of interactions and interfaces, and moving on to small-scale implementations for actual devices, the app was revised until a reasonably usable version was reached. The final prototype was playable online, available to testers for Android and iOS.

Following that, a test phase allowed users to play the game freely. The previous version was primarily developed for and tested by the Viennese youth. This decision was based on the surrounding research context, as teenagers often cited browsing YouTube and social media, as well as using YouTube for music. Since none of these are especially exclusive to the youth, it stands to reason that the game concept could also be interesting to other demographics. This phase gave answers to questions about both the prototype and the game concept: Are the interface and rules understandable? Is the game concept still relevant and interesting? What is enjoyable about the game, what isn't? In addition, expert interviews will provide further insight into the game's potential and weaknesses.

Leveraging the information gained in the test phase, the final result was the informed design of a high fidelity smart phone adaptation of YourTurn. This consisted of overhauled and modernized game mechanics and features, on one hand, and of an interface suitable to and optimized for smart phone use on the other.

CHAPTER 2

State of the art

2.1 State of the art

The most significant previous work is the initial YourTurn project [FKG+15][KSGP15][SGK15]. YourTurn was developed and studied between 2011 and 2012, initially interviewing 51 Viennese teenagers of various backgrounds. Based on interviews that informed about the interviewees leisure time activities and media behaviours, the original YourTurn online game was developed. Interviews found out that almost all teenagers frequented YouTube as well as facebook. In addition, music was the biggest common ground, along with playing games. With this information, the team aimed to create a playful intervention to foster positive attitudes towards multiculturalism, build bridges between groups that usually don't communicate, and help integration efforts. An explicit effort was made to keep the message subliminal, avoiding a patronising "finger-wagging" effect, thus it was designed with immediate interests of the youth closely in mind. After development, 28 of 40 teenagers signed up to participate in a testing phase that lasted for three months, starting February 21, 2012; the other 12 counted towards the control group. Afterwards, another wave of interviews was conducted, asking both social and practical questions to explore the intervention's impact on attitude and behaviour, as well as evaluate the game's design. The research team observed a positive correlation between playing the game a moderate amount and developing a more positive attitude towards multiculturalism. In addition, the social clusters of players expanded by 0.5 people more than those of non-players. It was concluded that the video game YourTurn was an effective tool to subliminally promote inclusion and learn about foreign attitudes and cultures. An unexpected additional finding was also a boost in media literacy, as well as an emancipatory effect of transforming a previously read-only channel (YouTube) into a creative outlet.

There have since been some studies about playful productivity and content production. Kasapakis and Gavalas examine user generated content in pervasive games, used to

provide content in vast games with relatively low production costs [KG17]. While YourTurn is gameplay wise quite different from the pervasive game studied here, many principles of a user's perception of their submitted content, and it's role to other players, are comparable. Another contribution to content production is presented by Fröhlich, and focuses on actual content production using a playful environment [Fro17]. This is interesting as it gives a psychological perspective of intrinsic motivation for content production, and might inform additional applications of the existing YourTurn game concept.

Some endeavours have been made to use serious games to educate or help social aspects. Khan Z. contributed to the research area of social impact games by providing a scenario editor for cultural competence serious games [KK14]. Ruehrlinger et al explored the potential of games to enable communication and interaction between young people and the elderly [RGS+18], a meaningful undertaking, as frequent exchange with young people is good for the elderlies' health. They present a number of design suggestions for games to align with the elderlies abilities and interests. While only some of them are relevant to YourTurn's design, it is among the most recent and exhaustive studies exploring games that aim to communicate with the elderly, a demographic that I will in part also seek to explore with my thesis.

Multiple studies regarding mobile game usability have already been performed to guide development and evaluate mobile games. Khan J. et al [KAM15] and Mohd [MNDH16] evaluated a number of popular existing games, Daud et al [DMM16] and Pavapootanont [PP15] defined usability heuristics and metrics for mobile games.

There is also an array of studies regarding YouTube. While many of them focus on quantitative measurements, especially regarding popularity and ad revenue, Sun et al explores social dynamics of co-located browsing of YouTube videos [SdOL17]. This study stands out by providing an in-depth look at the social dynamics of YouTube watching. While such a study is interesting in the context of a YouTube social game, it might be especially relevant in regard to additional use cases and game modes of YourTurn. Another social study about modern media was performed by Bourlai and Herring [BH14]. Researching multimodal communication on tumblr, parallels can be drawn to YourTurn as a way to communicate anonymously and non-verbally.

Dusi et al had a different idea of involving users as content creators, and in 2011 built a prototype for a concept they called "MovieRemix" [DFF11]. Similar to YourTurn, users would line up and cut segments from an existing video database to create a narrative. It was also set up to offer a competitive mode, where two players would be presented with the same outline, based on which they would create a video mix; the "match" would later be decided by community ratings. The project was inspired by the movement of web 2.0 towards content creation and participation instead of passive consumption, and shares many characteristics with YourTurn. What differentiates the two is the social aspect, as YourTurn focuses on the interaction taking place between two players, whereas MovieRemix had a wider array of editing options without envisioning a social dimension in its core gameplay.

Video cut and editing on mobile devices has already seen a fair share of exploration. Early work was performed by Jokela et al in 2007 [JKM07], when they designed and evaluated a video editor for mobile phones after recording videos with a mobile phone camera for personal use became commonplace especially among teenagers, but before the widespread use of smart phones. Inspired by various desktop software, functional capabilities included the stringing together of different videos, as well as an interface for cutting out segments of one video, not unlike Yourturn. At that time, said cutting interface proved to be the most unintuitive aspect of the application. More recently, Feinberg et al developed a professional grade video editing application called "KineMaster" [FSL16], mixing approaches of focusing on essential features and applying contextual UI design principles, they explored options of creating an uncluttered editing interface offering reasonable precision, all the while also facing technical issues due to mobile devices' limited memory and storage.

Published in 2012, Saini et al explored collaborative video mash-ups of live performance recordings [SGYO12]. Using multiple attendee's recordings, thereby providing different shots and angles, a visually interesting remix would be created algorithmically. Gandhi et al developed another algorithmic video editing concept, using just a single camera's recording and splitting it into segments by focusing on temporally changing relevant screen areas [GRG14].

Back in 2005, the creation of narratives through mobile recordings was already delved into by McGreen et al [MAS05]. Motivated by other's findings that creativity is important for learning, they enabled teenagers to tell a story through a video composed of their own mobile phone photos and audio recordings. While not creating the video narrative with actual video material, it is to the best of the author's knowledge the first project to explore amateur narrative creation via video on mobile phones.

In terms of collaborative video editing, Terrenghi et al present their idea and prototypical implementation of a tabletop monitor, which let users cut and string together video clips [TFB08]. Though motivated by the popularisation of private recordings, and the lack of editing options in that same socially intimate and spontaneous context, the result bears many similarities to the YourTurn project, in that it creates a social situation out of the otherwise solitary task that is video editing. An extensive foray into collaborative video creation was presented by Weilenmann et al in 2014 [WSE14]. Also motivated through a learning context, they present a collaborative system to let some users perform mobile recordings, while others give instructions and perform video cutting tasks; the goal in their performed experiment was to let students create a coherent storyline about an exhibit.

2.2 Methodology and approach

The first stage's fundamental methods are sketching, prototyping, and testing with the thinking aloud protocol. Sketching initially served to compare a multitude of different interface and interaction ideas, to prevent early fixations on suboptimal concepts. Using

an iterative approach to design revisions, I then develop mobile prototypes. During development, interface and interaction design were tested and evaluated, primarily in test sessions using the thinking aloud protocol. Users were given the app with only minimal onboarding. They were then asked to perform specific operations, or use the app freely at will, while voicing their thoughts at all times. This method served to uncover issues with the game's interface, navigation and interactions. Since the thinking aloud protocol gives users a lot of freedom to voice their thoughts, it also communicated opinions and (mis)conceptions about the game concept, and informed alternative game ideas.

After development, a polished prototype was used in a playtest phase. The game was distributed online to volunteers, who were able to play the game freely during the test period. Within the test phase, a number of video clips was submitted, giving insight into the kinds of video mixes that can emerge. Activity data was also gathered to further enhance understanding about typical usage behaviours in the game.[1] After the test phase, feedback was procured via a survey. The primary focus of this endeavour was to see what works and what does not, and why, rather than finding specific quantitative measurements. To this end, the survey featured and emphasised open-ended questions to support a qualitative analysis. The test phase as a whole was evaluated using a mixed method approach, triangulating data points of activity, in game results and survey answers.

Finally, I performed an expert interview to enhance understanding of previous test phase findings, and provide additional in depth insights to evaluate and improve the final design through the experience of experts in design and usability.

[1] Data gathered during the test phase was anonymised before analysis.

CHAPTER 3

Design

This chapter will sequentially go through the design process which was applied to come up with a preliminary version of the proposed YourTurn smart phone remake. The goal of this preliminary version was to provide an app with sufficient and reasonably well implemented functionality to carry out a meaningful test phase. The requirements were subsumed as follows:

A) Functionally, the version should provide basic implementations of all core mechanics. This includes, first and foremost, the „recording“ of clips, from YouTube videos; the most central and unique mechanic of YourTurn. Closely related is the browsing for and subsequent watching of YouTube videos. While browsing via external apps could have been a technical possibility, this was not considered as an option, on grounds of being disproportionally disruptive to immersion.

Another essential interface function was to provide match making between players. Adhering to the established core rules, this consists of a way to create a new public mix (by choosing between categories as thematic guidelines and submitting an initial clip), and of viewing existing public mixes (with the ability to respond to them). Both of these would afterwards lead to the browsing and recording functionality. Furthermore, it is required to show users existing mixes, those being either their own mixes that can be continued, or finished mixes, which would also include mixes made by others.

B) Non-functional requirements; the limited functionality that is provided, needs to work well. Users need to feel at ease using the application, without the unfinishedness being at the forefront of their minds. This includes a reasonable level of stability, meaning there should be no crashes for unexpected input combinations, and also reliability of the interface, reassuring the user that there are no „wrong“ sequences or actions that can't be undone. Ultimately, the experience should be well rounded enough that, while the alpha status would inevitably be perceived, the player could feel like a player, rather than a test participant.

3.1 Initial concepts

3.1.1 Designing the recording screen

The first step was to create an informed UI- and UX-design for the described core mechanics. Since part of the study's goal is to specifically determine the viability and potential of a mobile version, the design was approached open-mindedly to novel solutions, rather than locking on to the original version. To this end, the concept of quick variations of low fidelity sketches by Don Norman [Nor13] was applied. Initial design sessions focused on the video recording screen, since it offers the primary and most distinct feature of the game. Applying Norman's method, a variety of concepts freely drawn up in brainstorming sessions, the resulting sketches of which are depicted below. In the following, I'll quickly lay out the initial progression of design sketches, before comparing and analysing the ideas contained in more depth.

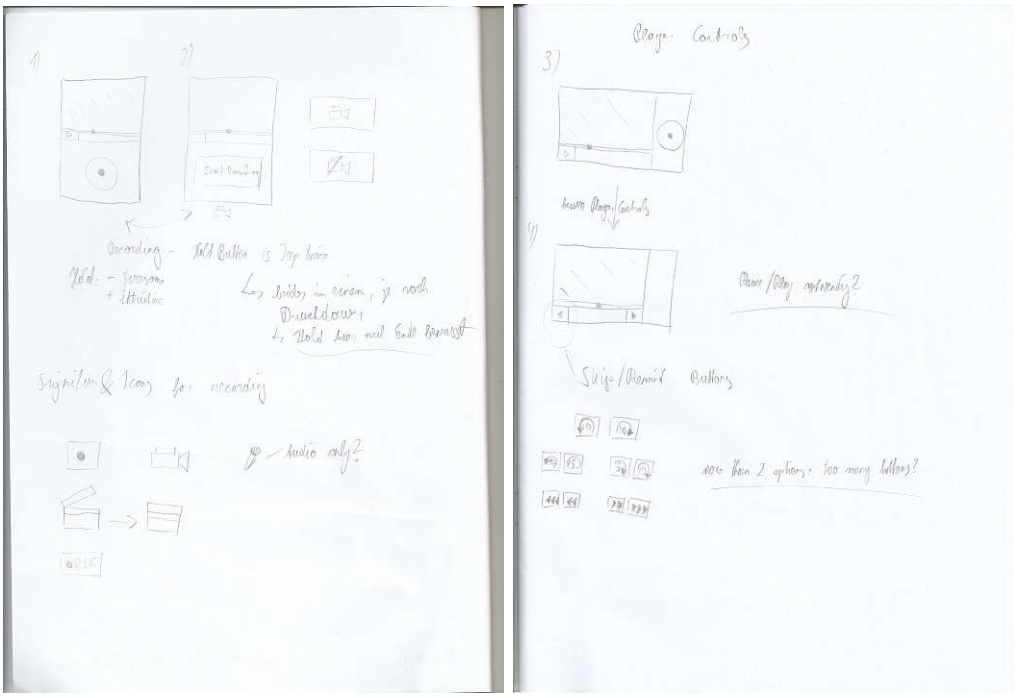

Figure 3.1: Initial recording screen sketches

Versions one and two started out by featuring regular video players with expected control elements such as a seek bar and a play button. Below, there would be a single button for recording the segment currently playing in the video. Within these ideas, there are distinct variants: it is either possible to tap the button once to start recording, and to tap it once more to signify the clip's end; or the button could be recording as long as it is held. The third sketch considers a landscape design of the same mechanic.

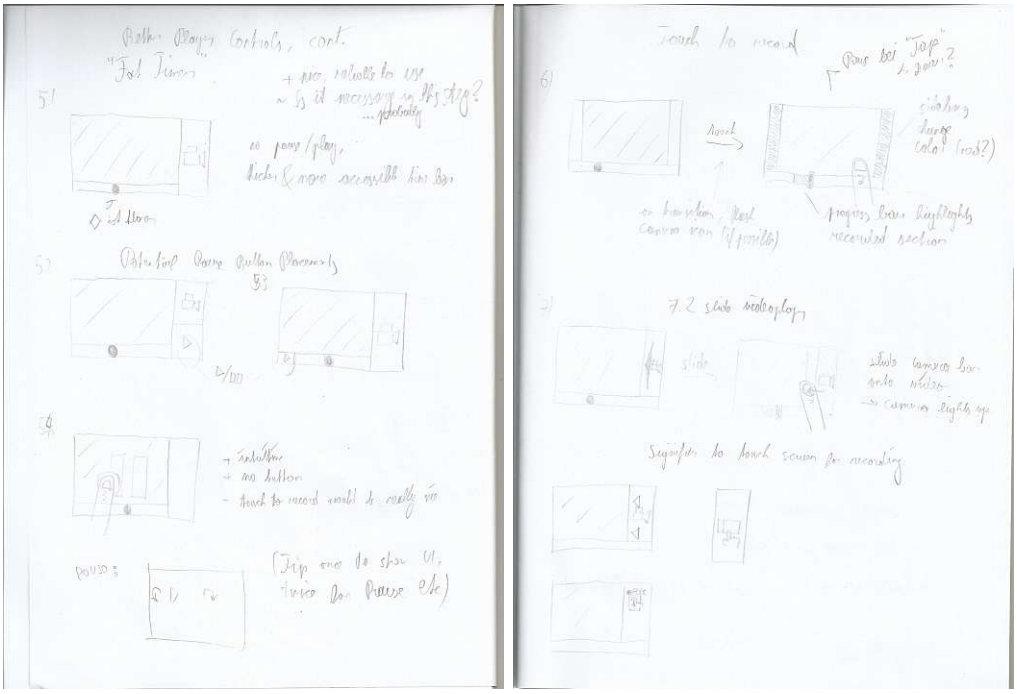

Figure 3.2: Initial recording screen sketches

The fourth sketch introduces additional options to the video player, by providing buttons to skip ahead or rewind by certain timed intervals, also considering buttons for different intervals – an idea brought about by YourTurn's video player's use case differing from regular video consumption. The same train of thought brought about sketch number five, where a minimal player design was presented by moving everything aside from an enlarged seek bar off-screen.

Variant six focuses puts even more emphasis on minimal UI, even scrapping an explicit record button. The idea is to hold the screen anywhere except for the seek bar, in order to record, and signify the action and status of an ongoing recording by colouring the player borders, in addition to potentially flashing a familiar „rec“ panel in the upper right corner. Player controls for pausing could be kept as in variant five, so that tapping would pause and show the menu, since only holding for a meaningful period of time would start recording. Further alternatives seven and eight explore the gesture of sliding or sweeping in order to record, the latter aiming to mimic a movie clapboard.

3.1.2 Evaluation of preliminary results

Sketches primarily evolved concepts surrounding the recording gesture, while a secondary focus was put on the video player and it's controls; both aspects will be discussed in the following. Four different concepts of possible recording gestures were created, each with

differing number of iterations and amount of refinement (some ideas stood on their own from the onset, others needed tweaking to be viable).

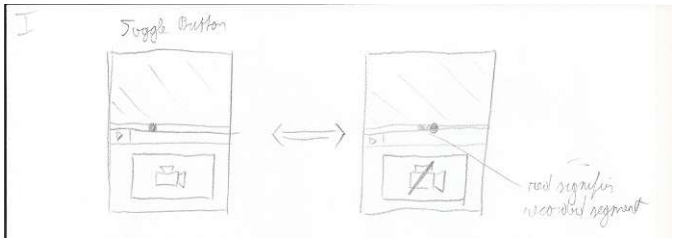

Figure 3.3: Toggle button

The first concept is a simple toggle button similar to the original YourTurn – the player would press the button once to initiate a recording (setting the current video time stamp as clip start). Upon pressing it, the button would change colour or icon to signify that a change in functionality occurred and pressing it again would end the recording. This concept's intuitive understandability stands and falls with the used metaphor, therefore, a number of alternatives for the button's icon where considered. A red dot typical of various recording software, a video camera, a slate and a rec symbol. The red dot is quite common for recording features in modern apps, though rather abstract. A simplified video camera carries meaning in cases where the user is uncertain about a screen's context or functionality. The clapper would be a prime candidate to symbolise a video recording's start, drawbacks being that it is very concrete, and that it lacks an equally iconic pendant for finishing the clip. The REC symbol is well-known especially for video recordings, though usually used in a passive context, representing information rather than action.

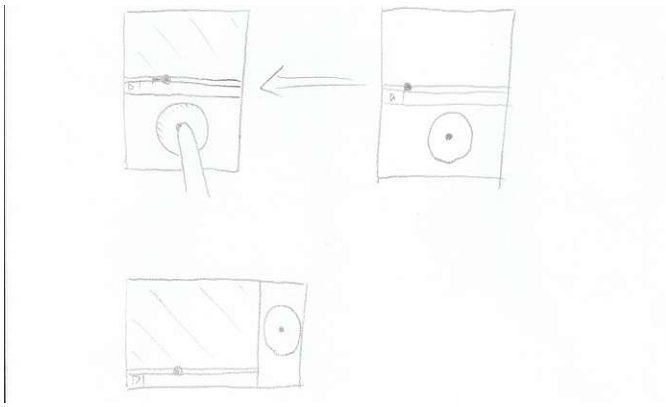

Figure 3.4: Hold button

A variant to the first concept is recording via holding the button. Visually, this mostly employs the same design, including icon choices, the main difference being that no separate icon would be necessary for finishing the clip. Also, the clapper would be less of a viable metaphor. Tapping has the advantage of being easy to perform, without putting

strain on the wrist. Additionally, tapping a button is the more intuitive initial reaction when catching sight of a button, rather than holding it. On the other hand, there are some drawbacks, one of them being the change of functionality of one and the same button – depending on the context, it either signifies starting the recording, or finishing it and, to put it from a first time user's perspective, moving on to whatever the next phase is. Furthermore, when providing just one button, there is no immediate way of undoing or redoing the recording offset.

Holding has some drawbacks that were already implied, such as being a less intuitive immediate response towards a button, in addition to requiring more effort to perform, particularly disadvantageous for longer clips. On the upside, it has considerable advantages: after initiating a recording, there is an intuitive out in case one wants to cancel and redo the process by swiping away from the button before lifting the finger. Secondly, the gestures for the two options of starting and finishing a recording are different, eliminating any confusion about context-dependent buttons. Finally, the action of holding the button is a much more deliberate gesture, and thus might feel more immersive. Lifting the finger after a short period of recording is also decidedly a conscious act, more so than a short tap.

As yet another option, the button could provide both of these options, and provide its functionality depending on the touch event's duration (anything below half a second would essentially lock the recording button in). The latter would offer the advantage of letting the player use the interface in whatever way he discovers first, thus, whatever is more intuitive to them; It also offers two different options without explicitly asking the user to change settings. Two arguments are to be made against this flexible variant: for one, it might be confusing for users that get accustomed to one style of usage, in case of missed inputs; particularly, users of the hold function might have issues with accidental short taps. Furthermore, which of the two options provides an overall superior experience might well be independent from a first timer user's intuitive choice (although initial intuitiveness is certainly a contributing factor).

