2528-9705

Journal of Organizational Behavior Research

Vol.: 10, Is.: 4, Year: 2025, Pages: 130-143

https://doi.org/10.51847/Y7q16s5TNh

Available online

https://odad.org/

Designing Against Desirability: A Systematic Review of Alternative Response Techniques in Self-Reported Social Science Data

Tharindu Dananjaya Weerasinghe[1*]

[1]Department of Human Resource Management, Faculty of Commerce and Management Studies, University of Kelaniya, Kelaniya, Sri Lanka.

***Corresponding Author**
E-mail: dananjaya@kln.ac.lk

ABSTRACT

Self-reported data are widely used in social science research but are highly susceptible to Social Desirability Bias (SDB), mainly in studies involving sensitive & normatively regulated behaviors. Although numerous methodological approaches have been adopted to address this bias, the evidence remains fragmented across disciplines. This study presents a PRISMA-guided systematic literature review of 32 peer-reviewed studies examining alternative reflection & response techniques designed to mitigate SDB in self-reported data. The review synthesizes findings across randomized & non-randomized indirect questioning methods, cross-sectional and longitudinal models, list & endorsement experiments, anchoring vignettes, implicit measures, bogus pipeline techniques, and ecological momentary assessment. Through comparative thematic analysis, the study evaluates the effectiveness, assumptions, and practical limitations of these methods. The findings demonstrate that no single technique universally mitigates SDB; rather, effectiveness depends on alignment between research objectives, underlying bias mechanisms, and contextual conditions. The review contributes an integrative methodological framework and practical guidance to support improved measurement validity in social science research.

Keywords: Indirect questioning, Reflection analysis, Sensitive survey methods, Self-reported data, Social desirability bias, Systematic literature review.

Introduction

Self-reported data remain the foundation of empirical inquiries in social sciences, underpinning research across psychology, sociology, management, public health, education, human resource management, and political science (Tourangeau *et al*., 2000; Tourangeau & Yan, 2007). Despite their widespread use, self-report instruments are mainly vulnerable to Social Desirability Bias (SDB), which is identified as the systematic tendency of respondents to misrepresent attitudes, beliefs, and behaviors in a way that conforms to perceived social norms and expectations (Crowne & Marlowe, 1960; Fisher, 1993; Krumpal, 2013; Guillen & Pereira, 2024; Kebe *et al*., 2025). This bias threatens the validity of conclusions drawn from survey-based research, especially when the subject matter involves sensitive, normatively regulated, and morally charged behaviors like deviance, corruption, discrimination, unethical conduct, sexuality, health behaviors, and compliance with organizational rules & regulations (Tourangeau & Yan, 2007; Wolter & Preisendörfer, 2013; Khan *et al*., 2024; Lee *et al*., 2025).

Social Desirability Bias and the Limits of Direct Self-report

Traditional approaches to addressing SDB have relied heavily on direct self-report correction strategies, including the use of social desirability scales like the Marlowe–Crowne scale, anonymity assurance, neutral wording, and statistical controls (Crowne & Marlowe, 1960; Fisher, 1993; Conti *et al*., 2025). However, empirical evidence consistently

Recieved: 09.08.2025 –Accepted: 24.11.2025 –Published: 15.12.2025

demonstrates that these approaches only partially mitigate the bias, and often fail when respondents perceive reputational, moral, and institutional consequences associated with truthful disclosure (Krumpal, 2013; Ried *et al*., 2021; Csep *et al*., 2024; Njoroge & Odhiambo, 2025). Moreover, incorporating social desirability scales introduces additional psychometric burdens like construct contamination, multi-collinearity, and questionable cross-cultural uniformity (Krumpal, 2013; Snodin & McCrossen, 2024).

Researchers have recognized that reflection-based self-reporting, in which respondents are explicitly asked to evaluate or disclose their own behaviors & attitudes, might be fundamentally limited in contexts where impression management and self-deception processes are salient (Tourangeau & Yan, 2007; Ganea *et al*., 2024; Raza *et al*., 2025). This recognition has driven the development of alternative techniques that reduce the cognitive and social pressures associated with direct disclosure by modifying the response process itself.

Emergence of Indirect and Alternative Response Techniques

The most influential shift away from direct self-report began with the introduction of the Randomized Response Technique (RRT) by Warner in 1965. RRT introduced deliberate randomness into the response mechanism to protect respondent privacy while enabling unbiased population-level estimates. Subsequent methodological refinements and applications demonstrated the potential of RRT to elicit more truthful reporting on sensitive issues (Le *et al*., 2023; Zar *et al*., 2024; Petchesi *et al*., 2025). However, practical challenges such as respondent comprehension, increased variance, and interviewer effects hinder its adoption across contexts (Wolter & Preisendörfer, 2013; Mickevičius *et al*., 2024; Yu *et al*., 2025).

To address these limitations, researchers began developing non-randomized indirect questioning techniques, including the crosswise and triangular models, which mitigate the effects of randomization while maintaining respondent anonymity (Yu *et al*., 2008; Jann *et al*., 2012; Zhang *et al*., 2023; Yılmazer & Altinok, 2024). Empirical validations suggest that these models can outperform both direct questioning and traditional RRT under certain conditions, mainly when respondents understand the logic of the technique and when careless responding is adequately controlled (Korndörfer *et al*., 2014; Hoffmann *et al*., 2015; Sagoe *et al*., 2021; Dupont & Lefevre, 2024; Jagsi *et al*., 2025).

