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What Values should Online Consent Forms Satisfy? A Scoping Review

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ABSTRACT

Background: Online users are presented with consent forms frequently, as they visit new websites. Such forms seek consent to collect, store and process a web user's data. The forms contain a wide range of statements that attempt to persuade people to grant such consent.

Aim: In this paper, we review the literature to determine what researchers say about the human values/needs online consent forms should satisfy.

Methods: We carried out a scoping review of the literature on consent forms, in order to understand the research in this area. We conclude with a value-based model of online consent.

Results: Our investigation revealed six distinct human values, and their associated value creators, that online consent forms ought to satisfy in order to support informed consent-related decision making.

Conclusions: We conclude with a suggestion for future work to validate the proposed model.

Keywords Online Consent Forms, Human Values, Subtraction, Human Need Fulfilment

1 Introduction

Every Internet service user encounters multiple online consent forms, requesting permission to collect, store and use their personal data. The frequency and ubiquity of these requests can wear users down so that they divulge more than is wise [36]. Personal data collection is often 'sold' as being necessary to support personalisation of recommendations, but it is well known that personal data is often used for other purposes too, including being sold to third parties. The service providers themselves may also use the data for purposes other than service delivery. Many consent requests are accompanied by the statement: "*we care about your privacy*", but this is no guarantee that they actually **do** care and will respect visitor data [30, 84]. By 'respect', we mean that they will ensure that the data kept confidential, processed and only sold to third parties with explicit consent. Moreover, they should ensure that granted consent is truly 'informed' – but this is quite hard to achieve, even if online vendors do want to do this, as we will explain here.

When researchers ask research participants to grant consent, they are abiding by strict ethical requirements adhered to by academics across the globe, i.e., "*seek to do no harm; then to do right by those with whom we work; and ... 'help our successors as much as is consonant with those two principles'* " [35, p. 4]. Organisations trading online, on the other hand, generally obtain consent to comply with regulations, such as the EU's General Data Protection Regulation (GDPR) [33], grounded in the principle of informed consent. As such, the *raison d'être* of online consent forms is to obtain such consent. The forms used by organisations in this respect are often drafted by legal teams, and tend towards verbosity and complexity [108]. The problem is that current 'terms and conditions' forms often fail to support *informed* decision marking, due to their verbosity and complexity [1].

The flaws of consent forms have national (and international) impacts, as online users may unknowingly have their personal information exposed by consenting without fully understanding the implications, and thereby eroding their own privacy. In essence, their private information is leaked, and complaints to bodies such as the UK's Information Commissioner, while advised, will not correct the situation because they themselves have granted consent.

If consent forms are to serve their stated purpose, it is clear that a re-design is required. To achieve this, we need first to understand exactly what consent forms should provide to online users to support informed decision making by means of a scoping review which seeks to reveal factors that contribute to truly informed consent decision-making rather than 'how people feel about online consent forms'.

Section 2 presents the problem of online consent as it has been described in previous research and outlines the theoretical framework of this discussion. Section 3 presents the parameters of the scoping review and explains how we analysed the corpus. Section 4 discusses and reflects on the results. Section 5 proposes a model for verifying the findings empirically, and Section 6 concludes and suggests directions for future work.

2   Consent: The Problem and Related Research

2.1   Privacy

GDPR regulation came into being in the European Union 2018, intending to empower online users, in terms of keeping control over their private information. After the UK left the European Union, they retained GDPR. The regulations require those who want to collect personal information to gain *informed consent*. This means that *privacy* is at the centre of our discussions of online consent forms. In the UK, where the authors are situated, the Information Commissioner (ICO) will prosecute organisations who do not adhere to GDPR's provisions. Other countries have similar legislation. For example, Kenya has a Data Protection Act[1], and Canada has the Personal Information Protection and Electronic Documents Act (PIPEDA)[2] Worldwide, many countries are seeking to give people more control over their personal data.