A different concept envisages a similar holding gesture for recording, but does away with buttons, instead lending the entire screen as control element. As soon as the player starts touching the screen, the video player's borders would turn red to signify that the recording process had begun and was in progress; releasing the screen would end the clip. An obvious advantage to such a design is the amount of screen space saved for the video player, since no additional elements are necessary. This is especially evident when the device is used in landscape orientation, allowing for the entire screen to be used for displaying the video – a common use case for mobile video consumption, in turn inspiring this design. The goal is making usage more easy-going and therefore fun: players could start recording with the easiest gesture possible, as it no longer requires hitting a specific screen area. Furthermore, the interaction is inherently intuitive through its immediacy: the player interacts with the video, therefore touching it directly would feel natural.

A caveat to the design is that what it gains in cleanliness and immersion in the video material, it loses in understandability to new users, as there is no clear signifier that

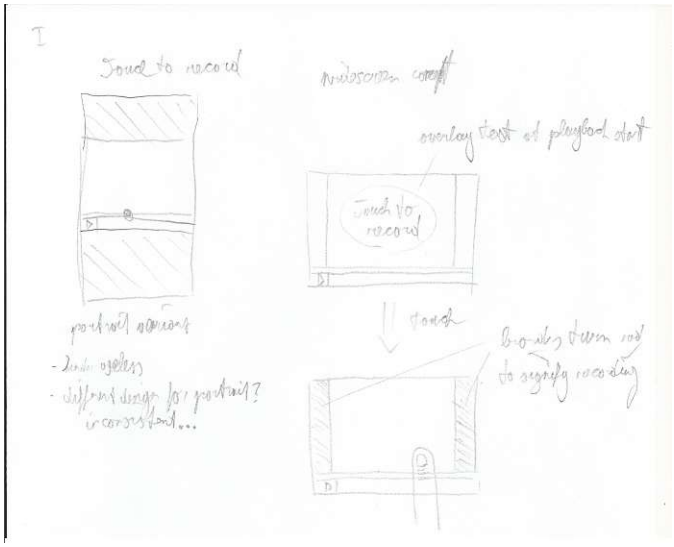

Figure 3.5: Recording by touching player

pressing (and holding) the player screen would do anything. To lessen this drawback's impact on new players, an instructive overlay prompt ("Touch to record" or "Hold to record") would be displayed at the beginning of each video playback. Instructions like that, while not helping intuitiveness, would hopefully be sufficient to effortlessly guide players into the control scheme. On another note, this concept's primary focus is placed firmly on landscape orientation, while hardly offering any advantages when displayed in portrait mode. This, again, is based on the premise of mobile video consumption commonly occurring full screen; this might not necessarily be the case for YourTurn, where the user's activity in the app would go far beyond regular video consumption. Applying a different concept in portrait mode was considered, but deemed too inconsistent and potentially confusing, in cases where new users would be confronted with two egregiously different looking screens.

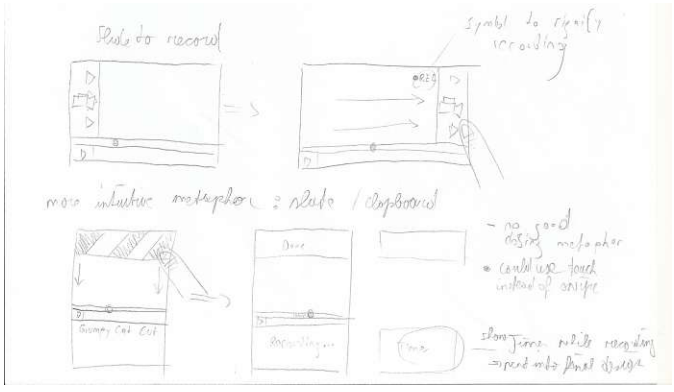

Figure 3.6: Recording through sliding gestures

Another concept revolves around recording with a sliding or swiping gesture. Initial sketches foresaw a sliding button with a camera and arrows as signifiers, that needed to be slid over the video player from left to right. Upon reaching the right side, the video player would change frame slightly and flash a recording icon – the gesture should resemble the feeling of pulling up a camera over the video player. Variants for finishing the clip were to either release the slide button or to drag it back manually.

Dissatisfied with the workable but somewhat clumsy metaphor, another take on the same mechanic was created with a clapboard aesthetic, especially applicable in portrait orientation, as there was plenty of vertical space for the clapper; also, video and clip information would fit nicely on the slate. This approach focused especially on the provided user satisfaction through immersion. It should directly convey the feeling to the user that they are a director, both empowering them to feel as such, and to guide their actions by more than comparatively heavy-handed instructions or button labels. Essentially, it would be more fun to use while also being at least as self-explanatory as other, more sterile alternatives.

Counterarguments to these approaches are their complexity, as the design would result in more visual clutter; the more detailed the clapboard is, the less it seems like a tangible object, but the more it is abstracted, the less it provides the intended experience. Furthermore, it requires a lot of screen real estate, while the intuitively usable section is rather small, and it is difficult to find a satisfactory visualisation in a full screen, landscape orientation. Another caveat to the slate metaphor is its lack of a counterpart for finishing the clip.

A downside to the sliding gesture in general is it's lacking precision – in at least some cases, players would want the ability to set the clip onset as easily and precisely as possible, but with sliding, the input would only register after completing a motion. The gesture of sweeping across the screen does not leave ample room for precision, as it is much simpler to time a button tap or release, compared to the timing of reaching the destination with a sliding gesture. While refining the selected section later would still be possible, dealing with 'unnecessary' imprecision could frustrate players.

The other essential control element next to recording input are the video player's controls – as such, a number of alternatives were considered while sketching.

The baseline was a regular video player as commonly seen in mobile players, the one from YouTube itself being the most exemplary. As such, control elements appear upon touching the screen: a play/pause button centred on the video player, a seek bar for visualising current playback progress and skipping to specific video segments is placed below the player. Various other information, such as video title, duration or current playback time in seconds also become visible, as well as full screen or settings button, depending on the platform.

It seemed like a common use case to YourTurn, more so compared to regular video consumption, to skip back and forth short periods of time – for example when realising a certain video segment would make for a great clip only after having watched it, the

player would need to navigate back to the beginning of that segment. To this end, an initial revision to player controls added buttons to backtrack or skip ahead by small time intervals. Variants were drafted for icon understandability; reasonable time intervals were deemed five, ten or potentially fifteen seconds, which would be both intuitive round numbers and overlap with a clip's minimum, average or maximum duration; variants also considered including multiple buttons to skip different amounts of time, but were disregarded as visual overload since the same result could be achieved by pressing a button representing a smaller time frame multiple times. Consequently, the most efficient version of this concept would feature one rewind- and one skip button, each seeking by the smallest sensible time interval (five seconds). Another alternative proposed holdable instead of clickable buttons that would scroll the video forward or backward continuously while pressed down.

Regular mobile video player's seek bars usually function such that they become visible together with the remaining player controls as soon as the player is touched, then upon a second touch on the seek bar, the actual seeking occurs. Prompted by YourTurn's use case heavily relying on seeking, another control concept features an altered, thicker seek bar that is always visible. The increased size should make it easier to touch, and permanent visibility allows for navigation with only a single touch instead of two. Both of these combined have the caveat of drawing visual attention, allowing for less focus on the video material; given the game's nature and focus on participation, though, that drawback seems acceptable.

3.1.3 Fine tuning

The sketches presented so far were concerned with the initial playback- and recording interaction; designing a proper follow-up was another major step. The general idea is to highlight and show the clip that was just recorded, and provide the option of editing the segment by moving the start and end point. Once satisfied, the user could submit the clip. Four more sketches were created.

Concept one envisions a transition where the player is mostly kept the same, and the clip's start- and end position on the seekbar are represented by interactive, draggable elements, though visually distinct from the regular playback knob. Dragging these control elements shifts the clip's start- and end time accordingly, while the regular seekbar option of adjusting the playback position via a knob was discarded (the reason being that such a short clip wouldn't require further navigation, and functionally interfering with the new draggable elements on the seek bar). Additionally, there is the option to play the (adjusted) segment again, and to submit the clip, once satisfied with the result. Both of these were provided as buttons.

A variant, dubbed „elastic rope", also placed two control elements as the clip's delimiters. The unique aspect to this approach was that the knobs were draggable with variable precision, depending on the finger's vertical distance from the seek bar. Directly dragging the knobs would move them immediately; when moving away vertically, though, a line

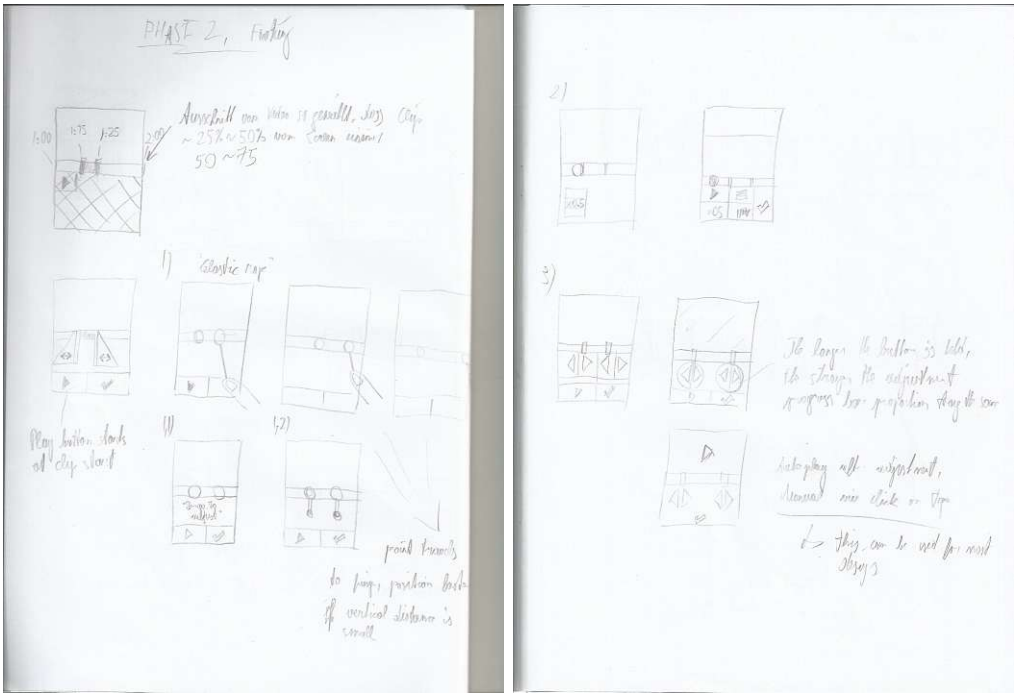

Figure 3.7: Sketches of fine tuning screen concepts

symbolising an elastic rope is drawn from the knob to the finger. The knob slowly moves to the same horizontal spot. The further away, the slower the knob's movement. The variant's purpose is to allow for higher precision than the screen space permits via direct positioning on the seek bar, while still visually connecting the gesture with the interaction's target, the seek bar.

The second variant also aims to give the user more precise controls, and aims to do so not via abstract gestures and metaphors, but by providing the option to slow down playback, and place the start- and end points with designated buttons; basically, to rewatch the segment around the initial recording (starting a few seconds early) and let them re-do the recording, but in slow motion and thus with more precision. The idea was momentarily considered, but quickly found to be unfun, consequently scrapped.

A third variant intends to manipulate existing start- and end positions, again, but via buttons. This was conceptually aimed at users with perfectionist tendencies, under the assumption that it was mostly those users who would use any fine-tuning features. The buttons would allow for minute adjustments, switching between singular video frames, if desired. At the same time, bigger adjustments could still be made by holding the button, which would speed up the scrolling through frames.

The fourth variant, dubbed „the needle", is similar to the „elastic rope" in that it focuses on seek bar knobs, and lets the user make adjustments at a detail level depending on the

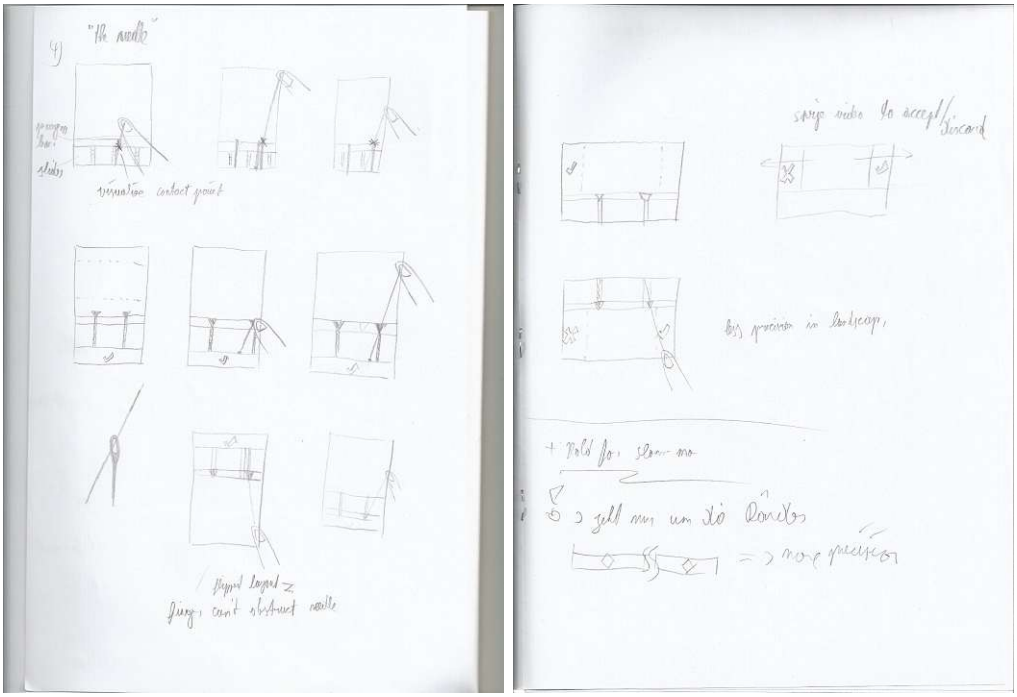

Figure 3.8: Sketches of fine tuning screen concepts

finger's vertical distance from the knob. Different from the previous idea, though, the knob immediately jumps towards the finger's horizontal position, though interpolated between its previous position and the new one, depending on vertical distance. This can be seen as a more responsive rework of the previous concept; while the rope would keep moving even after holding the finger still, this approach immediately positions the knob, while still offering finer control.

3.1.4 Preliminary design

The chosen design employs the holdable recording button as recording gesture. It was ultimately chosen over the snappier clapboard solution especially for being more precise mechanically, with additional arguments being increased visual cleanliness and consistency between portrait- and landscape modes. The metaphor of choice ended up an image of a video camera to give players clear instructions during onboarding and emphasise the recording screen's purpose non-verbally; the reasoning behind it being that the common red dot might not be recognised if a player is not aware of the screen's intention already. Furthermore, a camera over the common red recording dot should reinforce the recording's visual nature.

As for playback controls, the prominent always-visible seek bar was employed, with further player controls showing upon touching the player. Specific buttons for rewinding

and skipping were also included, although relegated to the initially hidden overlay controls. The motivator behind this approach is the general reduction of complexity. Since the intended actions of video cutting are likely unfamiliar to most users, reducing the interface to the point of only highlighting the most central feature of recording a clip, might encourage otherwise estranged users to try exactly that more quickly. Central video player features such as pause and play would still be necessary, but would instead borrow the common approach (used by the official YouTube app, amongst others) of pausing and showing the player menu only when tapping; though the proposed design diverges by always displaying the seekbar.

After an initial review of all proposed fine-tuning options, draggable knobs with granularity based on distance were found to be the best idea. However, an additional concept came up that was applied on top: „minimising“ part of the recorded clip, and using most of the screen space for a few seconds before and after each clip delimiter. The seek bar would begin shortly before the app's recording, and end shortly afterwards. Furthermore, the space in between is cropped, as imaginably, the user would not want to adjust the clip by that great of a distance.

3.1.5 Proof of concept implementation

Following the considerations and insights gained from the sketching phase, a first functional prototype was developed both as proof of concept, as well as for initial review and user testing. It was based on the previously adjudged best concepts, whereas an actual implementation of these would also serve as a verification as to whether those ideas deemed theoretically good would also hold up in practice. Said prototype was shaped as follows: The functionality was limited to performing clip recordings of a previously selected YouTube video. Accordingly, the goal of this first version ignored researching the understandability of YourTurn's multiplayer mechanics, or the intended creative process, instead fully focusing on the understandability of the video clip recording interface.

The test application's home screen provided a search bar in the header, letting users search for YouTube videos 3.9. Upon clicking on any of the results, the app would proceed to the primary focus that was video playback and recording. That process was split into two parts – first came the regular video viewing mode with the option to record an initial segment, as seen in 3.10; the screen that would normally be reached after selecting a video after browsing. The screen featured a video player with a seek bar underneath. Tapping the player would pause or resume playback. Beneath, the rest of the screen was covered by a recording button, signified by a camera icon. Holding it would start the recording, and an active recording was marked on the seek bar by rendering a red line over the covered segment. If the button was released before five seconds, a toast would appear, stating that clips had to be at least five seconds long, as seen in 3.11.

Upon releasing the recording button for a sufficiently long segment, the application would proceed to the fine-tuning stage shown in 3.12. Functionally, the fine-tuning screen would focus on a small segment of the YouTube video that immediately surrounds the initial

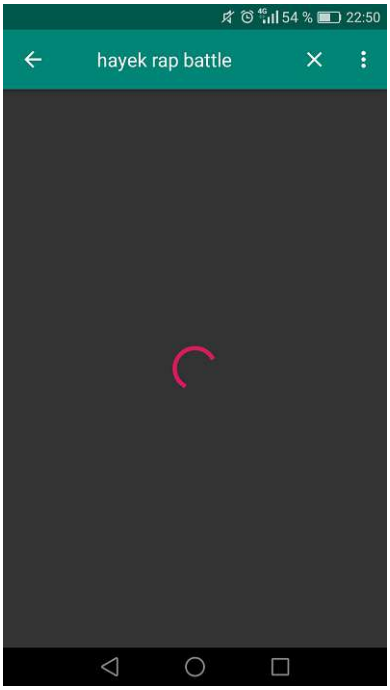

Figure 3.9: Proof-of-concept initial prototype

recording: the seek bar would be split into two interactive segments, one representing a few seconds before and after the recording's start time stamp, the other doing the same for the end time stamp. A basic assumption of the screen is that the previously performed recording is approximately timed correctly, so the time stamps would be within two seconds of the user's desired outcome. The fine-tuning screen's goal was to maximise the precision with which the time stamps could be adjusted. Consequently, anything before and after, as well as anything too far between the recording's time stamps, is disregarded, because those parts of the video would not be relevant anymore at this stage.

To visually indicate the change of state between recording and fine-tuning, a small transition animation played on the seek bar – the seek bar knob would split into two (placed centre left and centre right), and the seekbar would be thinned out at the centre of the screen, to visualise inaccessible areas. Furthermore, etchings along the seek bar should represent a finer granularity (as the same bar length new represented only a short video segment). Below, the recording button was replaced by two buttons, one with a checkmark for symbolically „accepting" the clip as is, and one with a cross for cancelling, leading back to the initial recording screen. After the screen transition, the video player would initially be at the start of the recording in a paused state. Dragging the knobs moved the start- and end point of the video; the left knob could not be moved beyond the bridge in the screen centre, the same was true for the right knob. While paused, there would be two separate play buttons: a regular one, that started playback at the recorded clip's start, while the second would start playback two seconds before the clip's

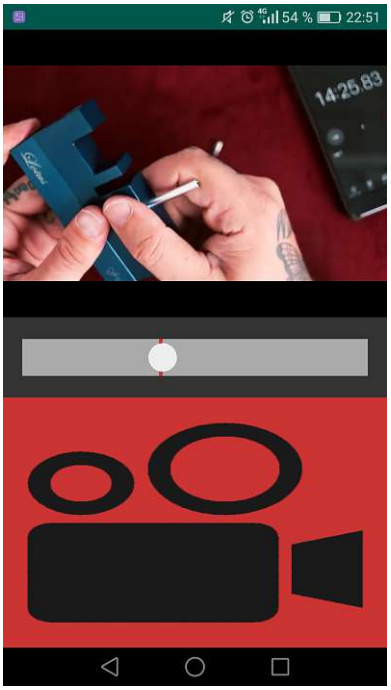

Figure 3.10: Recording screen of the initial prototype

end. During playback in this phase, the playback position was marked by a black line, instead of a draggable knob, in order to prevent a) visual confusion between draggable time stamps and the playback position, and b) unintentional inputs caused by grabbing the wrong knob.