In line with those developments, list experiments (item-count techniques) and endorsement experiments have gained prominence, mainly in social science and development research, as tools to estimate the prevalence of sensitive attributes without requiring individual-level disclosure (Blair & Imai, 2012; Glynn, 2013; Blair *et al*., 2014; Elamin *et al*., 2023; Kowalski *et al*., 2024). Advanced statistical estimators have further strengthened these methods by allowing covariate adjustment, diagnostic testing, and integration with direct measures (Imai, 2011; Aronow *et al*., 2015; Maslyakova *et al*., 2023; Pardo-Zamora & Castellano-Rioja, 2024).

Beyond Indirect Questioning

In addition to indirect questioning techniques, researchers have explored alternative modes of reflection analysis that fundamentally alter how attitudes & behaviors of people are captured. One prominent stream focuses on implicit measurement, most notably the Implicit Association Test (IAT) that seeks to bypass conscious self-presentation by measuring automatic cognitive associations (Greenwald *et al*., 1998; Salem *et al*., 2025). Although implicit measures reduce susceptibility to deliberate impression management, meta-analytic evidence suggests that they introduce distinct validity & reliability concerns and might not consistently predict real-world behaviors (Forscher *et al*., 2019; Leadbeatter & Tjaya, 2024).

Other approaches used in the social sciences, such as the bogus pipeline technique, leverage perceived physiological and technological verification to discourage dishonest responding (Alexander & Fisher, 2003; Bona *et al*., 2025). While effective in some laboratory contexts, ethical considerations and feasibility constraints limit their broader application.

More recently, anchoring vignettes have been identified as a means of correcting differential response styles and norm-based reporting biases by calibrating individual response scales (King *et al*., 2004; Paccagnella, 2011; Grol-Prokopczyk, 2017; Al-Mubarak *et al*., 2024). Although not designed specifically to address deception, anchoring vignettes offer a promising complement to indirect questioning when social desirability operates through scale interpretation rather than outright misreporting.

Moreover, Ecological Momentary Assessment (EMA) and other experience-sampling approaches aim to reduce retrospection and moral rationalization by capturing behaviors and states in real or near real time (Stinson *et al*., 2022). Evidence suggests that EMA often yields estimates that diverge substantially from retrospective self-reports, indicating its potential as a partial remedy to Socially Desirable Recall Biases (SDRB).

Need for a Systematic Synthesis

Although the introduction of alternative response & reflection techniques aimed at mitigating SDB, the extant literature remains highly fragmented across disciplines, methodologies, and epistemological traditions. Existing reviews tend to focus narrowly on single-method families such as RRT (Le *et al*., 2023), crosswise models (Sagoe *et al*., 2021), or sensitive question techniques (Tourangeau & Yan, 2007) without offering an integrative framework for comparing these approaches as alternative forms of reflection analysis.

Moreover, researchers face limited guidance on how to select among competing techniques based on research context, sensitivity level, cognitive burden, statistical efficiency, ethical considerations, and feasibility in the field (Krumpal, 2013; Ried *et al*., 2021). This gap is mainly consequential for social science research, where self-reported data remain dominant despite persistent concerns about validity & reliability.

Purpose and Contribution of the Current Study

Having considered the above-reported lacuna in the social science literature, the present study is conducted as a systematic literature review of alternative techniques for reflection analysis designed to mitigate SDB in self-reports in social science research. By synthesizing evidence from randomized and non-randomized response techniques, list & endorsement experiments, anchoring vignettes, implicit measures, bogus-pipeline approaches, and experiential data-collection methods, this review aims to provide a methodologically integrated and practically actionable direction for future researchers.

Accordingly, the study contributes by: (a) mapping the conceptual mechanisms through which different techniques address SDB; (b) evaluating their empirical performance and limitations; and (c) offering a structured framework for method selection in future social-science research.

Objectives of the Study

Based on the above rationale, this study advances on the following four objectives.

1. To systematically identify & classify alternative reflection & response techniques used in social-science research to mitigate SDB in self-reported data.
2. To critically evaluate the theoretical assumptions, methodological designs, and empirical performance of those techniques.
3. To compare indirect, non-randomized, cognitive, and experiential approaches in terms of respondent burden, ethical considerations, statistical efficiency, and suitability for different research contexts.
4. To develop an integrative framework and evidence-based guidance for selecting appropriate reflection analysis techniques in self-reported social-science research in the future.

The rest of this manuscript is outlined as follows: In the next section, the adopted methodology in the current study is presented. After that, the results are discussed, emphasizing comparative evaluation & method selection framework, and guidelines for selecting appropriate response & reflection techniques to mitigate SDB. The final section comprises the conclusion & implications, limitations, and directions for future studies.

