

What is (Un)Acceptable? -- Thoughts on Social Acceptability in HCI Research

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Technology is changing the way we experience our lives: interactive and increasingly intelligent technologies enrich our lives and allow us to tackle challenges previously considered unsolvable and augment our capabilities of sensing, communication, and even creativity. Examples include head-mounted displays and smart personal services for ubiquitous information access, and autonomous vehicles for increased comfort and safety. Simultaneously, the very same technologies introduce new risks, raise new societal concerns and can increase both social tension and inequality between users and non-users.

In HCI, new interface technologies are naturally in focus, and how they will be used in social situations is crucial to their acceptance. For example, unconventional interface technologies can face resistance from bystanders and cause embarrassment when used in public places, and the increasing autonomy can raise broader ethical and societal discussion on the roles and purposes of technology. The *social context*, as a broad notion, can set requirements and act as a catalyst or as a hindrance for adoption and appropriation of an interface. The actual, or anticipated, imagined disapproval from other people can have a major impact on if, where and how an interface might be used.

Such collectively constructed effects are typically embraced by the terms "social acceptance" and "social acceptability". Social acceptance could be considered as a broader concept, referring to a cultural phenomenon, while social acceptability is typically used to refer to a design having the quality attribute of being socially acceptable. However, this distinction is hardly established; in reality, both terms are used to refer to how an interface usage is received, internally by the user, as well as externally, by others. Lack of social acceptability can render an interface, application or technology practically unsuccessful: for the user, use of a technology might come at the cost of being socially disagreeable or stigmatized. At the same time, a user refraining from using an interface to conform with social context might result in being prohibited from access to particular applications, services, or information. In consequence, this chosen non-usage of technology might restrict accessibility of services, as well as impair social empowerment and social equity.

While social acceptability has been acknowledged as an essential part of the overall system acceptability [7], there is limited empirical research on this topic thus far. Technology acceptance research (e.g., the Technology Acceptance Model, TAM) was extended to incorporate social factors (e.g., by Malhotra et al., in 1999 [5]) but, they overlooked how potential negative feedback from peers or bystanders impacts on the user's continuous decision process to continue or discontinue interacting.

We argue that the research field of HCI lacks more contemporary and actionable articulations for "social acceptability" and "social acceptance", as well as design guidelines

and agreed-upon evaluation methods for putting it in practice. Catching up is indeed a timely issue, as the spread of computing technologies beyond the desktop into all aspects of our lives dramatically increases the range and scale of potential issues with social acceptance.

In a one-day workshop at CHI 2018, 16 researchers and practitioners from research areas like user experience, wearable computing, e-textiles, conversational agents, voice user interfaces, decision support systems, social networks, and gender studies, assembled to discuss the notion of social acceptability in today's HCI research and design practice. The workshop included 10 lightning talks out of the participant's areas of research, along with demos and moderated discussion sessions. In this feature, we share highlights from the workshop¹, including results of discussions and a pre-workshop survey conducted amongst the participants².

What does social acceptance mean with respect to modern HCI?

The variety of application areas covered by the workshop contributions indicates that social acceptability and the lacking thereof becomes increasingly relevant. However, anecdotal evidence also highlights that it is often encountered as a by-product of studies or discovered by accident, e.g., when interfaces are not interacted with during in-the-wild studies or not adopted on their market entrance. In consequence, social acceptability often becomes only apparent through its absence: aspects of a design causing a lack of social acceptance (i.e., "bad practices") are easier to identify than design strategies for increasing an interface's social acceptability (i.e., "good practices"). Simultaneously, research explicitly targeting social acceptability issues is rare, and so far only few authors (e.g., Montero et al. [6]) attempted to formally define social acceptability in HCI.

In our pre-workshop survey we collected the participants' personal understandings of both, "social acceptance" and "social acceptability". While HCI research had often used these two terms interchangeably, our collection of informal definition consolidated our impression that the term "social acceptance" is often used to describe a phenomenon: "*[W]hen a person can use or wear the technology around others without feeling uncomfortable, out of place, or judged. The other people around the user also do not feel uncomfortable by the presence and use of the technology*" (P7). Social acceptance is subjective, dynamic, temporal and contextual; Not a simple, binary decision, but rather a continuum: Instead of being a one-time decision for either acceptable or unacceptable, it is rather a continuous decision process that evolves over time [2].