3.1.6 Evaluation

First off, as a proof of concept, this prototype showed the technical feasibility. Official APIs provided sufficient functionality to allow for reasonably granular video cuts, and buffering was, while noticeable, still quick enough to let users cut segments satisfactorily. Beyond technological verification, this prototype was used for initial, informal usability tests. Two acquaintances of the author were invited to operate the application with some preceding explanation of its purpose. Said introduction briefly explained that in later stages, the app would be used to exchange short segments of YouTube videos between users, then emphasised that the current version was just a test for recording that video segment. Beyond that, no instructions were given besides the encouragement to „just try it“. It should be noted that these tests were strictly informal, but an important step nonetheless as an intermediary between theoretical discussion of conceptual sketches, and more exhaustive but also much later occurring usability tests.

The first test started out with the user browsing YouTube videos for the search term of „grumpy cat“. The concept and interface of searching for videos was understood without

Figure 3.11: Notifying the user about invalid clip duration

explicit mention, a result to be expected due to the similarity to the official YouTube and other video platform's browsing behaviour. Upon selecting a video entry, the recording view opened and playback of the video began, which prompted the question „aha, I can perform a recording here?“ (responded to with an encouragement to just try it). The first action taken was to click on the seekbar, causing the video to jump forward. Next, the user tapped the recording button, triggering a toast with the information that recordings need to be at least 5 seconds long. The reaction to this was voiced in an understanding tone, „ah, okay“, followed shortly by holding the button for a longer duration (without navigating back to the initial recording attempt's position). The user did not voice their perception of the recording's duration, and released the button after approximately ten seconds, triggering a screen transition towards the fine-tuning mode. Without further comment, the user clicked on the button signified with a check mark – this would cause the clip to be submitted immediately, and return the user to the home screen; however, this was not yet implemented, thus the user was verbally informed of the intended consequences. It was only afterwards that the user paid closer attention to the available screen elements, which as described before consisted of two play buttons on the video player, the seek bar with two knobs, and two buttons for cancelling and submitting. Upon closer inspection of the screen, the user asked „what can I do with the arrows?“, referring to the play buttons. Thereupon, they experimentally tapped the first, then the second button (cueing playback from the clip start and near the clip end, respectively), resulting in the recognition „ah, I can play the start with this and the end

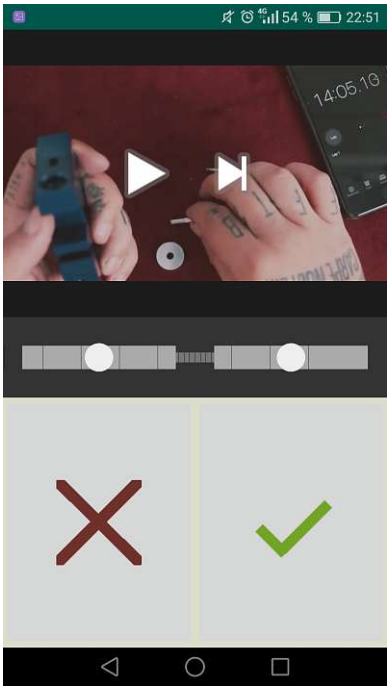

Figure 3.12: Initial prototype's screen for fine tuning a clip

with that". Next, the user dragged both knobs slightly, voicing a vague understanding with „I can adjust things a little here". After attempting to drag the first knob into and beyond the condensed middle section, they questioned „hm, I can't go further?". After dragging the knobs a bit more, the user concluded their experimentation and the session came to an end.

This session provided a rough estimate for the proof of concept player's user experience: It is clear that leaning on established ways of browsing and playing videos leads to intuitive understanding, requiring little active thought. The first playback- and recording screen was also almost immediately recognised as such, though the test's limited scope and introduction likely helped the user come to that conclusion. The first action taken on the screen was using the seek bar, possibly caused by the familiarity with that control element – the first attempt to record was made rather quickly, suggesting that the visual concept allows for an intuitive understanding of the intended and possible course of action. Interestingly, the first gesture was to tap, not to hold the button, which supports the afore postulated belief that holding might be less intuitive – the control scheme was not discounted, since the textual feedback, informing of the intended gesture, was quickly understood, and the information effortlessly applied.

Less understanding was shown for the fine-tuning section, as it seems the user was led to press a button before having had the desire or opportunity to fully understand the screen; only after pressing the accept button and receiving an explanation did they actively try

to decipher the available options. There are two lines of reasoning: one is that the accept button was too inviting, prompting a tap without further thought. The other is that there were too many elements, and that these elements lacked appropriate signifiers (a claim supported by the user's question of „what can I do with the arrows?“).

In the second session, the user took a few moments on the home screen to identify the search bar at the top. When they did, they entered “Alfred Dorfer” (and wanted to search by pressing enter, which at the time was not implemented); when the search didn't immediately show results, they questioned „is it searching yet?“; an indicator for ongoing searches was added in a later version. Next, they also scrolled through some results before clicking on an entry. After the player opened, the first element identified was again the seek bar, which the user immediately took advantage of to search for a specific segment. The recording button was again recognised as such, although instead of trying it first, the user specifically asked about the required gesture – „Do I need to press the button twice, or hold it?“. The user then tried to briefly hold it, causing the same toast to appear; however, they did not notice the toast and required an explanation. When reaching the fine-tuning screen, they briefly paused before tapping the submit button. They did not engage with the screen any further.

3.1.7 Learnings

One shortcoming was that feedback about incorrect input lacked sufficient visibility. In the recording test's scope, this manifests through textual pop-ups when holding the recording button too briefly or too long. Conceptually, the feedback informing of insufficient clip duration seemed to work fine for one user, suggesting that text works fine, dissuading from a pursuit of more abstract visualisations or metaphors in this context. The problem came to light when the other user did not notice the text popping up at all. While the problem was only apparent for invalid clip durations at this stage, it could easily transfer over to other use cases requiring textual feedback, as soon as a feature rich version is approached. The learning was to pay more respect to how easily information can be overlooked, bolstered especially by the fact that users are very involved in the process. While pop-ups with the same visibility might be workable in other applications, they are much more easily missed when a user is a) consumed by the YouTube video and b) mentally involved in a process that is both novel as it is cognitively demanding.

Conceptual issues were present for the fine-tuning phase. For the purpose of a feature-complete version, both test users skipped the screen and „submitted“ their clip by tapping the accept button before grasping the state transition or the new screen's purpose. One test user did not engage with the screen at all; the other interacted with it a bit after a tap on the dummy “accept” button, thus providing some insight into the screen's issues. Judging from these interactions, upon visiting the screen for the first time, users reflexively wanted to leave it again and move on. This could be caused by the user already being confident in their initial recording and quickly wanting to finish the process; another reason could be that users are made uncomfortable by some of the screen's

aspects. Reflecting on the design from a first time user's perspective, a few issues can be identified to explain said discomfort:

- The screen's purpose is unclear and easily misinterpretable. The user just recorded a clip, and is now presented with two buttons flashing affirmative and negative symbols, while the video player is paused and the seek bar has transformed slightly. It could be easy to interpret the screen as a simple opportunity to accept or reject the recording, especially if the transition was lacking in visual salience.
- The video player's change of scope might not be obvious, again particularly likely if the transition went by unnoticed. This hinders discoverability of the fact that the screen is about the newly recorded clip, therefore undermining the possibility of reviewing the material and the potential to make changes to it.
- The symbols were not clear. Especially if the user does not know the screen's purpose, the action performed by an affirmative or negative symbol is difficult to guess. Conversely, using text instead of symbols would help clear up the screen's goals.
- The user onus of action is placed upon the user without giving them any sort of guide beforehand. The screen offers many options at once: two playback buttons on the video player, two draggable knobs on the transformed seekbar, and the buttons for confirmation/rejection. However, upon visiting the screen, nothing happens automatically – instead, the user is left to discover an array of elements autonomously.
- together, these arguments furthermore hint at the problem that the screen might be trying to do too much at once, overloading the scope.

The consequent design suggestion, was to further split the fine-tuning screen's functionality by having one segment focusing on reviewing the newly recorded content, serving to establish the screen's context, and an explicit navigation item that enables fine-tuning functionality. After performing an initial recording, players are by default disoriented. Playing the recording automatically could be a simple yet effective way to re-establish the screen's context, while also letting the user review their creation before making a decision whether to submit it. Making the navigation to fine-tuning explicit should also help in understanding the corresponding control elements, as their usage's goal becomes clear.

This revised the concept invited some follow-up reflections: since one part of the process would now be dedicated to viewing one's creation, a worthwhile consideration presents itself in viewing the clip in context by allowing playback of both the preceding and current clip, in sequence. Doing so puts emphasis on the transition between clips, which arguably provides the most potential in terms of creativity and communication. Whereas clips by themselves would have little ability to create new meaning, by nature of only being a part

of existing material, segueing into another such clip transcends the boundaries set by the underlying source material. Bearing similarities to the nature of mash-ups [CRB+11] and remixes [DFF11], both projects that integrate functionality for video editing and clip arrangement, it becomes clear that modifications through taking parts out of context and rearranging them is perceived as creative undertaking. Consequently, when users append new contributions to a mix, these intersections deserve a significant share of attention, and to draw that attention, automatic playback of both the recording and it's preceding clip is worthwhile.

Finally, as was observed, scrolling on the fine-tuning seek bar was not understood or noticed, suggesting that the animation could be more visible.

Overall, the initial user test sessions lead to the conclusion that the initial navigation and recording were workable design wise, but needed some polishing to provide clearer feedback (such as loading symbols and bigger text). The fine-tuning follow up, on the other hand, needed some changes to the design itself to be more self-explanatory, in addition to being more explicit in its symbols.

3.2 Playable prototype

3.2.1 Design

The next phase moved on to testing the full concept of YourTurn. Whereas the previous proof of concept focused on video recording, the following implementations would provide all features fundamental to the game's core mechanic of creating video mixes together. Major technical additions were a user registration system, match making by letting users create and join mixes, submitting clips to a mix, and the continuous playback of multiple clips within a mix.

The new version shows users a registration screen upon first application start up, asking for a username, password and email, the last being optional. Login remembered for the phone, unless explicitly logging out from the profile sub menu.

The home screen, as depicted in 3.13, was designed to fit the minimalist nature of the prototype, and the main goal was to provide all information relevant to the user in a single screen without requiring further navigation, in part inspired by endless scrolling on various social media. The functional requirements of such a screen were

- showing a user's active mixes that require a response
- showing other mixes to join
- creating a new mix

The design envisioned these to be put in a scrollable list, with clear headings between sections: The group most important to the user, „active mixes requiring a response“,

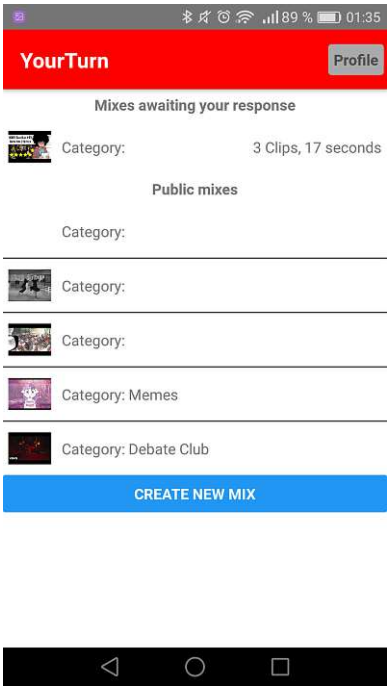

Figure 3.13: Home screen of the first feature-complete prototype

would be at the very top, thus motivating a response since viewing other content would require scrolling past active conversations every time. After that would be a list of all public mixes available to join. To create a new mix, a button was pinned to the bottom of the list or screen, supposed to be always available, but also less prominent than any already active content.

Clicking on an active mix would either lead to a video player, showing the clips submitted so far, and provide a button to browse for a response. Alternatively, if the mix did not have a partner yet, the initiator could instead view all clip responses and pick one.

Clicking a public mix would show the initial clip, and also provide the same button to browse for YouTube videos.

Clicking „create new mix“ would lead to a screen prompting the user to pick a category for the mix (that category would show up in the home screen's list entries), after which they would again browse for an initial clip. The categories for this demo were „Music“, „Memes“ and „Debate club“, an intentionally minimalist set that is diverse enough to enable different directions for mixes (memes could lead to light-hearted exchanges, whereas debates might be more provocative), provide an initial impulse for players not familiar with the concept and possibilities, and last but not least, a set that is small enough to let players think of unavailable options that they *would* like to have.

All existing features of the first prototype were enhanced through using the initial test's insights. The recording screen remained similar to the previous version, but centred

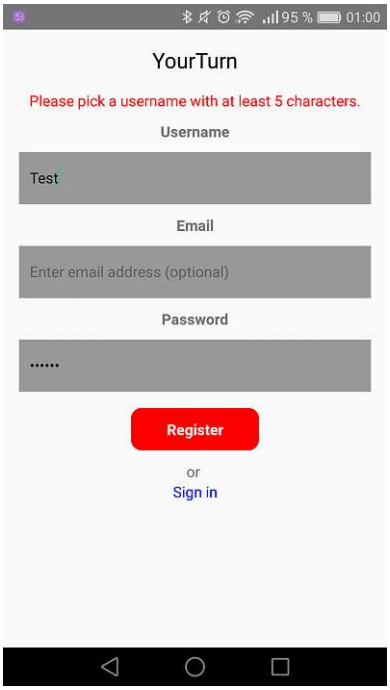

Figure 3.14: Registration

the toast text informing the user of the required minimum length in order to make it more prominent. The fine-tuning screen's issues were addressed in a few ways. Upon performing an initial recording, the screen would transition not directly to the fine-tuning area, instead displaying a review view first. There, the previous and the momentarily recorded clip would play in sequence; also, playback would start automatically. This should reduce the immediately perceived complexity of the screen by removing pressure to do something from the user – instead, something self-explanatory happens, informing the user that this screen is apparently about the clip they just recorded. The immediate playback also reduces the number of control elements initially visible to the user – the playback arrows would only render after the clip playback has finished, and since it is clear by then that the video player now plays the clip, the player button's functionality should also become more obvious.

The actual fine-tuning screen was reachable via a button, textually labelled "Adjust clip", replacing the previous "cancel" button. Only upon tapping that button would the seek bar transform into the more granular variant featuring two time stamp representing knobs. Moreover, the notches on the fine-tuning seek bar were made more prominent by increasing contrast. In addition to greying out the condensed centre section, this should enhance understanding about the relative time represented by the bar. Also, the more prominent notches would make the seek bar's scrolling animation, shown when a knob is dragged beyond its border, more visible.

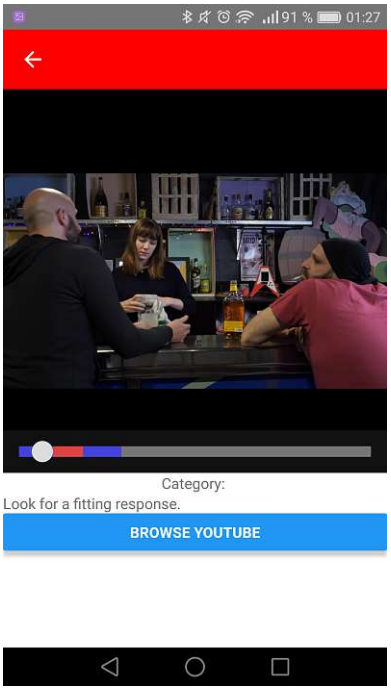

Figure 3.15: Mix viewer

Finally, the icon for the „submit“ button were replaced by text (the “cancel” button was removed). Since this button has a high functional impact in the way of irrevocably sending the recorded clip, signifying it with a potentially misinterpretable or misleading icon seemed misguided, and while some icons would be well understood for sending messages, users might not perceive the submission of a video clip the same way as the sending of a message, thus straining the metaphor. Additionally, there would be no other text on the screen apart from two buttons, so making the processes' central buttons explicit would help new users understand what is going on.

3.2.2 Evaluation

The second user test was conducted using this version and aiming to identify usability issues and areas of confusion regarding the game rules. Unlike the initial test sessions, this was a formal process, recruiting participants from an extended circle of acquaintances, and performed using the thinking aloud protocol.

Findings of the session have been assigned to eight distinguishable categories. The analysis will first focus on UX issues regarding the recording interfaces, issues of the same nature as already discussed and reviewed in the recording prototype test session.

3.2.3 Fundamental misconceptions

The category deemed most problematic consisted of issues where participants misinterpreted screen elements and inputs as something they were not. There were some fundamental problems regarding various screen's purposes, sometimes caused by misunderstanding the game rules. One such issue manifested upon the home screen's (3.13) first visit, where three out of four users initially set their eyes on the list titled „Public mixes". The recurring reaction to this was to interpret the list's entries not as public, thus joinable mixes made by other users, but instead understood it as a list of categories. One participant quickly stated „I see categories", two others reacted in a very similar manner, „Category memes! I press memes.". That user reflected later on, „My first guess was that they [the videos] were suggestions". Another later on subsumed, „I selected a category, responses with the first thing that came to mind, and now I'm waiting for a response". These comments suggested a fundamental mis- or lack of – understanding about the game mechanic. In hindsight, there were two factors of the UI implementation contributing to this misunderstanding; first, the list's headline had too small of a font size, seemingly going by unnoticed. Second, list entries only consisted of the initial clip's video thumbnail, and the category title.

Further confusion was elicited by the mix view upon navigating to an existing public mix, which featured video playback of the initial clip and a seekbar, only a short part of which was filled out (visualising the mix's state of completion). One player questioned, „Does the video pause after ten percent? Is this a recommended meme video?", attempted to understand it by viewing a few more public mixes, before resigning „I don't get it, I'll create a new mix". Only later did they revisit the situation and show insight by mentioning „ah, that explains it, the bar shows how long the mix can take". Another feedback was „What happens, a video opens up. [...] Wait, I thought that was my video. [...] No, it was the bot, now it's my turn.", signalling that one player initially thought they were creating video mixes together with clips randomly selected by „the bot". This misconception did not clear up on its own, and was rectified a bit later to prevent the session from going off course. The mix player screen's issues were probably brought about by the previous misunderstanding of perceiving public mixes as categories. Especially the latter misconception highlights the necessity of emphasising the game's multiplayer nature.

A common misinterpretation occurred on the log-in screen, where three out of four questioned whether a log-in to their actual YouTube account was necessary, one of the three actually assuming that that was the case. This might in part have been caused by the demo's red and white colour scheme, which was similar to the official one from YouTube. This learning was significant, as leading players on to possibly give up their official YouTube account information could lead to privacy and legitimacy concerns, evoking thoughts about parallels to phishing; these issues on top of the fact that users are confused and possibly turned off registering at all.

Another major misconception became apparent when first browsing for a YouTube video

to cut a clip from. One participant commented, while browsing, „These videos are probably too long, I'll search for something shorter", another noted after proceeding to the recording screen „I guess I can watch it first". A third participant questioned „Clip duration must be between five and ten seconds >it was actually fifteen< – does this mean it [the YouTube video] must only be this short, or can I select a part of it?", after tapping the recording button during their first visit of the recording screen. Only the one remaining participant tried to record a video segment on their first try. Meanwhile, it appears that two participants inherently assumed that the video mix would consist of appending entire YouTube videos, with one more participant considering the possibility of segmentation but still being unsure. Ahead of the experiment, one assumption was that a quick explanation of the rules would be sufficient, and the recording screen's usage consequently self-explanatory. Following the thinking aloud test session, though, it seems the intended game rules are not intuitively clear, perhaps in part because of their novelty.

Finally, the system for player match making and picking responses was unclear in several aspects. The game flow works as follows:

1. One player, the initiator, starts a mix by posting one clip. This becomes a „public mix", and several players can post a clip as response
2. The initiator sees the clips, and picks one of them to continue the mix
3. When they do, the initiator and the player whose response they picked get matched up to complete the rest of the mix in private
4. The other responses get discarded, and the mix disappears from the list of „public mixes"

Confusion arose from step 2) upon visiting the picking screen. Often, there would be just one response; in these cases, the buttons „previous" and „next" were greyed out – it was not clear to the players that these buttons referred to other responses to the same mix, one player mistakenly affirming „ah, I only have one mix, therefore I can't go to the next.". Rule wise, players seemed to understand that there could be multiple responses to a public mix. What was less clear to players was the process following step 3). One participant remarked „Ah, I can respond to all these public mixes. Then the creator can append something. And then...I don't know, can only I continue, or can anybody join in? [...] Does the host need to continue, or do they just start the mix?", another questioned before submitting their first response, „What happens when I respond now?". Just one player, the one who started a mix and picked a response as their first interaction, acknowledged „I picked the player, so I guess I'm locked into that match-up, and the others...probably get deleted". While the match making rules aren't overly complicated, there are a few different steps to them that are too much to sum up in a single sentence. An optimistic goal would have been to let players „find out" how the system works by playing through the process step by step and finding out naturally. While this approach

did show some promise, multiple players voiced confusion long before they reached steps that could potentially clear up that confusion.