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[1] `https://www.odpc.go.ke/dpa-act`
[2] `https://www.priv.gc.ca/en/privacy-topics/privacy-laws-in-canada/the-personal-information-protection-and-electro`

2.2   Consent

Online consent has been most widely studied from a cookie consent perspective. For example, a number of researchers have focused on the fact that cookie consent forms do not align with the strict rules imposed by the EU's GDPR legislation [96, 61, 15, 84, 104]. Indeed, Graßl *et al.* [42] find that many cookie consent dialogues deliberately manipulate users with so-called "dark patterns", probably in violation of GDPR strictures. (Dark patterns are deliberately deceptive techniques used to manipulate online users to act for the benefit of the person deploying the dark pattern [66, 39]. See Figure 1 for examples.)
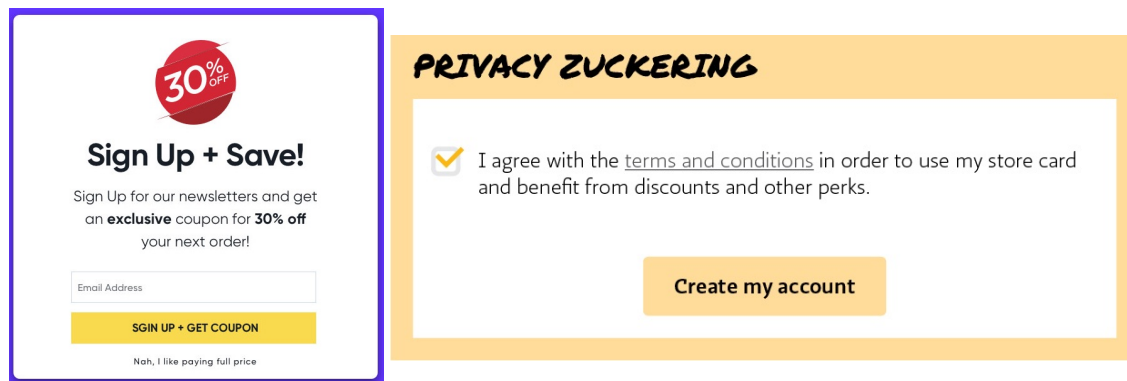

Figure 1: Examples of Dark Patterns (Left: Confirm Shaming - pushing customers towards the action that most benefits the vendor; Right: Privacy Zuckering - persuading customers to reveal more personal information than is wise)

Most of these studies (with the notable exception of [42]) did not consult end users about their perceptions and feelings about these practices.

There have been some studies of cookie acceptance/rejection. For example, Machuletz and Böhme [69] investigated cookie acceptance, contrasting forms providing either specific or overarching purposes of data collection, and discovered that there was no difference in acceptance. Those who see an "accept all" button were likely to use it to dismiss the request interaction. Ma and Birrell [68] discovered that the kinds of risk and the framing of cookie notices could impact cookie opt-out rates by a factor of three. Giese and Stabauer [40] identified a range of external factors that influenced cookie consent, including ease of use of the cookie notice and the speed with which the notice could be dismissed. Fernandez *et al.* [12] also highlighted the influence of cookie choice architecture design on choices.

Degeling *et al.* [30] point to the lack of usable mechanisms for accepting or rejecting cookies. Bauer *et al.* [9] discovered the importance of user sovereignty and need for regulation in influencing whether online users would accept or reject cookies.

Researchers have also investigated how users deal with online 'terms and conditions' documents. Steinfeld [107] finds that 'users often skip on reading them'. Even if the users did read the document, they tended to scan it rather than go through it carefully. Lukose *et al.* [67] report the same problem. Bakos *et al.* [3] observed online users and found that only 2% actually accessed online agreements, and even if they accessed it, they would only read a small portion.

It seems that the privacy regulations have not really led to more informed consent. Online vendors comply with regulations by providing 'terms and conditions' forms for online users to read and consent to. Due to a variety of factors, users do not read them, and consent anyway to gain access to the services. It is likely that at least some vendors exploit this situation and user privacy is irretrievably lost.

2.3   Proposed 'Subtraction' Approach

The usual approach to improving online consent forms is to provide *more* information, increasing length and exacerbating verbosity concerns. This confirms the assertions by Klotz [60], that people often try to solve problems by 'adding' to the system or to the text. In the case of online consent forms, this usually means adding *more* information — increasing length and complexity [45, 106]. Sunstein [108] also demonstrates that people are easily overwhelmed by too much information, which explains why they struggle with increasingly lengthy online consent forms. On the other hand, the involvement of legal entities in crafting online consent forms has maximised complexity [87].

The underlying assumptions of online consent forms are that: (1) people want **all** possible information about how their personal data will be stored and used, (2) decision-making can only be improved if exhaustive information is provided, and (3) liability must be limited by having trained legal staff craft online consent forms. These assumptions are unfounded [17, 70, 41].

