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VALIDITY OF SELF-ASSESSMENTS AS AN AUDIT TOOL: A COGNITIVE AND PSYCHOLOGICAL PERSPECTIVE

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Abstract: *This paper discusses the validity of self-assessments as audit tools in data protection and information security contexts from cognitive and psychological perspectives. By conducting a comprehensive literature analysis, this research synthesizes findings from several academic fields to investigate how cognitive and psychological biases influence the validity of self-assessments. Thus, this paper separates the self-assessment process into four subtasks: comprehension, retrieval, judgment, and response, each of which is vulnerable to specific biases. Key findings show various factors that threaten the validity of self-assessments: problems in comprehension due to the complexity of the languages used, memory biases in information retrieval, and judgment errors such as satisficing and acquiescence, among response order effects. The study finds that these biases could give incorrect results even when respondents mean to answer honestly. By implication, this research contributes to the scientific basis for reformation and improvements in the design of self-assessment tools because the psychological factors discussed form strong bases that should be brought into consideration to enhance validity of self-assessments.*
Keywords: *Audit tool, cognitive and psychological biases, data protection, information security, self-assessments*

INTRODUCTION

In the professional context of data protection and information security, organisations frequently utilise self-assessments to audit taken measures. Self-assessment results often influence decisions regarding collaboration with third parties and regarding compliance with regulations. Findings from related academic disciplines cast doubt on the efficiency of this approach and the utility of self-assessments.

The use of self-assessments regularly involves people, who in turn are affected by cognitive and psychological processes (cf. Haraldsen 2013, p. 110). Answering a self-assessment can, as shown in Fig. 1, be divided into four subtasks: comprehension, retrieval, judgement and response (Tourangeau 1984, pp. 74–93). The dashed boxes in Figure 1 represent relevant biases, some of them will be examined further below.

In “comprehension”, an understanding of the question that is as similar as possible to the respondents one should be established. “Retrieval”, means that the respondent must access the information required to answer. Within “judgment”, this retrieved information is evaluated. The actual act of providing the answer occurs during “response”. Cognitive and psychological biases can influence each of these subtasks. Therefore, following a methodological outline, an excerpt-based discussion of such biases will be presented.

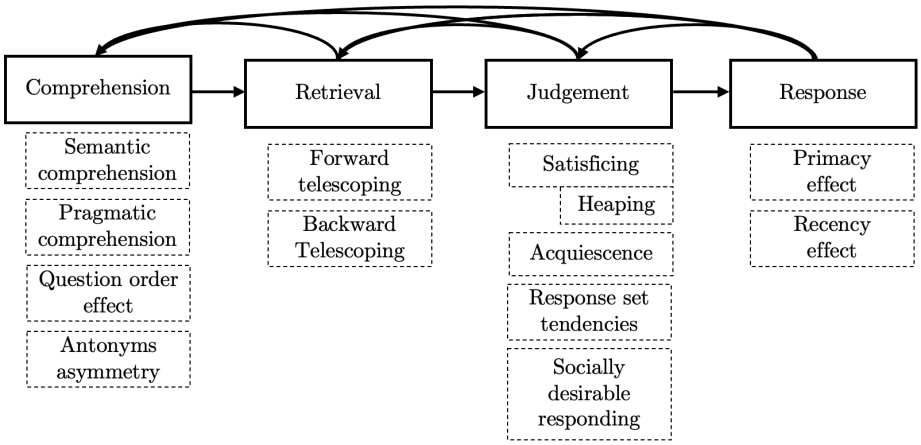

Fig. 1. Subtasks of the respondent when answering a question and chosen biases (extended figure by the author, based on Tourangeau 1984, pp. 74–93)

RESEARCH METHODOLOGY

In various disciplines, differing levels of well-substantiated findings exist regarding potential sources of error. A comprehensive literature analysis synthesises current research with a focus on its relevance to professional contexts, particularly concerning data protection and information security. The literature review includes, among other sources, published books, research papers, journals, and online articles from a range of academic fields.

RESULTS

In the **subtask of comprehension**, it is crucial that the respondent understands the question as intended by the questioner. Therefore, the language and specialised terms used are particularly significant. If respondents find a question difficult to answer they are likely to modify it in a way that makes it easier to respond, which can reduce validity (Schwarz 1990, p. 9). Even in cases where the questions seem flawless and unambiguous, biases can emerge, exemplified by effects of question order. A context-example: When asked "What is your security concept?", it is likely that physical security will be described as a subset of security. However, the scenario often differs when a question about physical security is asked first, followed by the mentioned question identically. In this sequence, respondents will typically address physical security first, and their knowledge of this question may then be interpreted as implying that physical concerns should be excluded from the subsequent question. Thus, with the same questions but in a different order, and hence different comprehension, different answers will be elicited. This example also illustrates that the less precise the question, the more interpretation is required, and the question itself is used for interpretation (Schnell 2019, p. 24).

