UNIVERSITY OF PADOVA

Department of General Psychology
Master's Degree in Cognitive Applied Psychology

Final dissertation

Improving the Transparency of an Ethical Review Process: A Case Study

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Academic Year 2022–2023

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INTRODUCTION

Transparency has risen to become an almost unquestioned "cornerstone of liberal democratic government" (Koivisto, 2016). The idea (and *ideal*) of transparency has gained significant traction in this era of heightened visibility, as transparency itself is widely believed to hold an institutionalized democratic value, even more so in situations where power is being wielded in a *top-down*, one-sided manner. Given that it is regarded as a mechanism to control the release of information, transparency is believed both to be effective in counterbalancing the concentration of power in the hands of a few and to serve as a means of enabling citizens to participate effectively in the political process. It also acts as a strategy to hold public officials accountable for their actions (Koivisto, 2016). Furthermore, the author argues that transparency has emerged as a normative concept that includes a "covert 'pro-attitude' towards it", under the assumption that "transparency creates legitimacy".

Initially, the concept of transparency was introduced as a means of ensuring accountability in government institutions by affording greater political leverage to citizens. Over time, it has evolved into a means of safeguarding the interests of society as a whole. Today, this principle is preserved in various laws and regulations to mitigate the risks associated with the use of information technology (Masotina, 2023). This is exemplified the General Data Protection Regulation (GDPR; Regulation EU 2016/679) implemented in Europe, which states that "The principle of transparency requires that any information and communication relating to the processing of those personal data be easily accessible and easy to understand, and that clear and plain language be used" and, furthermore, enforces that "personal data shall be processed lawfully, fairly and in a transparent manner in relation to the data subject".

For this reason, the present dissertation project is the first component of a larger initiative that is currently being undertaken by the Ethical Committee at the Human Inspired Technologies Research Center (HIT). The HIT Ethical Committee provides ethical reviews for researchers and for their research projects so as to ensure that they all meet the prescribed ethical and legal standards. The main objective of this project was to apply the very principle of transparency to the ethical review process. It is crucial to note that transparency represents a key value in research ethics, as it promotes trust, accountability and public understanding of research. However, transparency is not merely

a matter of disclosing information, but rather of making it accessible and comprehensible to the relevant stakeholders as well. Therefore, this project adopted the concept of *usable transparency*, which presupposes that the information provided by the ethical review should be effective, efficient, and satisfactory for the users. The main contribution of this dissertation was to design and evaluate a tool that implements *usable transparency* principles in the ethical review process, thereby enhancing efficiency and promoting ethical practices to ensure that the highest standards are upheld in all scientific endeavors.

In the **first chapter**, I introduce the concept of *transparency*, discussing how nowadays its distinct definitions all appear to hold an almost "ethical" value to them, as they tend to equate transparency with something that is not just *open* or *accessible,* but also *morally praiseworthy*. If it is already difficult to encapsulate such an abstract construct, the attempt to identify its underlying factors proves to be even more challenging, especially due to the fact that transparency is very rarely considered as a primary concept; rather, more often than not, it is regarded as a kind of complementary concept in respect to constructs like *privacy* and *security*. Next, I go on to discuss the notions of *usable security* and of *digital nudging*, which are user-centered approaches that may assist people in privacy and security decisions.

In the **second chapter** I introduce the main objective of the present research (i.e., *usable transparency*) and its context. An overview of the main phases in which the project was divided is also presented. Furthermore, I provide a description of the "General Protection Data Regulation (GDPR)" and the "American Psychology Association (APA) Code of Conduct", as they both shaped the theoretical and legal background of this entire project.

The third and fourth chapter constitute the heart of this dissertation, as they are concerned with the planning, the development and the testing of a revised ethical application process for the Ethical Committee of the Human Inspired Technology Research Centre. The specific sort of interventions that this study focused on (i.e., aiding researchers in navigating the ethical review process by making) was rooted on the concept of transparency and, as such, mostly addressed issues that are often connected with conditions of *incomplete information*. With the help of *nudging* dimensions and subdimensions (e.g., education, saliency, structure, timing), a new application form — equipped with an informative 'glossary'— and the automatic production of a custom

informed consent document —based on the information provided by the user in the application form— were built and tested on a small sample of researchers.

Finally, in the **fifth chapter**, I present the conclusion of the project. The chapter consists of a comprehensive overview and summarization of the project, including a critical analysis of its main findings and limitations. Finally, a section for the potential of this research for future advancements is also included.

1. TRANSPARENCY

1.1 Definition

The importance of transparency in democratic participation is both widely acknowledged on a global scale and thought to foster trust in government, thwart corruption, promote informed decision-making, guarantee the accuracy of government information, and facilitate the dissemination of information to the public, businesses, and journalists (Bertot et al., 2010). In fact, although different and highly context-specific acceptations of *transparency* have been proposed (Koivisto, 2018; Ofem et al., 2022), qualities like "transparent", "open", "visible", "accessible", and "available" have often been used interchangeably in previous literature (Barth et al., 2022). More recently, the "idea that democratic governments should be open, accessible, and transparent to the governed is receiving renewed emphasis through the combination of government reform efforts and the emergence of advanced technology tools for information access" (Dawes, 2010). However, it is important to distinguish between transparency and "data-flooding" (Alloa & Thomä, 2018), that is the deliberate and strategic disclosure of a great and overwhelming volume of data that is consequentially difficult to process or make sense of, thus leading to "opacification" (Alloa & Thomä, 2018). The essence of transparency lies in the extent of information that is available, accessible, and understandable to stakeholders (Ofem et al., 2022): this is the theoretical framework from which the definition of *transparency* which was employed in the present work is derived.

A more thorough analysis of both the material and symbolic meaning of *transparency*, detailing the three implications of transparency as a physical property, is presented in the work of Koivisto (2022), of which Masotina (2023) provides a summary. Firstly, transparency "allows seeing" and "promises visibility, clarity, and —for analogy— understanding". Secondly, it works as a medium that "allows seeing through". However, "there is nothing innocent about making the invisible visible" (Strathern, 2000). As Koivisto (2022) argues, in fact this process also implies an *a priori* intention; specifically, the intention of giving prominence to certain elements over others by making them visible in the first place. Therefore, "the way [transparency] is built influences how people will interpret the object they are observing" (Masotina, 2023). Thirdly, by

allowing to see something (or to see through something), transparency turns both the thing that is being observed *and* the observer into active components of the process. In fact, on the one hand, when looking at something, people rely on their pre-formed beliefs or goals (i.e., top-down mechanisms, Gaspelin & Luck, 2018) in order to understand or interpret it; on the other hand, the mere awareness that one is being observed might lead a person to modify their own behavior (e.g., Hawthorne effect).

1.2 Conceptualization and Operationalization

Dealing with how transparency is conceptualized and operationalized (i.e., implemented and measured through objective factors) has proven to be a challenging task. In their review, Ofem et al. (2022) conclude that *transparency* is rarely studied as an independent concept and, as such, "explained by well-defined factors". On the contrary, a remarkable portion of both qualitative and quantitative literature focuses on *transparency* only as the "other side of the coin" of a different primary concept (e.g., privacy, security). Of the eighteen articles taken into consideration by Ofem et al. (2022), only three provide an explicit definition of *transparency*, which can be summarized as 'a free circulation of information between all parties involved'. Furthermore, there is a certain degree of uncertainty even around the terminology employed to identify the properties which have been proposed to measure transparency in these articles. At last, the authors opt to synthesize attributes, notions or soft goals of transparency under the generic term "factor".

Their work is based upon the two main sub-groups in which Leite & Cappelli (2010) divide transparency: *information disclosure* and *process disclosure*. The former consists of explicating the information used by a software; meanwhile, the latter provides insights concerning the inner logic of the software itself (i.e., "what it does, and how it does it"; Leite & Cappelli, 2008). Based on this categorization, Ofem et al. (2022) distinguish between the conceptualization and operationalization of:

- *information transparency (IT)*, which "refers to the conceptualization and operationalization that focuses on software, especially the information it deals with, and software artifacts such as requirements documents, design documents, and code";

- *process transparency (PT)*, which "refers to the conceptualization and operationalization of transparency that focuses on automated (i.e., software) and unautomated (i.e., other organizational or business processes) processes".

Below, I present a list of some of the existing factors of transparency collected by Ofem et al. (2022) and grouped according to their proposed application (process transparency, information transparency or both).

Process and Information Transparency

- **Usability**: "The quality of being able to provide good service"
- **Accessibility**: "The quality of being easy to deal with"
- **Portability**: "The quality of being light enough to be carried"
- **Operability**: "The quality of being treated by surgical operation"
- **Performability**: "The ability to give a good performance"
- **Informativeness**: "The quality of providing or conveying information"
- **Clarity**: "The ability to be free from obscurity and easy to understand"
- **Completeness**: "The quality of being complete and entire; having everything that is needed"
- **Correctness**: "The quality of being conform to fact or truth"
- **Current**: "The quality of occurring in or belonging to the present time"
- **Integrity**: "The quality of being undivided or unbroken completeness, or totality with nothing wanting"
- **Accuracy**: "The quality of being near to the true value"
- **Dependability**: "The quality of being dependable or reliable"
- **Comparable**: "The ability to be compared"
- **Consistency**: "The ability to express logical coherence and accordance with the facts"
- **Conciseness**: "The ability to express a great deal in just a few words"
- **Decomposability**: "The ability to separate into constituent elements or parts"
- **Verifiability**: "The quality of being tested (verified or falsified) by experiment or observation"

- **Traceability**: “The quality of following, discovering, or ascertaining the course of development of something”
- **Availability**: “The quality of being at hand when needed”
- **Uniformity**: “The quality of lacking diversity or variation”
- **Simplicity**: “The quality of being free from difficulty or hardship or effort”
- **User-friendliness**
- **Understandability**: “The quality of comprehensible language or thought”
- **Adaptability**: “The ability to change (or be changed) to fit changed circumstances”
- **Accountability**: “The quality of being explained; made something plain or intelligible”
- **Publicity**: “The quality of being open to public view”

Information Transparency

- **Transparency Usefulness**: “Enables stakeholders to make decisions based on provided information and act upon them”
- **Information Availability**: “Information provider must disclose information for the use of the information receivers”
- **Information Interpretation**: “Interpretation of information in a way that can be understood easily by information receivers”
- **Information Accessibility**: “Degree to which information can be easily located by information receivers”
- **Information Perception**: “Information receivers' perception of the transparency provided by the information”
- **Information Understandability**: “Perceived information should also be understood and comprehended by information receivers”

Process

- **Free of error**: “The extent to which information is accurate and dependable”
- **Accessibility**: “The extent to which information is available, or easily and quickly retrievable”

1.3 Psychological effects of transparency

Now that the critical factors of transparency have been identified, there is a need to evaluate how these factors are implemented, whether they are effective in promoting transparency or not and, therefore, whether they provide *ecological validity* for the examined concept. Given the multifaceted nature of transparency, evaluations have traditionally relied upon case studies, surveys and frameworks, even though it is relevant to note that there are a number of studies that propose experimental or quasi-experimental designs (Ofem et al., 2022). A portion of literature has focused on how transparency affects other psychological constructs by considering it as an independent variable or as a mediator.

1.3.1 Trust

According to Keefer & Scartascini (2022), *trust* is defined as the belief that others will act honestly and dependably; in other words, it signifies having the freedom to choose 'a hen tomorrow rather than an egg today' and to focus on broadening one's opportunities in the future instead of worrying about surviving day by day. Trust is critical in determining the majority of social and economic interactions, given that it can push someone to act in contrast with the normative model of economic theory (Borzino et al., 2023). This explains why its behavioral dynamics have been extensively researched. Studies support the hypothesis that *transparency* promotes *trust*, whether full or partial information is disclosed (Cassar & Rigdon, 2011; Borzino et al., 2023).

These results hold promise for potential applications in real-world settings, such as business or politics. For instance, Borzino et al. (2023) contend that, by providing citizens with information about government performance, policymakers may increase trust in government and promote more positive attitudes towards public institutions. A number of authors have also postulated a convergence between *regulation* and *trust*. For a long time, it has been thought that a trade-off existed between the two: the lower the trust in regulations is, the stronger the regulations must be; therefore, stronger regulations, in turn, penalize trust (Aghion et al. 2010; Ayres and Braithwaite 1992). However, a more recent approach appears to suggest that regulations may actually enhance public trust by holding private and public organizations to agreed standards and by appointing designated supervisors. Since transparency can be viewed as a regulatory instrument (Etzioni, 2018;

Koivisto, 2018; Grimmelikhuiisen et al., 2023), it then becomes relevant to investigate its role in the regulation-trust debate. For instance, Grimmelikhuiisen et al. (2023) resort to an experimental design to test how the way information is framed impacts on building citizen trust in regulated sectors (industries or areas of economic activity that are subject to government oversight and regulation, such as nuclear safety, healthcare, telecommunications ecc.). Their experiment focuses on *targeted transparency*, that is the selective disclosure of information by organizations with the specific aim to minimize certain risks or performance problems (Fung et al., 2007). As claimed by Grimmelikhuiisen et al. (2023), the relationship between *targeted transparency* and *trust* is mediated by contextual factors, namely the specific regulated sector that is being considered, or the type of transparency frame that is being employed. In fact, their study produced mixed evidence: some transparency frames had a positive impact on trust (i.e., positive equivalence framing and anecdotal frames), while others did not have any significant effect (i.e., reference points and specificity of information).

As previously stated, the relationship between transparency and trust concerns organizations as well as computer engineering, where algorithmic transparency has proven to be successful in promoting the perceived trustworthiness of a decision-making algorithm (Grimmelikhuiisen, 2022). These results show that two of the aforementioned factors of transparency (*accessibility* and *explainability*; Table 1) contribute to algorithmic transparency and are crucial to foster trust, although the former has proved to be more important than the latter in affecting citizens' trust. These results confirm those previously reported by Kartikeya (2021). This quantitative study demonstrates that, when people are supposed to make a decision, they tend to trust the suggestion of an explainable artificial intelligence (AI) more than the one provided by a *black-box algorithm*. In fact, when participants were shown the process through which the AI came to a certain output (specifically, a prediction about a restaurant rating based on the textual review of the client), they displayed the tendency to trust that output more and, in many cases, to even change their answer so that it would be closer to the one given by the AI. This was true even when the AI was totally incorrect in its predictions. On the contrary, this was not true for those participants who did not receive additional information about how the output was calculated.