Instead of 'adding' more information, Klotz [60] advocates a *subtraction* approach – paring down instead of exacerbating complexity. If we seek to subtract, as advocated by Klotz [60], we need to gain insight into what should be retained and what can feasibly be removed. Sunstein [108] suggests that only information that improves well-being should be included.

In suggesting that a subtraction approach might be viable, we align with Guthrie [44], who argues that people often do not need or want more information; they want *the right kind of information*. Legal requirements have to be satisfied, while ensuring that well-being is maximised according to Sunstein.

Our suggestion is to design online consent forms in such a way that they satisfy the needs of online users. To that end, we need first to find out what people's actual needs are in this respect. This is important because satisfying needs and aligning with users' values is likely the best way to maximise informed decision-making.

This is where existing research on user values and needs becomes crucial. Specifically, previous work in human-computer interaction has applied the psychology of human universal needs and values to model, evaluate and design for user experience [72, 97]. Other research in housing has used means-end chain analysis to study and identify human needs, conceptualised as *values*, as well as *value creators* that contribute to fulfilling these needs, as a basis for designing and evaluating homes from the perspective of their inhabitants [75]. We agree with the concept of universal human needs [100] being applied to the design and evaluation of artefacts [48]. However, in applying this concept, it is important to establish *values* and *value creators* in different domains, as the relevance or priority of each need

may differ between domains (e.g. the design and evaluation of online-games, social housing or online-consent all have distinct features and satisfy different needs informed by varying human values).

2.4   Human Values/Needs

Kilby [59] says that "*a value is anything of importance to a human*" (p. 5). Williams [111] defines values as "*criteria or standards of preference*" (p. 16). Kilby explains that the importance of a value is grounded in its relationship to the welfare of the person or group, confirmed by [37]. Clawson and Vinson [25] say: "*A value is a belief held by the consumer. It is not some objective 'truth' that might have been tested and accepted by scientists, philosophers, religious leaders, economists, or other observers*". They also explain that values endure and have underlying positive worth to consumers. A major role of a consumer's values, according to Clawson and Vinson [25], is that they constitute criteria customers can use in guiding their behaviours.

Rokeach [91] suggests two sets of values: (1) instrumental values (codes of conduct), and (2) terminal values (states of existence) but encapsulates these in "*the cognitive representation and transformation of needs*" (p. 20). This and our discussion previously seem to suggest a co-dependency between human needs and human values. Indeed, whereas Kilby [59] refers to autonomy as a 'value', Ryan and Deci [94] refer to it as a 'need'. Given this interchangeable usage and the argued linkage between 'human values' and 'human needs' [91], we also searched for papers enumerating 'human needs' in compiling a list to inform our study.

We commenced with Rokeach's [91] seminal book titled '*The nature of human values*', which had been cited by 29907 in April 2023. We then considered other publications that had cited this book. We could only find three research publications that mentioned both "online consent" and "human values" [65, 72, 52]. To ensure comprehensiveness, we thus filtered other publications based on whether they were applicable to the consumer context. In particular, could the human need indeed be satisfied: (1) by an online consent document, and (2) where the other party is invisible so that trust comes into play. Our assumption is that the consenter (customer) holds at least some of the values, and that they can expect the service provider (online entity) to hold the same and satisfy such in their online consent form.

In Table 1, we enumerate the values and needs mentioned by all research papers in our corpus.

Table 1: Human Values that could apply to Online Consent (Related Concepts Grouped)

HUMAN VALUE/NEED	REFERENCES
Control including Autonomy, Freedom of Choice, Power, Self-Esteem	[59, 64, 37, 22, 98, 94, 24, 31, 105, 2, 85, 98, 65, 64, 53, 98, 65, 85, 22, 28, 101]
Fairness including Being Treated with Respect/Dignity, Fairness, Trustworthiness, Benevolence, Candour	[59, 22, 59, 64, 98, 85, 99, 37, 59, 64, 98, 99, 98, 59, 85, 22]
Uncertainty Avoidance/Loss Aversion including Privacy, Security	[59, 64, 37, 99, 85, 98, 99, 22]
Achievement/Competence	[110, 98, 64, 22, 94, 31]
Relatedness	[94, 10, 14]
Well-Being	[102]
Obedience to Authority	[59, 85, 98]

2.5   Summary

Having identified the applicable human values to inform our analysis, we proceeded to a scoping review, considering the literature on consent forms, and the human values and value creators mentioned in the publications.