Materials and Methods

Review Design and Reporting Standard

This study adopted a Systematic Literature Review (SLR) design in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure transparency, replicability, and methodological rigor (Moher *et al*., 2009; Page *et al*., 2021). The review focused on identifying, evaluating, and synthesizing alternative techniques of reflection and response analysis developed to mitigate SDB in self-reported data within social science research. Considering the methodological and interdisciplinary nature of the topic, the

review emphasized conceptual, methodological, and empirical studies rather than effect-size aggregation, aligning with prior methodological reviews in sensitive survey research (Tourangeau & Yan, 2007; Krumpal, 2013; Le *et al*., 2023).

Search Strategy and Information Sources

A comprehensive literature search was conducted across multiple academic databases to capture methodological developments covering psychology, sociology, political science, management, public health, and statistics. The primary databases included: Web of Science, Scopus, PsycINFO, PubMed, ScienceDirect, SAGE Journals, Taylor & Francis Online, and SpringerLink.

To ensure coverage of methodological innovations and foundational works, supplementary searches were conducted using Google Scholar, reference list snowballing, and citation chaining of seminal reviews and highly cited methodological papers (as recommended by Warner, 1965; Tourangeau & Yan, 2007; Blair & Imai, 2012; Krumpal, 2013; Le *et al*., 2023).

Inclusion and Exclusion Criteria

Eligibility criteria were decided to ensure conceptual coherence and methodological relevance. **Table 1** presents the inclusion and exclusion criteria applied during screening.

Table 1. Inclusion and Exclusion Criteria

Criterion	Inclusion	Exclusion
Topic focus	Studies explicitly addressing social desirability bias, sensitive questions, or misreporting in self-reported social-science data.	Studies on general response bias without explicit relevance to SDB
Methodological relevance	Studies proposing, testing, validating, or reviewing alternative reflection/response techniques	Studies using only conventional direct self-report scales without mitigation strategies
Study type	Empirical studies, methodological papers, simulation studies, systematic or narrative reviews	Editorials, opinion pieces, non-methodological commentaries
Disciplinary scope	Social sciences (psychology, sociology, political science, management, public health, education, economics…)	Purely biomedical or clinical diagnostics without a self-report focus
Publication type	Peer-reviewed journal articles and authoritative methodological reviews	Conference abstracts, unpublished manuscripts (unless seminal), dissertations
Language	English	Non-English publications
Time frame	No lower time bound (to include foundational works such as Warner, 1965)	—

These criteria are consistent with previous systematic reviews on sensitive survey techniques and indirect questioning methods (Tourangeau & Yan, 2007; Krumpal, 2013; Le *et al*., 2023).

Search Strings

Search strings were refined and combined using Boolean operators. Core terms included:

“social desirability bias”
“sensitive questions”
“self-reported data”
“indirect questioning”
“randomized response technique”
“crosswise model” OR “triangular model”
“list experiment” OR “item count technique” OR “endorsement experiment”
“anchoring vignettes”

"implicit measures" OR "implicit association test"
"bogus pipeline" OR
"ecological momentary assessment"
Searches were limited to peer-reviewed publications in English, reflecting standard practice in methodological SLRs (Krumpal, 2013; Sagoe *et al*., 2021).

Study Selection and Screening Process

The study selection followed a two-stage screening process. First, all the records retrieved from database searches were screened, and duplicates were removed. Titles and abstracts were then screened for relevance based on the eligibility criteria.
In the second stage, full-text screening was conducted for all potentially eligible articles. Studies were assessed for (a) explicit relevance to SDB, (b) clear engagement with alternative reflection & response techniques, and (c) methodological transparency. Disagreements during screening were resolved by referring to inclusion criteria and established reviews in the domain (Tourangeau & Yan, 2007; Blair & Imai, 2012; Krumpal, 2013).

Data Extraction and Coding

A structured data extraction protocol was developed to ensure consistency across studies. For each included article, the following information was extracted into an Excel file. This approach aligns with previous methodological syntheses of sensitive survey techniques (Krumpal, 2013; Sagoe *et al*., 2021; Le *et al*., 2023).

- Bibliographic information (author, year of publication, journal name)
- Disciplinary context and research domain
- Type of reflection analysis technique/s
- Underlying bias-mitigation mechanism/s
- Study design (theoretical, simulation, laboratory experiment, field study…)
- Empirical context and sample characteristics
- Key findings regarding effectiveness, limitations, and implementation challenges

Synthesis Strategy

Considering the methodological heterogeneity of the included studies, a narrative and thematic synthesis approach was employed rather than quantitative meta-analysis. Studies were grouped into method families, including:

- Randomized response techniques and variants (Warner, 1965; Wolter & Preisendörfer, 2013; Le *et al*., 2023)
- Non-randomized indirect models (Yu *et al*., 2008; Jann *et al*., 2012; Korndörfer *et al*., 2014; Sagoe *et al*., 2021)
- List and endorsement experiments (Blair & Imai, 2012; Glynn, 2013; Blair *et al*., 2014)
- Anchoring vignettes (King *et al*., 2004; Paccagnella, 2011; Grol-Prokopczyk, 2017)
- Cognitive and behavioral alternatives (Greenwald *et al*., 1998; Alexander & Fisher, 2003; Forscher *et al*., 2019)
- Experiential approaches (Stinson *et al*., 2022)

Within and across these categories, studies were compared on theoretical logic, empirical performance, respondent burden, ethical considerations, and practical feasibility, consistent with integrative methodological reviews (Tourangeau & Yan, 2007; Ried *et al*., 2021).