1.3.2 Reactance

Psychological reactance (or simply *reactance*) has been defined as an emotional or motivational reaction that emerges when an individual feels like his or her freedom is being somewhat restricted or otherwise threatened and, thus, purposefully behaves in contrast with the perceived expectation to restore his or her perceived autonomy (Brehm & Brehm, 1981; Reuter et al., 2022). Stehlíková et al. (2020) provide a brief literature review of *psychological reactance*. Even though it was originally regarded as a situational reaction, it has later been conceptualized as a state and trait dimension. As such, it was also studied in tandem with other personal characteristics (e.g., anger, depression, aggression, noncompliant behavior, etc.) in order to find some correlations, consequentially highlighting its social implications. Furthermore, the authors point out that there is no actual consensus around the operationalization of reactance. Both multi- and unidimensional scales have been proposed; for example, De las Cuevas et al. (2014) differentiate between an affective dimension and a cognitive dimension of reactance.

Still, not every loss of (or threat to) autonomy induces reactance. On the contrary, the occurrence of this psychological state is affected by a number of contextual factors that can either increase or decrease its likelihood (e.g., authoritative language, alignment with user goals, perceived legitimacy and permanence, and social agency). In addition to that, studies show that reactance may be mitigated either by providing a justification or by clarifying the nature of a threat to one's autonomy (i.e., *informativeness* and *accountability* as transparency factors; Table 1). This is also true in some cases where a direct preference of the individual (i.e., user) is ignored (Heatherly et al., 2023).

1.4 Usable Privacy

The implementation of new privacy legislation has had a major impact on the usable privacy domain (Reuter et al., 2022). Naturally, only adhering to the law on a surface level without effectively allowing users to exercise their rights is not enough. With the advent of websites, *cookie banners* emerged as a means to seek user consent for the processing of their personal data. However, many of these banners employed dark patterns that went against the *privacy by design* principles. These patterns exploited users by making it difficult for them to withdraw consent and/or simply manage their choices about privacy. As a result, online users were inundated with banners that were specifically

designed to manipulate them into giving consent without fully understanding the implications of doing so (Machuletz & Böhme, 2020). Furthermore, since users are often blamed for missing or malfunctioning safety measures, many experts believe that human error is the most significant factor in cyber security breaches, whereas the often-glaring lack of system-side support and usability (e.g., the design of the interface, the feedback mechanisms, the complexity of the system, and the availability of help and guidance) is regularly overlooked among the causes of misuse in cyber security. However, it is important to acknowledge that the users' primary focus is completing tasks, not taking protective measures. This means that, if security measures get in the way of the completion of said tasks, users may ignore or bypass them, rendering them ineffective. Yet, even in doing so, users are *still* acting within the bounds and limitations of the environment that they are provided with, thus proving that security, human factors and user-friendliness cannot be regarded as separate, independent concepts, and that there must be a "congruence between internal system mechanisms and users' mental models" for users to accept protection measures (Reuter et al., 2022). Rather than merely leaving individuals in a condition of *incomplete* and *asymmetric information* whenever they are faced with pivotal and complex privacy and security decisions, more recent studies have started investigating those strategies which may assist people in decisions and behaviors related to those matters (Acquisti et al., 2017; Reuter et al., 2022).

Specifically, there is growing research on how "transparency can be implicitly achieved based on [the] choices in information systems or software design and development approaches" (Ofem et al., 2022). As argued by Reuter et al. (2022), "approaches have been developed to make privacy statements easier to understand" by "visualizing relevant information or by providing visual feedback on decisions in critical situations to respond to visual perception", even though people's personal preferences regarding transparency may vary (e.g., seeing relevant information in an aggregate *vs.* disaggregate way). In addition, disclosing how a system works can not only improve "user trust, satisfaction and efficiency" (Völkel et al, 2019), but also be instrumental in identifying potential risks, issues, or conflicts of interest, and in ensuring more accountability from organizations (Ofem et al., 2022). Nowadays, users are not satisfied with a system which does not provide insights into how a certain output is calculated (i.e., algorithmic transparency); they expect an explanation, instead (Shah et al., 2023). This is

a so-called *white-box algorithmic approach* (Cheng et al., 2019) where the system has an explainable algorithm (i.e., users can see how an output is generated). In contrast, *black-box systems* only show the input and the output, while keeping the process hidden from the user.

Architectural designs rooted in soft paternalism and meant to "nudge users towards better decisions without restricting their options" represent another type of these strategies. From the late 1990s onwards, the key role of interfaces in influencing —and sometimes hindering— users' awareness of privacy and security features has emerged more and more in literature. Studies support the idea that *incomplete* and *asymmetric* information does in fact affect the decision-making process, as the former attribute refers to situations where economic agents lack information concerning a transaction, whereas the latter is used to describe a situation where agents interacting in a transaction have significantly differential access to information that is key for that specific transaction (Acquisti et al., 2017).

1.4.1 Digital nudging

Most of these approaches aiming to solve policy issues tend to exist on a spectrum whose extremes are "strong paternalism" on the one end and "strict libertarianism" on the opposite one. Where strongly paternalistic interventions often translate to decisions being imposed upon users so long as these decisions are reputed to be beneficial for them, strictly libertarian ones are ultimately based on self-regulatory solutions (as individuals are implicitly expected to direct their own decision making in their own best interest) and take a neutral stance, instead. Softly paternalistic approaches fall somewhere in the middle of this *continuum*: frequently referred to as "nudges", these approaches tend to favor a reframing of the choices that are made available to users in a way that would make it more likely for them to prefer decisions that are beneficial to them (Thaler & Sunstein, 2008). As a consequence, strongly paternalistic approaches *directly* regulate behavior, libertarian systems merely provide the user with the available options while remaining neutral with respect to the user's particular interests, and softly paternalistic interventions are those "nudges" endeavoring to affect decision making without imposing limitations around individual choices. However, no framework or system design —neither the (strongly or softly) paternalistic regulatory one nor the strictly libertarian self-regulatory one— constitutes a guarantee for the achievement of the previously stated security and

privacy objectives. Strictly self-regulatory systems may fail to address issues properly, regulation might fall flat, and the behavioral research behind softly paternalistic approaches might not necessarily produce the intended consequences every single time it is implemented.

A recently burgeoning number of studies centered on the effects of the implementation of *soft paternalism* and nudging tactics as a way to aid privacy decision making has increasingly gone on to demonstrate how it would be more accurate for these interventions to be viewed as "complements" of *incomplete* and *asymmetric* information rather than actual "substitutes" for awareness and transparency of information. *Ergo*, the main implication of these particular findings appears to be that information-related difficulties mostly ought to be dealt with through greater transparency and awareness interventions (Acquisti, 2009). Default options, positioning, color coding, reminding of the consequences, enabling social comparison, framing (e.g., red color for risk), as well as privacy-related information are just some of the protection mechanisms suggested and rooted in digital nudging (for a review, please refer to Reuter et al., 2022). Acquisti et al. (2017) provide an overview "of nudging dimensions and the relevant hurdles that they mitigate or exploit" (Table 1).

Table 1. Retrieved from Acquisti et al. (2017). The table describes the six nudging dimensions (and their relative subdimensions) that can be used in order to aid privacy decision making in users. Their aim is to either counterbalance or exploit users' biases and heuristics.

Dimensions	Subdimensions	Targeted Hurdles
Information. Reduces information asymmetries and provides a realistic perspective of risks.	Education	Asymmetric and incomplete information, availability heuristic,
	Feedback	Asymmetric and incomplete information, bounded rationality, availability heuristic, optimism bias and overconfidence
Presentation. Provides necessary contextual cues in the user interface to reduce	Framing	Loss aversion, optimism bias and overconfidence, representativeness heuristic
	Ordering	Post-completion errors, anchoring

Dimensions	Subdimensions	Targeted Hurdles
cognitive load and convey the appropriate level of risk.	Saliency	Availability heuristic, optimism bias and overconfidence
	Structure	Bounded rationality, availability heuristic, representativeness heuristic
Defaults. Reduce user effort by configuring the system according to user's expectations.	--	Status quo bias
Incentives. Motivate users to behave according to their stated preferences.	Increasing cost	Loss aversion
	Rewards/Punishments	Hyperbolic discounting, loss aversion
Reversibility (error resiliency). Limits the impact of mistakes.	--	None in particular. The goal is to allow users to recover from suboptimal decisions potentially caused by behavioral biases.
Timing. Defines the right moment to nudge.	--	Each nudging technique may be needed at different points in time.

2. THE RESEARCH

2.1 Context and Objective

The present study is part of a larger project of the Ethical Committee of the Human Inspired Technologies Research Center (HIT) at the University of Padova in Italy. The HIT Ethical Committee provides ethical reviews for researchers in their research projects and is currently updating its application process so as to make it more transparent to researchers. This main goal (i.e., *usable transparency*) can be further articulated in three subsequent secondary goals: (i) to simplify the workflow of the application process by implementing a certain degree of automation; (ii) to allow researchers to gain a more profound and conscious insight into data protection and ethical reviews as they are designing their project; and, consequently, (iii) to comply with article 25 of GDPR "Data protection by design and by default" that states that "data protection safeguards [must be] built into products and services from the earliest stage of development" (EUR-Lex, 2022).

This is attempted by, firstly, developing a revised application form intended to aid researchers in navigating the ethical review process (refer to "Tool design and development"), and, secondly, by testing it empirically (refer to "Tool evaluation: methods"). The way we chose to achieve this was by resorting to an *iterative process model* —"a cyclical process in which you make and test incremental adjustments" (Eby, 2016), that is, to get closer to the solution. The *iterative process model* proves to be useful in the timely refinement and revision of a product while allowing to avoid having to identify detailed features and functions from the very beginning, as it is assumed that the needs of future users (as well as other factors) might vary during the development timeline. Each adjustment cycle is composed of five steps which can be repeated as many times as needed (Eby, 2016):

1. **Planning and Requirements:** the initial stage is about laying out preliminary requirements, collecting the necessary documents and establishing a schedule for the first cycle.
2. **Analysis and Design:** once a plan has been drafted, it is necessary to determine all the technical requirements, such as database models, algorithms, etc.

3. **Implementation:** in this phase, the real development and implementation (of both the design and the functionality) take place.
4. **Testing:** this is the time to verify how the tool performs in the field and whether expectations are met or not. Inputs and insights from stakeholders or product testers are integrated.
5. **Evaluation and Review:** in the final stage of the cycle, the initial requirements and expectations are compared to the results of the testing phase. This evaluation represents the starting point of the next cycle.

As showed in Figure 1, for the purpose of this dissertation, the steps concerning the design and development of the new ethical application tool comprehended a preliminary planning phase that involved a few components of the HIT Ethical Committee and then the design and development both of the new application form and of a revised informed consent template, but also the drafting and improvement of a glossary. The testing phase was divided into two stages: an initial *pilot study* would be followed by the *main study*. At the end, a concluding evaluation phase would ensue. Each step will be further discussed in chapter 3 and 4, respectively.

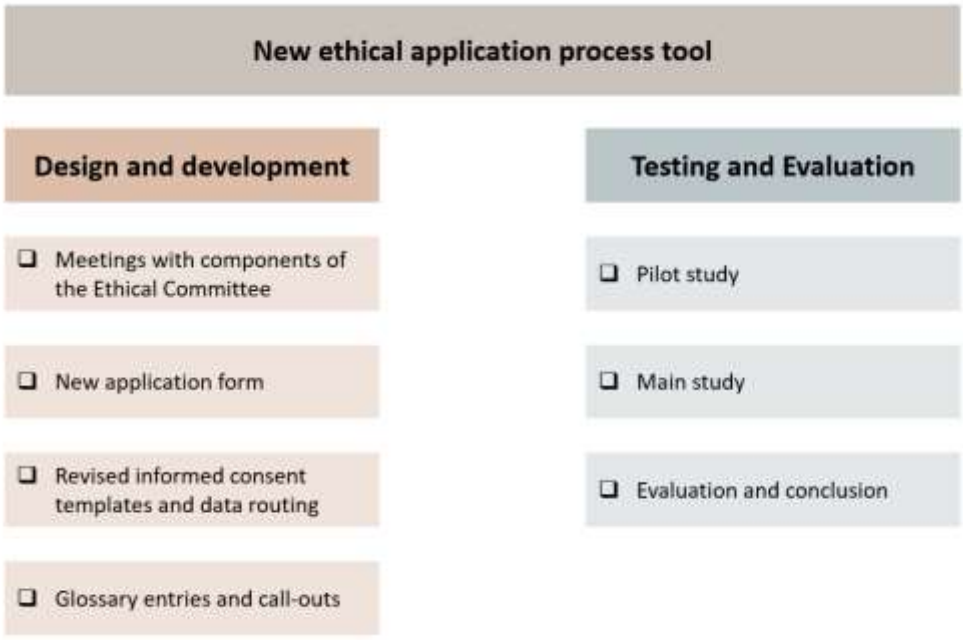

Figure 1. The figure shows a schematic view of the two main phases in which this project is divided into (*'design and development'* and *'testing and evaluation'* of the new application process tool) and the steps they each include.

2.2 Data Protection and Ethical Reviews

Ensuring that the privacy and dignity of each individual are preserved when dealing with a great amount of possibly sensitive information is a delicate matter. Consequently, having policies and procedures in place to govern the collection, storage, and handling of data is a necessary step to guarantee the security and privacy of sensitive information. The Ethical Committee plays a crucial role in simultaneously ensuring that all research projects conducted by researchers meet the required ethical and legal standards, and that said projects will cause no harm to individuals or society as a whole. It provides ethical reviews for researchers and their projects to ensure that they comply with the prescribed guidelines: if the General Data Protection Regulation (GDPR) provides the legal background of the collection and processing of personal data of individuals who live in the European Union, the American Psychological Association (APA) Code of Conduct, on the other hand, serves as a guideline for ethical behavior within the field of psychology. It is important to note that, for the purposes of this dissertation, research in the medical field was not investigated because health data is often subject to specific legal protections and regulations, given their higher sensitivity.