3   Scoping Literature Review

A scoping review was carried with the following parameters, to answer the following research question:

RQ1: *what human values need to be satisfied in the online consent context?*

Search Terms: ("Online Consent" OR "Internet Consent") AND Privacy

Databases: SCOPUS, ACM Digital Library, EBSCO, ProQuest, PsycINFO, arXiv, Google Scholar

Years: 2013-2022

Inclusion: Peer reviewed and written in English.

Exclusion: Medical publications about research, consent forms for research participation and those neither author was able to access from their institutions (where emails to authors were unfruitful).

After removing duplicates, we were left with 61 peer reviewed papers. 14 were related to medical research consent. One was a project report without empirical results. One, we were unable to obtain. We were thus left with 45 papers to analyse.

3.1   Descriptive Analysis

The *authors* came from Norway, the USA, Canada, Ireland, Portugal, Austria, Germany, the UK, Israel, Australia and France. *Research participants* were from the USA, EU, Austria, the UK, India, and 41 studies used MTurk.

The *contexts* within which consent was studied include: (1) social network platforms [1, 83, 82], (2) conceptual narratives [18, 20, 21, 112, 32, 34], (3) consent for research studies [38, 8], (4) dark patterns [43, 63], (5) social annotation [5, 4], (6) consent- and privacy regulations [13, 53, 76, 81], (7) protecting children's privacy [11, 46, 54], (8) exploring knowledge of privacy and online consent [49, 50, 55, 56], (9) identifying values [93, 71, 79, 80], (10) automation of consent [57, 95], (11) AI- and big-data risks [58, 79, 58], and (12) miscellaneous: study proposals [26], considerations of open data [29], cloud-based services [7] , readability of forms [64], consent management [86], and an ethics-based alternative to the consent-based status quo [92].

3.2   Thematic Analysis

Thematic analysis with mixed coding was used. We created and, as the coding unfolded, developed a table with the publications as rows and codes as columns. The values from Table 1, where applicable, were used to guide the coding of the content of the publications in the corpus. Value creators were then sought for the values to identify how the

values could be satisfied in an online consent form. One of the authors did the initial coding. After discussion, the authors agreed on the final coding. Table 2 enumerates the consent form-related values that emerged from our analysis of the corpus. The results are discussed in the next section.

Table 2: Human Values that Emerged from Thematic Analysis of Corpus (*Starred Items Confirm Human Value Groups from Table 1)

CONSENT-RELATED VALUE	VALUE CREATORS	REFERENCES
Control* externally focused or autonomy-as-independence	Mechanism to change consent decisions, alternative consent forms, power balance, voluntariness/freedom of choice, agency, scope of consent, cooperative consent	[1, 4, 5, 7, 20, 21, 29, 32, 34, 49, 53, 55, 71, 76, 19, 71, 76, 53]
Fairness*	eliminate dark patterns, no deception, no manipulation	[53, 63, 76, 19]
Uncertainty Avoidance*	maximise comprehensibility, transparency, attract attention	[71, 53, 55, 56, 58, 76, 80, 83, 81, 82, 86, 58, 57]
Loss Aversion*	information about consequences	[81, 82]
Trust	Trust in an ecommerce context (invisible vendor)	[74]
Effort Minimisation	conciseness, reduce complexity, reduce information overload, design for readability reduce ubiquity of consent forms	[1, 4, 7, 8, 13, 32, 34, 38, 49, 93, 53, 55, 64, 81, 83, 82, 86, 19]

Some papers did not report on values or value creators, but rather reported on the difficulties related to knowing whether people self-reporting that they actually read forms could be trusted [83]. However, Jakiel *et al.* [54]'s results showed that their participant-students honoured the value of honestly reporting reading their consent forms. Some authors proposed alternatives to consent-based paradigms in preserving personal privacy: one grounded in ethical and appropriate use of the user's data [92]. In particular, Rooney and Foley argue for adoption of an "ethics of virtue" approach to address the fact that the current affordances of data mining have outpaced the traditional consent model. In the new ethics-driven paradigm, stakeholders act to meet the criteria of virtue: (1) act in good faith, (2) trust participants, (3) cede power to consenting participants, (4) anticipate moral dilemmas, (5) act with empathy. The current consent model is not built on these criteria. The status quo is similar to a *caveat emptor* situation, and Rooney and Foley propose a *caveat venditor* situation where the onus is on the service provider to behave ethically. Such a paradigm would hold service providers liable for damages done if they use so-called "gotcha" or 'clickwrap' clauses of dubious legality in their online consent forms [81, 51].