While these definitions mainly focus on an individual perspective, social acceptance could be understood as a collective judgement that is not only subjective (one subject), but: it is a compound of the perceptions and opinions of multiple people, that might be influenced through media coverage or greater societal and cultural changes. "*What is regarded as 'socially acceptable' is highly contested, however: It differs depending on cultural or religious background and it changes throughout history. A lot of things we nowadays consider*

¹ See <https://socialacceptabilityworkshop.uol.de/#program> for all workshop contributions, accessed 22/01/2019

² The pre-workshop survey was conducted online, prior to CHI 2018. The survey link was distributed amongst the workshop attendees and their coauthors, and completed by 10 participants (denoted as P).

progressive were historically considered socially unacceptable" (P6). Nevertheless, social acceptance can also "[...] be measured or at least empirically analyzed" (P6).

Although similar to social *acceptance*, participants used the term social *acceptability* rather to describe a product quality, i.e., an interface's appropriateness and suitability for a certain context or culture, as well as the design's ability to respond to societal norms, values and visions. They considered social acceptability as "*[t]he probability that a technology will be accepted by society and not only individuals" (P10)*. Furthermore, they also saw a clear connection between an interface's social acceptability and its design: "*Intuitively, I consider social acceptability to operate at a similar level as accessibility, that is, a practice for designing [or] evaluating the acceptability of technologies" (P9)*. This connection also re-occurring during the workshop, where participants considered social acceptability as an interface quality that could and should be influenced by design. They also considered it a design requirement related to a broader notion of techno-ethical risks: "*I would define 'social acceptability in the context of existing or emerging technologies' as a fundamental requirement to think about possible impairments or disturbances of an interactive system with regard to other people" (P4)*.

In previous HCI literature, the terms "social acceptance" and "social acceptability" appear to have been used largely interchangeably. However, based upon workshop discussions we would argue that for future research it is helpful to clearly distinguish between acceptance as a descriptive concern with "what is" and "what has been" and acceptability as looking forward, relating to "what could be". HCI can undoubtedly benefit from better understanding what has influenced the social acceptance of current and previous products. Insights gleaned from such efforts should feed into our fields efforts to improve the future. Developing successful novel systems and designing for new interactions requires attempting to predict, influence, and evaluate different options concerning possible social acceptability - hence we choose to use "acceptability" in the title of this feature.

What makes an interface socially (un)acceptable?

Social acceptability encapsulates the socially constructed factors that affect user experience and the acceptance of new interaction techniques. In practice, those are what makes an interface more acceptable or unacceptable. However, those factors are hard to grasp, as they depend on the context and perspective:

The social acceptability of an interface can be regarded on different levels. On a micro level, social acceptability of a technology concerns whether an actual encounter with the technology (or user thereof) affects the social comfort, status, reputation, moral convictions, etc. of participants or close witnesses in the encounter. Brewster et al. [1] describe this as the internal (user) and an external (bystander) view of technology usage. Montero et al. [5] formalize this as the user's social acceptance (How comfortable or relaxed does the user feel interacting with an interface?), and the spectator's social acceptance (Does interacting with an interface appear 'normal' or does it stand out?). On a macro level, social acceptability concerns the bigger picture of whether a technology is tolerated, accepted, or possibly even appreciated by a community or culture. Olshannikova et al.'s workshop contribution extends Brewster's and Montero's notion, and suggest five perspectives:

1. internal perspective: How I perceive myself, mindful of self-image and cultural norms, while interacting with a particular technology,
2. interpersonal perspective: How does using a technology affect the impressions by others and my interaction with other people?
3. perspective of social structure: How does using a technology affect my professional image and my position in organizations and other social structures?,
4. normative perspective: How is using an interface generally perceived in the cultures and communities I belong to?, and
5. ethics and regulations perspective: To what extent is using a technology in line with existing laws, regulations and moral standards?.