2.2.1 General Data Protection Regulation (GDPR)

The GDPR contains regulations "on the protection of natural persons with regard to the processing of personal data and on the free movement of such data" (Regulation EU 2016/679) established by the European Parliament and the Council of the European Union. It represents the legal framework for organizations and companies that collect and process personal information from citizens of the European Union (EU), regardless of their physical location. This homogenization allows for a smoother movement of data, while also protecting the security of people by defining the rights and obligations for both organizations and individuals. On the one hand, organizations must obtain explicit consent from individuals before collecting and processing their personal data. It is also the organization's duty to take adequate precautions and measures to ensure that personal data is protected from unauthorized access, disclosure, alteration, or destruction (i.e., data protection). Violations can result in significant fines and penalties. On the other hand,

individuals are granted the right to access, rectification, erasure, data portability, object, restriction of processing and the right to not be subjected to automated decision-making.

Article 5 of GDPR states a list of seven principles relating to processing of personal data:

- **Lawfulness, Fairness, and Transparency**: "Processing must be legal, fair, and transparent to the data subject"
- **Purpose Limitation**: "Data should only be collected for specified, explicit, and legitimate purposes"
- **Data Minimization**: "Only the data that are necessary for the intended purpose should be collected"
- **Accuracy**: "Data must be accurate and kept up to date"
- **Storage Limitation**: "Personal data should be kept only as long as necessary"
- **Integrity and Confidentiality**: "Data must be secured against unauthorized access and accidental loss, destruction, or damage"
- **Accountability**: "Data controller must be able to demonstrate compliance with the previous principles"

In addition to that, Article 25 of GDPR states that data protection should occur "by design and by default". This means, for example, that organizations and researchers must consider how to effectively apply data-protection principles and how to integrate the necessary precautionary measures when determining how to process data (i.e., in the earliest stages of the research project) and during the actual processing. This can look like: choosing an anonymization procedure over storing the data confidentially, appointing a referent for data protection for that specific project, keeping a record of the collected data, their use, names of the people that have access to them, etc. In the making of the new application form, we also kept this specific Article in mind by specifically requiring this kind of information and by simultaneously providing a brief explanation as to why it matters. This will be further described in "Methods".

2.2.2 American Psychology Association (APA) Code of Conduct

As the largest scientific and professional organization of psychologists in the United States, the APA takes on a crucial role in advancing not only scientific research, but also the interests of psychologists, and ensuring the highest standards of practice to promote

the wellbeing of society (American Psychological Association, 2022). Although the APA Code of Conduct is not a legal document and, therefore, is not enforceable by law, it provides a set of guidelines and general principles that act as "aspirational goals to guide psychologists toward the highest ideals of psychology" (American Psychological Association, 2017, Introduction and Applicability). These standards apply to all activities concerning psychologists, including research, teaching, supervision, social intervention, development of assessment instruments, conducting assessments, educational counseling, and organizational consulting.

The APA Code of Conduct is based on five key principles:

- **Beneficence and Nonmaleficence**: In their work, psychologists not only avoid harming individuals (or animals) with whom they interact, but they are also aware of the possible ramifications of their actions.
- **Fidelity and Responsibility**: Psychologists build trusting connections with the people they work with. They take responsibility for their behavior and conform to professional standards of conduct, while also holding their colleagues to the same standards.
- **Integrity**: Psychologists cannot purposefully distort the truth or otherwise behave dishonestly in their professional activities. Situations in which deception may be ethically justifiable must be considered carefully.
- **Justice**: Psychologists take precautions against potential biases or limitations in their expertise to ensure that all people are treated fairly and equally during processes, procedures, and services.
- **Respect for People's Rights and Dignity**: People's dignity and their right to privacy and self-determination must be preserved by taking necessary precautions, especially when dealing with vulnerable categories.

Furthermore, an APA Ethics Committee has been appointed to investigate and resolving complaints of unethical conduct by APA members (American Psychological Association, 2023). Violations of ethical standards can result in professional and disciplinary repercussions for psychologists, such as loss of licensure, loss of membership in professional organizations, or damage to one's professional reputation (American Psychological Association, 2018).

3. TOOL DESIGN AND DEVELOPMENT

3.1 Meetings with Components of the HIT Ethical Committee

The first stage concerned both the planning and the definition of overall requirements for the intervention. Many meetings were conducted with one or more components of the HIT Ethical Committee (namely, Professor Spagnolli and Professor Navarin) from the earliest stages and throughout the entire research. Over the course of these meetings, the information and the necessary documentation which would be necessary to design a plan for the development of the revised application form were gathered. A few mind maps which would make it possible for us both to navigate the relevant information within the General Data Protection Regulation (GDPR) and to draft an early workflow for the new ethical application form were built (Figure 2). This particular approach was elected to ensure that we would be able to identify: (i) the various themes and sub-fields mentioned in the GDPR which must also be *explicitly* addressed in the application form due to their relevance to research projects (e.g., data format, data processing); (ii) all interested parties affected by the GDPR, such as data subjects and organizations operating in the EU and/or operating on EU members' information. Furthermore, (iii) we highlighted links and connections between different aspects of a project so as to be wary of potential critical points where inconsistencies may arise along the line (e.g., stating that the data will be anonymous while simultaneously granting the right to erase one's data at any time).

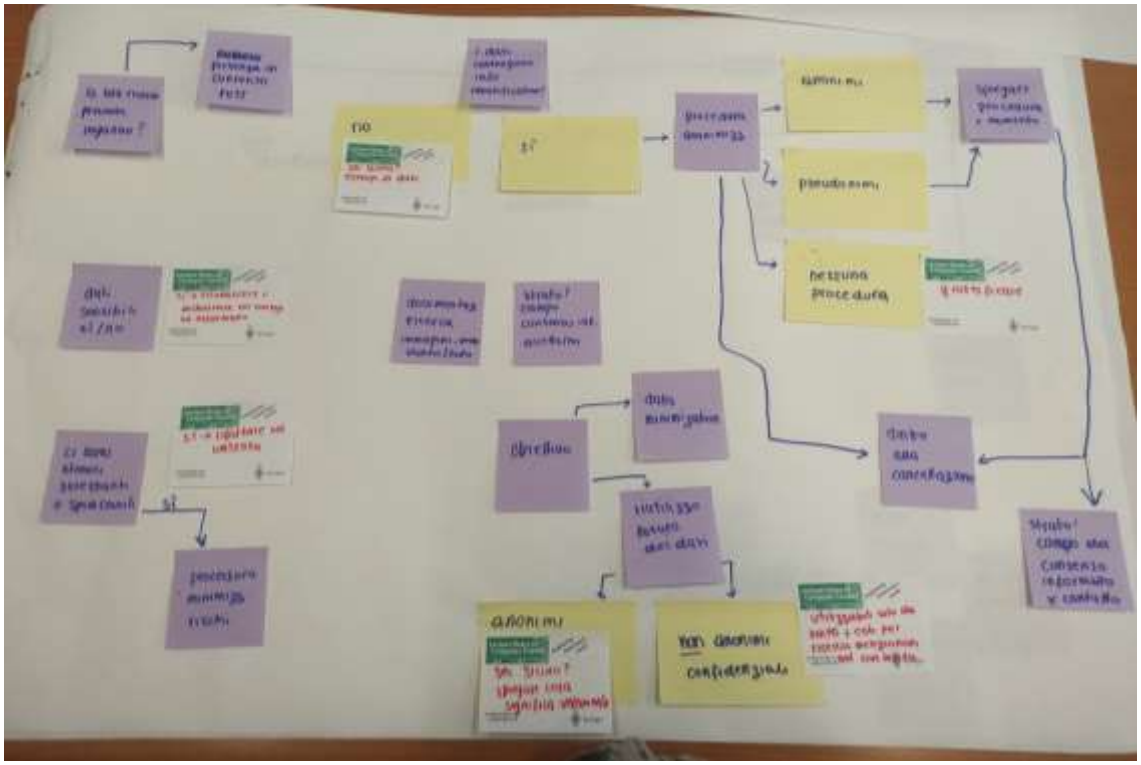

Figure 2. The figure shows one of the mind maps that were built during the planning stage in order to have a visual representation both of how the relevant concepts were linked to each other and of the workflow of the new application form.

3.2 Drafting and building of the new application form

Once the planning stage was done, we proceeded to create the general architecture of the design. The **new application form** was drafted by following the main structure of the one that was already in use on the HIT's website, although the revision benefited from the insights obtained during the previous phase. Special attention was given to the needs of researchers by aiming for a plainer way to guide them throughout the entire ethical review process. This was achieved by: (i) breaking the entire procedure into incremental steps, so that researchers may only view the application fields which would be relevant to them (i.e., display logic); (ii) discarding unnecessary items or modifying them to accommodate the leaner process which was brainstormed in the earlier stages of this research; (iii) focusing on those fields that usually lead to more mistakes on the part of applicants (e.g., by rephrasing or providing more instructions); (iv) identifying technical terms and explaining them. Instructions and definitions mentioned in point (iii) and (iv) were then grouped together in a *glossary*, which will be further discussed in the next paragraph.

I built the revised application form (based on the insights and modifications discussed over the course of the preparation phase) on Formstack, an online form tool (Figure 3). Some adjustments and additions were made throughout the entire time that I worked on the prototype, depending on the new information acquired about policy matters, and/or based on common errors in the applications which were revised by the Ethical Committee in the meantime.

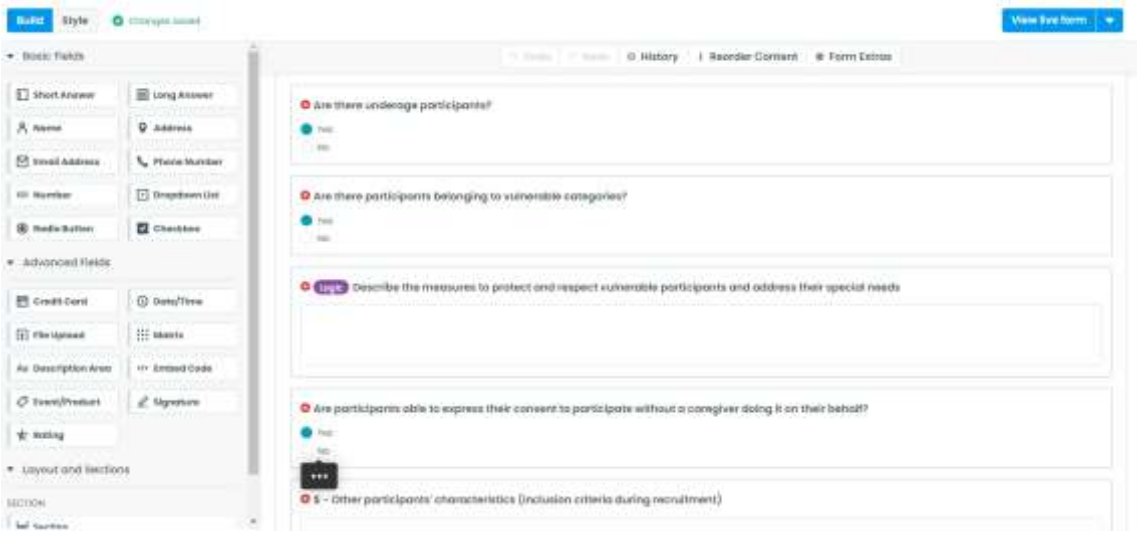

Figure 3. The figure shows Formstack's form builder (from the developer's point of view). On the left, all the different types of fields that can be implemented in the form are displayed. On the right, it is possible to view some of the fields of the new application form (e.g., 'Are there any underage participants?'. Display logic (e.g., in the field asking to 'Describe the measures to protect and respect vulnerable participants and address their special needs') was used to hide or show some fields based on whether they would be relevant to the researcher's project or not.

3.3 Drafting of the Informed Consent Template and Data Routing

Since much of the information that is required by the Ethical Committee in order to formulate an evaluation had *also* to be present in the informed consent which would be handed to each participant during data collection, we aimed to minimize the steps in the procedure; this was achieved through the automatic production of **a custom informed consent document** based on the information provided by the researcher in the application form. For this, I relied again on Formstack, which allowed me to integrate forms with an automated document tool capable of automatically transferring information from the input fields of the form to a document. A template of the revised informed consent was

rewritten starting from the version that was already provided on the HIT Research Centre website. The old version reported many procedural instructions and suggestions that were transferred either to the *glossary*, or to the new application form. The new template was structured so as to maintain internal consistency even once the information provided by researchers through the application form was integrated, which was achieved by placing a tag (or *placeholder*) whenever information had to be integrated from input fields onto the application form. Then, the template had to be uploaded on Formstack and manually connected to the form from which information had to be retrieved —namely, the revised application form. Each placeholder was matched to the specific field inside the form. Figure 4 shows an example.

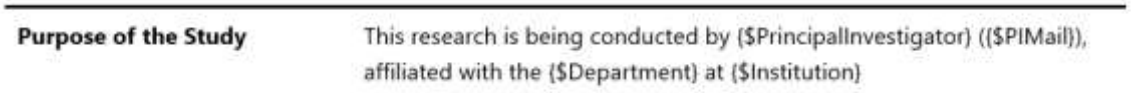

Figure 4. This is a section of the informed consent template concerning the purpose of the study. The text on the right contains some placeholders which were to be later populated with the information integrated from the application form the researcher would fill.

As shown in the figure above, that particular section of the informed consent ("Purpose of the Study") would be populated with the information retrieved from the application form. Specifically, {$PrincipalInvestigator}, {$PIMail}, {$Department}, and {$Institution} are all placeholders matched with four different fields from the application form, respectively asking who the principal investigator is, his or her e-mail, affiliation and institution. The final result would then be something along the lines of "This research is being conducted by Mario Rossi (mariorossi@mockemail.it), affiliated with the General Psychology Department at University of Padova". To ensure that the information matched, it was necessary to work simultaneously on the application form and on the informed consent, going back and forth from one to the other. This phase was likely the most crucial one, given that some snippets and information on the consent template may change based on each project's specifics (e.g., for how long data are stored). For instance, the sentence "Personal data can be kept for statistics or scientific purposes even beyond the time necessary to reach the goals for which they have been collected or subsequently elaborated, according to 5, § 1e of GDPR" must be present on the informed consent *only* if data are being stored indefinitely. This specific issue was solved by transforming these

sentences and/or statements into options to be selected in the form and which would only be visible when relevant to the project at hand.