The overlap between the human values that emerged from our initial search (Section 2.4, summarised in Table 1) and the values revealed by the scoping review, is depicted in Figure 2.

4 Discussion

According to our research model in Figure 3, the quality of consent decision-making depends on the extent to which needs or values have been fulfilled. From the named values that we identified from our literature review are control, autonomy, uncertainty avoidance, loss aversion, effort minimisation and fairness. In our review, we identified value creators that contribute to the fulfilment of each of these values (see Table 2).
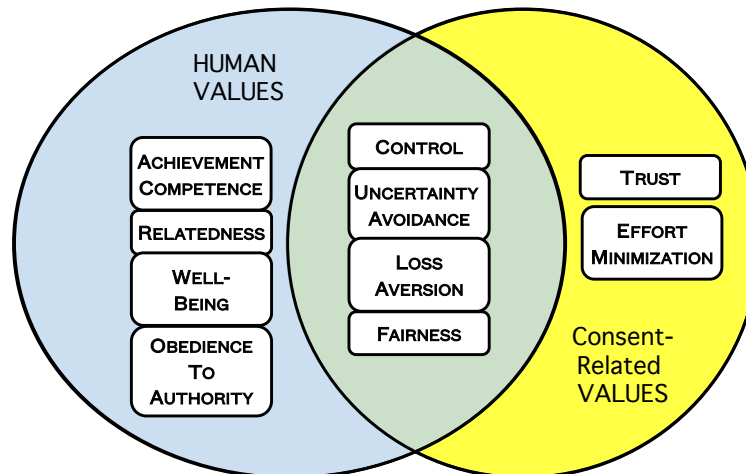
Figure 2: Overlap Between Human Needs/Values (Table 1) and Consent-Related Values (Table 2)

4.1   Control

The outcome of our separate analysis of the literature on the values of control and autonomy is as follows.   The focus of perceptions or experiences is internal or external to the individual. Perceived behavioural control-as-capacity [2] (also known as self-efficacy [103]) and autonomy-as-volition [94] are both internally focused. Autonomy-as-independence [105] and perceived behavioural control-as-autonomy [2] are externally focused and can be considered to be interchangeable.

Contributing 'control' value creators: (1) mechanism to change consent decisions, (2) alternative consent forms, (3) power imbalance, (4) voluntariness/freedom of choice, (5) agency, (6) scope of consent.

Users' preferences may change over time. From this follows a requirement for the option of post-consent access and the option to change or revoke consent [53]. A limitation of current consent mechanisms is that they do not allow users to intervene, in the sense of reading, amending or revoking their consent [55]. For example, a consent withdrawal function is not available on social networks such as Facebook. This creates a barrier to users' control over consent over time [1] [49]. Collaborative projects can pose special challenges to the withdrawal of consent, in terms of administering consent for the collective project members [16]

Alternative forms of consent have been proposed to enhanced consent decision-making [92]. Autonomy can be enhanced through consent by design. It has been proposed that this can be implemented through a user-centred consent process that consists of two phases: first, the elicitation of a consent policy and, second, its enforcement [92]. Another proposal is to enhance autonomy through an arrangement by which users are continually consulted and informed, and can continually change their consent to reflect any changes in their consent preferences [92, 57]. This can be seen as an extension of the concept of consent mechanism.

Usually, the data controller decides the purposes and means of data-processing. This creates an imbalance of power between data controller and data subjects. [53] A proposal to reduce the power imbalance between users and service-

providers is user-managed access to personal data [71]. This is seen as an 'emerging standard' that supports the identified consent mechanisms of choice, relevance, granularity, scalability, automation and reciprocity [71]. This can be considered an extension of the concept of alternative forms of consent.

In the design and use of online consent documents, autonomy can be compromised by a lack of voluntariness and choice, as consent is often implicit and uninformed [1, 7, 13]. Concerns also exist over a lack of voluntariness in data-mining for profit. [29] In addition, the ad-industry carefully crafts consent forms to persuade online users to consent, perhaps against their own best interests [34], which limits users' freedom of choice. A lack of voluntariness also arises from online consent forms that present users with a forced-choice dilemma: either agree to terms that include mandatory fields with personal information that is not required for the online service or not use the service [49, 55, 57].