One player noted „I can't see who made these clips", their tone suggesting that would be a weakness, drawback or oversight, potentially caused by an incomplete implementation. While not being mentioned at all by the others, the clarification of anonymity as design choice evidently also had room for improvement, though not as glaring as other game rule misconceptions.

3.2.4 Usability weaknesses

Apart from revealing conceptual ambiguities and areas of confusion regarding the game's rules and purpose, the test session also revealed several more usability issues that hindered users from completing tasks they did understand. There still remained some issues with the initial recording screen. A big one was that players initially did not understand how to start the recording process while watching their selected YouTube video. One participant had to experiment a bit, before reaching the conclusion that the recording button needed to be held. In retrospective, they recalled „Initially I didn't understand how to set the starting position, but I understood it after seeing the button light up red", and came to understand the intended usage by themselves. Another player initially tapped the recording button, causing the „duration needs to be over 5 seconds" toast to appear. After clearing up some confusion about the screen's purpose, they also surmised „Do I need to press the camera...? Oh, hold it, I get it." The other users did not find out by themselves at all. One participant questioningly voiced their assumption „do I need to press the camera once to start, then again to finish...?" and consequently tapped the button twice, intending to frame a video segment. The toast informing of the minimum duration popped up with each tap, but went by unnoticed. Another participant first held the button for a moment, prompting the same toast. They then voiced their intention, „I'm now trying to find out how to select those fifteen seconds", seeking, pausing and resuming a few times, before finally resigning „I don't get it."

In general, text pop-ups were not visible enough. In the thinking aloud demo, this manifested mostly through toasts in the recording screens, but also applies to further textual feedback of the final prototype. Text was usually wrapped in a semitransparent box; one participant specifically pointed out that they had some trouble reading the text because the boxes were not visible enough („Messages should be less transparent"). Another participant, as mentioned when discussing the recording screen, did not notice the pop-ups at all even when they appeared two times. While text message visibility was already increased from the initial recording prototype, further accentuation was needed.

Another issue during the initial recording was the lack of a designated timer. Upon pressing the recording button, it would light up red, and the seekbar, the segment would be highlighted in a different colour. While this did give some feedback about the ongoing recording, in practice, the highlighted segment would vary depending on total video duration, so players really had no way of knowing the duration of an ongoing recording.

To prevent frustration about clips being discarded for being a bit too short or too long, clips that were barely not long enough were extended to fill up five seconds, while if the recording was too long, the recording would set the end mark after fifteen seconds while leaving the start mark in place. It was assumed that players would be looking for specific start- and end points, while caring less about the actual clip time. This was disproven by three players asking or complaining about the lack of a timer, being especially irritating to users wanting to record short segments („Does it tell me how long five seconds are?“), the same held true for recording longer video passages, causing another participant to manually count up to ten while watching and holding the button. A less significant annoyance was mentioned by one participant, who pointed out after a failed recording (caused by tapping the button) that navigating back to the originally intended clip start was cumbersome.

The perhaps biggest usability issues occurred on the fine-tuning screen. The screen was designed as such that the video player allowed for playback from clip start or two seconds before the end. Below the player was a seekbar with two knobs, one respectively for the starting- and ending time stamp. In the middle of the bar was a short, thinned and greyed out section. The idea was to compress time in the middle, that would usually not be needed for fine-tuning, while leaving more screen space around the time stamps. The actual recording was represented by the entire seek bar segment between the two knobs. However, two participants interpreted the thinned out bridge as their recording. After trying to adjust the clips using the knobs, one participant was also confused about not being able to move the knobs across the bridge. Neither of the players came to a satisfactory conclusion through experimenting, and ended up submitting the clip as it was.

While watching responses to their public mix, one player initially skipped ahead to the other player's clips (by default, the entire mix would play). They then decided they were only interested in the transition between clips. However, the screen only allowed for playback from a clip's start. Being interested in the transition between clips, while not wanting to watch one's own segment in its entirety, seemed like a common use case, so it was adapted for the final prototype.

Another issue was brought up in regard to the list items visible on the home screen. On the top were a player's own mixes that were currently waiting for the player's response, below were public mixes. A player's mixes that were waiting for a response and thus did not require player action were not shown, with the goal of only showing the player content they could currently engage with. However, one participant, upon noticing that the mix with their newly submitted clip wasn't visible to them anymore, voiced frustration about this implementation, and noted „I'd like to see mixes where I'm currently waiting for an answer“.

A minor issue was found while browsing YouTube videos, where one participant was irritated that no information about a video's playback duration was displayed. Also, a feature request was made for further social options, saying that a scoreboard, emojis or voting would be nice to have.

3.2.5 Insights

Several statements could be categorised as insights gained about the application's functionality. Talking about the home screen, one participant stated „I could respond to the public mix", another „I could start a new mix". While these were valid, it was already described that the initial options were wildly misinterpreted, especially in regard to public mixes being interpreted as categories. Later on, a player realised „Ah, I could respond to all of these public mixes!", and another gave a more verbose description (and correct interpretation) of creating and joining mixes – though as described, these realisations only came after a significant detour.

After completing a recording, one player watched the segment and immediately followed up by saying „And I can send that now". The other three explicitly voiced their acknowledgement of the option to „adjust" a clip; two of these players exhibited the same pattern of first checking whether the recording met their expectations, before taking note of the screen's further options. The initial recording's automatic playback therefore seems to achieve the intended effect of lifting the player of the burden of action, instead showing them what the screen is about, as it was only afterwards that they tried to interpret the screen's remaining options. After proceeding to the fine-tuning screen, one player quickly identified the knobs as the time stamps. While the general interpretation was correct, there was still a significant misunderstanding of how they worked in detail, as described before.

When reading an informative toast after submitting their clip as response to a public mix, one participant read aloud and commented „'Clip submitted, if the creator liked it, they will continue the mix with you' – makes sense, I pass the ball to them and don't need to see it on the front page anymore". This shows one user appreciating the fact that the front page only shows immediately actionable entries, but stands in contrast to another user's frustration about not seeing previous work. Finally, the picking screen was acknowledged with the recognition „and now I can append something again" while tapping „choose this clip as response".

3.2.6 Emotional responses

Furthermore, some users also made statements that led on to some level of emotional involvement, which will now be discussed as the last aspect of the thinking aloud tests. One participant in particular voiced their dissatisfaction of other player's video- or clip choices, such as „my predecessor chose a part that is neither interesting visually, nor auditorily" – of course, that is subjective, but due to the participant's unfamiliarity with the system, many clips might have been made experimentally and without a lot of regard for the content's quality. Later on, the same participant critiqued an ongoing mix for „dragging the category through the mud", displaying regard for the category feature. One takeaway from this is that the prototype already provides the potential to feel something about the content, to be aware of the other player's existence and thought process. Another is that categories provide an additional pillar for players to lean on,

which might be an upside, considering the evident confusion about the concept. Another participant also mentioned in regard to categories, „Memes are good that's something most people can get into“, supporting the same notion. Responding to the game concept in general, one user claimed „this is next level meme warfare“, also showing that the game was perceived in a light-hearted manner.

Two participants verbalised emotional investment in their video cut's and mix transition's quality. One commented while viewing their initial recording, „I probably didn't get the perfect timing...oh, I almost did!“, showing visible excitement upon seeing the transition. Another initially said „I'm trying to think of the best answer“ when starting their search for a response to a public mix; later, after recording their clip, they showed disappointment upon watching the result („I thought it would be better“). Also, one of them showed excitement when they did immediately know a response for a public mix (though thinking of responses quickly was rather an exception, more on that below). These sentiments were understood as positive feedback for the implementation's ability to capture the player's interest, and to let them play the game moreover than just test it.

When picking a partner as initiator, a participant stated their opinion that „it should be the norm to view all the received responses“, saying that all player's input deserves recognition, and possibly implying that throwing away the other efforts would be wasteful.

3.2.7 Entry barrier and difficulty

Finally, an often represented opinion, voiced a number of times by three different participants, was essentially that the game is hard and requires extensive (YouTube-)knowledge. All of them expressed similar sentiments while looking for a response to a public mix: „You'd have to know some iconic quotations, but I'm drawing a blank“, „This is really difficult – but that makes it all the more exciting“ and „I think it's very difficult if you don't know a specific video“. Upon aimlessly browsing for videos, another somewhat frustrated comment was „YouTube doesn't know memes like I do“, supporting that suspicion.

To deal with difficulties and come to terms with the concept, one of the three players focused on public mixes, „to understand what's going on“. Later on, they stated „when trying it out, it's easier to first take a look at existing material“, and finally made a suggestion at the end of the session, regarding initial difficulties and barriers: „For beginners, it would be really nice to see a whole mix first, so they can grasp the potential, realise what you can create with it“.

Regarding general navigation in the application, two out of four players first visited the profile, located behind a button to the upper right. All users responded to public mixes on their own, but three out of four did not create one until prompted to do so. One of them verbally explained that behaviour, stating that it was easier to start out with something tangible while still unfamiliar with the game. Just one player created a mix before joining someone else's, though that was also only after they got confused with the process of joining public mixes. One player tried holding the display sideways

at one point; a landscape orientation was not yet supported, and while planned, the occasion served as a reminder of the feature's necessity. Finally, three players at some point noticed that their phone's speakers were turned off or too quiet; since this is a hardware limitation, it was not addressed further.

3.3 Final Prototype

The final test version built upon the second prototype, polishing the most criticised features, while adding on a few more that were deemed important for a good player experience.

The colour scheme was changed from the prior YouTube-esque white-red combination to grey as primary colours, with orange and green as accent colours. This was adopted from the original version, which went for a graffiti-on-asphalt vibe. Orange served as passive, green as active accent colour, which in this version manifests in buttons and seek bar colours.

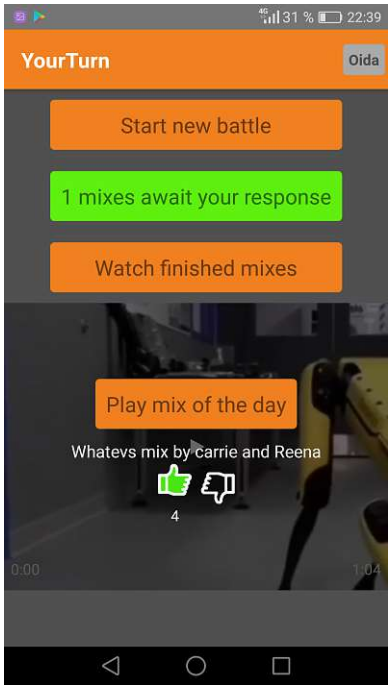

Figure 3.16: Home screen of the final prototype

The previous prototype's home screen was scrapped and replaced with regular menu items, along with a video player offering to play the "mix of the day". Menu items were labelled with text in a straight-forward manner, offering the options "Start a new battle", "My mixes" and "Watch finished mixes". The addition of the video player serves two purposes, the primary motivator being that it functions as a gateway for new players,

inspiring ideas and guiding them into the unique communication model. Another benefit was that it might motivate users to create a mix visible on the front page, themselves.

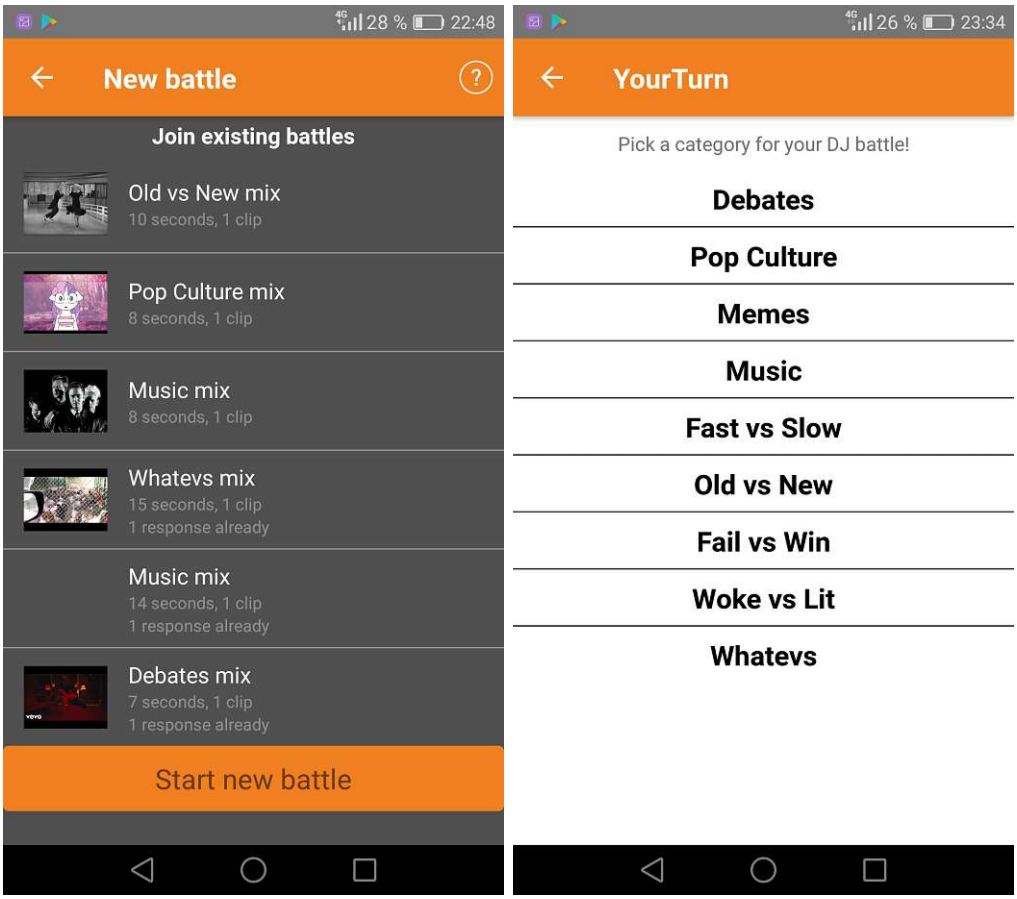

Figure 3.17: Joining and creating new mixes

"New battle" leads to a scrollable list consisting of all public mixes that were currently available (mixes with just the initial clip, without a partner). Clicking a list entry leads to playback of that mix, accompanied by the prompt to look for a fitting response. On the bottom of the list, there is a button "create new battle", which lets users start their own new mix instead of joining others'. The button was purposefully placed on the bottom to draw attention to existing openings first, encouraging participation in those. Upon creating a new mix, users are presented with a choice of categories, followed by a prompt to find a fitting initial clip.

Both creating new mixes and joining existing ones lead to the same workflow. First, players would browse for YouTube videos using a search function. This screen is functionally equivalent to the preceding prototype. Selecting a video leads to an overhauled recording screen. Upon suggestion confusion in the previous version, the recording button's signifier

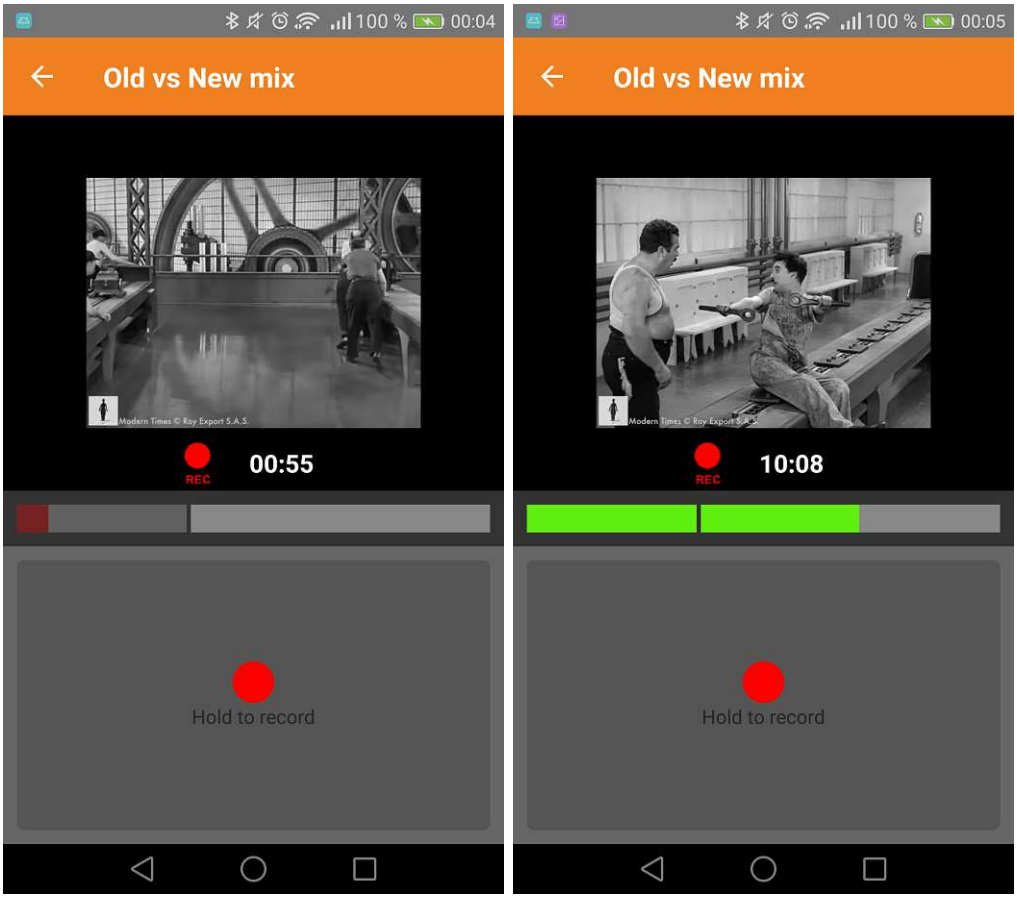

Figure 3.18: Recording process in final prototype

was changed to the well-known red dot, accompanied by textual instruction to hold the button. Upon starting the recording, the seek bar now turns into a timer that informs the user of the ongoing recording's duration. As the minimum clip length is reached, the timer bar turns from red to green, indicating that the clip is now valid.

The screen following the recording was split into two parts. Initially, the player is presented with a mix viewer that lets them view their recording in context. It starts playback by default at the start of the recorded clip, or near the end of the previous clip, if the mix already had clips. Since the previous prototype's follow-up to recording (directly progressing to a fine-tuning screen) lead to confusion, this reviewing screen should serve to re-establish the context and reaffirm that a clip was just recorded. Should the user not be satisfied with the result, they then have the option to adjust the clip by navigating to the fine-tuning view via a button. The fine-tuning screen itself remains similar to the previous prototypes, with the main difference being that it colours the recorded segment on the seek bar in bright green, guiding users to recognise the section

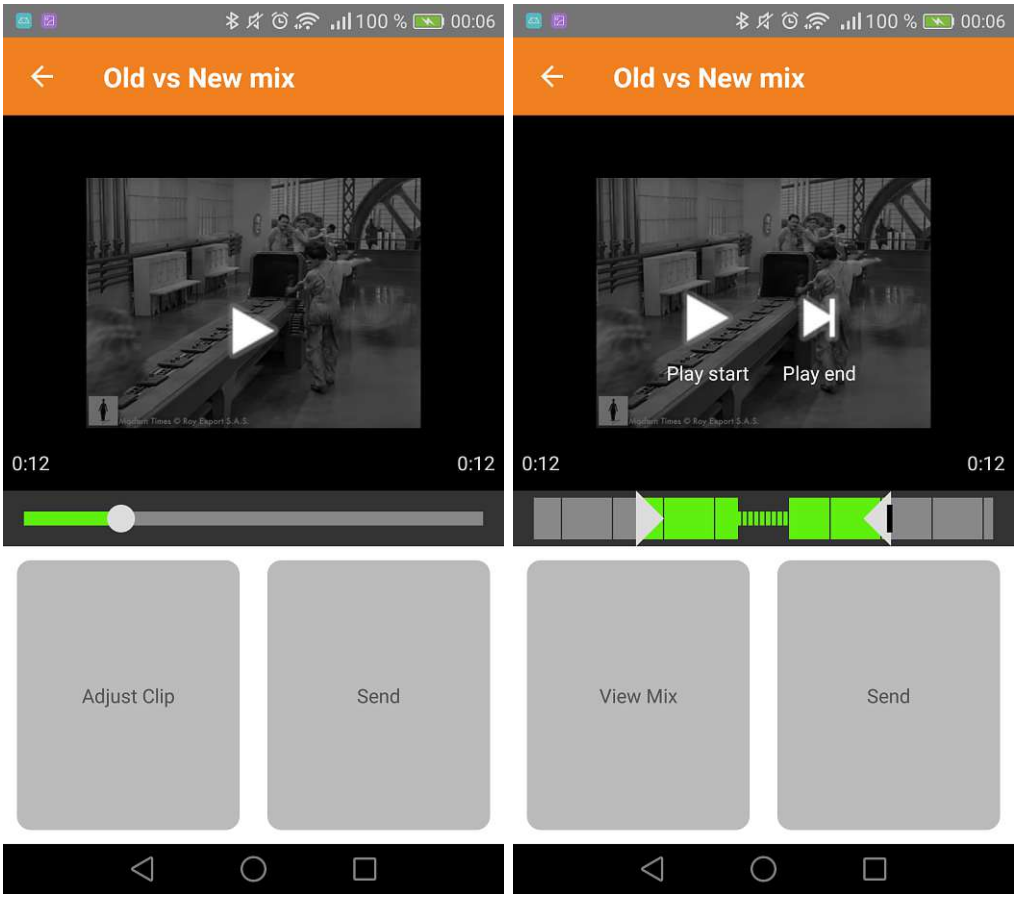

Figure 3.19: Review- and fine-tuning screen

between the two knobs as the recording, rather than misinterpreting the bridge in the middle. Additionally, the knob elements are visualised as split diamonds to emphasise its functional difference from the regular seek bar knob.