PRISMA-flow Description

The systematic search across Web of Science, Scopus, PsycINFO, PubMed, ScienceDirect, SAGE Journals, Taylor & Francis Online, and SpringerLink yielded 624 records, with an additional 38 records identified through reference list screening and citation chaining of seminal methodological reviews. After removing 172 duplicate records, 490 unique records remained for title and abstract screening. At this stage, 372 records were excluded for being irrelevant to SDB, lacking alternative reflection & response techniques, or relying exclusively on direct self-report measures. The full texts of the remaining 118 articles were assessed for eligibility, resulting in the exclusion of 86 articles due to insufficient methodological focus, lack of explicit bias-mitigation mechanisms, conceptual redundancy, or inadequate

reporting detail. The final review, therefore, included 32 peer-reviewed studies, which served as the basis for the qualitative synthesis and methodological comparison. **Figure 1** depicts the PRISMA-flow diagram.

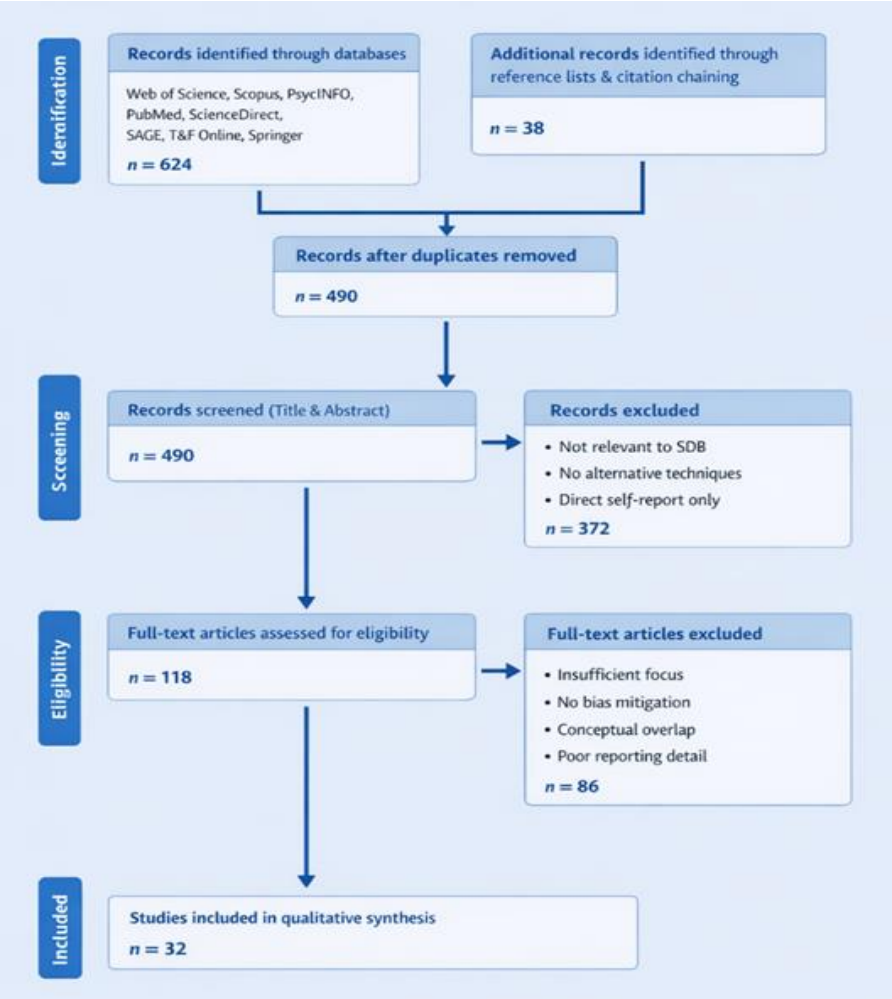

Figure 1. PRISMA-flow diagram

Results and Discussion

Descriptive Synthesis of Alternative Methods

The final sample of 32 studies reflects substantial methodological diversity, bridging more than six decades of research on mitigating SDB in self-reported data. Consistent with previous reviews (Tourangeau & Yan, 2007; Krumpal, 2013; Le *et al*., 2023), the included studies could be grouped into six (06) major method families, each addressing SDB through distinct psychological and statistical mechanisms. **Table 2** presents the classification of alternative techniques identified in the current review.

Table 2. Classification of Alternative Techniques

Method Family	Core Techniques	Key Mechanism for Mitigating SDB	Key References
Randomized Response Techniques (RRT)	Warner RRT, forced-response, unrelated-question models	Protection through randomization and plausible deniability	Warner (1965); Wolter & Preisendörfer (2013); Le *et al*. (2023)

Non-randomized indirect models	Crosswise model, triangular model, parallel model	Anonymity via non-invertible response mapping	Yu *et al*. (2008); Jann *et al*. (2012); Korndörfer *et al*. (2014); Sagoe *et al*. (2021)
List / item-count / endorsement experiments	List experiment, endorsement experiment	Indirect prevalence estimation without individual disclosure	Blair & Imai (2012); Glynn (2013); Blair *et al*. (2014)
Scale-calibration approaches	Anchoring vignettes	Adjustment for normative and response-style bias	King *et al*. (2004); Paccagnella (2011); Grol-Prokopczyk (2017)
Cognitive and implicit approaches	IAT, bogus pipeline	Reduction of conscious impression management	Greenwald *et al*. (1998); Alexander & Fisher (2003); Forscher *et al*. (2019)
Experiential and real-time methods	Ecological Momentary Assessment (EMA)	Minimization of retrospection and moral rationalization	Stinson *et al*. (2022)

This classification highlights that SDB is not a single phenomenon but rather the outcome of multiple processes, including fear of judgment, self-deception, recall bias, and scale interpretation, each of which requires unique methodological remedies (Tourangeau & Yan, 2007).