Another threat to autonomy is a lack of users' agency through the self-governance fallacy [79]. This means that even if online consent documents were understandable to their users, given the exceedingly high number of documents that users encounter they would not be able to make enough time available to actually read, process and understand these documents as a basis for making informed consent decisions [79]. Potential solutions to the fallacy of self-governance include layered consent through subtraction and only requiring and requesting online consent where it is needed from the perspective of users.

The scope of consent may threaten the autonomy of third parties whose data may be captured, if their consent is not sought and obtained [58]. Examples include a smartphone owner's consent to the analysis by the smartphone manufacturer of emails that have been sent by others to the owner, a drone-renter's consent to the analysis of pictures taken by a drone and stored in another country of objects that a drone-owner does not own, and an autonomous-vehicle-renter's consent to autonomous-vehicles rental conditions for all passengers [58].

4.2 Uncertainty Avoidance

"*The degree to which cultures try to avoid uncertain situations*" [89, p.63]. Contributing value creators are transparency and attracting attention.

A lack of certainty about consumers' rights arises from a lack of transparency and information on uses of personal data in online consent documents [76]. Moreover, Jarovsky [55] also points to the failure of online consent forms to provide legally required information and adequate notice of potential usage of their data by big-data analytics processes. Obar [79] questions the assertion that transparency and information access on their own are sufficient to help online users to achieve privacy, pointing to the complexity of the domain and the difficulties related to really understanding it. Long and complicated consent documents can containing unfavourable clauses that commit users to conditions that they would not agree to if they had read them or had actually read and understood them properly [81, 82].

A lack of certainty is also created by online consent documents that do not attract users' attention in terms of not highlighting their default rights, not making the 'terms of use' readily and obviously available to users and hiding the importance of details of the contracts online from user [58]. More generally, an important requirement is that consent

dialogues draw users' attention in order promote informed decision-making [86]. Uncertainty avoidance can further be reduced by presenting concise, comprehensible, but complete information [52].

4.3   Loss Aversion

"*... people are more sensitive to losses than to gains*" [6, p.1248]. The value creator here is: "Information about Consequences". An example of people not spotting the losses comes from Obar and Oeldorf-Hirsch [81, 82], who show that people do not spot 'gotcha' clauses that were embedded in terms and conditions documents and thus do not know what they are giving up by consenting. When people discover what they have signed up for, loss aversion is likely to trigger a great deal of emotional negativity [78].

4.4   Effort Minimisation

"*...the process that aims to achieve the most cost-effective behavior based on this perception*" [23, p.169]. Value creators/detractors are conciseness, complexity, design for comprehension, ubiquity of consent forms.

A number of authors point to a lack of conciseness in online consent forms [55, 32, 38], and the consequences of this lack, leading to excessive demands in terms of time taken to peruse them. This makes overwhelms many [83, 81].

Jarovsky [55] highlights the complexity of many of these documents. Luger *et al.* [64] carried out an analysis of online consent forms using the SMOG readability formula. They found that the documents were beyond what a functionally literate adult could be expected to understand. Like the previous value creator, a lack of reading ease increases the time it takes to read them, and reduces the likelihood that people will read them [83].

Pesch *et al.* [86] suggest that the documents be designed to maximise comprehension with Obar and Oeldorf-Hirsch [81] finding self-reported difficulties in comprehending online consent forms. A number of authors emphasise the importance of this aspect [1, 4, 7, 38, 49, 93] and the inherent complexity of online consent forms [13, 49] with Batchelder *et al.* [8] testing this aspect of online consent forms and finding them wanting.

Jarovsky [55] draws our attention to the ubiquity of online consent forms. He points to the effort involved in dealing with the sheer number of online consent forms that have to be dealt with every day.

4.5   Fairness

Colquitt and Rodell [27] define fairness as "*global perception of appropriateness*" (p. 188). The values creators/detractors here are deception and manipulation. There is mention of the unfairness of deception and manipulation by creatig confusion or coercion [63]. Nicholls [76] points to the exploitation of users' behavioural biases to influence them to consent when such consenting might not be in their best interests.

4.6 Trust

Fassl *et al.* [34] refer to 'consent theatre' where online services pretend to respect users' choices but then in their actions, do not. In other words, these vendors do not demonstrate a trustworthiness.