The second button's label "My mixes" leads to all mixes that a user is involved in. In case there are any mixes waiting for the user's input, the button lights up green and the label changes to "(x) mixes await your response". Visual highlighting was implemented to draw attention when receiving responses. The user mixes section employs a list split in three parts, similar to the previous prototype's home screen; At the top are a user's public mixes that received responses already. This leads to another screen that lets the user pick their mix partner by choosing their favourite response. Below are mixes were it's the user's turn to post the next clip. This leads to the same procedure of searching and recording as described before. Placed at the bottom, there is a list of the user's remaining mixes that currently await their partner's response.

"Watch finished mixes" leads to a list of all mixes that reached a playtime of over sixty

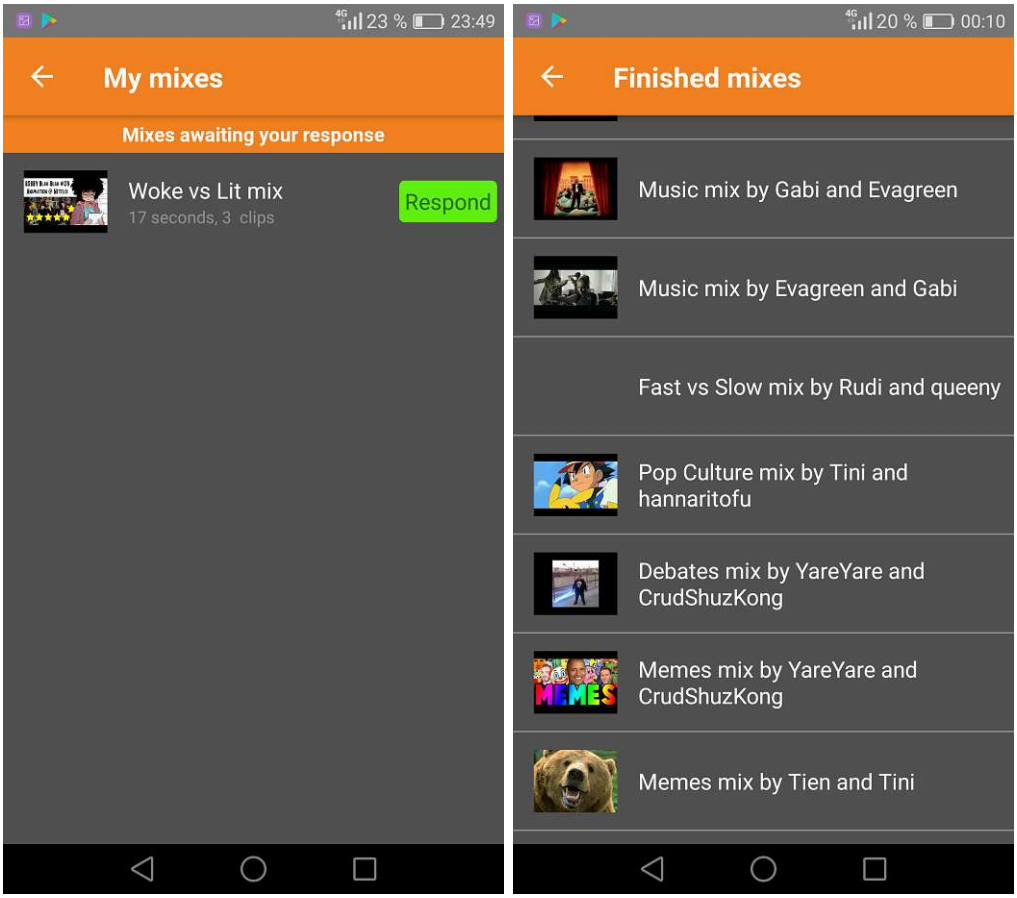

Figure 3.20: Browsing own mixes and finished mixes

seconds and consequently got closed off. This is the only section where players can watch mixes they were not part of.

Finally, as visible on the home screen, a voting feature was added. Finished mixes could be liked or disliked. Then, each day, the new mix with the most likes was shown on the home screen.

CHAPTER 4

Evaluation

The official test phase lasted for two weeks, although the servers remained online for another week afterwards, permitting users to continue any unfinished mixes they were creating, should they so desire. Participants were recruited in class and in the author's extended social circle; potential recruits were given a short pitch about YourTurn's concept, and had the opportunity to sign up afterwards. It was clearly expressed that participation is voluntary, signing up without participating would be fine as well. A link to the prototype was sent out weeks later, along with installation instructions. After the gameplay test phase was complete, a survey was sent out.

Analysing the test phase encompasses two parts: one is analysing produced mix and player activity distributions. A visualisation tool was made to convert the underlying data into meaningful metrics. Another part is analysing the survey results, primarily focused on qualitative statements. The visualisation tool allows for cross-referencing survey answers with the user's corresponding activity data; parallels are drawn wherever informative. Matching survey responses to activity was conducted by mapping usernames to random androgynous names. As such, any names used in the following writing give no information about the participant, instead merely serving illustrative purposes.

4.1 Quantitative data

4.1.1 User activity in general

There were 44 registered accounts in total, 35 of which displayed a minimum amount of activity. Minimum activity is defined as having contributed to the platform either through posting at least one video clip (as a new mix or in response to another), or by answering the survey.

28 users contributed by submitting at least one clip (22 of whom also voted, 16 of whom filled out the survey), 27 users by voting (22 of whom also submitted a clip, 15 of whom

Figure 4.1: General user activity

filled out the survey), and 19 users filled out the survey sent out after the test phase. Two users, Ripley and Skylar, only watched openings and finished mixes, but filled out the survey. It is interesting that of the eleven users that didn't actively contribute anything, four still visited the app throughout the next days, suggesting the app's potential to spark curiosity via passive consumption, in spite of the primary focus' firm fixation on private interaction and active participation. Whether passive consumption is desirable or worth building upon is debatable; an argument for captivating passive users is the potential to convert them to active participants, since multiple users reported initial insecurities and hinted at participation shyness (as will be described in more detail later).

4.1.2 Mixes and clips

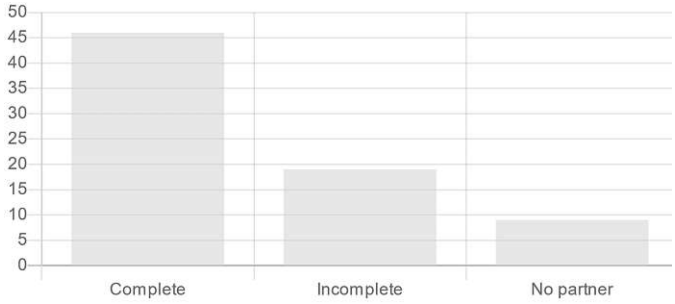

Figure 4.2: Mixes

74 mixes were initiated and 457 clips recorded. 46 out of them were completed, 19 mixes were in production by the end of the test phase, and 9 more were only initiated but without partner, either because nobody responded or because the initiator did not pick a response to continue with. A majority of mixes was performed by the most active twelve players, who had playtimes of approximately four hours and above. These players completed 38 mixes, while leaving 13 more unfinished, and 6 without partner.

The nineteen started but unfinished mixes had a relatively wide distribution of playtimes. Prior to analysis, one assumption was that players would start creating mixes together, but stop before it went anywhere, meaning a bigger portion of unfinished mixes would end with relatively short playtimes and clip counts. However, the test phase data directly contradicts that prognosis, as the peak of unfinished mixes (more than half of them, 11 out of 19) exceeded a video playtime of 45 seconds, and were thus pretty close to the completion mark at 60 seconds. The remaining unfinished mixes had evenly distributed durations between 15 and 45 seconds.

Since completed mixes become publicly viewable, while mixes in progress are only visible to the player in responsible for the next clip, finishing mixes is a central corner stone of YourTurn's gameplay – having a high number of stranded mixes is thus counterproductive to the game's enjoyability. Cross-referencing survey results and player activity, many mixes remain unfinished not because either player stopped playing the game altogether, but instead because they stopped responding to that particular mix. Some participants voiced dissatisfaction with their partner's answers, and mixes not going anywhere, in the survey. As such, the prevalence of unfinished mixes is not directly caused by factors surrounding the test phase, but rather the game rules themselves. While by no means disastrous – a majority of mixes did find completion – it could be worthwhile to explore some rule tweaks such as reducing the time requirement, reopening inactive mixes to the public, or letting users end a mix prematurely.

4.1.3 Clip durations

The game required recorded video clips to have a minimum duration of five, and maximum duration of fifteen seconds. It is necessary to regulate the durations to an extent, preventing mixes from finishing very slowly if players exchange very short clips, or finishing with too little clips for a meaningful exchange in case clips had no upper time limit. The downside to this is that players might feel limited and frustrated by poorly chosen time limits. In order to inquire about the chosen value's adequacy, I looked into the distribution of video times of all recorded clips. First off, we find an entirely even split between clips shorter and longer than ten seconds (229 shorter, 228 longer). While for the most part, no particular clip length can be observed as being particularly popular, the (perhaps to be expected) exceptions to this are the limit values. 77 clips were just 5 seconds long, and 69 took over 14 seconds. Thus, close to a third of all clips were near one of the two time limits, with no significant difference between upper and lower limits. Arguably, the players who recorded these clips would've liked them to be even shorter or longer, causing these unnatural peaks in an otherwise even distribution.

Due to the even spread of shorter and longer clips, there is no apparent need to shift the time limits in either direction. Whether the window needs to be enlarged entirely is debatable – on one hand, the game design requires time limits to a certain extent, on the other hand, the visible clusters around time limits suggests a certain dissatisfaction on the player's end.

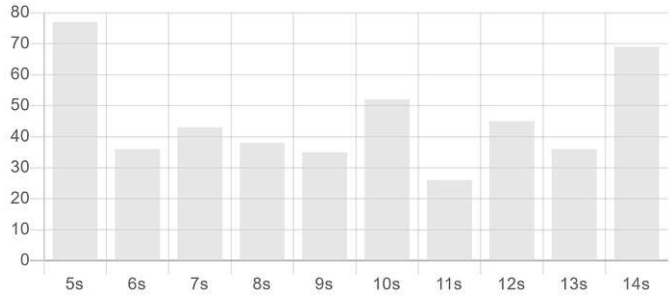

Figure 4.3: Number of clips per duration in seconds

An alternative to changing time limits could be found in more fundamental rule changes. One option would be to disregard the accumulated play time in determining a mixes' completion, instead using clip counts or letting players determine the cut-off point of a mix themselves. There are also arguments to be made for keeping the current mechanics, however. The lower time limit doubles as quality insurance. Removing it might lead to an influx of reaction-image type responses.

Furthermore, games often profit from simplicity, and creativity gets spurred on by limitations. Giving players the freedom to choose the finish line for mixes themselves might complicate their creation by a considerable amount. The interface would need to be bloated by a function that's necessary only once per mix. Then, an extra confirmation step would be necessary to make sure both parties consider the mix finished, reducing the game's immediacy. Lastly, it is worth considering such a function's impact on a mix creation's meta level. Currently, players already mention troubles coming up with fitting responses. If choosing the mixes end point is added into the equation, posting a response might become even less straight forward, straying from the game's intended nature of a quick game. However, it does seem to be a gripe to some players. If the mixes' automatic completions are kept, thinking of ways to reduce the enforced time limit's impact on the player's enjoyment might be worthwhile.

4.1.4 Categories

To help users find inspiration for new mixes on one hand, and create a frame of reference for potential partners, a variety of categories was available. For each of the 74 mixes, mix initiators could choose between nine categories. How these categories should ideally work, and which selection makes for the most enjoyable gameplay, was not a solved problem – instead, these test findings should help make a more informed decision in future versions.

Most categories fit into one of two general types. One represented various topics and genres (music, debates, pop culture, memes), the other gave instructions about the two user's intended interaction, represented by opposing themes. The former had 35 mixes (and 20 without their most common representative), the latter 26 (and 15 without their most common pick), suggesting that topical categories might have been slightly easier to

grasp, although the difference is not big enough to make that definite statement.

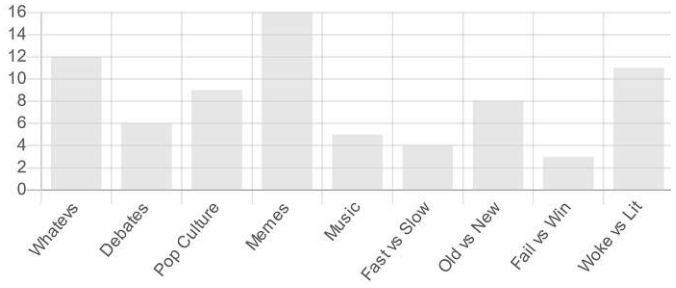

Figure 4.4: Number of mixes in each category

First off, a few categories turned out to be a lot more popular than others, as the top three categories account for more than half of the mixes. „Memes“ was the most popular category with 16 entries, followed by „Whatevs“ with 12 entries and „Woke vs Lit“ with 11 entries. Moderately popular categories were „Pop culture“ with 9, and „Old vs new“ with 8 entries. The 18 remaining mixes are split between the least popular categories „Debates“, „Music“, „Fast vs slow“ and „Fail vs win“.

12 more mixes were created under the „Whatevs“ category, which falls under neither category type – this category was included to allow for other ideas that players might not pursue due to a lack of category, and additionally to inform about the current category selection's inadequacy.

The most picked category was „Memes“, 16 mixes were created in this category by 12 unique users. This was perhaps to be expected, as memes are a contemporary phenomenon of high popularity, especially among the test phase's most commonly represented age. As sort of an in-joke that many are in on, memes are the lowest common denominator that require the least shared interests or expertise. Looking beyond the current popularity of memes, however, another trend becomes apparent when examining the three biggest categories – Memes, Whatevs, and Woke vs Lit, in that order. While these belong to different types (representing themes, representing mode of interaction, no desired category at all), they all share the characteristic of being very vague and non-committal. Whatevs was already specifically designed as such, Woke vs Lit was purposefully nonsensical, intending to provoke a battle between concepts that are highly subjective and lack clear definitions, and finally memes, which arguably span the entirety of humorous material.

One possible explanation is that non-committal categories are the easiest to come up with and participate in. Another would be the universal appeal, ie everyone knowns material to contribute to those categories. However, both of these are only partially valid. The other categories were also designed to have wide-spread appeal and/or wide accessibility, examples of this being music or pop culture, which arguably most people have opinions and input on. In this context, it is interesting to see that a previously very common topic, music, has taken the back seat in this iteration. The 2012 version of the game featured similar mechanics and rules, so in theory, the same kind of mixes that emerged back

then, could emerge now, and vice versa – therefore it is interesting to see such a sharp decline in a previously popular category. Perhaps the most plausible explanation lies in the game's introduction to new players. Before, the game's introduction and promotional material heavily alluded to DJ battles in the way of performing musically oriented video mixes. This time around, the concept was still explained to test players as „DJ battles using YouTube videos", however, music was emphasised less than before. This leads to believe that what players create is heavily influenced by what they've seen before in the actual app, and less what they usually watch on YouTube, or even by what the existing range of categories would suggest. Following this lead, the concept of categories might need a more fundamental overhaul than simply reviewing the selection of categories.

4.1.5 Discarded clips

A major change from the original YourTurn game was the process through which players who would create a mix together were matched up. The original employed a first-come-first-serve principle, so whoever posted a response first got matched up with the initiator. There was no limit, so players could post their responses to as many openings as they liked, automatically matching up with the poster of said opening. Unfortunately, this lead to problems with an abundance of low effort posts, and quantity prevailed over quality – therefore, one aspect of the remake would be to rethink the match making system. The new iteration introduces a review process, letting the original poster pick between different clips. This not only fixes the original spam issue, but presumably also boosts the compatibility between mix partners. A foreseeable downside to this was that some posted clips would be discarded – since the opener had to pick one, the others would to waste. Test phase result are giving some insight into the new system's workings, and potential downsides' magnitude.

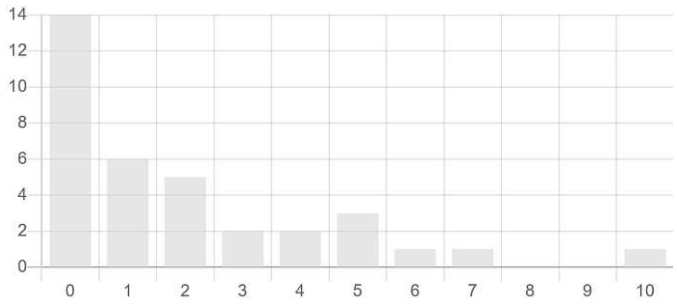

Figure 4.5: Number of players (y axis) with respective amount of discarded clips (x axis)

A total of 68 clips were discarded, with 21 players posting at least one clip in response to an opening without getting picked as a partner. The number of discarded clips per player ranges from one to ten, although the latter is an outlier. Nonetheless, five additional players saw five or more clips discarded, and nine players posted between two and four clips that remained unpicked. On closer inspection, players with high counts of discarded clips might have been less impacted by those discarded clips, as they simultaneously

posted many more clips that were fruitful. For those players, at worst one in four clips would get discarded, with an average of one in five clips. However, there were problematic cases where users would only post a few clips, but not receive a response for a significant portion of those. Specifically, Freddie posted one clip in response to someone else, but received no response. Activity logs show that they logged in three more times, but saw nothing new, before quitting entirely. Quinn shared a similar fate, initially responding to one mix, but not joining into the mix because the mix's author chose a different response to continue with. As opposed to Freddie, Quinn made one more attempt some days later, responding to yet another mix, and this time they did get picked and received a response in turn. However, while Quinn logged in and watched the work-in-progress mix two more times, they did not respond anymore. Regrettably, there are no survey responses logged for this user.

Another user with few clips, whose had a clip discarded, seemed less discouraged by that fact: Reed initially posted two clips as responses, and while one was ignored, the other received a response. They continued the mix, but afterwards stopped logging in to check for more responses. In the survey, Reed answered that they didn't receive a response to some clips, but that it didn't bother them. Rudy posted one mix initially, to which they received no response until their next log-in, where they posted two more clips as response but stopped logging in afterwards. Jeri initially posted two clips as responses that never received responses, and then created two new mixes. After a few more days of waiting, they finally received responses and Jeri could continue playing. However, they quit soon after, perhaps motivationally drained from many failed attempts. Jeri was also one of the few users that stated being bothered by clips that went by without response, additionally stating the necessity of heavier moderation to prevent mixes from stagnating and going to waste.

While the prototype's take on match making offers certain advantages, its downsides are clearly felt. Considering the original version caused a dramatic drop in mix quality, one could argue that the prototype revision is a net improvement, but revisiting the match making system yet again might be a worthwhile consideration for future versions.

4.1.6 Days active, Playtime

The number of days of activity is spaces out relatively evenly for all users that contributed at least once. Users that did not contribute actively had fewer days of activity. The distribution of total playtimes shows that 13 players played less than 30 minutes, while the distribution of the more active 22 players has a long tail, wildly varying in terms of playtime. 10 players had a total playtime of more than 30 but less than 150 minutes, 6 players a playtime between 210 and 300 minutes, and the 6 most active players had playtimes exceeding 5 hours.