However, a one-fits-all informed consent definitely has its limitations. For one, it is not possible to use the same template regardless of whether one is collecting data from adults or from *underage participants*, given that the latter are not legally able to provide their consent and need both parents/legal guardians to sign on their behalf. Similarly, a study that involves some kind of *deceit* needs two different informed consent forms: one with the deceitful goal, that is to be handed to the participant prior to the data collection session; and another one disclosing the actual goal of the study, that is to be handed to the participant *after* the data collection and *before* the processing of the participant's data. Furthermore, in some cases, extra information or forms are needed, such as authorization to picture dissemination or authorization to be contacted via e-mail about any incidental findings. Given that these conditions are not always present, a discrimination was made between the kind of information that must be always present, and the kind that could be regarded as a kind of appendix to be attached to the "main" informed consent if needed. The former comprehends: generic project information, the purpose of the study, the data collection procedure, expected incidental findings (if any), the necessary compliance statements, potential risks and related minimization procedures, potential benefits and/or rewards, participants' rights, confidentiality and anonymization procedure, all the people involved in the collection and processing of data, the statement of consent to participate and to the data processing, date and signature. The latter comprehends: the request for data erasure upon withdrawal from the study, the authorization to picture dissemination, the subscription to a mailing list, and the authorization to be contacted about any incidental findings. In order to account for all the different scenarios, a total of 14 different templates was produced, uploaded on Formstack, and matched to the application form through Formstack's Data Routing —a feature that can be used to automatically send incoming data (i.e., from the application form) to multiple documents (i.e., to multiple informed consent templates and appendices). By defining specific conditional logic to determine which documents to create, it was possible to produce a single file with a customized informed consent form that could be automatically delivered to whichever e-mail address had been submitted on the application form (e.g., the address of the principal investigator of the research project and/or another contact person).

Throughout the set-up, the process was tested several times in order to ensure that everything worked smoothly and that the generated informed consent form would be consistent with the characteristics and necessities of the research project (e.g., if it is signaled on the application form that the project involves *deceit*, then a double informed consent template ought to be generated –one to be handed prior to the data collection and another to be handed post-data collection). Tables 2 and 3 provide a schematic representation of all the 14 different templates (and the conditional logic which triggers their compilation, and which was implemented through the Data Routing feature), while Figure 5 shows the Data Routing editor on Formstack itself.

Table 2. One of the six main body templates of the generic informed consent is always generated upon the completion of the application form. Which template is generated depends on the characteristics of the research (i.e., whether deceit and/or participants who cannot legally give their consent on their own and need a legal guardian are involved).

Main body Template	Description	Conditional logic	Is the signature of a legal guardian needed?
Generic informed consent form	Main body	If deceit is not involved	No
			Yes
	Main body (pre-data collection)	If deceit is involved	No
			Yes
	Main body (post-data collection)	If deceit is involved	No
			Yes

Table 3. Relevant appendices are generated and attached to the main body of the informed consent template if the respective conditional logic is triggered. The table is a schematic summary of the conditions that triggere the generation of each appendix.

Appendix Template	Description	Conditional logic	Is the signature of a legal guardian needed?
Declaration of withdrawal and data erasure	The appendix participants can use to ask for data erasure after their withdrawal from the study	If data collected from withdrawn participants is not automatically deleted	No
			Yes

Appendix Template	Description	Conditional logic	Is the signature of a legal guardian needed?
		AND If data is not anonymized from the collection	
Dissemination of pictures	The appendix participants can use to authorize the dissemination of pictures taken during the data collection	If the study involves the collection of images, videos, or pictures	No
			Yes
Incidental findings	The appendix participants can use to ask to be contacted via e-mail about any incidental findings	If incidental findings are expected **AND** If they are communicated via e-mail post-data collection	No
			Yes
Mailing list	The appendix participants can use to ask to subscribe to the researcher's mailing list and be contacted for more studies	If researchers want to keep participants' contact information even after the study is completed	No
			Yes

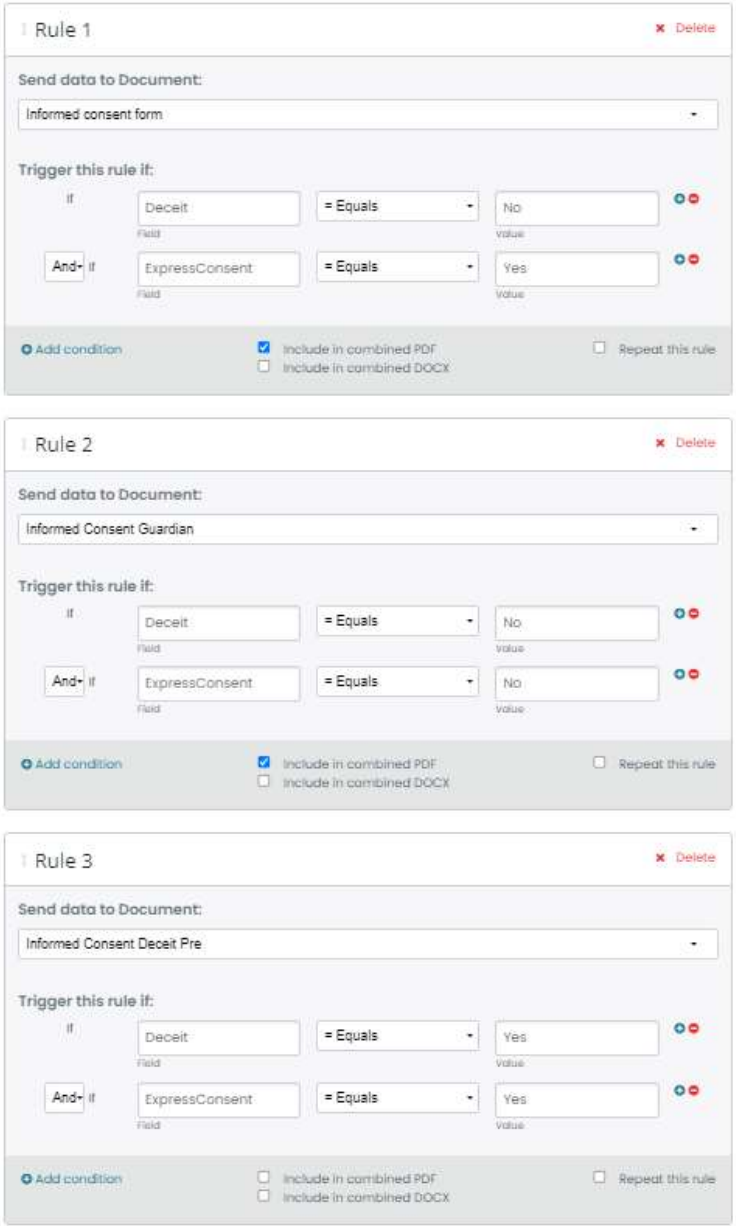

Figure 5. The figure shows the Data Routing editor on Formstack itself. 'Deceit' and 'ExpressConsent' are the tags that identified the relative field on the form filled in by the researcher (e.g., 'Deceit' = Equals 'No' signifies that the researcher answered 'no' to the question 'does this study involve some kind of deceit?' on the form). A total of 14 rules was implemented in order to generate all the possible templates combination.

3.4 Drafting and testing of the glossary callouts

Following the 'planning and requirements' phase, we realized that it was necessary to provide researchers with definitions for all the technical terms which would be

mentioned in the application form, therefore a 'glossary' (even though, *vademecum* could prove to be a more comprehensive term) was drafted. This was a practical solution aimed at decreasing errors due to potential misunderstandings of technical terms or procedures over the course of the compilation of the application form. In addition to that, as a way to help researchers better navigate the application form, the glossary was also constructed to include procedural instructions on filling in the different fields of the application form and —consequentially— the informed consent.

Upon the completion of this phase, a *readability check* was conducted to ensure that all the definitions would be easily understood by the target audience. Nowadays, there are several formulas to gauge the understandability of a text; for this research, we employed the Automated Readability Index (ARI; Smith & Senter, 1967) from Readability Formulas. The benefits of this particular index include the fact that: (i) it does not require a minimum word count to work; and (ii) it is not based on a syllable count, but rather on a character count, which is decidedly positive, as the former can often prove "somewhat more difficult to program for computer computation" (Hartley et al., 1975). The ARI produces a numerical output corresponding to the approximate grade level required to comprehend the analyzed text. As shown in the formula, this output is based on two factors: word length (number of characters per word) and sentence length (number of words per sentence). Note: 'GL' stands for grade level, 'c' for the number of characters, 'w' for the number of words, and 's' for the number of sentences in the text.

$$\text{GL} = 4{,}71 \times \left(\frac{c}{w}\right) + 0{,}5 \times \left(\frac{w}{s}\right) - 21{,}43$$

Given that the online calculator we employed (on Readability Formulas) bases the *number of sentences* on the *number of dots,* and the *number of characters per word* on the number of *blank spaces*, a few accommodations on the text were made when calculating the readability score: specifically, any dot that did not signal the end of a sentence was removed (e.g., dots in email addresses); hyperlinks were excluded from the sample; each bullet point ended with a dot to compensate for the common lack of periods in a list.

Below, a list of all the entries of the glossary and their relative Automated Readability Index score is shown below. Each term was explained in the relative *callout* in the form.

The legend shown in Table 4 that can be used to interpret each score was retrieved from readable.com.

Terms

- **Adequacy decision**; score: 9.6
- **Agreement**; score: 7.5
- **Anonymous data**; score: 14
- **Authorized non-member**; score: 12.6
- **BMCS**; score: 7.6
- **Caregiver**; score: 13.5
- **Compensation measures**; score: 14.1
- **Data**; score: 11.4
- **Data controller**; score: 12.3
- **Data minimization**; score: 10.1
- **Data processor**; score: 14.6
- **Data protection procedure**; score: 12.9
- **Deceit**; score: 12.8
- **HIT member**; score: 9.6
- **Incidental findings**; score: 12.7
- **Member state**; score: 2.9
- **Member of the UNIPD research team**; score: 10.6
- **Potential Benefits**; score: 13
- **Potential risks and minimization procedure**; score: 8
- **Principal investigator**; score: 5.8
- **Processing**; score: 10.1
- **Profiling**; score: 9.6
- **Project-specific referent for data protection**; score: 10.1
- **Protocol**; score: 10.1
- **Pseudonymous data**; score: 12.9
- **Sensitive data**; score: 11.9
- **Short-form informed consent**; score: 6.9
- **Tracking or observing**; score: 7.9

Table 4. Each ARI score (first column) indicates the U.S. grade level required to read a piece of text (second column). The last column shows the relative age of the students in each grade.

Score	U.S. Grade Level	Age
1	First Grade	6–7 yrs. old
2	Second Grade	7–8 yrs. old
3	Third Grade	8–9 yrs. old
4	Fourth Grade	9–10 yrs. old
5	Fifth Grade	10–11 yrs. old
6	Sixth Grade	11–12 yrs. old
7	Seventh Grade	12–13 yrs. old
8	Eighth Grade	13–14 yrs. old
9	Ninth Grade	14–15 yrs. old
10	Tenth Grade	15–16 yrs. old
11	Eleventh Grade	16–17 yrs. old
12	Twelfth Grade	17–18 yrs. old
13	College	18–22 yrs. old
14+	Professor	--

Given that the glossary is destined to PhD. students and/or academic researchers, a score of 14.9 was set as a *cut-off*, with 14 being the score of most academic papers. As indicated in the table above, the highest score registered was 14.6 for the definition of "Data processor". The average score was 10.5, which is comparable to a grade level of 10 (i.e., 15-16-years old students). It is also worth noting that, as Smith & Senter (1967) point out, the ARI formula is merely a mathematical algorithm which does not take several important factors into account, such as the intent of the reader and his or her competence in the subject. In order to achieve a more in-depth analysis of our glossary, we further investigated its readability by resorting to Rewordify —an online software capable of identifying difficult English words and offering simpler alternatives to improve readability (referred to as "rewordifying"). Rewordify was created as a tool to support teachers (and students) in teaching (and learning) English language; due to this reason and to the fact that the recipients of the glossary are scholars, a level 4 of *difficulty*

threshold was selected. This means that —for each entry in the glossary— the software provided descriptive definitions but less vocabulary support than the previous levels (1-2 difficult words). Most of the flagged words were technical terms that had already been explained in the glossary, and, as such, were not replaced. Similarly, we opted for discarding many alternatives that Rewordify suggested, as they were not accurate within the context in which they appeared (e.g., "legal person who protects another from harm" rather than "legal guardian"). Finally, the glossary was further tested by asking two Psychology students about to graduate from their master's degree to read it and report any lack of understanding. Overall, these results indicate that people with higher education, such as scholars or PhD. students who are knowledgeable in the subject (at least to a certain extent) should be able to comprehend the text without much difficulty.

Rather than providing users with the full glossary, each entry was implemented in the application form as *callouts* that appear when the specific field which they provide information for is selected by the user. This was meant to avoid overwhelming them with the sheer volume of information, which has been proven to constitute an actual risk when disclosing more information (Ben-Shahar & Schneider, 2010). Instead, we took advantage of the *presentation* and *timing* dimensions of nudging proposed by Acquisti et al. (2017) by offering extra information at the exact time it became relevant and by making it salient to the user. In fact, the *callout* appears as a dark "bubble" covering the fields, thus making it quite difficult for the user not only to miss it, but also to continue filling in the form without having closed the *callout* before (Figure 3).