With respect to trust in the consent context, an insight was gained from Julian Ranger, Chairman of iBundle [88]. He has a wealth of experience in experimenting with improving the quality of online consent forms. A good experience with online consent documents is likely to engender trust, and such trust will create a sense of wanting to continue to interact with the service provider. McKnight *et al.* [74] carried out a study to explore the antecedents of trust in e-commerce websites. They suggest that the following constructs are relevant: *disposition to trust, institution-based trust, trusting beliefs (competence, integrity & benevolence)*, and *trusting intentions*. While disposition is outside of the control of the organisation, the others can be influenced by experiences of the service provider, as well as the quality of the website. We plan to use these constructs in subsequent studies of online consent.

4.7 Summary

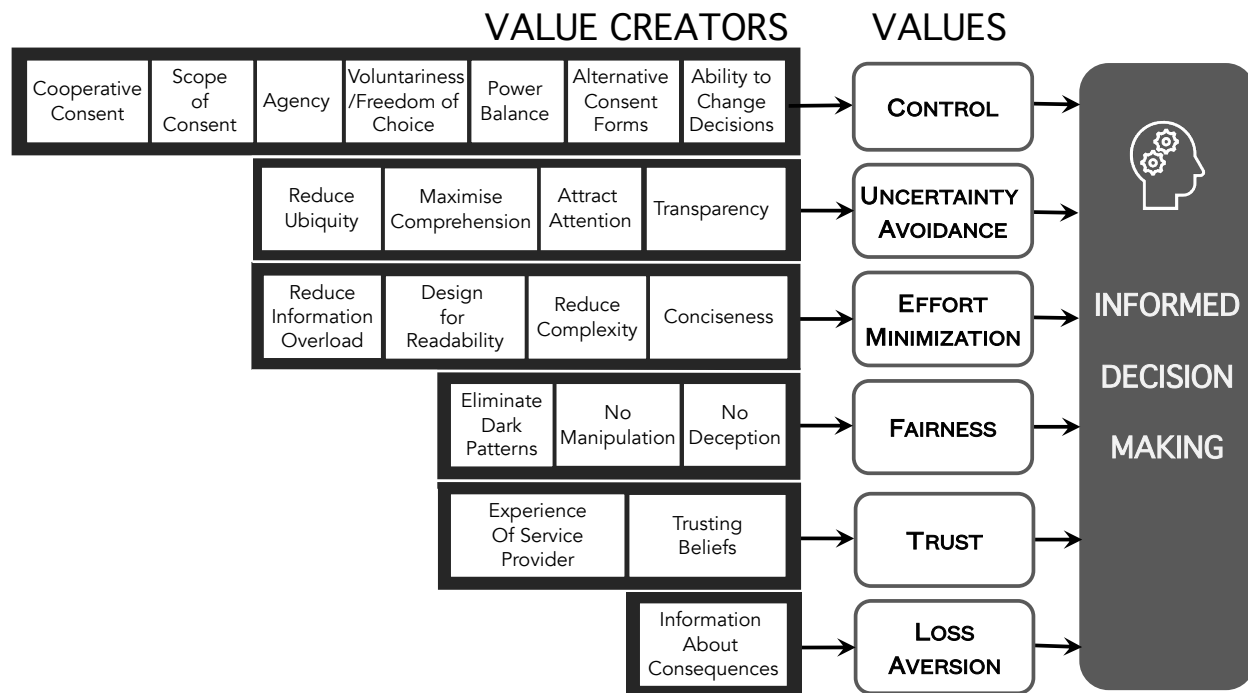Figure 3 brings together our findings from the scoping review.

Figure 3: Depiction of our Findings related to consent form values

5   Proposed Model

Figure 4 proposes our "well-consent" document (WCD) design model, grounded in the 'subtract' paradigm proposed by Klotz [60] and informed by Sunstein's suggestion that only information that increases well being be included [108]. This model needs to be validated with one or more user studies.

As future work, we plan to develop a taxonomy [77] of online consent forms used in the UK (e.g., registration for a service, installing a mobile app). For each of these, we will harvest a representative sample of publicly-available online consent forms from UK-based companies. We will then apply the proposed model from the current scoping review by ensuring that the values and value creators are prominently represented in each online consent form.

We will also apply principles of subtraction as follows: (a) remove information that has low or no priority according to our WellConsent Design (WCD) design model; (b) distil the essence of remaining information elements; (c) prioritise the essences according to our WCD design model; and (d) design the presentation of prioritised essences, with links to backgrounded information [90]. From this process, different design solutions may follow. Therefore, for a particular online consent form type, one or more WCD solutions might well be created. A series of experiments will then be conducted to test the WCD alternative(s) against an original online consent form of each type, based on measures from our WCD behaviour model (see Figure 4).