Effectiveness of Alternative Techniques in Mitigating SDB

Randomized Response Techniques (RRTs)

RRT remains the most theoretically robust method for protecting respondent privacy in surveys on sensitive topics. Empirical evidence consistently shows that RRT yields higher prevalence estimates of socially undesirable behaviors than direct questioning, suggesting reduced underreporting (Warner, 1965; Wolter & Preisendörfer, 2013; Le *et al*., 2023). However, this review also confirms persistent limitations. RRT is cognitively demanding, prone to respondent misunderstanding, and statistically inefficient due to increased variance, especially in small samples (Krumpal, 2013; Wolter & Preisendörfer, 2013). These constraints have restricted its adoption to other than highly controlled research environments.

Non-randomized Indirect Models

Non-randomized models represent a major methodological advance by eliminating the need for external randomization while retaining anonymity (Yu *et al*., 2008). Multiple validation studies in the extant literature indicate that the 'crosswise' and 'triangular models' often outperform direct questioning, and perform comparably to RRT under favorable conditions (Jann *et al*., 2012; Korndörfer *et al*., 2014; Sagoe *et al*., 2021). Nevertheless, effectiveness here is also conditional. These models are sensitive to careless responding, misunderstanding of instructions, and violations of model assumptions (Hoffmann *et al*., 2015; Sagoe *et al*., 2021). Thus, some recent methodological refinements aim to address these issues, but their adoption remains inconclusive.

List and Endorsement Experiments

List experiments and endorsement experiments have proven highly effective for estimating the population prevalence of sensitive attributes in social science research, especially in organizational behavior studies (Blair & Imai, 2012; Blair *et al*., 2014). Compared to direct questions, these techniques consistently yield higher estimates of stigmatized attitudes and behaviors (Glynn, 2013). However, their effectiveness depends on careful design. Ceiling effects, design effects, and violations of no-design-effect assumptions could bias estimates if not properly addressed (Imai, 2011; Aronow *et al*., 2015). Most importantly, list experiments do not allow individual-level inference, limiting their use in explanatory modeling.

Anchoring Vignettes

Anchoring vignettes address a distinct but related source of bias. It includes differential response styles and norm-based interpretation of survey scales (King *et al*., 2004). Evidence suggests that anchoring vignettes improve cross-group comparability and reduce socially normative scale distortion to a significant extent (Paccagnella, 2011; Grol-

Prokopczyk, 2017). However, anchoring vignettes do not directly prevent SDB. Their effectiveness in mitigating SDB is therefore indirect and complementary, rather than standalone (Krumpal, 2013).

Cognitive and Implicit Approaches

Implicit measures, particularly the IAT, aim to bypass conscious self-presentation by tapping automatic associations (Greenwald *et al*., 1998). While attractive in theory, meta-analytic evidence shows modest predictive validity and substantial variability across contexts (Forscher *et al*., 2019). On the other hand, the bogus pipeline technique demonstrates stronger effects in discouraging dishonest responding but raises ethical and feasibility concerns that limit its applicability beyond laboratory settings (Alexander & Fisher, 2003).

Ecological Momentary Assessment

Ecological Momentary Assessment (EMA) reduces SDB by minimizing retrospection and situational rationalization (Stinson *et al*., 2022). Studies consistently show divergence between EMA data and retrospective self-reports, indicating reduced normative distortion. However, EMA is resource-intensive and might not be feasible for large-scale and low-resource studies.

Table 3 depicts the comparative effectiveness of alternative methods for mitigating SDB.

Table 3. Effectiveness of Alternative Methods for Mitigating SDB

Method Family	Effectiveness in Mitigating SDB	Primary Strengths	Key Limitations	Evidence
Randomized Response Techniques (RRT)	High (theoretically strong)	Strong protection of respondent anonymity; robust theoretical foundation; consistently higher prevalence estimates than direct questioning	High cognitive burden; respondent misunderstanding; increased variance; limited feasibility in applied field settings	Warner (1965); Wolter & Preisendörfer (2013); Krumpal (2013); Le *et al*. (2023)
Non-randomized indirect models (Crosswise, Triangular)	Moderate to High (context-dependent)	No external randomization required; lower respondent burden than RRT; effective for sensitive behaviors when instructions are understood	Vulnerable to careless responding; sensitive to assumption violations; effectiveness declines with low respondent comprehension.	Yu *et al*. (2008); Jann *et al*. (2012); Korndörfer *et al*. (2014); Hoffmann *et al*. (2015); Sagoe *et al*. (2021)
List / Item-count / Endorsement experiments	High (for prevalence estimation)	Effective at reducing underreporting; simple to administer; strong performance in political and organizational research	No individual-level inference; design effects and ceiling effects possible; careful construction required	Blair & Imai (2012); Glynn (2013); Blair *et al*. (2014); Imai (2011); Aronow *et al*. (2015)
Anchoring vignettes	Low to Moderate (indirect mitigation)	Corrects response-style and norm-based biases; improves cross-group comparability; feasible in large surveys	Does not directly prevent deliberate misreporting; it assumes vignette equivalence and response consistency.	King *et al*. (2004); Paccagnella (2011); Grol-Prokopczyk (2017); Krumpal (2013)
Implicit measures (such as IAT)	Moderate (limited behavioral validity)	Reduces conscious impression management; captures automatic associations	Modest predictive validity; reliability concerns; weak correspondence with real-world behavior	Greenwald *et al*. (1998); Forscher *et al*. (2019); Tourangeau & Yan (2007)