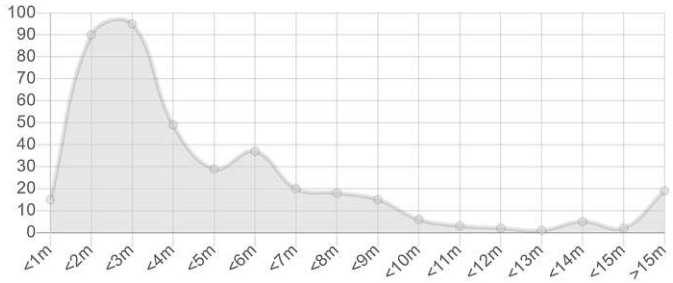

Figure 4.6: Time it took to record a clip (in minutes)

4.1.7 Clip recording times

A commonly cited property of the old YourTurn game was that playing it took a lot of time and effort, because the acts of finding a fitting video and recording a good snippet of it would take a lot longer than expected. This time around, the time it took users to complete their recordings was logged to inform the necessity of counter measures. A clear peak can be seen for recording durations less than two, and less than three minutes – a total of 200 recordings took no more than that amount of time. 115 more recordings took up to six minutes. The 91 remaining recording times are higher than six minutes, 21 recordings exceeded a production time of fifteen minutes. It becomes visible that creating clips moderately fast is a possibility, as approximately half of them were recorded within three minutes. This interval would render it viable for short play sessions on public transport, for example. Roughly another quarter took three additional minutes, an amount of time that borders on being too much for quick sessions on the go. The remaining clip recordings demonstrate that the sky's the limit for perfectionists. Put into perspective, five percent of recordings took more than 15 minutes. For these much longer recording sessions, it is necessary to consider two dimensions of use cases. One is the difference between taking long due to being unable to get a moderately satisfactory clip at all, or going the extra mile out of sheer perfectionism when a plausible response could've already been submitted much faster. From a game design perspective, being able to fine-tune and perfect one's creations seems like an appealing option for the users interested enough in doing so. These cases would not harm the concept of being a quick on-the-go game either, as these long recordings are only performed when time permits, while they arguably would've been submitted in less refined states, given different real world circumstances at the time of recording. Being locked into the activity due to continuously producing inadequate results, on the other hand, seems demoralising and most of all unusable for short play sessions. Since it is not possible to differentiate between these causes using an analysis of log times alone, survey results will give further insight into the prevalance of both cases.

The other is where the actual hold-up occurs – both the choice of YouTube video to record from and the video cutting process were mentioned as time-consuming activities. One possibility of the game concept that was not discussed before, is the mulling over

options for multiple sessions or days. To this purpose, I'll provide an analysis of time and session intervals between first viewing a response, and responding to it.

4.1.8 Routes

The spread between activity counts for each menu point were relatively even – the home screen was visited a total of 3658 times, 1546 public initiates, 1772 users personal mixes, 1645 completed mixes. This aligns with the common survey response of opening the app just to check out what's new. It also suggests that the three chosen main menu components all shared a similar relevancy to the user's interests; it stands to reason that a menu entry perceived as unimportant would've been visited noticeably less. The most interesting takeaway of this is the activity level for the completed mixes route. Findings of the old YourTurn study lead to the initial assumption that other's creations would likely be of much less interest than one's own mixes. However, activity logs clearly display that mixes of other users were commonly watched as well. The perceived relevance of other user's creations could possibly be dictated by their prominence in the user interface.

4.1.9 Sessions

There were a total of 883 sessions played by users, sessions being defined as continuous activity between short time spans. If an activity occurred no more than 15 minutes after a preceding activity, it was counted as being part of the same play session; Otherwise, it would mark the start of a new session. An exception to this rule is the submission of new clips, as players would potentially take more time than that to complete their recording. Analysing the distribution of all session lengths, one can see approximately half of all sessions (443) lasting for less than a minute, and another 73 less than two minutes. After that one finds a slow and relatively steady decline of session counts, with 310 sessions between two and thirty minutes. Interestingly, the tail of this distribution drags out a lot, and 57 sessions lasted longer than 30 minutes. Evidently, about half of the time users started the game, they merely checked whether there was any new activity, and presumably exited the application again when there was none. Checking for updates typically occurs out of curiosity, and sends a positive signal in regard to the game's interestingness (though it should be kept in mind that the abundance of short sessions was exacerbated by a lack of push notifications).

User's motivation behind short sessions can be estimated by analysing their route distributions: in 516 sessions lasting up to two minutes, the completed mixes screen was visited 291 times, a user's mixes were queried 518 times, and public mixes 367 times. The section of user's mixes was most relevant for personal updates, thus coinciding with „checking for progress“. The section of open public mixes still gives the option of contributing and producing new material, but is already distanced from personal involvement, as it is more akin to a public forum that one can respond to, rather than a private conversation. Finally, finished mixes of other users were also visited in three out of four logins. The prevalence of visiting multiple routes, some of which are partially or

not at all related towards a user's personal progress, point towards more involvement than merely checking for the existence of new messages. Instead, users on average appeared interested enough to take a peek at most sections. Overall, the number of and behaviour during short sessions suggest that players are interested in both personal updates and general activity, while the session time distribution's long tail hints at a success in making the game's time requirement flexible. Put together, these are solid arguments supporting the claim of the concept being predestined for a mobile era, where short sessions and lurking potential is welcome, while more invested sessions are possible but optional.

4.1.10 Activity decline

In general, it is common to find players of any game most invested during their first session of play, whereafter interest slowly declines. In extreme cases, players might quit after one or two sessions, or on the other end of the spectrum, keep up their activity for years. While varying between individual players by personal interest and circumstances, different games have varying distributions of such an activity decline - in that sense, observing the development of a player's playtime throughout their involvement can indicate the game's expected span of activity and long term potential. To this end, I visualised the relationship between the YourTurn testphase participant's playtimes and session counts compared to their total count of active days. There was a slight decrease in both number of sessions per day, as well as session duration, the more days of activity had passed. It is encouraging to see many players return and visit the game for many more days following their first session, with only a fraction of players quitting upon their first visit. However, the decline in activity, while slow, was steady; eventually, the game ground to a halt, even though servers were still up and running for a while.

It needs to be kept in mind that due to the test phase's experimental nature, various factors could potentially bolster, but also inhibit activity decline. Participants might feel encouraged to play even though they wouldn't feel the desire to do so autonomously, since they did sign up for the test phase formally. It was attempted to diminish any perceived obligations by emphasising the optional nature, stating that it was perfectly fine to sign up and play just once, or not at all; still, it is likely that wanting to help the researcher was a factor to some participants. On the other hand, the application was just a prototype, which showed in features as much as it did in polishing of visuals and usability. Overall, the change in activity over time suggests at least some longer term potential, as players were engaged through most of the test phase, in spite of the prototype nature and, compared to public multiplayer games, low amount of players.

4.2 Qualitative data

As the test phase was more exploratory in nature, a central goal to analysis was to not just verify existing assumptions; the game concept itself is still largely unexplored, and exclusively probing for verification of a pre-established set of assumptions and questions would not do justice to the potential problem space. It was therefore important to instead

allow participants to voice any opinions in an unguided manner, as to not just receive unbiased feedback, but also to let participants choose the talking points themselves. Therefore, the survey following the test phase purposefully asked many open-ended questions.

The analysis of these free text answers was based upon grounded theory, using an inductive approach for category formation[May00]. Codes emerged on two levels - the lower level codes paraphrase and summarise the statement, stripping nuances but leaving the core meaning intact. Via clustering, an abstract layer was discernable. In the first step, all survey responses were reduced to their core meanings by separating them from the asking question and summarising their message in a few words. In many cases, a single response was deconstructed into two or more sentiments, either if the response directly made multiple statements, but also if one statement operated upon implicit assumptions that formed a different sentiment. For example, if a user argues that a video mix is fun if the (video-)responses are good, that implies that "good" responses exist.

Following this reductive approach, many sentiments appeared a number of times, and ultimately, 34 sentiments emerged that occurred more than once, while 21 further sentiments appeared a single time. The sentiments formed set of discernable thematic clusters. Generally addressed topics were the game concept itself, feelings and emotions arising during gameplay, the social dimension and perception of other players, direct suggestions towards improving future versions, barriers and other issues that make the game difficult to play, and finally usage, regarding how the app was used. Most sentiments fit closely to one of these topics, some lay in between, and a few more didn't directly fit the structure. There also appeared relations between different clusters, some relating more closely to each other. Furthermore, some sentiments have connections that cross category boundaries. In the following, findings will be discussed separately by topic, and therein roughly in order of the sentiment's number of occurrences.

It should be kept in mind that while an effort was made to keep the level of abstraction similar between sentiments, in some cases the questions guided the participants more than in others. Where applicable, reference will be made to the sentiment's origin within the survey, giving more insight into the level of independence with which the thoughts were formed. Also, The absolute numbers of occurrences should not be used as the singular attribute giving a sentiment importance; some sentiments were simply easier to voice, and easier to think of.

4.2.1 Game concept

One central cluster formed around sentiments towards the game concept. With eleven occurrences, the most common sentiment not only in this section but across the entire survey is that the concept itself is good. The was expressed in various ways, ranging from direct expressions ("the concept is good") to euphoric exclamations ("It is a great idea"). The sentiment is basic and easy to reach, but at the same time very important as an indicator to the research question whether the concept is still relevant. The origin of

these occurrences often traces back to the question "What did you think of the game's concept? Did your opinion change over time?", as such, the response count toward the topic is not surprising. Content wise, the tendency is overwhelmingly positive, leading to the assumption that the opinions are genuine, rather than being courtesy prompted by the question. As such, the idea was overall well received, suggesting continued relevance to this day.

Another general sentiment was that the game is "challenging creativity", with nine occurrances. This reduction stems from a small range of responses, decidedly with positive connotations and the perception of the game as a place to unfold and spread one's wings. It is a fact that via the underlying platform of YouTube, there are uncountable options to pick between when formulating a response. That certainly explains the "challenging" aspect, but does not explain the need for creativity. The perceived need for creativity is likely explained by users' desires to find something unexpected. Following the game's rules, it would be simple to produce a mix with little creativity involved, by continuously appending more of the same. While technically, something is still created in the process, there would arguably be only little creativity involved. It seems, however, that players feel the need – without being prompted to, or rewarded for it – to find unexpected, more clever responses, which in turn makes creativity through thinking outside the box a necessity. At this point, the deductions above might seem like a speculative leap; however, other sentiments support this take, as will become apparent in the following sentiments.

Three responses made statements about drawing enjoyment from the connection between individual clips – one participant gave that direct response to the question "What made a mix fun for you?". Other participants had similar thoughts, though they gave voice to them in different contexts. This is one of the sentiments supporting the above statement: valuing the connection between clips puts emphasis on the concept of the whole being more than the sum of it's parts. It explains in part why the queueing up of YouTube clips, though technically not being different from other public or private YouTube viewing sessions, is a creative endeavour, instead of a simple presentation of newly found clips. A focal point is not the video material itself, but the associated meaning, and the logical leaps occurring with each new response.

Another sentiment with three occurrences is that the experience is diverse and multi-facetted. The pragmatic option is again provided by the vast library of video material available on the underlying platform, but the utilisation of said library to achieve a diversified effect – especially within a single mix – requires users with differing knowledge and views to interact with one another. This directly ties into the original YourTurn project's ambition of creating communication bridges between social islands. Stating that the game is a diverse experience without being primed to think about diversity, suggests that the original goal was achieved.

Two users found it important for clips to adhere to the mixes' categories. This is a somewhat controversial topic, as three other users rather felt that categories distracted from the overall experience. The users valuing categories importance apparently valued an underlying theme, thus a connection between clips. The negative aspects of categories

will be discussed in more detail later in the context of barriers. From a conceptual view, categories could be considered to diminish the diversified experience, and prevent mixes from taking unexpected turns enjoyed by some. In that sense, it reduces the potential for one kind of "meaning between individual clips", while focusing on a different kind of interconnectedness. Which of these is preferable, is an entirely subjective matter, and that is all the more reason to acknowledge two different approaches to thinking about mixes.

Finally, a sentiment only rarely directly stated, but very often implied, is the concept of "good answers". I find this an important talking point, as seemingly, all participants talk about the game while taking the existence of "good answers" for granted. When taking a step back, however, it becomes apparent that the definition of what makes an answer good is not trivial. Building from other sentiments, it is possible to come up with a variety of facets that might contribute to an answer's perceived quality; adherence to the category would be one, connection to the previous clips would be another. For connections to previous clips, different qualities might be considered, as discussed above – some might prefer order, others randomness. Some users might enjoy seeing old clips and having feelings of nostalgia invoked, others might be more interested in seeing new material instead. It is interesting to observe how users are not only diverse in their knowledge and background outside of the game, but also interpret the game's purpose and value in different ways, all the while implicitly agreeing on the existence of "good answers".

4.2.2 Entertainment

The second cluster of sentiments formed around responses which give insight into the player's feelings while playing the game, the most common being that the game is "fun" or "entertaining" in some way (with a total of 10 statements to that effect). Originally, the concept was thought up as a tool to playfully educate on communication and diversity. It is in that sense a success that many players perceive it as fun, rather than a chore, which only one player voiced in a way. The fact that players perceived it as a tool for entertainment underlines this even more.

Interestingly, six players stated that they found the game more fun the more they played it. The reasoning was explained in a few of these statements: one user said that inhibitions were diminishing after increasing playtime. Most of these players remained vague on the underlying reasons. I suggest two lines of reasoning. First, the test phase was performed with a functional prototype. The user experience was rather bare-bones and focused on providing a pleasant recording tool, the onboarding was also limited. Given these circumstances, it seems expected that players would take some time to get used to the app, before immersing themselves in the concept's intended experience. This line of reasoning is in accord with some of the barriers and other criticism that will be addressed in detail later. I imagine that another reason for player's increasing enjoyment is the fact that they, together with their peers, got better at playing the game. As with many things, practice makes perfect. Given the sentiment that good answers exist, it makes sense that

players eventually get better at finding those answers. The benefit of this is two-fold – it can be satisfying for players themselves, as directly stated by some responses ("it is my ambition to find a great response"), but it also makes the responses more interesting (and thus, in a way, challenging) for the mix partner, and the resulting mixes would ultimately be more entertaining to other parties as well. This finding is particularly interesting as many games and applications suffer from a dwindling player base and lessening interest after some time. Now, while this tendency was still visible even in the test phase, the growing appeal of the game could give YourTurn the potential to stay relevant and on the player's minds for a while longer than other games manage.

Five players disclosed the sentiment that the game is surprising, and that they found enjoyment in surprising (video-)responses. This gives further insight into what makes clips "good", as discussed before already. Players apparently not only tolerate, but actively wish for content that is unexpected to them, therefore beyond their immediate horizon, even if only in the context of a given mix. It is not enough to form an implicitly agreed upon sequence; instead, to some players, it becomes expected to break the rules in one way or another. This finding can be interpreted in two ways. One is on a micro-scale, taking video material that is within the scope of knowledge for both parties, but applying it in an unexpected context. Essentially, this boils down to a relatively easy to digest piece of humour and/or cleverness. A second way to interpret "unexpected" would be to respond with video material foreign to the other party – foreign not just in the context of the ongoing mix, but in general. That sort of unexpectedness is arguably more difficult to come to terms with, but on the flip side it is exactly the material necessary to elevate the game beyond simple entertainment.

Another feeling expressed by three players, curiosity, possibly ties into the desirability of foreign material. If approached with a curious and open mindset, the potential for unexpected material rises greatly. Of course, one can not make a leap from a general statement of curiosity about the game towards being appreciative towards all kinds of material; being curious could in this context just as well mean being curious about new responses, not necessarily about those responses' incorporation of foreign material. At the very least, curiosity can be interpreted as being invested in the game, having an interest in the progress and development of various mixes, which bodes well for playerbase retention.

Three players shared the sentiment that the game was challenging in some way. Specifically, one player stated the challenge and difficulty of finding a clip that is "good enough for their own standards", not just for their mix partner. This weighs into the discussion of good clips and necessitating creativity. While not expressed as directly by the others, the sentiment itself suggests a high level of motivation. The game mechanics themselves do not place any pressure on the player – it is merely by *wanting* to achieve something with a clip, that finding such a clip can become challenging.

Another sentiment shared by three players is that they found it funny. This is adjacent, but different, to the common sentiment that the game is fun and entertaining, which could also be attributed to curiosity or competition. Explicitly calling the game funny looks at

the game from a much more light-hearted perspective. Some players seem to have found enjoyment in posting the first thing that comes to mind – one player specifically states that "there's more fun in just posting some memes, rather than overcomplicating it". Other players tagging along with these mixes presumably followed a similar mindset. On the flip side, a different sentiment voiced by two players stands in stark contrast: These players found the game's exchanges to be overly shallow and too spam heavy. It stands to reason that this line of thinking, while not made explicit by the same players, might have been shared by the players valuing connections between clips, "good" clips or surprising reactions. This again opens the game up to two different takes through different levels of seriousness. It might be feasible to appreciate the game on both levels; regardless, it is important to understand these as dimensions that make the game enjoyable.

4.2.3 Social dimension

The third cluster of sentiments formed around social perceptions through the game. Five players experienced the anonymity as positive. One player felt like, while it was obviously a social interaction, the identity of players participating in a mix takes a step back, instead allowing both players to focus on the shared activity. Another stated positive connotation with anonymity was the resulting guess work and building of mental models about the mix partners. Both of these trace back to the game mechanic's prescribed anonymity, but value it for different – and arguably opposing – reasons. One point of view values the act of creating mixes, which happens to also be a social interaction. However, that social interaction serves as a means to an end, from this point of view. The other view instead focuses on the other player, and uses the social interaction for the purpose of understanding the mix partner as a person. Simultaneously, the entire sentiment of anonymity being a net positive was again controversial, as some other players felt that the anonymity rendered any social potential pointless, in the sense that since one does not get any information about the other player as a person, it does not change any perceptions in the real world.

It appears that, through the topic of anonymity, there lies yet another junction of perceptions of the game. It is possible to enjoy the game for *not* putting its focus on the social dimension, others praise the social dimension's potential, and even further players feel like that same potential is lacking. The divergence between the former two points might be explained by personal preference; it is thinkable that creative people enjoy the aspect of mix creation more, therefore focusing on that, while perceiving social aspects as secondary. At the same time, the perception of the social dimension could be dependent on how interested the user is in their peers. It follows that the social dimension of the game and it's importance are not set in stone, rather it can be as pronounced as the player wants it to be. The disparity in perceived importance is non-problematic, as players of both alignments can interact as they want without compromising each other's enjoyment. For the remaining point of view, "anonymity detracts from social experience", that is different. Taking away the anonymity might make focusing on the collaborative creative effort difficult; it also takes away the aspect of figuring out who

the other user is (regardless of whether one's goal is an approximative guess of the mix partner's personality, or guessing an exact identity of a previously known peer). In the original YourTurn concept, anonymity is rooted deeply – however, that does not invalidate the perception that the social dimension is diminished by it; rather, it is worthwhile to investigate ways to alleviate that feeling, and reconcile these positions.

A common sentiment regarding social aspects, mentioned by four participants, was having an interest in an implicit mutual understanding between players while creating a mix.

Direct acknowledgement of the social dimension's importance was made three times. While from this thesis' discussion's focus, the importance is made obvious, this was perhaps less so the case for test phase participants. Apart from knowing that they interacted with one another, no mention was made of the game's purpose; it was merely presented as a game that they could play, within the context of a test phase. Making a statement that highly regards the social dimension's weight, provides valuable feedback on the concept as tool for social structure. It suggests that, regardless of the game's marketing, there is a tendency to view the game as a social platform, more than as just a game that happens to involve other players (although that point of view was also represented, as discussed before).

Three players share the sentiment that communicating through the game's non-verbal channel was interesting. This piece of feedback is very important, as it underlines the purpose of finding communication channels that enable interactions otherwise not possible, or make said interactions easier, more common. There is an abundance of communication through verbal channels, however, along with that come limitations and subconscious preconceived structures. By sidestepping it in favour of something novel, people have a rare opportunity of getting to know other sides of people they might already know, and get to know people they usually would not get to know, thus expanding their horizon. Providing that opportunity is a central goal of the game's design; and players directly valuing the enabler of this opportunity provides validation for the game's chosen method. This seemingly stands in opposition to common sentiments from the category of feature requests, where players wish for social features such as comments or chat.

Both a question and a goal of the original YourTurn game was its ambiguity surrounding its collaborative or competitive nature. This effect manifests itself in the test phase sentiments as well, with three players implying that there is an ongoing competition, while three others directly talk about collaborative efforts. This is augmented by the circumstances of the mobile remake: the original game put a clear emphasis on its competitive side. It was marketed as DJ-battle, and immediately provided leaderboards, as well as focusing on scoring systems. A certain competitive edge was therefore inherent in the game concept's concrete implementation. In the test phase remake, however, that edge was deliberately discarded, only subtle elements remained. Whereas the original featured leaderboards in addition to a scoring system, where points could be used for customising one's representing avatar, the remake was limited to liking or disliking finished mixes, in addition to crowning a "mix of the day" based on those votes (which was shown on the front page, but had no further consequences). The remake's features aren't

intrinsically competitive, which makes it all the more interesting to see the perception of the core mechanic as competitive return yet again. Previously, an argument could have been made that any competitive dimensions might've been perceived because of the game's presentation and implementation details. Findings from the remake's test stand in opposition to that argument, and instead suggest that a competitive edge is indeed intrinsic to the YourTurn's core concept.