Our well-consent behaviour model is based on: (a) a means-end chain value-based user experience approach [75], and (b) HCI UX modelling work [47, 62]. From the former [75], we take two ideas.

First, given a set of values, the requirements for the corresponding value creators can be derived and from the value creators the requirements for design factors can be derived to create design solutions.

Second, given a particular design solution and design factors that characterise this, predictions can be made about the corresponding value creators and from these predictions about the corresponding values as experienced by users.

Third, from the latter, we take the concepts of: (a) quality in design, and (b) quality in use [62]; a product's design quality is reflected in the objective (e.g., task performance) and subjective quality of use. Subjective quality includes users' experience of objective quality in interaction with the product, in terms of need fulfilment (experience of values realised) [47, 109]. In the context of online consent, the ultimate outcome of the fulfilment of needs to contribute to informed consent decision-making will be the experience of informed consent decision-making. In addition, experienced consent-related need fulfilment can be considered as a form of structural assurance: the belief that "*protective structures like guarantees, regulations, promises, legal recourse, or other procedures are in place to make a successful [...] transaction likely*" [73, 74] (p. 483, p. 339). According to McKnight and Choudhury's trust model [74], structural assurances then lead to trusting beliefs, these – in turn – to trust intentions and, finally, trust-related behaviours (adoption or continuation of usage of the online service).
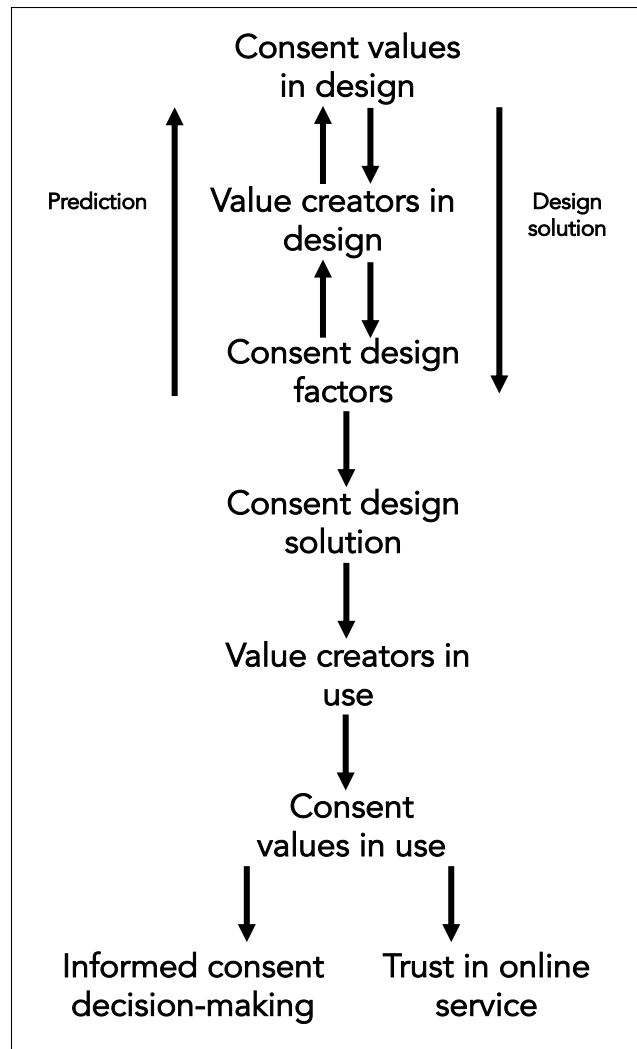
Figure 4: Proposed online well-consent behavioural model

Based on the experiments' results, the WCD design model will be refined in terms of the revealed importance of value creators influencing consent form design factors. Moreover, the WCD behavioural model will be refined, in terms of explaining online privacy-related decision-making.

6   Conclusion & Future Work

From our scoping review, we developed a value-based well-consent document design model for online consent. The model specifies values that contribute towards truly informed consent decision-making. The value creators provide potential mechanism to achieve the values. In our research we will use the model to re-design information consent documents and then test the improvements. The tests will also allow us to refine the WCD design model and the WCD behaviour model for future use.

Acknowledgements

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