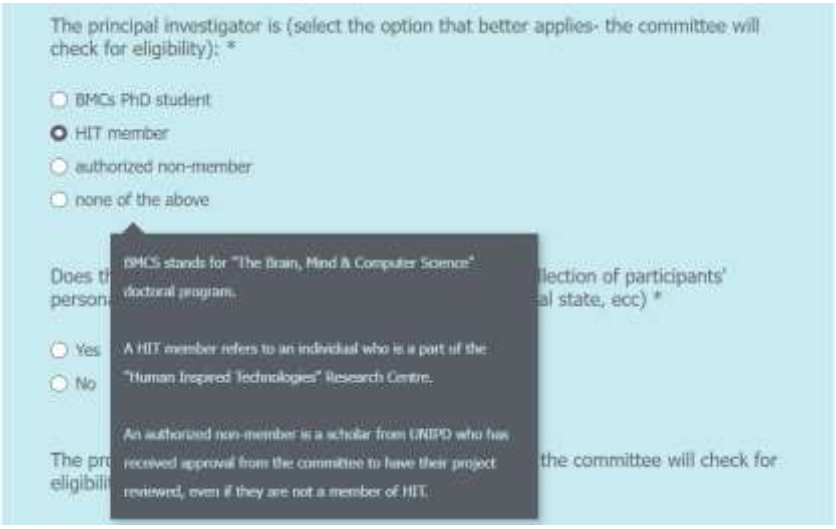

Figure 6. The figure shows a section of the application form from the point of view of the user. *Callouts* appear as dark "bubbles" covering the fields of the application form. The *callout* showed in the figure refers to the term 'BMCS'.

4. TOOL TESTING AND EVALUATION

4.1 Methods

The testing and evaluation phase aims at identifying and locating areas that either are not working or that require improvements to be able to meet performance expectations. In order to test the revised application process, a study was conducted.

4.1.1 Participants

Eight participants were recruited online through a platform called Prolific (https://www.prolific.com). The inclusion criteria, checked with the filters provided by Prolific, were: to reside in Europe or the United Kingdom, i.e. where GDPR or GDPR-compliant data protection policies are adopted; to be fluent in English, since the application content was in English; to work as a *researcher* (through the filter 'industry' role) in *education & training* (through the filter 'employment-sector').

4.1.2 Experimental Design

Preliminary evaluation of the application form was achieved through a randomized controlled trial experimental design. The task consisted in filling out the revised ethical review application form. Only participants who had been assigned to the experimental condition were provided with the glossary *callouts* throughout the compilation of the form, whereas those who had been assigned to the control condition were not. After the task, regardless of their assigned condition, all the participants were asked to fill in a self-report questionnaire about their experience and their opinions about the ethical review process.

4.1.3 Questionnaire and Variables

The performance and experience of participants were measured through *behavioral measures* (completion time) and *self-report ones* (perceived comprehension, empowerment, sense of control, risk perception, trust, reactance, transparency, and usability of the form). In addition, participants were required to answer some questions concerning their past experience with ethical reviews in order to assess their overall competence and to ensure that the samples of tested researchers did not differ much

between the two conditions. Furthermore, our aim was to activate the participants' memories about the last time they had had to either submit an ethical review application or to edit an informed consent from scratch, so as to keep it as an *anchor* and as a term of comparison while they answered the subsequent questions about their experience with the application process they had just tested. Finally, participants were given the opportunity to leave some suggestions.

All the different dimensions that were measured in the research are shown in the table below (Table 5), along with a list of the items we used. Some of them were retrieved from previous literature, whereas others are original.

Table 5. List of items and relative dimensions of the questionnaire.

Dimension	ID	Modified Item	Original item	Reference
Reactance	**V1_1R**	Overall, I would describe my THOUGHTS toward this information provision process as:	"Overall, I would describe my thoughts toward the thermostat as:"	Dillard et al. (2018)
	V1_2	When providing the project information, how much ANGER did you feel?	"The amount of anger I feel after the above message is:"	Dillard & Shen (2005)
	V1_3	When providing the project information, how much ANNOYANCE did you feel?	"The amount of annoyance I feel after the above message is:"	Dillard & Shen (2005)
	V1_4R	When providing the project information, how much RELIEF did you feel?	"The amount of annoyance I feel after the above message is:"	Dillard & Shen (2005)
	V1_5R	When providing the project information, how much GRATEFULNESS did you feel?	"The amount of annoyance I feel after the above message is:"	Dillard & Shen (2005)
Competence (empowerment)	**V2_1**	I am confident about my ability to do my job regarding the ethical review.	"I am confident about my ability to do my job."	Spretizer, G. M. (1995).

Dimension	ID	Modified Item	Original item	Reference
	V2_2	I have mastered the skills necessary for the ethical review.	"I have mastered the skills necessary for my job."	Spretizer, G. M. (1995).
Impact (empowerment)	**V3_1**	I believe that I have made all efforts to be respectful of the participants and have a good impact on them.	"I believe that I am having an impact"	Short, P. M., & Rinehart, J. S. (1992)
Sense of control	**V4_1**	I feel in control over the application process.	"Overall, how much in control do you feel over your personal information provided to the company?"	Xu, H. (2007)
	V4_2R	I feel that I have relinquished the control of my project to the ethical committee.	"Overall, how much in control do you feel over your personal information provided to the company?"	Xu, H. (2007)
	V4_3	I feel that applying for ethical review is helping me to better focus on the ethical aspects of my project.		Original
Perceived comprehension	**V5_1R**	The criteria for the ethical review of the project elude me.		Original
	V5_2	I understood the main concepts related to the ethical review.	"From reading the page descriptions, I understand the value of using the settings pages."	Knijnenburg, B., & Cherry, D. (2016).
	V5_3	I understood what information I was supposed to provide.	"From reading the page descriptions, I understand the value of using the settings pages."	Knijnenburg, B., & Cherry, D. (2016).
Meaning (empowerment)	**V6_1**	I believe that the ethical review is an essential part of designing a project.		Original
	V6_2R	I believe that the ethical review is merely a bureaucratic step before doing the real research job.		Original

Dimension	ID	Modified Item	Original item	Reference
	V6_3	The ethical review is very important to me.	"The work I do is very important to me."	Spretizer, G. M. (1995).
Risk perception	**V7_1**	I am aware that some research projects deal with very sensitive ethical issues and consequences.		Original
	V7_2	I am aware that data protection requires provisions at many different levels of a project		Original
	V7_3R	I think that my research does not involve any serious ethical threat to participants.		Original
Trust	**V8_1R**	I am suspicious of this ethical review's intent	"I am suspicious of the system's intent, action, or outputs."	Jian, J.-Y., Bisantz, A. M., & Drury, C. G. (2010).
	V8_2	This ethical review has moral integrity	"The system has integrity."	Jian, J.-Y., Bisantz, A. M., & Drury, C. G. (2010).
	V8_3	I think that having an automatically generated consent form based on my project info would be an excellent addition		Original
	V8_4	I would trust this ethical review	"I would trust X completely"	Höddinghaus, M.; Sondern, D.; Hertel, G. (2021)
	V8_5	I trust the ethical committee running this platform to do what is right	"I trust X to do what is right."	Grimmelikhuijsen & Knies (2017)
	V8_6	I believe the ethical committee running this platform is competent in its work	"I believe X is competent in its work."	Grimmelikhuijsen & Knies (2017)

Dimension	ID	Modified Item	Original item	Reference
Usability	**V9_1**	The way the form was structured guided me to enter the correct information		Original
	V9_2	Fields in the application form were easy to understand	"The page descriptions were difficult to understand."	Knijnenburg, B., & Cherry, D. (2016)
Transparency	**V10_1R**	I needed to look up other sources to understand the items in the application form	"I can access a great deal of information which explains how the AI system works."	Zhao, R., Benbasat, I., & Cavusoglu, H. (2019)
	V10_2	I think I could see through the Ethical Committee decision-making process	"I think I could see through X's decision-making process."	Höddinghaus, M.; Sondern, D.; Hertel, G. (2021)
	V11	When did you last submit your research project for an ethical review?		Original
	V12	Did you have to submit the informed consent form along with a project description?		Original
	V13	Were you in charge of preparing the documentation for the review?		Original
	V14	Have you ever edited an informed consent from scratch?		Original
	V15	Are you/would you be confident in complying with recent privacy regulation requirements in your research?		Original
	V16	Do you know how to change your informed consent if your participants are minors or people with disabilities?		Original

Dimension	ID	Modified Item	Original item	Reference
Completion time	**V17**	Completion time		

Empowerment

The adoption of a user-centered approach in designing the digital interface for the ethical evaluation process that researchers have to undertake when they propose a new research project has been a key principle of the present research. All measures which we implemented in order to make the process as *transparent* as possible aimed at developing a new understanding of ethical and privacy matters. In fact, it is one thing to merely fulfil a legal obligation towards regulations (e.g., GDPR), and quite another to concretely promote new knowledge and awareness. The creation of the conditions for the recipient (or user) to become a key resource in increasing the adherence to privacy regulations requires that he or she both desires and feels able "to shape his or her work role and context" (Spreitzer, 1995), which can be accomplished through the enhancement of psychological empowerment.

Following the conceptualization of Thomas and Velthouse (1990), Spreitzer (1995) defines psychological empowerment as "a motivational construct manifested in four cognitions: meaning, competence, self-determination, and impact". Together, these four cognitions offer an estimate of (i) how much a person values their work goals in accordance with their personal beliefs, (ii) the confidence in their skills to perform job activities, (iii) the level of autonomy they feel they have in their job and (iv) the extent to which they believe they can impact administrative decisions at work.

Psychological empowerment is viewed as a continuous and fluid dimension, as it is shaped by self-perceptions which are related to the work environment (Thomas & Velthouse, 1990; Bandura, 1989). A variety of studies confirm its positive consequences on workers and employees, such as a decrease in burnout cases (Pecino et al., 2019) and quitting intentions (Suifan et al., 2020; Amarneh et al., 2021; Lu et al., 2023). Additionally, it was found that promoting user empowerment in knowledge management systems increases two knowledge-sharing behaviors: *knowledge contribution* and *knowledge seeking* (Kang et al., 2017).

Reactance

Reactance was a key dimension to observe in this research project due to two different reasons. First, as already stated in the introduction of the current dissertation, one of the main objectives of this research consisted in introducing an additional level of automation in the ethical review process (i.e., by automatically generating a draft of the informed consent at the end of the form). Given that "automation inherently removes a certain amount of user control" (Heatherly et al., 2023), justification was provided and/or transparency enhanced in order to counterbalance user's reactance which may arise as a result. Second, there could be an apparent clash of "desired outcomes" between the Ethical Committee and the researchers. On the one hand, the Ethical Committee aims for the observation of legal and deontological regulations and for the safeguard of all the people (i.e., subjects) involved in the research; on the other hand, however, researchers might perceive the presence of an external Ethical Committee as a threat to their autonomy and might fear losing control over the ethical aspects of their own project. In order to prevent researchers from feeling reluctant to follow ethical guidance when the benefits are ambiguous and the desired behavior appears to presuppose an excessive effort, "both the required and desired information [are provided] to users in a way that aligns with their internal representations —so-called mental models", as suggested by Reuter et al. (2022).

Trust

According to recent literature, trust can be amplified by the implementation of regulatory measures that establish agreed-upon standards and that assign designated supervisors to both private and public entities. It has been found that transparency, as a regulatory tool, also plays a significant role in reinforcing trust. As far as the Ethical Committee and the application process (i.e., the form) are concerned, a *trust metric* was used in the current research dissertation in order to find whether glossary *callouts* could have a positive impact on participants' trust, given that they provided information both on *how* the Ethical Committee evaluates submissions and on the latest regulations involving privacy and data protection.

Risk perception

In the research study, *risk perception* was not employed as a dependent variable that was analyzed to draw conclusions. Instead, the role of risk perception was to serve as a control variable which would ensure that both the conditions that were being compared were similar. This control was put in place to minimize any confounding effects of individual differences in risk perception on the overall results of the study. Specifically, risk perception was assessed among participants in both conditions to confirm that there were no significant differences in how they perceived risks that were associated with the study. By doing so, we were able to ensure that any observed differences between the two conditions were not due to differences in participants' risk perception. This approach helped both to strengthen the internal validity of the study and to increase the confidence in our findings.

The concept of *risk* itself can be described as a circumstance that presents the potential for harm or danger, typically quantified in terms of the likelihood of the occurrence of a negative result. There are objective aspects to risk, such as the probability of the event taking place and the gravity of its consequences, as well as subjective factors, such as individual appraisals of the potential outcomes. These qualities collectively influence a person's perception of risk, which is a key component in motivating people to protect themselves from and to cope with harm (Protection-motivation theory; Rogers, 1983).

4.1.4 Procedure

Since the sample was small, we intended to make sure that an equal number of participants would be assigned to each condition; for this reason, two different invitation links were created on the Prolific platform —one for the control condition and another for the experimental condition. With this objective in mind, I only published the link for the experimental condition *after* four participants had already completed the control condition. I also ensured that those initial four participants would be excluded from participating in the experimental condition *before* recruiting the remaining four participants.

Upon accepting the invitation on Prolific, participants were redirected to Qualtrics, where they were asked for their informed consent; here, they had to confirm that they were not using a mobile phone to participate in the study, since there would be a

considerable amount of typing to do. Only participants who gave both their consent and confirmation were then redirected either to the control or to the experimental condition workflow on Formstack, which consisted of two parts: firstly, participants had to fill in the application form as if they were a researcher from UNIPD who wanted an ethical review for a (real or made-up) research project; secondly, they were tasked with answering some questions regarding their experience with past ethical reviews and their opinion about the application process they had just gone through. At the beginning of the second step, all participants were asked to upload the ethically compliant consent form – compiled with the information about their research project which they had provided during the first step– which had been sent to their Prolific address.

In order to verify that participants were not just randomly answering the questions without actually reading them, two attention checks were included in the questionnaires. The completion of entire procedure took significant time and effort, which meant it was fundamental to prevent any invalid responses. The attention checks employed were the same as those used in Masotina (2023) and were in accordance with Prolific guidelines. They were designed in a way that allowed participants who were paying attention to pass the check easily without needing to remember any specific information. The attention checks were integrated within the rest of the questions and phrased as follows: "It is important that you pay attention to this survey. Please tick '*Disagree*"'. For ethical reasons, participants were informed about the inclusion of these attention checks in the initial informed consent. In fact, in accordance with Prolific's standards, participants were to receive monetary compensation (9£/hour) upon the completion of the study (i.e., both the application form and the questionnaire), provided that they had successfully passed at least one of the two strategically placed attention checks.

The only information which was collected for identification purposes was the participants' Prolific ID —an alphanumeric code that is used to identify participants on Prolific whilst simultaneously guaranteeing their anonymity. This information was gathered solely for the purpose of paying participants after the experiment and to verify that no participant would be included in multiple studies. Once the payment had been processed, even this identifying information was deleted from the dataset.