Bogus pipeline technique	Moderate to High (laboratory contexts)	Strong deterrence of dishonest responding; clear reductions in socially desirable answers	Ethical concerns; deception involved; limited feasibility outside laboratory settings	Alexander & Fisher (2003); Tourangeau & Yan (2007)
Ecological Momentary Assessment (EMA)	Moderate (behavioral and recall bias reduction)	Minimizes retrospection and rationalization; captures real-time behavior; strong validity	High participant and logistical burden; limited scalability; does not fully eliminate desirability motives.	Stinson *et al*. (2022); Krumpal (2013)

Comparative Evaluation & Method Selection Framework

The current review demonstrates that no single method universally mitigates the SDB. Instead, effectiveness depends on alignment between the bias mechanism, research objectives, and contextual constraints. **Table 4** summarizes the comparison of SDB mitigating techniques.

Table 4. Comparative Evaluation of SDB Mitigating Techniques

Technique	Mitigates Deliberate Deception	Reduces Self-deception	Feasibility	Individual-level Inference
RRT	High	Low	Moderate	Limited
Crosswise / Triangular	High (conditional)	Low	Moderate	Limited
List / Endorsement	High (population-level)	Low	High	No
Anchoring Vignettes	Low	Moderate	High	Yes
Implicit Measures	Moderate	High	Moderate	Yes
EMA	Moderate	High	Low	Yes

Guidelines for Selecting Appropriate Methods

Based on the above synthesis, an evidence-based method-selection logic could be proposed.

1. For prevalence estimation of sensitive behaviors or attitudes, list experiments or cross-sectional models are most appropriate (Blair & Imai, 2012; Sagoe *et al*., 2021).
2. For studies requiring individual-level modeling, anchoring vignettes or EMA should be combined with indirect questioning (King *et al*., 2004; Stinson *et al*., 2022).
3. For highly stigmatized or legally risky topics, RRT or non-randomized indirect models offer the strongest anonymity protection (Warner, 1965; Yu *et al*., 2008).
4. For attitudinal or unconscious processes, implicit measures may complement self-report data but should not replace them (Forscher *et al*., 2019).

Importantly, several studies advocate method triangulation, combining indirect techniques with direct measures, validation data, or behavioral indicators to strengthen inference (Aronow *et al*., 2015; Ried *et al*., 2021), which also will mitigate SDB to a significant extent.

Conclusion

This systematic literature review synthesizes over six decades of methodological innovation aimed at mitigating SDB in self-reported social science research. Drawing on a sample of 32 peer-reviewed studies, the review demonstrates that SDB is not a uniform measurement error but a multifaceted phenomenon arising from deliberate misreporting, self-deception, normative pressure, and retrospective rationalization (Tourangeau & Yan, 2007; Krumpal, 2013). By organizing alternative techniques into coherent method families and evaluating their mechanisms, strengths, and

limitations, this study advances a comprehensive understanding of how reflection and response processes shape the validity of self-reported data.

This review makes three central contributions. First, it provides an integrative methodological map of alternative reflection techniques, spanning randomized and non-randomized indirect questioning, list and endorsement experiments, anchoring vignettes, implicit measures, and experiential data collection, thereby bridging fragmented literatures across psychology, sociology, political science, management, organizational studies, and public health (Warner, 1965; Blair & Imai, 2012; King *et al*., 2004; Stinson *et al*., 2022).

Second, by critically evaluating the effectiveness of these methods, the study moves beyond descriptive cataloguing to offer evidence-based outcomes on when and why particular approaches succeed or fail in mitigating SDB (Wolter & Preisendörfer, 2013; Sagoe *et al*., 2021; Le *et al*., 2023). Third, the review contributes a method-selection logic that explicitly links research objectives, bias mechanisms, and contextual constraints, offering practical guidance for researchers who must balance validity, feasibility, and ethical considerations in real-world settings (Krumpal, 2013; Ried *et al*., 2021).

The implications of these contributions are both theoretical and practical. Theoretically, the findings underscore the need to reconceptualize SDB as a design-dependent phenomenon rather than a post hoc statistical artifact, reinforcing calls to integrate measurement theory more deeply into substantive social science research (Tourangeau & Yan, 2007). Practically, the review highlights that no single method offers a universal solution; instead, method triangulation and context-sensitive design emerge as the most promising strategies for improving the validity of self-reported data. For fields that rely heavily on self-report, such as organizational behavior, public administration, education, and health research, this review provides a structured foundation for making informed methodological choices without abandoning survey-based approaches.