Finally, a social sentiment appearing two times was the acknowledgement and respect for other player's efforts – these responses directly report enjoying responses when it was clear that the author put thought in it. This is another indicator to the social dimension's importance: players report caring not only about the result, but about the knowledge of and imagination about their peers. It is evidently not just the satisfaction of viewing a clever sequence; instead, there is a direct acknowledgement of the other player as a person, even without explicitly making the thoughts behind a recording, now the acknowledgement thereof, known.

4.2.4 Feedback and suggestions

The next big cluster of sentiments formed around criticism and improvement suggestions. Therein, further distinctions can be made between criticism of core mechanics, feature requests, and technical shortcomings or lack of polishing.

The most common general sentiment out of all criticism is that in-game social interactions are lacking; participants state that they would enjoy more options to interact with their mix partners. Considering that the choice of YourTurn's communication mode is very deliberate, there appears to be a conflict between the intended experience, and what the players actually experienced.

A common feature request, mentioned four times, was for push notifications. The inclusion of such was considered during development, but decided against, to avoid annoying participants with something they might consider spam. It turned out, users were often times not satisfied with checking for progress whenever they felt like playing the game, and would instead much rather be informed about new responses immediately, not unlike various messaging services. This presents a branching point and departure from the way the original version was used. Before, users would decide entirely on their own when to engage in the game, they'd have to think of starting the game on their own, and only if they did, would they be able to see any new movements. This was fine, before, as that kind of modality was expected of a browser game. The leap to smart phone, however, drastically changes the expectations. With the metaphors being what they are, locking two players in a mix together, and calling new video clips "responses", it is no surprise that participants mentally compare the app to other messaging (and various other social) services that immediately inform them of responses and other news. While seemingly a simple request, push notifications would change the game dynamics in a fundamental way, by taking away the freedom (and at the same time, necessity to remember) of checking in whenever the user feels like it, and instead prompt the player

for action regardless of their current situation. Imaginably, this could speed up gameplay and mix creation by a tangible amount: in versions so far, players were rarely online long enough to continuously go back and forth on one mix within a single session – instead, they were slowly conceived over the course of multiple days. By appropriating the look and feel of chat applications, players are not only enabled to give quick responses on a technical level, they might also be more inclined to do so from a psychological point of view. The peer's social presence would also be increasingly pronounced, as a notification would directly serve as a life-sign of sorts – while the game was already perceived as a social experience as is, such feelings of connectedness might be bolstered. It stands to reason that, though not requested with that goal in mind, push notifications might alleviate perceived social insufficiencies of the demo version without compromising the non-verbal design goal.

A feature request sentiment emerging three times was the desire for a group mode of sorts. These requests trace back to different manifestations: One player desired that the game simply let more players participate in any given ongoing mix (instead of just at the start), while leaving the other principles untouched. A different player more radically mused about similarities to the party game "Cards Against Humanity", and later on mentioned that such a group mode would be fun. While not certain that this was the intended meaning, it does imply taking the concept outside of an asynchronous game, and instead apply it in real life meet-ups. Both of these are interesting, as they suggest going beyond the scope of fixing the current game, but rather take the underlying concept and apply it in new ways; taking the game out of virtual space in particular is a curious candidate for exploring the game's potential, and an area that deserves further research. Having multiple users unpromptedly come up with this idea suggests the viability of the approach.

Two players thought that directly "challenging" players would be fun. First and foremost, this statement indirectly supports the core concept's competitive nature – participants actively worded these requests in a competitive sense. Furthermore, it indicates users' desire to interact with specific peers, which has curious implications on the anonymous aspect, as it could be interpreted as having increased interest in some particular strangers, but also as wanting to stray away from interacting with random users, and perhaps instead focus on playing the game with friends. This motivates cross-referencing the requests for "challenging other players" with their author's other responses and activity, in order to better understand these sentiments: one of them states elsewhere that they initiated their first mix with someone else in real life. The other player voices the sentiment along with requests for friend- and favourites lists, shows curiosity about other players' identities, but also acknowledges the deliberate wish for anonymity. The latter suggests that it would be fine to friend and consequently challenge players that want to be anonymous. What neither of the two participants seems to imply, is the opportunity of getting to know specific people better through challenging them; but exactly that might be such a feature's potential.

Another cluster of sentiments formed around barriers and conceptual difficulties, the

most common being the necessity of "YouTube knowledge" in order to play the game effectively (with a total of four mentions). Certainly, the way the game plays changes drastically depending on how much video material one has already consumed on the platform – this can range from often picking videos from memory, to constantly searching for potential candidates manually. The latter can be rather difficult and requires wading through a lot of video material, especially if the player has something specific in mind, and/or has perfectionist tendencies. Especially the latter has indeed been mentioned, though in a different context, by the player describing that "finding the right clip takes a lot of time". If the game aspires to be fast-paced and quickly playable, as mobile games often do, this is certainly an issue to consider. One player in particular indirectly voiced dissatisfaction on numerous occasions, exclaiming that the game was "surely fun for YouTube addicts, but exhausting for me".

An issue directly named once, but implied a couple of times, are initial inhibitions when starting out. What one user described was essentially participation shyness (though their inhibitions dropped during the creation of their first mix), and some others also described being unsure at first. Since the concept is rather unique, it follows that users initially need some time to learn the feel of the app, and learn of the possibilities of this new communication mode. While some efforts were made for the prototype to "show" plays possible usages through the "mix of the day" on the app's front page, this was evidently and expectedly not enough to comfortably guide new users towards autonomous participation. The only directly stated reason for such insecurities were the "somewhat confusing categories", which will be discussed shortly. In hindsight, I suspect one other issue, and that might be the presentation of open mixes. In the prototype, players had a list of all available open mixes (those without a partner); this list might sometimes be a bit overwhelming to someone just starting out. Instead, it would have been more sensible to suggest joining one specific mix, though to let the user decline and skip to another one, if available. Since the mechanics are a lot to take in for a beginner, it is important to keep the number of decisions to a minimum, and taking away the decision of *where* to participate would be one step in that direction.

Another step in that direction could be considered for categories: as briefly mentioned before, three users experienced mix categories in a negative way. Categories were introduced for multiple reasons, one of them being a supposedly helpful source of inspiration, to give new players something at all to come up with their first openings. This seemed reasonable, as limitations often unlock creativity. Looking at the amount of users being dissatisfied with that system, and even feeling hindered by it at the start, suggests that the categories, as provided in the demo, were ill-advised. One change request wished for custom text entry, transforming categories into hash tags of sorts. Regardless of whether the categories have to be picked from, or whether they can be manually entered, it requires a choice from new players either way, and that choice is seemingly (judging from survey responses), but also understandably, hard to make while a player is still figuring out the communication mode, it's options and purpose. At the same time, categories are intended as guidelines to keep mixes coherent and meaningful,

increasing the amount of meaningful mixes that get produced. One way to satisfy both requirements would be the introduction of a "topic of the day", which gets selected automatically for new players (but could still serve as impetus for seasoned players). The category system could otherwise remain the same, or be extended by custom category tags. With these changes, new players could start out the game, and regardless of whether they create a mix, or join another, they would only be faced with the most fundamental choices of the game – which video to respond with, and which clip to record from said video.

A final barrier to the game, described by two, is one that hinders gameplay for players that have already immersed themselves in the game. Dubbed "no mix, no incentive", this sentiment is characterised by players losing interest as soon as there is no active mix (anymore).

4.2.5 App usage

Finally, there was a sentiment cluster is about the app's usage. Seven users mention watching finished mixes, mostly as a reason to start the app, and thus presumably in a positive context. One player in particular described eagerly watching other's mixes in the beginning while still being unsure about participating (as mentioned in a different context about initial inhibitions); another who experienced active participation as too strenuous still kept checking in, as observing the finished mixes was fun. It follows that the game is enjoyable not only to the participating parties of any given mix, but can also pique the interest of other parties. This is a good sign for the game's passive potential, an important element of many public social platforms.

"Checking for responses" also has seven mentions. Players generally report enjoying the suspense of waiting for new responses, though imaginably, the amount of players starting to app would decrease, were features such as push notifications implemented.

Five users described their experience with the application as quick and non-committal, stating that the game was easy to pick up anytime for short play sessions. One such mention reported playing on the bus to work, another "quickly checking in when bored". A sentiment sometimes appearing in tandem, and a total of four times, is also the game's straightforwardness, describing that it is uncomplicated and easy to understand. Generally, these are very much in line with the qualities expected of a mobile game, and contribute towards an answer of the central research question, "is the concept sensible on smart phones". Especially the ease of understanding is reassuring for the core concept's qualities, as only the essentials were covered by the demo's onboarding – still being easy to use, despite being a mobile app with limited screen space and explanations, speaks for the suitability of the platform.

On the flipside, some users did report finding the app complicated and difficult to use in one way or another. One such explicit mention followed up by stating an improvement over time, another related the difficulty to the aforementioned problem of "lacking" YouTube knowledge.

4.3 Expert input

To gain further perspective and insight, an interview was conducted with Dr. Kayali, a co-creator of the original YourTurn game. Presented with test phase results and preliminary findings, Dr. Kayali commented and talked about several aspects through the lens of someone knowledgable about the original project, the key statements of which will be described below.

To Dr. Kayali, it was an encouraging surprise that watching other player's mixes was such a well received feature. In the original project, players were mostly interested in mixes they themselves participated in, ignoring other player's creations. This was not the desired outcome, since both the potential for social immersion, as well as the satisfaction drawn from finishing mixes is diminished if fewer players view each other's works. It is surprising that players reacted more positively towards watching mixes, since in terms of game mechanics, no further encouragement to that end was implemented (possibly aside from the "mix of the day", but it's hard to say whether that was a factor). Conceivably, the changing social media landscape makes amateur content of YourTurn's nature more intuitively graspable, given that short video clips or animated images have been on the rise for a while. Perhaps the familiarity with similar content aides the readiness to watch other player's mixes for entertainment. The same thought applies to players describing the game as challenging or creatively demanding. Dr. Kayali called those qualities both a big strength as well as a big obstacle, since on one hand, it's what makes the game unique and expressive, while on the other hand, it pushes players away by asking for a lot. In this context, Dr. Kayali imagines that barriers might be lower than before, thanks to the concept being less foreign in today's social media environment. In that sense, the concept of YourTurn might not just be still relevant, but instead more relevant than before.

The divide between serious or high quality interactions and more light-hearted content was interpreted as desirable by Dr. Kayali, saying that the most important factor is to get people playing, as a game such as YourTurn rises and falls together with its player count and amount of content. Furthermore, the seriousness and quality of the mixes would be less indicative of social potential than other factors, such as the ability to extend contact beyond the game, or the curiosity piqued by anonymity. The latter is especially interesting, since some players voiced irritation about not knowing who they were interacting with; however, the same lack of knowledge stimulates curiosity and promotes thinking about who is behind the screen, so there is a definite argument for keeping anonymity as a feature unchanged.

As alluded already, providing options that reach beyond the game itself was deemed very important by Dr. Kayali to provide opportunities for social impact; at the same time, that notion stands at odds with test phase participant's feedback, which displayed minimal desire to link the game with other social channels. Various approaches could be taken to bridge that gap; the most obvious being to link social media channels regardless, other approaches could be taken by enhancing in game social elements. Dr. Kayali

imagined providing chances for social exchange in small portions, such as providing personal questions or quizzes as icebreakers, possibly providing the chance to follow up with conversations either inside or (ideally) outside of the game. Regardless, as long as direct communication between players is enabled (as it should be), it is important to provide safety measures and make all participants explicitly agree on opening up such a communication channel. Extending the social dimension beyond creating video mixes together is desirable, but should not be forced on anyone not feeling safe in the process.

4.4 Findings

In addition to being the de facto standard platform for social media platform at the time of writing, a number of arguments can be made that a mobile version could elevate the game beyond the original version's capabilities. Playing on the go and checking in continuously during daily routine, compared to playtime being limited to more encapsulated desktop browsing sessions, can boost speed and spontaneity, an argument also supported by test phase data and further bolstered by potential push notifications. Since the latter close in towards the experience of messaging services, the social dimension's prevalence would also increase in addition to general activity through lack of downtime and rapidness of responses.

The ubiquity and speed emerging from a mobile adaptation as well as further proliferation of social media bears consequences to YourTurn's social dimension's perception and potential – these can at least be glanced at through a lens provided by the prototype test. While the original had avatars, user profiles, video tagging and category guessing, none of these were ported to the mobile prototype, giving participants the opportunity to voice their own imagination of auxiliary features. Overall, users most often requested a variety of features commonly found on prevalent social media sites, such as commenting or chatting. First, this parallel cements the game as being perceived as a social experience, focusing on contacting and interacting with others more than on video cutting or other game-like features such as hypothetical scoring systems. Second, the original intention was to create a purely non-verbal communication channel, thus the longing for such social features contradicts the intended purpose invites a discussion of how the game can be framed feature-wise without compromising the design goal. Chatting or reaction gestures during the mixing process would directly interfere and distract from the communication channel that makes YourTurn unique, and should thus be kept away from. Enhancing post-mix interaction on the other hand fits in well with the original, which provided options to link social media. Interestingly enough, that very option was unpopular with participants. Originally it was envisioned that mix partners would get to know one another via facebook, thus media closer to their real life selves; participants now seemed less enthralled with that prospect, but do state the desire for more communication via in-game channels. Imaginably, the leap from a non-verbal communication channel to social media close to real life is uncomfortable, or perhaps scepticism towards these platforms has grown. Regardless, providing the option to verbally discuss mixes after

they are done seems advisable and could present a previously missing mediating step needed between non-verbal communication and real life contact.

The original YourTurn featured a scoring system, pronouncing the program's status as a game and its competitive nature. Interestingly enough, judging from survey responses ("challenging others", etc) the latter seems to be perceived just fine even without official score or ranking. Since scores invited abuse of game mechanics in the original, all the while not being required for the game's competitive edge, implementing such a system or putting too much of a focus on it seems ill-advised. Additionally, though more of a speculative guess rather than informed by the experiment, over-emphasising scoring and competition in something as subjective as YourTurn mixes might feel unfair and discouraging to some users without providing enough benefits to offset.

In the outset of this prototype, some tweaks to the original ruleset were pursued based on learnings of the original version – now, the newly found usage and feedback invite another iteration of ruleset adaptations, ranging from tweaks to fundamental overhauls. Staying close to the original vision of anonymous one-on-one DJ battles, the surrounding mechanics and matchmaking could be further refined to lessen player frustration and confusion. One would be to re-open mixes to the public if a participant becomes inactive or stops responding; that kind of behaviour could potentially have helped a number of mixes in the test phase that were close to completion, but never saw the light of day due to often being just a single clip short. As another nonintrusive change, mix categories should probably be optional, since feedback towards them was often negative (being perceived as confusing or irrelevant), without much positive feedback to counterbalance. Some users felt limited or voiced the desire to name their own titles – while the primary motivation for mix categories is to provide a hook and give players ideas, feeling limited implies that the player already has ideas of their own, thus negating the need for inspiration or impulse. In those cases, it makes sense to simply let them skip categorisation and potentially name the mix on their own. On the other hand, keeping mix categories as an optional feature is sensible since they don't detract from the experience for players that already have ideas while providing support for players who don't.

CHAPTER 5

Final redesign suggestion

In conclusion, I present design suggestions for the user interface and game mechanics, informed by all previous design- and evaluation steps. Implementing the game as described should focus and build on its strengths, while eliminating weaknesses from both the original YourTurn game as well as the mobile prototypes evaluated in this study, resulting in a polished, marketable experience. Any actions or interactions not described in more detail behave as they do in the final prototype.

5.1 Mock-ups

5.1.1 Home

The menu structure was reworked, and screens now offer navigation between the four main areas “home”, “new mix”, “my mixes” and “theatre” (a fifth being user’s profiles, which will be discussed below). The home screen contains the “mix of the day” at the very top. Depending on the app’s scope of usage and popularity, this concept could be scaled to allow for multiple “winning” mixes. Below are short lists of completed mixes, new mixes and the user’s own mixes, each list containing two or three entries. The screen is functionally similar to the second prototype’s home screen, but counteracts visual overload by providing less information at once, instead allocating more space for headlines and potential in-line playback of mixes to establish context. The primary purpose is to quickly and easily present newcomers with both completed mixes for guidance and inspiration, and with new mixes as call to action.

5.1.2 New mixes

The “new mix” section lists all mixes from other users that are free to join, and additionally offers a button for creating a new mix in the lower right corner. Tapping on a mix starts playback of its first clip and provides the option to join in by adding a new clip. Joining

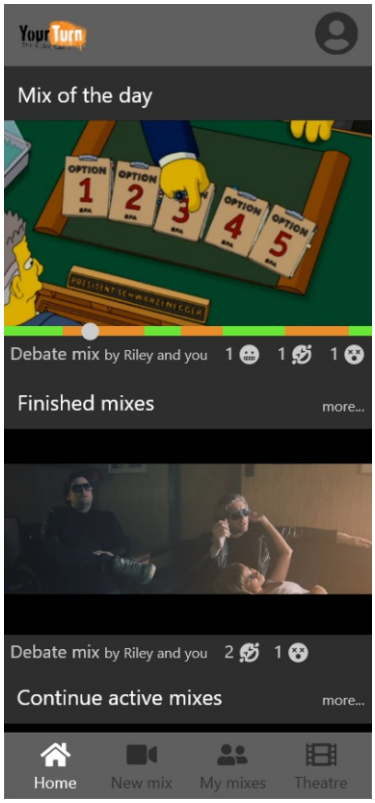

Figure 5.1: The new home screen shows a "mix of the day", similar to the tested prototype. Below, mixes of all statuses are presented to the user.

a mix leads directly to a search view for YouTube videos, creating a new mix first leads to the selection of a mix category before continuing to the same YouTube search view (both unchanged from the final prototype and therefore not visible in any mock-ups).

A proposed game mechanics change to the final prototype is a rework to the review system: to ensure a certain standard of clips' qualities, the final prototype allowed for multiple responses by different users to a single mix. The creator would choose their favourite to continue with, discarding the rest. This lead to a considerable amount of wasted content, both frustrating players (as visible in the test phase) and decreasing the amount of clips that were available to interact with. A better alternative to ensure clip quality might be to hide new mixes from the public as soon as they received a response, but still give the mix creator the option of discarding the response. Such a rule set would provide similar capabilities in terms of filtering out low quality responses while wasting less content.

Furthermore, a small tweak was made to video players across the entire application, changing their aspect ratio from 4:3 to 1:1 (the only exception being the "home" area). The reasoning behind the final prototype's player aspect ratio of 4:3 was that many

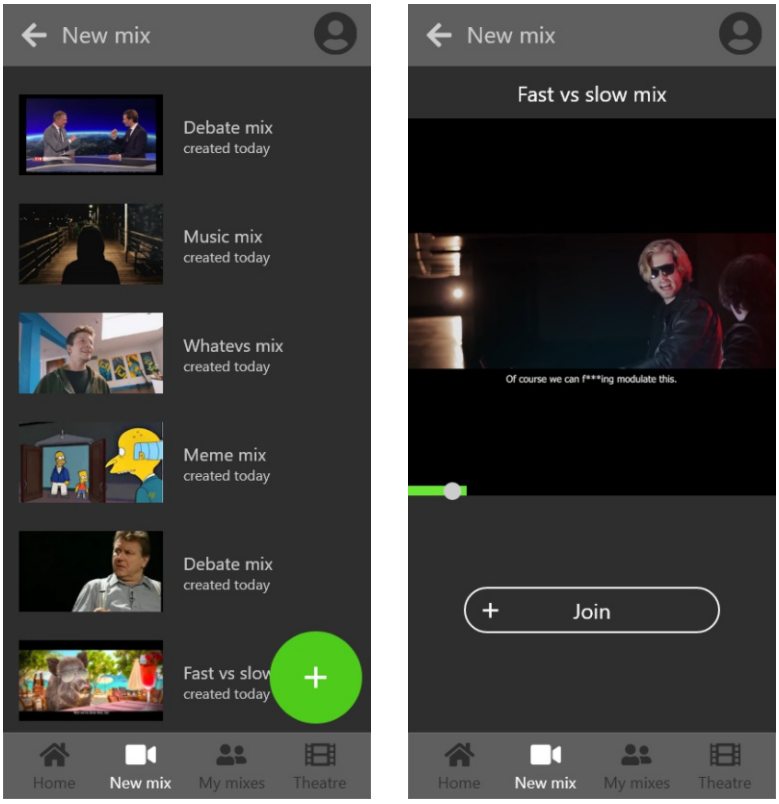

Figure 5.2: The "new mix" section lists new mixes created by other users that one could join, and also lets users create new mixes of their own. Upon tapping a list entry, the mix starts playback.

recent videos would be in widescreen formats, while formats up to 4:3 were still worth supporting for older material. However, since ongoing trends in the social media landscape have continuously increased the prevalence and acceptance of vertical videos, providing reasonable support for the same seems recommendable.