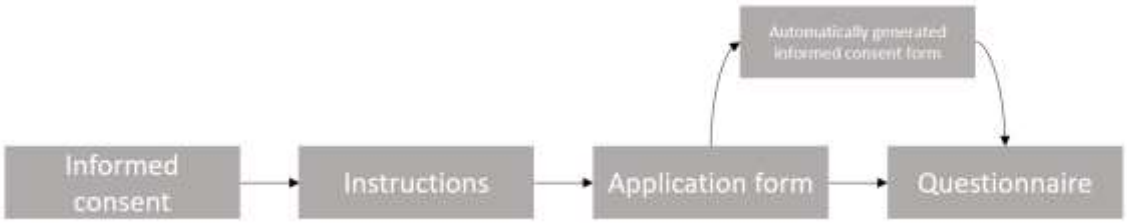

Figure 7. Outline of the study procedure before the pilot study.

4.1.5 Pilot Study

Before recruiting the eight participants for the research, a pilot study was conducted (N=4) in which participants were randomly assigned through Qualtrics to one of the two conditions. Because of the pilot, we were able to find out about a technical issue underlying the entire process. Specifically, we discovered that no participant was receiving the automatically generated informed consent form of their research project. This was due to a structural limitation on the part of the Prolific e-mail address which participants provided instead of their personal one (for privacy reasons), since the former did not function like a typical email account and, therefore, did not allow attachments (i.e., the automatically generated informed consent form) to be included. We attempted to find a different approach to distribute the automated informed consent form to the participants, but were unsuccessful. Eventually, we chose to remove this feature from the upcoming studies as it did not impact our goal of testing the efficacy of the glossary *callouts* anyway.

Nonetheless, we gained some valuable insights about how the revised application form actually "performed": specifically, we were able to record the time which would be necessary to complete the study. This, in turn, allowed us to make some subsequent adjustments in order to shorten it; in particular, some fields were excluded from the final version of the application form which we later presented to the participants of the main study, as we found them to be less relevant to the purpose of the study itself (e.g., all the information concerning the principal investigation's institution and department, information regarding any funding agencies involved, etc.).

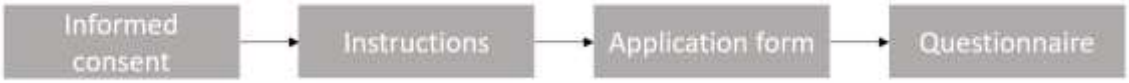

Figure 8. New outline of the process for upcoming studies.

4.2 Results

As we proceeded with the analysis, one subject was excluded from the sample on the grounds that the answers they gave were very brief and lacked detail and clarity to the point where they also compromised the validity and reliability of the collected data. Thus, the final sample resulted in 3 submissions for the control condition and 4 submissions for the experimental one.

4.2.1 Characteristics of the Sample

As for the participants' previous experience with ethical reviews, 1 participant reported that they had never submitted a research project for an ethical review, 1 stated that they last did it more than 2/3 years ago, 2 of them claimed to have submitted a project in the past 2/3 years and 3 of them last did it this year. Of all the participants who reported having past experience with an ethical review: (i) all were in charge of preparing the documentation for the review; (ii) only one of them did not also have to submit the informed consent form along with a project description; (iii) two had never edited an informed consent form from scratch, whereas the other participants had done it either this year or in the past 2/3 years. Upon being asked whether they would be confident in complying with recent privacy regulation requirements in their research, 6 participants answered "yes", while one answered "no". On the contrary, upon being asked whether they knew how they would have to change their informed consent in case that the participants of *their* research were minors or people with disabilities, only one person answered positively. Overall, participants in both conditions were evenly balanced with regards to their previous experience with ethical reviews.

		ITEM			VARIABLES					
		ALL SAMPLE	NO_CALL	CALL	ALL SAMPLE (M, DS)		NO_CALL		CALL	
REACTANCE*	V1_1R	2,4	3,0	2,0	3,1	1,3	3,6	1,2	2,8	1,2
	V1_2	2,0	2,7	1,5						
	V1_3	3,1	3,3	3,0						
	V1_4R	4,3	5,0	3,8						
	V1_5R	3,7	4,0	3,5						
EMP-COMP	V2_1	4,0	4,0	4,0	3,6	0,8	3,3	1,0	3,8	0,7
	V2_2	3,1	2,7	3,5						
EMP-IMP	V3_1	4,4	4,7	4,3	4,4	0,5	4,7	0,6	4,3	0,5
CONTR	V4_1	3,1	3,3	3,0	3,3	0,9	3,4	1,2	3,3	0,8
	V4_2R	3,0	3,0	3,0						
	V4_3	3,9	4,0	3,8						
PRC COMPR	V5_1R	3,0	3,0	3,0	3,7	0,8	3,8	1,0	3,6	0,7
	V5_2	4,1	4,3	4,0						
	V5_3	3,9	4,0	3,8						
EMP-MEANING	V6_1	4,4	4,3	4,5	4,0	0,7	4,1	0,8	3,9	0,7
	V6_2R	3,9	4,3	3,5						
	V6_3	3,7	3,7	3,8						
RISK	V7_1	4,3	4,3	4,5	4,5	0,6	4,3	0,0	4,6	0,7
	V7_2	4,6	4,3	4,8						
	V7_3R	2,3	3,0	1,8						
TRUST	V8_1R	3,9	4,0	3,8	4,1	0,7	4,1	0,7	4,1	0,8
	V8_2	1,6	4,0	3,3						
	V8_3	4,4	4,7	4,3						
	V8_4	4,0	4,0	4,0						
	V8_5	4,1	4,0	4,3						
	V8_6	4,0	4,0	4,0						
USABILITY	V9_1	4,0	3,7	4,3	3,8	0,7	3,3	0,8	4,1	0,4
	V9_2	3,6	3,0	4,0						
TRNS	V10_1R	2,6	2,0	3,0	3,2	1,1	2,7	1,2	3,6	0,9
	V10_2	3,9	3,3	4,3						
TEMPO	V17				00:56:54	00:26:20	01:12:56	00:32:43	00:44:53	00:21:19

Figure 9. The results of the main study are presented in this report. The dimensions of the study are listed from most to least important. These dimensions include reactance, competence (empowerment), impact (empowerment), sense of control, meaning (empowerment), risk perception, trust, usability, transparency, and completion time. The first column lists the relative items of each dimension. The second column provides mean scores for each item across the entire sample, as well as for the control and experimental groups. The third column shows the mean and standard deviation for each dimension across the entire sample, as well as for the control and experimental groups. A higher score in the reactance dimension indicates a negative evaluation of the experience.

4.2.2 Risk Perception

The figure above (Figure 6) shows all the different constructs and the relative items in the first column; in the second column, the mean score for each item is displayed; in the third column, the means and standard deviations for each construct were calculated. Given the small sample size, it was not possible to conduct an inferential analysis. Yet, the means and standard deviations were calculated for each item and for each dimension in order to compare trends in the different conditions, nonetheless.

Since we intended to ensure that there were no significant differences between the participants in the two conditions, risk perception was measured, given that this dimension could have had a significant impact on how participants had responded.

Additionally, due to the fact that our participants came from different research fields with varying levels of risk, one of the three items (V7_3R) was excluded from the calculation for the entire dimension. This item did not measure a personal predisposition, but rather the risk perception regarding the participants' specific research project. As such, the variability among the distinct research fields could have influenced the answer and, consequently, impacted the overall score for the 'risk perception' dimension.

4.2.3 Completion time

Time is the only behavioral variable that was measured. The purpose of this assessment was to explore whether providing glossary *callouts* to researchers would result in a more time-consuming procedure or whether, on the contrary, it would help make the process more streamlined (which would be consistent with the objective of this intervention). Interestingly enough, the completion time appears to be lower for the participants in the experimental condition (the one with the *callouts*) than for those in the control condition (Mean_No_Callout = 01:12:51; DS_No_Callout = 00:32:43 *vs* Mean_Callout = 00:44:53; DS_Callout = 00:21:19). There are a few possible explanations for this result: while it is possible that participants did not read the *callouts*, it may very well be that they benefitted from the presence of the *callouts* instead, as these might have supposedly resolved some ambiguity over the course of the compilation of the form, thus saving some of the participants' time.

4.2.4 Usability and Transparency

To gain more insights concerning these findings, we turned to both usability and transparency scores, as that set of questions aimed to collect the participants' opinions surrounding the informativeness and completeness of the form and its fields, and also the transparency of the Ethical Committee decision-making process. Data seems to suggest higher scores in both usability (Mean_No_Callout = 3.3; DS_No_Callout = 0.8 *vs* Mean_Callout = 4.1; DS_Callout = 0.4) and transparency (Mean_No_Callout = 2.7; DS_No_Callout = 1.2 *vs* Mean_Callout = 3.6; DS_Callout = 0.9) in the experimental condition, than those in the control condition. The result for item V9_2 ("Fields in the application form were easy to understand"; Mean_No_Callout = 3.0 *vs* Mean_Callout = 4.0) seems particularly promising, as it encapsulated exactly the aim of this research, i.e., aiding researchers in the submission of their ethical review application. If taken together,

these findings appear to suggest that participants in the experimental condition *did* in fact use the provided *callouts* to resolve any ambiguity they might be experiencing, as forms did not otherwise differ in their structure nor in their wording between the two conditions (if not for the presence of the *callouts*, that is). Following this interpretation, it is possible to suggest that *callouts* contributed to save time for the participants in the completion of their application process.

4.2.5 Reactance

Reactance was measured due to the fact that there was a possibility that the intervention could both lead to a decrease in user autonomy and instigate resistance towards the Ethical Committee's guidance. *Glossary callouts* were specifically designed to prevent any pushback and the results are encouraging, as the disparity between the scores in the control condition and the experimental condition seemed to favor the latter. In this case, items measured both the cognitive and emotional response to the application process, with higher scores indicating a more negative experience. Participants in the experimental condition appear to have experienced fewer negative emotions and thoughts (thus, less reactance) than their counterparts (Mean_No_Callout = 3.6; DS_No_Callout = 1.2 *vs* Mean_Callout = 2.8; DS_No_Callout = 1.2). These metrics seem to support the assumption that *callouts* helped to reduce the participants' reactance. One potential implication of this result is that, by disclosing more information through the *callouts*, it is possible to counter the negative emotions that may arise during the kind of long and tedious procedure that the submission of an ethical review application often represents.

4.2.6 Trust

The current research resorted to a trust metric to determine if *glossary callouts* would actually improve the participants' trust in the Ethical Committee and in the application process, by providing information on both the evaluation process and data privacy regulations. One outlier was observed for an item measuring trust (V8_2) compared to the other items from the same set. Since further investigation about the contribution to the internal consistency of item V8_2 was not possible, we decided to remove it from the analysis, since we already had four other items which measured trust in the ethical committee more explicitly. On the other hand, responses for item V8_3 ('I think that having an automatically generated consent form based on my project info would be an

excellent addition') appear to very high (i.e., positive) in both conditions (Mean_No_Callout = 4.7 *vs* Mean_Callout = 4.3). This is an encouraging result, suggesting that participants would have welcomed the automatically generated consent form if that feature had been implemented during the research.

4.2.7 Synthesis

Based on the data we collected, there seemed to be no difference in scores between the two conditions for the other variables (empowerment, sense of control and perceived comprehension); however, due to the small sample size, these data must be interpreted with caution. Further considerations are discussed in the next chapter. Overall, the present study raises the possibility of improving the transparency of an application process through the disclosure of more information about the process (V9_1: 'The way the form was structured guided me to enter the correct information'; V9_2: 'Fields in the application form were easy to understand'; V10_1R: 'I needed to look up other sources to understand the items in the application form') and about the algorithm (V10_2: 'I think I could see through the Ethical Committee decision-making process').

5. CONCLUSION

5.1 Discussion, limits and further research

The present dissertation represents the very first step of a larger initiative undertaken by the Ethical Committee of the Human Inspired Technologies (HIT) Research Centre at the University of Padova with the aim to resort to *usable transparency* in the revision of the HIT ethical review process. In fact, *transparency* is a key element in ensuring that stakeholders are aware of the relevant information and of the underlying decision-making processes that are involved in said process. As such, this "call for transparency" should aim for true 'empowerment' rather than superficial adherence to the legal system. For instance, while overwhelming people with a huge amount of information without giving them the skills to navigate it properly or listing rights without effectively explain how to exercise them *might* be interpreted as an adhesion to the latest regulations, these practices clearly do not actually contribute to protecting and/or aiding people in an effective manner.

The specific sort of interventions which our study focused on instead were rooted on the concept of *transparency* and, as such, mostly addressed issues that are often connected with *incomplete information*. Whilst it is true that *usability* itself is not necessarily a guarantee of better decision making, the chief objective of usable security and privacy studies is to attempt to counter decision complexity thanks to interfaces that are specifically designed to provide the users (or, in our case, the researchers and, consequentially, the participants of *their* studies) with manageable and easily understandable options to choose from, nonetheless. Thus, throughout this preliminary investigation, our aim was to assess whether it could be possible to enhance the transparency of an ethical review application.

This was achieved by developing (and then testing) a new tool that consists of a revised application form equipped with "*glossary callouts*" (i.e., timely text-bubbles containing guidelines and supplementary information about the specific field that researchers must fill in as the *callout* pops up), plus an automatically generated informed consent template already compiled with all the information that researchers provided about their project as they were completing the application form. Both the fields on the

form and these guidelines were designed to enhance *information transparency* (e.g., by explaining what kind of information the form and, therefore, the committee requires and deals with, or what kind of documents are needed) and *process transparency* (e.g., by providing researchers with insights on the criteria on which the Ethical Committee bases its evaluations). Techniques and strategies rooted in *digital nudging* were implemented as a way to counter or exploit common biases and/or heuristics. For instance, the choice to design a glossary in the first place was partially motivated by the very notion of *anchoring*; specifically, this cognitive bias postulates that, upon making a decision and/or an assessment, people often take into consideration information which may or may not hold relevance to the situation at issue, but which will be utilized as a reference point for subsequent decisions and/or assessments. By offering timely definitions and specific guidelines to follow for each of the most difficult questions throughout the form right away, we aimed to create valuable reference points which would be conducive to an accurate and complete compilation of the form on the part of the researchers participating in our study.