Having considered the analysis results of this review, it could be concluded that advancing the quality of self-reported social science data requires not only awareness of SDB but deliberate engagement with the growing toolkit of alternative reflection & response techniques. By consolidating existing evidence and articulating clear pathways for methodological innovation, the review lays the groundwork for more credible, ethically sound, and theoretically informed empirical research in the social sciences.

Limitations and Directions for Future Research

Future research should move beyond isolated evaluations of individual techniques and prioritize comparative and integrative study designs that directly assess the relative performance of alternative methods within the same empirical contexts. Although existing studies demonstrate that indirect questioning techniques such as randomized response, crosswise models, and list experiments often outperform direct self-reporting, few investigations conduct head-to-head comparisons across multiple techniques using identical samples, topics, and validation benchmarks (Wolter & Preisendörfer, 2013; Korndörfer *et al*., 2014; Sagoe *et al*., 2021). Such designs are essential for disentangling method effects from contextual influences and for identifying the conditions under which specific approaches are most effective.

Moreover, future research should expand validation efforts by incorporating external behavioral, administrative, or observational data to assess criterion validity, a limitation noted across both randomized and non-randomized models (Krumpal, 2013; Aronow *et al*., 2015; Le *et al*., 2023). Methodological innovation is also needed to address persistent challenges such as careless responding, assumption violations, and statistical inefficiency, particularly in non-randomized indirect models and list experiments (Imai, 2011; Hoffmann *et al*., 2015).

A second critical avenue for future research is to expand the contextual and epistemological scope of SDB mitigation strategies. Much of the existing evidence is derived from Western, highly educated samples and from domains such as political attitudes and health behaviors. It limits the generalizability of findings to organizational, institutional, and non-Western settings where social norms and power relations might intensify desirability pressures (Tourangeau & Yan, 2007; Krumpal, 2013; Ried *et al*., 2021). Future studies should therefore examine how cultural context, organizational behavior dynamics, and technological mediation influence the effectiveness of alternative response & reflection techniques.

Moreover, promising directions include the development of hybrid and multimethod designs that integrate indirect questioning with anchoring vignettes, EMA, or digital trace data to capture both conscious and unconscious components of reporting bias (King *et al*., 2004; Stinson *et al*., 2022). Advancing such integrative approaches will require not only methodological refinement but also clearer ethical guidelines and practical frameworks to support their adoption in applied social science research in the future.

Acknowledgments: None

Conflict of Interest: None

Financial Support: The Article Processing Charge (APC) is provided by the Research Council of the University of Kelaniya, Sri Lanka.

Ethics Statement: None

References

Alexander, M. G., & Fisher, T. D. (2003). Truth and consequences: Using the bogus pipeline to examine sex differences in self-reported sexuality. *Journal of Sex Research, 40*(1), 27–35. doi:10.1080/00224490309552164

Al-Mubarak, A. M., Alkhaldi, F. A., Alghamdi, A. A., Almahmoud, M. A., & Alghamdi, F. A. (2024). Awareness and clinical competency of dental students in crown lengthening procedures. *Asian Journal of Periodontics and Orthodontics, 4*, 42–51. doi:10.51847/r5cLVpz1UT

Aronow, P. M., Coppock, A., Crawford, F. W., & Green, D. P. (2015). Combining the list experiment and direct question estimates of sensitive behavior prevalence. *Journal of Survey Statistics and Methodology, 3*(1), 43–66. doi:10.1093/jssam/smu023

Blair, G., & Imai, K. (2012). Statistical analysis of list experiments. *Political Analysis, 20*(1), 47–77. doi:10.1093/pan/mpr048

Blair, G., Imai, K., & Lyall, J. (2014). Comparing and combining list and endorsement experiments: Evidence from Afghanistan. *American Journal of Political Science, 58*(4), 1043–1063. doi:10.1111/ajps.12086

Bona, C., Camacho-Alonso, F., Vaca, A., & Llorente-Alonso, M. (2025). Oral biofilm control in patients using orthodontic aligners: Evidence from a systematic review. *Asian Journal of Periodontics and Orthodontics, 5*, 33–42. doi:10.51847/siIhUaqfip

Conti, A., Ricci, L., & Esposito, M. (2025). In vitro evaluation and in vivo pharmacokinetic assessment of intranasal tadalafil nanocrystals. *Annals of Pharmaceutical Practice and Pharmacotherapy, 5*, 94–111. doi:10.51847/8J1kgy8yW6

Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*(4), 349–354. doi:10.1037/h0047358

Csep, A. N., Voiță-Mekereș, F., Tudoran, C., & Manole, F. (2024). Understanding and managing polypharmacy in the aging population. *Annals of Pharmaceutical Practice and Pharmacotherapy, 4*, 17–23. doi:10.51847/VdKr0egSln

Dupont, H., & Lefevre, M. A. (2024). Patient-taught workshop to develop Calgary-Cambridge communication skills in hospital pharmacy residents: Implementation and outcomes. *Annals of Pharmaceutical Education, Safety, and Public Health Advocacy, 4*, 185–191. doi:10.51847/Z4Tey6oMKA