Regarding the effect of question order, there are two orientations: consistency effects, where the first question or answer increases the similarity of the second answer, and contrast effects, where the second question differs greatly from the first (Schuman and Presser 1981, pp. 27–28). The direction of the context effect is determined by the categorisation of the available information. Information included in the cognitive representation of the judgment object results in assimilation effects, while excluded information results in contrast effects (Schwarz 1991, p. 7).

The tone of a question – whether framed negatively or positively – also matters, as this influences the answers given. According to Schuman and Presser (1981, 296), this is the largest wording effect, explained as antonym asymmetry. A context-specific example could be either "Is the use of out-of-date software not allowed?" or "Is the use of out-of-date software forbidden?". A lower consent rate is expected for the second question (cf. Rugg 1941, pp. 91–92). Strack (1994, p. 29) states that respondents are more likely to answer "no" when the verb "allow" is used, compared to "yes" when the wording contains "forbidden". Conversely, the proportion of "no" responses for "forbid" is higher than the proportion of "yes" responses for "allow". The reason for this asymmetry can be attributed as follows: "forbidden" comes across as harsher and more definitive, and therefore a question containing this term is less likely to receive agreement. Finally, the

asymmetry effect depends heavily on the abstractness of the phrasing used (Schuman and Presser 1981, p. 280).

Further attention should be drawn to assimilation effects. This describes the relationship between the context of the self-assessment and the responses. In a positive context, responses are expected to be more positive, whereas in a negative context, they are expected to be more negative. A related effect is caused by existing contextual information. Studies have shown that identical questions are answered differently depending on the survey title (Galesic and Tourangeau 2007, p. 199). This knowledge can, in the context of this paper, be transferred to the department that sends out the self-assessment. Accordingly, it can be assumed that answers will differ if the legal or the sales department requests the responses.

The **subtask of retrieval** focuses on accessibility of information. Especially in larger organisations, relevant details are stored in systems, and cognitive and psychological insights regarding autobiographical memory are only partially applicable (Haraldsen 2013, p. 83). For data protection or information security reasons, it is often necessary to inquire about past events such as incidents. In doing so, it is important to take into account the more commonly observed forward telescoping effect, as well as the less frequent backward telescoping effect, both of which are psychological dating errors (Schnell 2019, p. 32) and presented in Fig. 2.

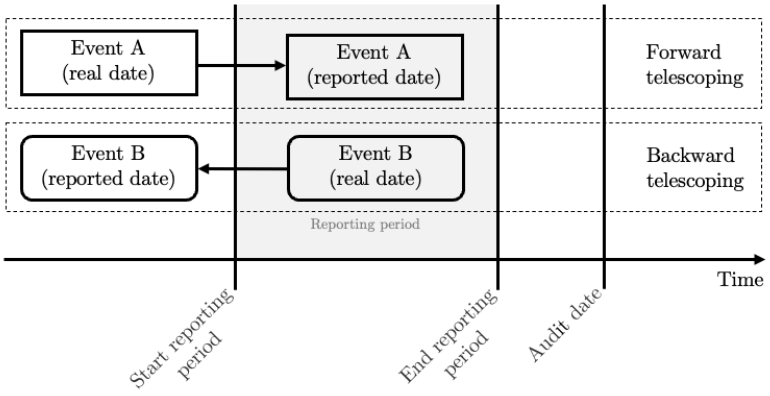

Fig. 2. Overview of the dating errors forward telescoping and backward telescoping (figure by the author, based on Schnell 2019, pp. 31–32)

In forward telescoping, the relevant event that is to be reported actually occurred before and thus outside the reporting period. However, due to psychological effects during recall, it is reported as having occurred within. This results in an increased prevalence rate, meaning the number of relevant incidents is overestimated (Schnell 2019, pp. 31–32). Similarly, in backward telescoping, an event that actually occurred within the reporting period is "thought of" as occurring before the reporting period due to psychological factors and the prevalence rate is underestimated (Schnell 2019, pp. 31–32).

It is also important to highlight the bias memory creation. Here, the focus is not on the correct temporal placement but on the construction of memories, even though the underlying event may never have taken place. This occurs when respondents link their memories to new and false recollections (Loftus 2000, p. 201). Particularly susceptible to this are memories that are already fading due to the passage of time and the construction of false memories can be based on two key mechanisms: suggestion by others and one's own imagination (Loftus 2000, p. 202, 209).

The results of a study by Thompson, Skowronski and Lee (1988, p. 243) are also noteworthy: the test subjects stated that 22% of their attempts to recall autobiographical events were pure guesswork. This finding is comparable with the results of Menon (1993), who found an error range from 13% for the most accurately reported behaviours to 130% for less accurately reported behaviours.

Current research suggests that the level of detail in the questions also plays a significant role in this context. The results of Schwarz and Sudman (1987) suggest that the more detailed the questions, the more comprehensive the responses, and the more frequently reported events.

Having information available from the second subtask does not directly lead to an answer but is instead processed by the respondent during the **subtask judgment**. Respondents are influenced by the potential consequences of their answers, and effects such as satisficing and acquiescence come into play (Krosnick 1991, p. 213, 217).