Since it was not possible to e-mail the automatically generated informed consent template in our research to participants for privacy reasons, this feature was not implemented in the study, as it did not interfere with the experimental design anyway. In fact, our ultimate aim was to test whether the *glossary callouts* were effective in enhancing the transparency and usability of the application form. As previously mentioned, this only represents the very first step (or cycle) of an iterative process model (i.e., "a cyclical process in which you make and test incremental adjustments"; Eby, 2016), which explains why only a small sample of participants was recruited (N=7). All the participants were supposed to pretend to be applying for an ethical review application, but only four of them were provided with the *glossary callouts*, whereas the other three were not. Then, all the participants had to answer the same questions.

Naturally, it was not possible to conduct any inferential analysis given the limited size of the sample; however, despite its exploratory nature, this study offers some insights into the strategies and techniques which may be used to enhance *transparency* and how this might affect other variables. In fact, the participants in the experimental condition (i.e., the ones who had access to *glossary callouts*) seemed to be able to complete their application in a shorter time than the participants in the other condition. Given that they

also appeared to report higher scores for transparency and usability, it may be the case that *glossary callouts* were actually useful in saving time during the completion of the process. These findings also appear to suggest that *glossary callouts* did have an impact on both the *information* and *process transparency* of the ethical review process, seeing how scores in the experimental conditions seem higher whenever participants had to evaluate how easy to understand the fields in the application form were.

Another promising finding which emerged from this study is the fact that all the participants welcomed the idea of an automatically generated informed consent template, regardless of their condition. Initially, we worried that —by introducing a level of automation in the process— the researchers' sense of autonomy could be negatively impacted, thus triggering reactance (Heatherly et al., 2023). However, both the aforementioned "warm" reaction and the seemingly lower scores for reactance in the experimental condition would appear to confirm that a disclosure of information is enough to compensate for the arising of reactance (Heatherly et al., 2023).

Studies also show that transparency has a positive impact on trust (Cassar & Rigdon, 2011; Borzino et al., 2023), but in this case both conditions reported the same mean score for trust; the initial analysis was therefore inconclusive and there is a need to further investigate whether, in our specific case, transparency can positively affect trust, too. The same could be said about empowerment: the intervention also aspired to increase the researchers' awareness and empowerment, but whether our intervention has had any effect on their perceived competence, impact, meaning and sense of control is yet to be determined.

In conclusion, this study contributed to our understanding of applied transparency by designing and testing a new tool with the aim to make the ethical review process as transparent as possible, while also laying the groundwork for future research. The findings from this study seem to support the approach we adopted in order to enhance transparency in an ethical review application process and are also consistent with previous research on the matter. Of course, it is important to state once again the necessity for these data to be interpreted with caution, as this still represents just a preliminary investigation on the effectiveness of the intervention. The paucity of participants, in particular, represents the main weakness of this study and is what made it difficult to investigate any correlation between the different dimensions that were measured or to conduct an

inferential analysis in order to draw any conclusions. As our study constitutes simply the first of many iterative cycles, it ought to be repeated with more participants, given how large randomized controlled trials could provide more definitive evidence. Future research might explore more user-centered strategies to further increase the user-friendliness of the digital interface of the application process —for instance, by providing a list of common doubts and/or mistakes that researchers tend to make whilst filling in the ethical review form, or by making it clearer (e.g., through visual representations and/or a color code) for researchers how the different aspects of a project are related to (and how they affect) each other.

6. BIBLIOGRAPHY

References marked with the symbol * have been directly consulted.

*Acquisti, A. (2009). Nudging privacy: The behavioral economics of personal information. *IEEE Security & Privacy*. 7(6), 82-85. doi: 10.1109/MSP.2009.163.

*Acquisti, A., Adjerid, I., Balebako, R., Brandimarte, L., Cranor, L., Komanduri, S., Leon, P., Sadeh, N., Schaub, F., Sleeper, M., Wang, Y. & Wilson, S. (2017). Nudges for Privacy and Security: Understanding and Assisting Users' Choices Online. *ACM Computing Surveys, 50*(3), 1–41. doi: 10.1145/3054926

Aghion, P., Algan, Y., Cahuc, P., & Shleifer, A. (2010). Regulation and distrust. The *Quarterly Journal of Economics*, 125(3), 1015–1049.

*Alloa, E., & Thomä, D. (2018). Transparency: Thinking Through an Opaque Concept. In E. Alloa, & D. Thomä (Eds), *Transparency, Society and Subjectivity: Critical Perspectives*. Palgrave Macmillan. doi: 10.1007/978-3-319-77161-8_1

Amarneh, S., Raza, A., Matloob, S., Alharbi, R. K., & Abbasi, M. A. (2021). The Influence of Person-Environment Fit on the Turnover Intention of Nurses in Jordan: The Moderating Effect of Psychological Empowerment. *Nursing research and practice*. doi: 10.1155/2021/6688603

*American Psychological Association. (2017). Ethical principles of psychologists and code of conduct (2002, amended effective June 1, 2010, and January 1, 2017). Retrieved from https://www.apa.org/ethics/code/ethics-code-2017.pdf

*American Psychological Association. (2018). *Rules and Procedures of the Ethics Committee* [PDF]. Retrieved from https://www.apa.org/ethics/committee-rules-procedures-2018.pdf

Ayres, Ian, and John Braithwaite. 1992. *Responsive Regulation: Transcending the Deregulation Debate*. Oxford University Press, USA.

Bandura A. (1989). Human agency in social cognitive theory. *The American psychologist, 44*(9), 1175–1184. doi: 10.1037/0003-066x.44.9.1175

*Barth, S., Ionita, D., & Hartel, P. (2022). Understanding Online Privacy—A Systematic Review of Privacy Visualizations and Privacy by Design Guidelines. *ACM Computing Surveys (CSUR), 55*(3), 1-37.

Ben-shahar, O., & Schneider, C. E. (2011). The failure of mandated discourse. *University of Pennsylvania Law Review*, 159(3), 647–749.

Bertot, J. C., Jaeger, P. T., Grimes, J. M. (2010). Using ICTS to Create a Culture of Transparency: E-Government and Social Media as Openness and Anti-Corruption Tools for Societies. *Government Information Quarterly, 27*(3), 264-271. doi: 10.1016/j.giq.2010.03.001

*Borzino, N., Fatas, E., Peterle, E. (2023). In transparency we trust: an experimental study of reputation, transparency, and signaling. *Journal of Behavioral and Experimental Economics, 106*. doi: 10.1016/j.socec.2023.102061

*Brehm, J. W., & Brehm, S. S. (1981). *Psychological reactance: A theory of freedom and control*. San Diego, CA: Academic Press.

*Cassar, A., & Rigdon, M. (2011). Trust and trustworthiness in networked exchange. *Games and Economic Behavior, 71*(2), 282–303. doi: 10.1016/j.geb.2010.04.003

*Cheng, H. F., Ruotong, W., Zhang, Z., O'Connell, F., Gray, T., Harper, F. M., & Zhu, H. (2019). Explaining Decision-Making Algorithms through UI: Strategies to Help Non-Expert Stakeholders, in *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*,1 –12. ACM. doi:10.1145/ 3290605.3300789.

Dawes, S. S. (2010). Stewardship and usefulness: Policy principles for information-based transparency. *Government Information Quarterly, 27*(4), 377-383. doi: 10.1016/j.giq.2010.07.001

De las Cuevas, C., Peñate, W., Betancort, M., & de Rivera, L. (2014). Psychological reactance in psychiatric patients: Examining the dimensionality and correlates of the Hong Psychological Reactance Scale in a large clinical sample. *Personality and Individual Differences, 70,* 85-91. doi: 10.1016/j.paid.2014.06.027

*Dillard, J. P., Kim, J., & Li, S. S. (2018). Anti-Sugar-Sweetened Beverage Messages Elicit Reactance: Effects on Attitudes and Policy Preferences. *Journal of Health Communication, 23*(8): 1–9. doi: 10.1080/10810730.2018.1511012

*Dillard, J. P., Shen, L. (2005). On the Nature of Reactance and its Role in persuasive Health Communication. *Communication Monographs, 72*(2): 144–168. doi: 10.1080/03637750500111815

*Etzioni, A. (2018). The Limits of Transparency. In E. Alloa, & D. Thomä (Eds), *Transparency, Society and Subjectivity: Critical Perspectives*. Palgrave Macmillan. doi: 10.1007/s11158-019-09425-4

*European Union Agency for Cybersecurity (2015). Big data security: good practices and recommendations on the security of big data systems. *European Network and Information Security Agency*. https://data.europa.eu/doi/10.2824/13094

Fung, A., Graham, M., & Weil, D. (2007). *Full disclosure, the perils and promise of transparency*. Cambridge University Press, Cambridge. doi: 10.1017/CBO9780511510533

Gaspelin, N., & Luck, S. J. (2018). "Top-down" does not mean "voluntary". *Journal of Cognition, 1*(1), Article 25. doi: https://doi.org/10.5334/joc.28

*Grimmelikhuiisen, S., de Vries, F., Bouwman, R. (2023). Regulators as guardian of trust? The contingent and modest positive effect of targeted transparency on citizen trust in regulated sectors. *Journa of public administration research an theory*, muad010. doi: 10.1093/jopart/muad010

*Grimmelikhuijsen, S. (2022). Explaining Why the Computer Says No: Algorithmic Transparency Affects the Perceived Trustworthiness of Automated Decision-Making. *Public Administration Review, 83*(2), 241–262. Scopus. doi: 10.1111/puar.13483

*Grimmelikhuijsen, S., Knies, E. (2015). Validating a Scale for Citizen Trust in Government Organizations. *International Review of Administrative Sciences.* doi: 10.1177/0020852315585950

*Heatherly, M., Baker, D. A., & Canfield, C. (2023). Don't touch that dial: Psychological reactance, transparency, and user acceptance of smart thermostat setting changes. *PloS one, 18*(7). doi: 10.1371/journal.pone.0289017

*Höddinghaus, M., Sondern, D., & Hertel, G. (2020). The automation of leadership functions: Would people trust decision algorithms? *Computers in Human Behavior, 116*. doi: 10.1016/j.chb.2020.106635

*Jian, J.-Y., Bisantz, A. M., & Drury, C. G. (2010). Foundations for an empirically determined scale of trust in automated systems. *International Journal of Cognitive Ergonomics, 4*(1), 53–71. doi: 10.1207/S15327566IJCE0401_04

*Kang, Y. J., Lee, J. Y., Kim, H. W., (2017). A psychological empowerment approach to online knowledge sharing. *Computer in Human Behavior, 74*, 175–187. doi: 10.1016/j.chb.2017.04.039

*Kartikeya, A. (2021). Examining correlation between trust and transparency with explainable artificial intelligence. *International Journal of Human-Computer Interaction*. ArXiv. doi: doi.org/10.48550/arXiv.2108.04770

Keefer, P., & Scartascini, C. (2022). Trust: The Key to Social Cohesion and Growth in Latin America and the Caribbean, Inter American Bank of Development

Knijnenburg, B., & Cherry, D. (2016). Comics as a medium for privacy notices. In *Twelfth Symposium on Usable Privacy and Security* ({SOUPS} 2016).

*Koensler, A. (2023). Surviving in an age of transparency: emancipatory transparency-making in food governance in Italy. *American Anthropologist*, *125*(3), 546–558. doi: 10.1111/aman.13880

*Koivisto, I. (2016). The anatomy of transparency: the concept and its multifarious implications, *EUI MWP, 2016/09*. Retrieved from Cadmus, EUI Research Repository. doi: https://hdl.handle.net/1814/41166

*Koivisto, I. (2018). Towards Critical Transparency Studies. In E. Alloa, & D. Thomä (Eds), *Transparency, Society and Subjectivity: Critical Perspectives*. Palgrave Macmillan. doi: 10.1007/s11158-019-09425-4

Koivisto, I. (2022). *The Transparency Paradox: Questioning an Ideal*. Oxford University Press.

Leite, J. C. S. D. P., & Cappelli, C. (2008). Exploring i* characteristics that support software transparency, in *Proc. CEUR Workshop*, Recife, Brazil, Feb. 2008, pp. 51–54.

*Leite, J. C. S. D. P., & Cappelli, C. (2010). Software transparency: *Business & Information Systems Engineering, 2*(3): 127–139. doi: 10.1007/s12599-010-0102-z

*Lu, M., Al Mamun, A., Chen, X., Yang, Q., & Masukuhhaman, M., (2023). Quiet quitting during COVID-19: the role of psychological empowerment. *Humanities and Social Sciences Communications, 10*. doi: https://doi.org/10.1057/s41599-023-02012-2

Machuletz, D., and Rainer, B. (2020). Multiple Purposes, Multiple Problems: A User Study of Consent Dialogs After GDPR. *Proceedings on Privacy Enhancing Technologies (PoPETs)*, 481–498. doi:10.2478/popets-2020-0037.

*Masotina, M. (2023). *The principle of transparency as a design goal and as a discourse topic: two case studies* [Doctoral dissertation, University of Padova]. Padua Research Archive https://hdl.handle.net/11577/3473509

*Muturi, N., & Zhang, X. A. (2023). Risk communication and community preparedness in the context of biotechnological hazards: A case of NBAF. *Journal of Community & Applied Social Psychology*, 33(3), 646–663. https://doi.org/10.1002/casp.2673

*Ofem, P., Isong, B., Lugayizi, F. (2022). On the concept of transparency: a systematic literature review. In IEEE Access, 10, 89887–89914. doi: 10.1109/ACCESS.2022.3200487

Pecino, V., Mañas, M. A., Díaz-Fúnez, P. A., Aguilar-Parra, J. M., Padilla-Góngora, D., & López-Liria, R. (2019). Organisational Climate, Role Stress, and Public Employees' Job Satisfaction. *International journal of environmental research and public health*, *16*(10), 1792. doi: 10.3390/ijerph16101792

*Ramos Sousa Silva, G., & Canedo, E. D. (2022). *Towards User-Centric Guidelines for Chatbot Conversational Design.* International Journal of Human-Computer Interaction. ArXiv. doi: 10.48550/arXiv.2301.06474

*Regulation (EU) 2016/679. (2016). *General Data Protection Regulation (GDPR)*. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32016R0679

*Reuter, C., Lo Iacono, L., & Benlian, A. (2022). A quarter century of usable security and privacy research: transparency, tailorability, and the road ahead. *Behavior & Information Technology, 41*(10), 2035-2048. https://doi.org/10.1080/0144929X.2022.2080908

*Rogers, R. W. (1983). Cognitive and physiological process in fear appeals and attitude change: A revised theory of protection-motivation. In J. Cacioppo & R. Petty (Eds.), *Social psychophysiology: A source book* (pp. 153–176). New York: GuilfordPress.