So far, these perspectives have not yet been combined in a generalized model or framework. In addition, factors influencing those perspectives, and thus shaping an interface's social acceptability, have not yet been researched comprehensively.

During the workshop and in the pre-workshop survey, we collected a list of factors that link to the social acceptability of an interactive technology. While this list is not exhaustive, it can serve as a valuable starting point for future research.

- Aspects of a technology that cause fear, objections or eerie emotions can be relevant to social acceptability. Potential causes of fear and anxiety include *control loss*, *lack of situation awareness*, and *privacy infringements*.
- Aspects concerning the user's social image, such as *perceived awkwardness*, *coolness* or *publicity of interactions* relate to the user's impression management [2]. In consequence, *strange form factors*, *unusual or ambiguous interactions* can impair social acceptability, which may vary depending on usage scenario, location, and interface type or variant.
- Aspects that make a technology non inclusive can trigger *ethical concerns*. These aspects might include *poor availability*, *low accessibility*, or a (perceived or real) *lack of fairness* (e.g., in algorithmic systems). Design that neglects some standpoints, perspectives, circumstances or contexts, i.e., technology that works only for few, or causes disadvantages certain people is likely to be considered not socially acceptable.

How to design for social acceptability and how to evaluate and measure it?

Evaluating interfaces in terms of social acceptability (or evaluating interfaces that have issues with social acceptability in terms of something else) is challenging. Issues with social acceptability might hinder usability testing, as users could be hesitant to interact. Moreover, research prototypes can be prone to a novelty effect (e.g., the "WOW" factor), or include single aspects that are (not yet) acceptable, or not part of the to-be-evaluated concept (e.g., "bulky" hardware). In consequence, participant's feedback might strongly focus on these most-evident issues, and neglect others.

Thus, testing design concepts instead of functional prototypes has become a popular choice. Variants of such "hypothetical" designs are often evaluated using scenario-based or storytelling methods that require participants to imagine the use of an interface in a certain situation. These methods typically use sketches, illustrations or video prototypes to depict how the envisioned interface would be used. While these methods have the advantage that they are highly controllable, mitigate bias, and allow to investigate and compare effects of

individual factors (e.g., visibility of interactions), they may be challenged in terms of external validity. It has to be acknowledged that these methods do not provide absolute measures, i.e., cannot answer whether an interface would reach a certain acceptability threshold. On the other hand, they allow to isolate certain features and compare variants against each other, which allows for accurate relative validity.

In contrast, in-the-wild tests with actual prototypes, such as technology probes using on-street recruitment are prone to self-selection bias, and thus might only attract participants that already have a positive attitude towards the evaluated technology, or participants that feel the need to protest against it. In this case, viable and purposefully designed tools, such as questionnaires measuring social acceptability (e.g., the WEAR Scale [3]) may be prone to ceiling effects, or attract answers that are out of scope. Nevertheless, research on technology adoption illustrates that actual user experience and perceived social acceptability often differ from what user's would initially predict. For this reason, in-the-wild tests of prototypes may be necessary to obtain an estimation of an interface's actual social acceptability.

Both approaches, testing visions, and testing prototypes, do have their strengths and weaknesses. Future research on social acceptability would require methods or processes comprising that work with a meaningful combination of both, design visions and prototypes.

Future Perspectives

The workshop on social acceptability at CHI 2018 demonstrated that social acceptability issues impact upon many areas of HCI. Although the term was conceptualized more than two decades ago, the social acceptability of human-computer interfaces has been given little attention since.

Although there was a consensus amongst the workshop participants that purposefully designing for social acceptability was possible and necessary, it was also noted that dedicated design methods and best practices are sparse.

Future research should answer what designers can do to mitigate fears, social rejection, and other issues causing a lack of social acceptability. Starting a collection of good and bad practices out of different application areas that might be transferred into guidelines or heuristics could serve as a starting point and be a good way of packaging the insights of current research efforts targeting social acceptability issues in HCI. With this in mind, we intend to evolve the CHI 2018 workshop on social acceptability into a workshop series.

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