5.1.3 User's mixes

Functionally equal to the final prototype, the "my mixes" section first lists all mixes that await the user's response, then mixes that await the mix partner's response, and finally all completed mixes that the user participated in. Same as the "new mix" section, tapping a list entry starts playback of the mix, and provides the option to add a new clip if applicable. Completed mixes are lead to a distinct theatre view, the same as presented in the "theatre" section below. Due to the game mechanics change to the review system, there is no need to choose between multiple responses from different partners anymore; instead, the mix creator has the option to discard the first response to a mix (with a button next to "add clip", not visible in the mock-up).

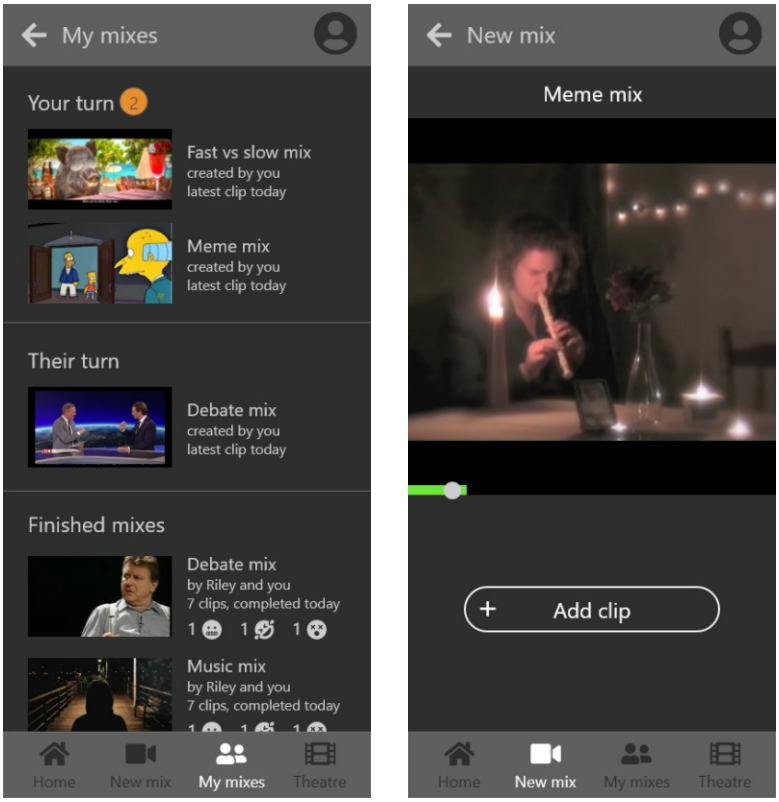

Figure 5.3: User's personal mixes section, listing all ongoing as well as finished mixes in which the user participated. Pressing on a list entry causes playback of the mix, also providing the option to continue the mix, if applicable.

5.1.4 Theatre

The "theatre" section lists all completed mixes chronologically. Playback of the completed mix takes place in a distinct view, providing additional information and options compared to the other sections. The features' intents are to bolster the game's social immersion: First, users can react to mixes with an array of emojis. These replace the likes and dislikes seen in the final prototype, and should give players more room to provide feedback, expressing what they liked or otherwise thought about a mix with a bit more nuance. Furthermore, a comment section can be found beneath. A discussion on including such a verbal channel in YourTurn follows below; unlike the more innocuous reaction emoji system, the comment section needs to be unlocked by both mix creators.

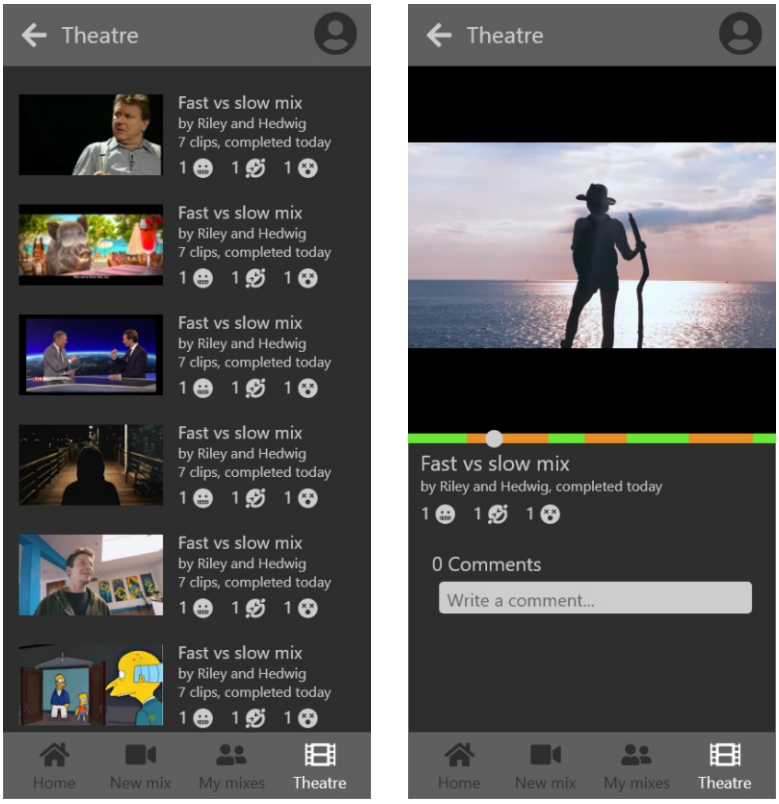

Figure 5.4: In the "theatre" section, users can watch all completed mixes. Playback of a mix starts in a separate view and allows reacting with emojis, as well as comments, if they are enabled by both mix creators.

5.1.5 Recording

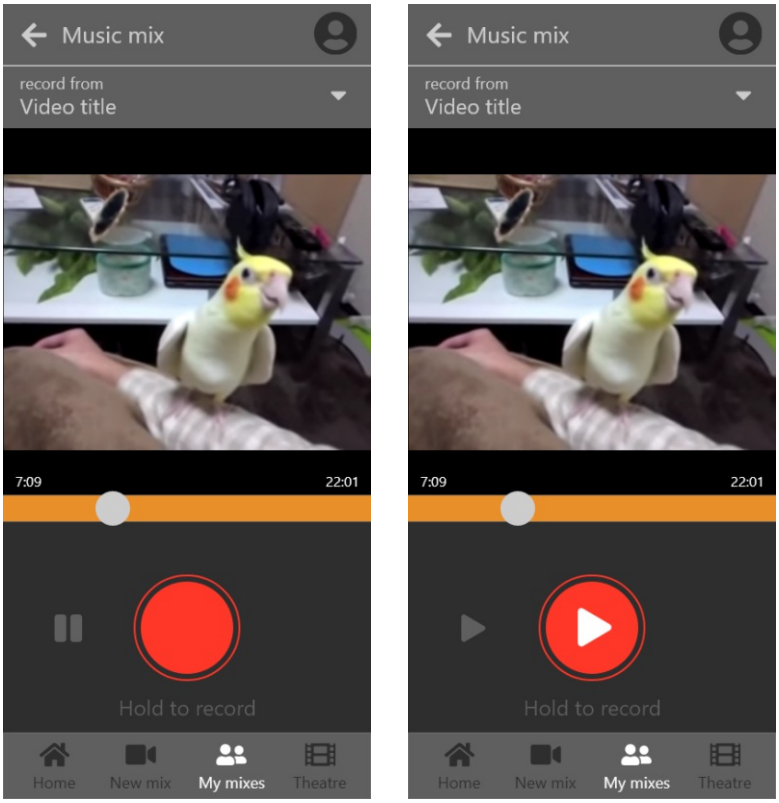

Figure 5.5: Upon selecting a YouTube video, users can "record" a segment by pressing or holding the recording button. While video playback is paused, the recording button resumes playback in addition to starting the recording.

The recording of video clips remains mostly unchanged from the final prototype: upon selecting a YouTube video, the video player opens with a deliberately thick, easy to touch seek bar, since navigating through the video is more central in YourTurn compared to regular video consumption. A button to start and finish the recording is found below. Recording still works by holding rather than tapping the button. To eliminate confusion, the instruction "hold to record" is faintly displayed below, being visually unobtrusive but helping disoriented users looking for clues. As an addition to the final prototype, a play/pause button is available next to the recording button. While playback is paused, touching the recording button resumes playback in addition to initiating the recording. This is signified by displaying the "play" symbol on top of the recording button while paused.

To keep the focus on YourTurn's gameplay, and away from regular YouTube watching, the screen intentionally shows only very little meta information about the YouTube video.

The suggested redesign does present slightly more than the final prototype, by showing the original video title, and offering a caret for some additional information (intended to reveal the video description, channel name, upload date, views, likes and dislikes).

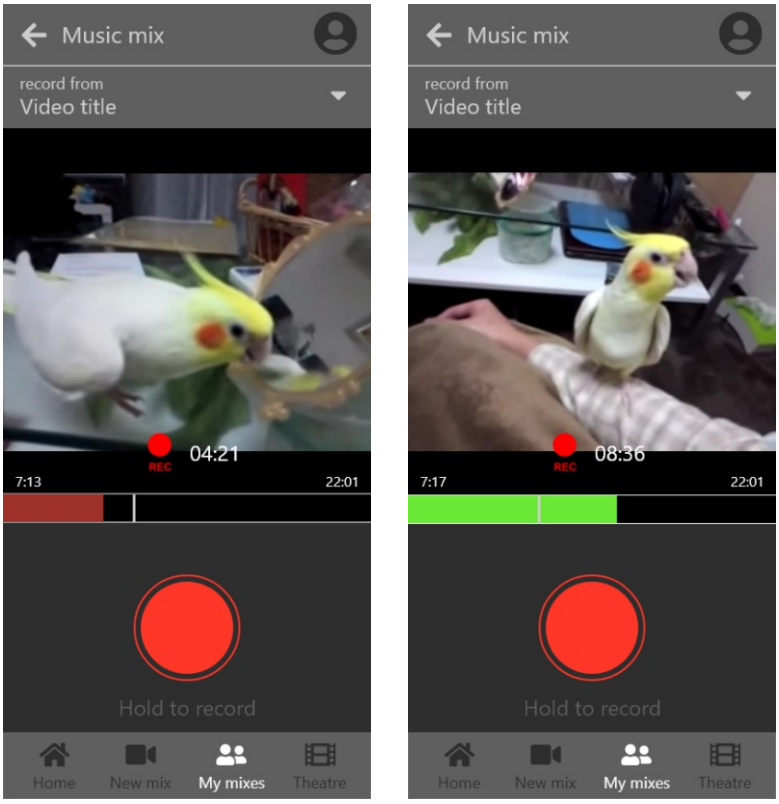

Figure 5.6: Upon starting the recording, the seekbar turns into a timer bar, signifying the minimum and maximum length of a recording. The seek bar transformation is visualised as a zoom-in animation, signifying that the new timer bar is a small segment of the previous seek bar.

Upon starting a recording, the pause/play button disappears, the recording button starts pulsating and a timer indicating the current recording duration appears near the bottom of the player. Furthermore, the seek bar turns into a timer bar that gradually fills up as the recording progresses. The timer bar is red while below minimum clip length, afterwards it turns green, thus signifying the minimum and maximum clip length of respectively five and fifteen seconds. The seek bar transition is visualised through a zoom-in animation, signifying that the timer bar represents a limited section of the previous seek bar.

After recording a clip, users can submit it by sliding the paper plane icon to the right. This functionality is now locked behind a sliding motion instead of a regular button to prevent accidental submissions; this might happen especially easily since there are

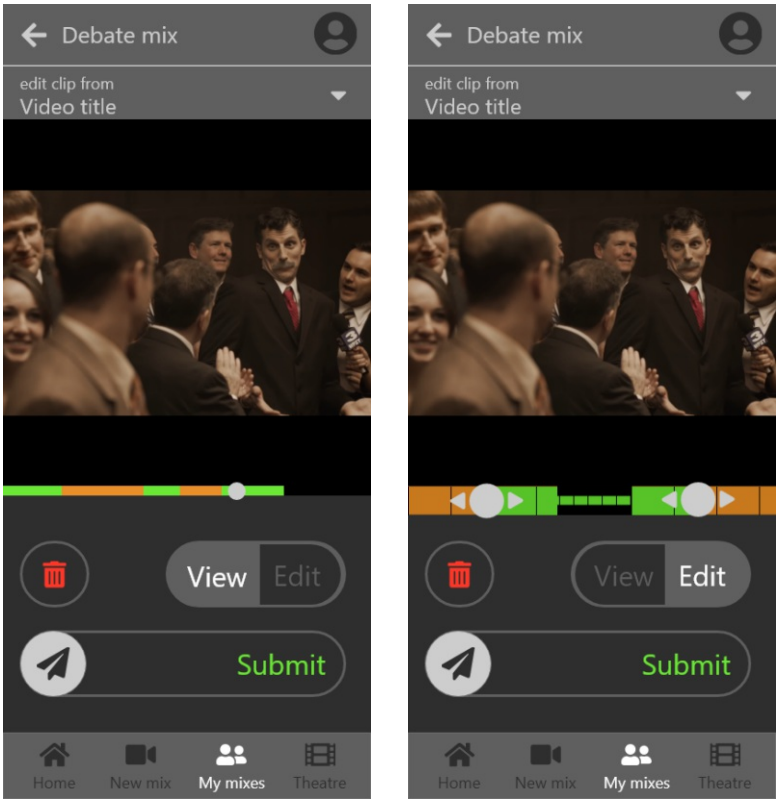

Figure 5.7: Upon completing the recording of a video segment, users get to watch their newly recorded clip in context of the video mix. They have the option to adjust their clip's start- and cut-off point before submitting their creation.

other buttons on screen. Apart from submitting, users can toggle between editing their clip by dragging start- and cut-off point across the seek bar, and watching it in context. Furthermore, the recording can discarded by holding a delete button (visualised by a trash bin icon) for a short duration.

5.1.6 Feedback

To inform users of activities relevant to them, a small number next to the "my mixes" section in the navigator indicates the number of mixes the user hasn't replied to yet. Also, whenever a mix is finished – regardless of whether the user submitted the final clip themselves or not – the user is presented with a custom view that plays the mix, informs the player of their opposite's username and provides the option to unlock comments for the mix.

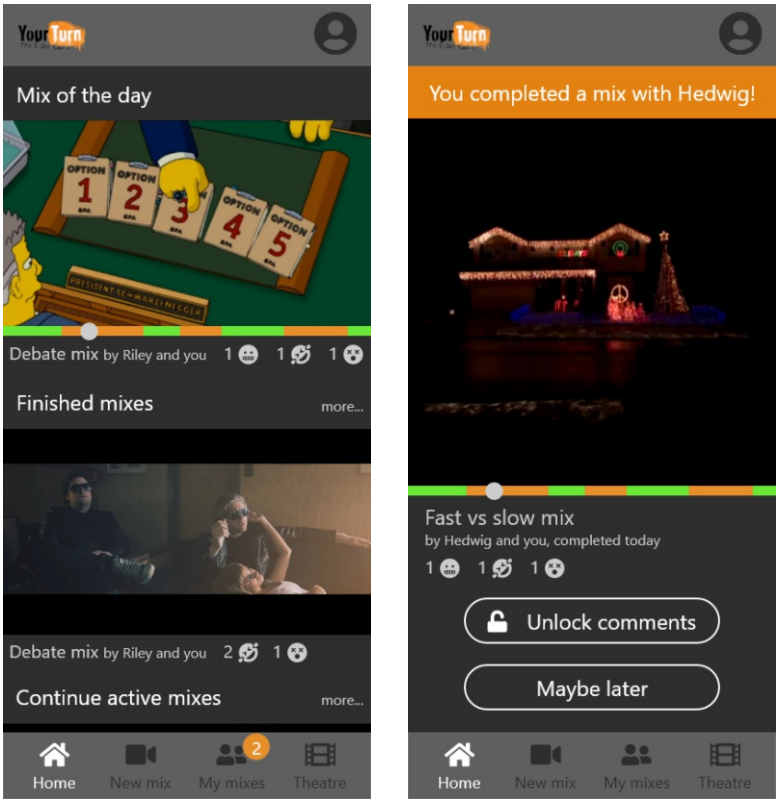

Figure 5.8: When a user has mixes waiting for their answer, the "my mixes" section is highlighted with the number of pending mixes. Whenever a mix is finished, both participants are notified. User names are revealed, the mix can be watched and a comment section optionally unlocked.

5.2 Final considerations

Including options for textual communications through the comment section is a non-trivial choice: first, non-verbal communication is embedded in YourTurn's very core, and secondly, it opens the flood gates of misconduct and abuse in an otherwise relatively innocent game. A compelling argument for some text support is the change in surrounding social media landscape; whereas previously, players could almost seamlessly transition towards other communication channels via facebook integration, no comparable option exists at present. The option to comment was also a common theme and wished for in the questionnaire, presumably driven by the desire for more social interaction, and further prompted by the general prevalence of comment sections in social media. As for the counterarguments, implementing verbal communication in the form of a comment section leaves the communication during gameplay intact. The issue of bad behaviour is more problematic and certainly requires moderation effort. Since implementing verbal

communication somewhere is almost unavoidable due to the lack of guaranteed social media integration, moderation or other safeguards would be necessary regardless – as a first step, the comment section would need to be approved by both creators of each mix, letting players play the game without fear of irksome interaction, should they prefer to do so. Overall, since the feature was wished for and getting social after creating mixes is a central goal of the game, providing comments seems advisable.

After textual input is no longer off-limits, this opens up the option of custom categories, tags or names for mixes. This was not only directly requested in the survey, the category system was generally criticised a lot more than it was praised. Predetermined mix names are a good baseline and should still be included, as they have the potential to inspire users just as much as they take the pressure off of coming up with good titles; however, limiting players to a fixed set of categories is unnecessarily restrictive. Since the advantages of categories are also left intact by keeping them as suggestions, it seems like a good idea to restructure categories towards a more free form naming system.

Implementing push notifications is highly recommended; while not included in the tested demo as to remain nonintrusive, this feature was highly demanded by participants. It would likely improve the game first off by increasing the pace, making the back and forth more immediate, turning into more output and thus more content to watch and mix with. Since sheer volume plays a crucial role, heightening the average pace of players would presumably have a positive effect on player base retention. While push notifications often serve as a simple reminder for the application's existence, in YourTurn's case, they would also prevent players from forgetting or overlooking mixes. This is good for both involved parties, and could possibly leave fewer mixes stranded. Furthermore, as another quality of push notifications, receiving quasi-messages from mix partners is reminiscent of messaging applications (albeit non-verbal); this could easily paint the experience in a more social light by association without even touching the game mechanics.

Since YourTurn's prescribed anonymity was somewhat polarising, making anonymity optional could be considered. Users who want their name to be known could display their username even in public and ongoing mixes, while those who do not would hide it until their mixes are complete. The advantage would be to appease players who don't see the point in anonymity, while keeping the option intact, thus satisfying both camps. On the flip side, another goal of anonymity is to pique curiosity, which bolsters potential surprises when identities are revealed only upon completion of a mix. This factor would fall flat for all mixes involving non-anonymous players. Overall, making anonymity optional is a possibility, not a recommendation.

A profile section, while not included in the mock-up screenshots, is definitely intended, and would be reachable via the user icon on the screen's top right. The profiles of collaborators from completed mixes would be publicly accessible, as well as profiles of users who commented on mixes. A profile page would contain a list of all finished mixes, counts of reactions that their mixes received, and times that their mixes received the "mix of the day" status. Furthermore, social media contact information could optionally be added here. This component heavily depends on the popularity of various platforms;

in the original game's era, facebook was a straightforward choice for having a monopoly and being focused on people revealing lots of personal information, thus playing into the game's purpose of connecting players beyond the scope of the game. Platforms at the time of writing, on the other hand, do not lend themselves to this goal as readily, and additionally, scepticism towards privacy and sharing data has seen an increase, as is also visible in survey respondent's opinions towards linking social media. Giving users the option still seems like a valuable choice, since it provides at least some connection to the players outside the game, while presumably not deterring anyone due to its optional nature. As mentioned by Dr. Kayali, it might also be worthwhile to explore further options for communication within the game. The large range of possible scopes, from small personal info pages to de facto recreations of existing social media platforms, necessitates finding a sweet spot and offering a personal touch to user profiles without shifting the focus away from YourTurn's core mechanics. While examining this aspect in detail is out of this thesis' scope, implementing social mini-games or questions could be a playful way to break the social barrier, bridging the game mechanics and real world social dimension.

With these considerations made, it would be interesting to watch YourTurn play out in real world use cases and scenarios with potential for social impact. Whether for direct successors or new projects, hopefully these considerations help create, propagate and inform the design of future social games.

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