*Sagiroglu, S., & Sinanc, D. (2013, May 20–24). *Big data: A review* [Paper presentation]. CTS 2013, San Diego, CA, USA. doi: 10.1109/CTS.2013.6567202

Shah, M. U., Rehman, U., Parmar, B., & Ismail, I. (2023). Effects of Moral Violation on Algorithmic Transparency: An Empirical Investigation. *Journal of Business Ethics.* doi: 10.1007/s10551-023-05472-3

*Short, P. M., & Rinehart, J. S. (1992). School participant empowerment scale: Assessment of level of empowerment within the school environment. *Educational and psychological measurement, 52*(4), 951-960

*Smith, E. A., & Senter, R. J. (1967). Automated Readability Index. AMRL-TR-66-22. Wright Patterson AFB, Ohio: Aerospace Medical Division, 1967

*Spretizer, G. M. (1995). Psychological Empowerment in the Workplace: Dimensions, Measurement, and Validation. *The Academy of Management Journal, 38*(5), pp.1442–1465. https://www.jstor.org/stable/256865

*Statista (2023, April). *Artificial Intelligence: in-depth market analysis. Market Insights report*. Statista. https://www.statista.com/study/50485/in-depth-report-artificial-intelligence/

*Stehlíková, J., Řiháček, T., Kostolanská, E., & Cígler, H. (2020). Hong Psychological Reactance Scale: Factorial structure and measurement invariance of the Czech version. *Československá Psychologie, 64*(6), 656-667. Retrieved from https://ceskoslovenskapsychologie.cz/index.php/csps/article/view/7

*Strathern, M. (2000). The Tyranny of Transparency. *British Educational Research Journal, 26*(3), 309–321. doi: 10.1080/713651562

Suifan, T., Diab, H., Alhyari, S., Sweis, R. J., (2020). Does ethical leadership reduce turnover intention? The mediating effect of psychological empowerment and organizational identification. *Journal of Human Behavior in the Social Environment, 30*(39), 1–19. doi: 10.1080/10911359.2019.1690611

*Tankard, C. (2012). Big Data Security. *Network Security Newsletter*, *2012*(7), 5–8. doi: 10.1016/S1353-4858(12)70063-6.

*Taylor, A., & Bouazzaoui, S. (2019). Moving forward with autonomous systems: ethical dilemmas. In Nunes, I. L. (Ed), *Advances in Human Factors and Systems Interaction* (101-108). Springer International Publishing. doi: 10.1007/978-3-319-94334-3

*Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving Decisions About Health, Wealth, and Happiness.* Yale University Press, New Haven, CT.

*Thomas, G., Hartley, R. D., & Kincaid, J. P. (1975). Test-Retest and Inter-Analyst Reliability of the Automated Readability Index, Flesch Reading Ease Score, and the Fog Count. *Journal of Reading Behavior, 7*(2), 149–154. doi: 10.1080/10862967509547131

*Thomas, K.W. & Velthouse B.A. (1990) Cognitive Elements of Empowerment: An "Interpretive" Model of Intrinsic Task Motivation. *Academy of Management Review, 15*, 666-681. doi: 10.2307/258687

Völkel, S., Schödel, R., Buschek, D., Stachl, C., Au, Q., Bischl, B., Bühner, M. & Hussmann, H. (2019). Opportunities and challenges of utilizing personality

traits for personalization in HCI. In M., Augstein, E., Herder, & W., Wörndl (Eds.), *Personalized Human-Computer Interaction* (pp. 31-64). Berlin, Boston: De Gruyter Oldenbourg. https://doi.org/10.1515/9783110552485-002

Xu, H. (2007). The Effects of Self-Construal and Perceived Control on Privacy Concerns. *Proceedings of the International Conference on Information Systems*. Retrieved from https://aisel.aisnet.org/icis2007/125

Zhao, R., Benbasat, I., & Cavusoglu, H. (2019). Do users always want to know more? Investigating the relationship between system transparency and users' trust in advice-giving systems. In *Proceedings of the 27th European Conference on Information Systems (ECIS)*, Stockholm & Uppsala, Sweden, 8–14 June 2019.

7. SITOGRAPHY

*American Psychological Association. (2022, January). *About APA*. https://www.apa.org/about

*American Psychological Association. (2023, January). *Ethics Committee*. https://www.apa.org/about/governance/bdcmte/ethics-committee

*Eby, K. (2016, July 12). *The Power of Iterative Design and Process*. Smartsheet. https://www.smartsheet.com/iterative-process-guide

*EUR-Lex. (2022, January). *General data protection regulation (GDPR)*. European Union. https://eur-lex.europa.eu/EN/legal-content/summary/general-data-protection-regulation-gdpr.html#document1

8. APPENDIX

A1. HIT ethical application study: informed consent (extended)

Purpose

This research is conducted by Elena Capuozzo for her master's thesis under the supervision of Prof. Anna Spagnolli (anna.spagnolli@unipd.it, Dept. of General Psychology, University of Padova) and is part of a larger project of the **Ethical Committee of the Human Inspired Technologies Research Center (HIT)** at the University of Padova in Italy.

The HIT Ethical Committee provides ethical reviews and is updating its application process. The current study tests the applicants' experience. The research has no commercial purpose.

Procedure

If you agree to participate, you will be asked to **pretend to be an applicant from the University of Padova, looking for an ethical review**. You will be displayed the application form and asked to enter information about your research project; it can be a real or an imagined one, as long as it **makes sense, is internally consistent, and involves collecting human personal data**. (The information about the project will not be retained after checking for compliance with the above-mentioned characteristics). Then, you will be asked to fill in a questionnaire collecting your opinion about the application form. The data collection lasts approximately **60 minutes**. If you have any questions, please contact Prof. Anna Spagnolli (anna.spagnolli@unipd.it). To participate, you must be older than 18, a researcher in an education or training organization, fluent in English, and reside in the European Union or the United Kingdom.

Keep your Prolific ID close. Since you will need to type, the use of mobile phones to participate in this study is strongly discouraged.

Potential risks and discomforts

No potential risks or discomforts are foreseen in this study. If you feel uncomfortable at any time, you can withdraw by simply closing the browser window. In that case, the compensation will not be paid.

Potential benefits

You will not have potential benefits from the participation except for the reward (below).

Reward

You will be rewarded **£9** for your participation. The payment will be managed via the Prolific Platform.

The payment is constrained by:

- The use of a device other than a smartphone to participate in this study, given the amount of typing involved;

Exclusion criteria

- Failing both attention checks
- Filling in the form with gibberish, nonsensical, or otherwise unusable answers
- Filling in the questionnaire with a response pattern

Any of the aforementioned criteria constitute a reasonable motive for exclusion from this study. The participant will not qualify for the monetary reward in any of those cases. It will take at most 1 week to proceed with your payment.

Immediately withdraw from the research if one or more exclusion criteria apply to you (please note that it is not necessary to disclose which criterion it is).

Right to withdraw and questions

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time by simply closing the browser window, even if you gave consent. If you decide not to participate in this study or if you stop participating at any time, the data collected up to that moment will be canceled, and you will not qualify for the monetary reward.

If you have questions, concerns, or complaints, please contact the principal investigator at the following e-mail address: anna.spagnolli@unipd.it

Compliance Statement

This project complies with the current pertinent regulations related to research ethics and professional deontology, such as The European Convention on Human Rights (1950), The Oviedo Convention (1997), the EU Charter on Fundamental Rights (2000), The General Data Protection Regulation (EU) 2016/679 ("GDPR").

Confidentiality

All members commit to treating the data collected with confidentiality and have received proper instructions about the specific nature of this commitment. Your privacy will be protected to the maximum extent allowable by law. No personally identifiable information will be reported in any research product. All data will be stored and processed in an anonymous form.

During the data collection, the collected data will be stored on Formstack's repository, which is GDPR-compliant. After the data collection, all data will be removed from Formstack's repository and stored in the researchers' password-protected personal computers. All identification information (i.e., your Prolific ID) will be deleted from the dataset after all submissions have been reviewed for payment and no later than 1 week from the data collection. The **anonymous dataset** hence obtained is kept for statistical or scientific purposes even beyond the time necessary to reach the goals for which it has been collected or subsequently elaborated, according to 5, § 1e of GDPR. The anonymized dataset might be shared in protected institutional repositories according to the Open Science policy.

Only Prolific knows the identity of the participant for payment purposes.

Right to express consent to data processing

You have to expressly provide or deny consent to the processing of personal data when this consent is asked. You have the right to request from the institutional privacy referent (Prof. Anna Spagnolli: anna.spagnolli@unipd.it) access to and rectification or erasure of personal data (articles 15, 16, 17 GDPR) 1 week from the day of your participation, given that after that time your Prolific ID will be no longer associated to your data.

Data controller: the University of Padova holds the responsibility for the whole data processing (Art.28 GDPR).

Project-specific referent for data protection: Prof. Anna Spagnolli (anna.spagnolli@unipd.it).

People authorized to process data: Prof. Anna Spagnolli (professor at the General Psychology Department of the University of Padova), Elena Capuozzo (master's degree student at the General Psychology Department of the University of Padova), Valeria Orso (researcher at the General Psychology Department of the University of Padova).

Processor: No external agencies, university partners, or research centers are processing the data collected during this study.

By clicking on "I agree" on the online informed consent, I confirmed that:

1. I agree to participate in the research project described in the information note above.
2. I have been given sufficient information about this research project. The purpose of my participation has been explained to me and is clear.
3. My participation is voluntary. There is no explicit or implicit coercion whatsoever for me to participate in this study.
4. I am at least 18 years of age, I have a good knowledge of English, and I have a personal computer.
5. I have the right not to answer any of the questions. If I feel uncomfortable in any way during the study, I have the right to withdraw from the study.
6. I have been given the explicit guarantee that the researcher will not identify me by name or function in any reports based on this study, and that my confidentiality as a participant in this study will remain secure. In all cases subsequent uses of records and data will be subject to standard data use policies at the EU (Data Protection Policy).
7. I consent to the processing of the personal data collected during the session.
8. I know that I have the right to withdraw the consent at any time, I know that I have the right to request from the institutional privacy referent access to and rectification or erasure of personal data (Articles 15, 16, 17 GDPR) within 7 days from the day of my participation. I am aware that, after 7 days, the data erasure from the dataset is not possible, because of the impossibility of

identifying the data subject due to a process of anonymization (Article 11 GDPR).

A2. HIT ethical application study: on-line informed consent

Principal investigator

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General Psychology Department

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Data Controller

University of Padua

https://www.unipd.it/en/

Project-specific referent for data protection

Professor Anna Spagnolli

People authorized to process data

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- Master's degree student Elena Capuozzo
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- Assistant professor Valeria Orso
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About the study

Aim of the study

The Ethical Committee of the Human Inspired Technology (HIT) Research Centre at the University of Padua provides ethical reviews and is updating its application process. The current study tests the applicants' experience.

What are you expected to do?

If you agree to participate, you will be asked to **pretend to be an applicant from the University of Padova, looking for an ethical review**. You will be displayed the application form and asked to enter information about your research project; it can be a real or an imagined one, as long as it **makes sense, is consistent, and involves collecting human personal data**. (The information about the project will not be retained after checking for compliance with the above-mentioned characteristics). Then, you will be asked to fill in a questionnaire collecting your opinion about the application form. The data lasts approximately **60 minutes**. If you have any questions, please contact Prof. Anna Spagnolli (anna.spagnolli@unipd.it). To participate, you must be older than 18, a researcher in an education or training organization, fluent in English, and reside in the European Union or the United Kingdom. No mobile phone can be used, since you will be required to type a lot.

Keep your Prolific ID close.

Compensation

You will receive a compensation of £9 for your participation. The payment will be managed by Prolific. The compensation is lost if you use a device other than a smartphone to participate, if you fill in the application with gibberish answers or response patterns, or if you fail two attention checks.

In case of withdrawing

Participation is voluntary, and you may withdraw at any time without explanation and within 7 days of the data collection. If you decide to abandon the experiment, you can do so by simply closing the survey window. All data collected up to that moment will be destroyed. The compensation will not be granted.

About your data

All identification information (i.e., including your Prolific ID) will be deleted from the dataset after all submissions have been reviewed for payment and no later than 1 week from the data collection. The anonymous dataset hence obtained is kept for statistical or scientific purposes even beyond the time necessary to reach the goals for which it has been collected or subsequently elaborated, according to 5, § 1e of GDPR. The anonymized dataset might be shared in protected institutional repositories according to the Open Science policy.

If you would like to **see and download the full informed consent**, please visit: https://drive.google.com/file/d/1UT0u7jdmbKb0uQl98rR9i518gf1jRn3X/view?usp=sharing

If you need to ask questions, please contact anna.spagnolli@unipd.it

Consent is the legal ground for processing personal data in this research.

By clicking on "I agree", I confirm that:

1. I agree to participate in the research project described in the information note above.
2. I have been given sufficient information about this research project. The purpose of my participation has been explained to me and is clear.
3. My participation is voluntary. There is no explicit or implicit coercion whatsoever for me to participate in this study.
4. I am at least 18 years of age, I have a good knowledge of English, and I have a personal computer.
5. I have the right not to answer any of the questions. If I feel uncomfortable in any way during the study, I have the right to withdraw from the study.
6. I have been given the explicit guarantee that the researcher will not identify me by name or function in any reports based on this study, and that my confidentiality as a participant in this study will remain secure. In all cases, subsequent uses of

records and data will be subject to standard data use policies at the EU (Data Protection Policy).

7. I consent to the processing of the personal data collected during the session.
8. I know that I have the right to withdraw the consent at any time, I know that I have the right to request from the institutional privacy referent access to and rectification or erasure of personal data (Articles 15, 16, 17 GDPR) within 7 days from the day of my participation. I am aware that after 7 days the data erasure from the dataset is not possible, because of the impossibility of identifying the data subject due to a process of anonymization (Article 11 GDPR).