In satisficing, the respondent does not necessarily provide the correct answer but tends to a response that most satisfies the requester (Barge and Gehlbach 2012, pp. 2, 17–27). The strength of this bias depends on task complexity, respondent motivation, and cognitive abilities. In the specific context considered in this study, heaping, also known as digit preference, is a phenomenon to note as a particular form of satisficing. This phenomenon indicates that when querying frequencies, numbers, and probabilities, certain digits or endings are preferentially reported or avoided (Schnell 2019, p. 39). This is explained by effort minimisation, which leads to the use of response heuristics. In addition to satisficing, acquiescence also influences the use of self-assessments. This tendency refers to respondents being more likely to give affirmative answers rather than negative ones, regardless of the actual content of the response. Rokeach (1963, pp. 304–309) demonstrated that respondents would even agree to two items with contradictory content if these were formulated as agreeing question-and-answer pairs. The likelihood of agreement increases with the length of the question (Trott and Jackson 1967, p. 279) and with inconsistently formulated questions (McBride and Moran 1967, pp. 116–117).

If the respondent's knowledge is lacking, answers will become increasingly random, especially an answer is mandatory (cf. Converse 1970). However, due to the previously mentioned acquiescence, absence of knowledge does not lead to perfectly distributed answers, such as 50% "Yes" and 50% "No" responses, but rather to more affirmative than negative responses. A study by Schuman and Presser (1981, pp. 148–154) shows that, with 61.9%, a majority of respondents support an unknown law if they generally hold a positive contextual opinion. If this is not the case, the majority will reject the unknown law.

In addition to satisficing and acquiescence, the tendency towards the middle can also be explained by the respondent's effort minimisation (Bogner and Landrock 2015, p. 2), where middle scale values are more frequently chosen as answers, regardless of the actual content or correct response, in an effort to avoid extremes.

In the context of this paper, particularly noteworthy is the effect of socially desirable responding, defined as the tendency to provide positive self-descriptions (Paulhus 2002, p. 49). This effect is highly relevant in the context of audits and must be taken into account. It can be assumed that respondents will particularly emphasise the desired information in order to build and maintain business relationships and present their organisation in the best possible light (cf. Bishop, Tuchfarber and Oldendick 1986, p. 248).

In the **subtask response**, effects related to the order of answers become apparent. The sequence of responses influences the validity of self-assessments, a phenomenon referred to as response order effects. In written self-assessments, the primacy effect is particularly evident. This leads respondents to select one of the initial response options (Schwarz et al. 1985, p. 187). Krosnick and Alwin (1987, pp. 202–203) explain this through two factors: firstly, the initial response options create a frame of reference that affects the interpretation of subsequent items; secondly, the initial response options are processed more deeply than later ones, thus overshadowing the later options in memory and consciousness. The recency effect occurs when one of the final response options heard or seen is disproportionately chosen (Bogner and Landrock 2015, p. 8). This phenomenon is explained in the literature by the differing inputs into short-term and long-term memory and their retrievability, depending on elapsed time (cf. Schwarz et al. 1985, p. 188).

CONCLUSION

The presented selection of cognitive and psychological biases clearly illustrates that, from a psychological perspective, there are numerous sources of error in the use of self-assessment as an audit tool, which can significantly undermine the validity of the results. While it is a necessary condition that the respondent intends to answer honestly, this alone is not sufficient. The employed self-assessments must take these findings into account in order to minimise the biases, to the extent possible. This paper provides an introduction to research on how these various factors influence the validity of self-assessments as an audit tool and the potential interrelations involved. On this basis, design guides for self-assessments can further be developed.

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ВАЛИДНОСТ НА САМООЦЕНКИТЕ КАТО ИНСТРУМЕНТ ЗА ИЗСЛЕДВАНЕ: КОГНИТИВНА И ПСИХОЛОГИЧЕСКА ПЕРСПЕКТИВА

Резюме: *Тази статия оценява валидността на самооценките като инструменти за одит в контекста на защита на данните и информационната сигурност от когнитивна и психологическа перспектива. Чрез цялостен анализ на литературата изследването синтезира открития от различни академични области, за да разгледа как когнитивните и психологическите пристрастия влияят върху надеждността на самооценките. Затова това изследване разделя процеса на самооценка на четири подзадачи: разбиране, извличане, преценка и отговор, всяка от които е*

податлива на специфични пристрастия. Основните открития разкриват множество когнитивни и психологически фактори, които могат значително да подкопаят валидността на самооценките. Те включват проблеми с разбирането поради сложността на езика, пристрастия в паметта при извличане на информация, грешки в преценката като задоволяване и съгласие и ефекти от реда на отговорите. Изследването подчертава как тези пристрастия могат да доведат до неточни или изкривени резултати, дори когато респондентите имат намерение да отговорят честно. Това изследване допринася към научната основа за подобряване на дизайна на инструментите за самооценка, като подчертава необходимостта от отчитане на тези психологически фактори за повишаване на надеждността и ефективността на одитите в контекста на защита на данните и информационната сигурност.

Ключови думи: *инструмент за одит, когнитивни и психологически предубеждения, защита на данните, информационна сигурност, самооценки*

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