Elamin, S. M., Redzuan, A. M., Aziz, S. A. A., Hamdan, S., Masmuzidin, M. Z., & Shah, N. M. (2023). Educational impact on glycemic outcomes among children and adolescents diagnosed with type 1 diabetes. *Journal of Medical Sciences and Interdisciplinary Research, 3*(1), 41–64. doi:10.51847/s5KgRZ9e1O

Erdmann, A. (2019). An experimental application of the triangular model as an indirect questioning method for sensitive topics. *Methods, Data, Analyses, 13*(1), 139–167. doi:10.12758/mda.2018.07

Fisher, R. J. (1993). Social desirability bias and the validity of indirect questioning. *Journal of Consumer Research, 20*(2), 303–315. doi:10.1086/209351

Forscher, P. S., Lai, C. K., Axt, J. R., Ebersole, C. R., Herman, M., Devine, P. G., & Nosek, B. A. (2019). A meta-analysis of procedures to change implicit measures. *Journal of Personality and Social Psychology, 117*(3), 522–559. doi:10.1037/pspa0000160

Ganea, M., Horvath, T., Nagy, C., Morna, A. A., Pasc, P., Szilagyi, A., Szilagyi, G., Sarac, I., & Cote, A. (2024). Rapid method for microencapsulation of Magnolia officinalis oil and its medical applications. *Specialty Journal of Pharmacognosy, Phytochemistry, and Biotechnology, 4*, 29–38. doi:10.51847/UllqQHbfeC

Glynn, A. N. (2013). What can we learn with statistical truth serum? Design and analysis of the list experiment. *Public Opinion Quarterly, 77*(S1), 159–172. doi:10.1093/poq/nfs070

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology, 74*(6), 1464–1480. doi:10.1037/0022-3514.74.6.1464

Grol-Prokopczyk, H. (2017). In pursuit of anchoring vignettes that work: Empirical tests and practical guidance. *Demography, 54*(3), 941–964. doi:10.1007/s13524-017-0574-0

Guillen, J., & Pereira, R. (2024). Institutional influence on gender entrepreneurship in Latin America. *Annals of Organizational Culture, Leadership, and External Engagement Journal, 5*, 28–38. doi:10.51847/RaQltcyzXu

Hoffmann, A., Diedenhofen, B., Verschuere, B., & Musch, J. (2015). A strong validation of the crosswise model using an online cheating paradigm. *Methodology, 11*(3), 89–97. doi:10.1027/1614-2241/a000091

Imai, K. (2011). Multivariate regression analysis for the item count technique. *Journal of the American Statistical Association, 106*(494), 407–416. doi:10.1198/jasa.2011.ap10415

Jagsi, R., Lee, J., Roselin, D., Ira, K., & Williams, J. (2025). Do U.S. medical schools follow medical associations' recommendations on paid parental leave for faculty? *Annals of Pharmaceutical Education, Safety, and Public Health Advocacy, 5*, 1–11. doi:10.51847/r117In8wdi

Jann, B., Jerke, J., & Krumpal, I. (2012). Asking sensitive questions using the cross-sectional model: An experimental survey measuring plagiarism. *Public Opinion Quarterly, 76*(1), 32–49. doi:10.1093/poq/nfr036

Kebe, I. A., Kahl, C., & Liu, Y. (2025). The role of transformational leadership in enhancing employee performance: A study of the Vietnamese banking industry. *Annals of Organizational Culture, Leadership, and External Engagement Journal, 6*, 21–30. doi:10.51847/g7jtt7Qgxk

Khan, T. M., Tahir, H., Adil, Q., Baig, M. R., Jaber, A. A. S., Khaliel, A. M., & Mohammed, Z. M. (2024). A three-decade overview of female-specific cancers in Malaysia: A thorough examination. *Asian Journal of Current Research in Clinical Cancer, 4*(2), 5–18. doi:10.51847/LIdazW7afN

King, G., Murray, C. J. L., Salomon, J. A., & Tandon, A. (2004). Enhancing the validity and cross-cultural comparability of measurement in survey research. *American Political Science Review, 98*(1), 191–207. doi:10.1017/S000305540400108X

Korndörfer, M., Egloff, B., & Schmukle, S. C. (2014). A large-scale test of the triangular and crosswise models for sensitive questions. *Journal of Economic Psychology, 45*, 213–222. doi:10.1016/j.joep.2014.08.001

Kowalski, T. W., Reis, L. B., Andreis, T. F., Ashton-Prolla, P., & Rosset, C. (2024). Rare co-occurrence of two mutational variants in NF1: Molecular testing reveals diagnostic surprises. *Journal of Medical Sciences and Interdisciplinary Research, 4*(2), 20–29. doi:10.51847/H2qQlZTYO7

Krumpal, I. (2012). Estimating the prevalence of xenophobia and anti-Semitism in Germany: A comparison of randomized response and direct questioning. *Social Science Research, 41*(6), 1387–1403. doi:10.1016/j.ssresearch.2012.05.015

Krumpal, I. (2013). Determinants of social desirability bias in sensitive surveys: A literature review. *Quality & Quantity, 47*(4), 2025–2047. doi:10.1007/s11135-011-9640-9

Le, T.-N., Lee, S.-M., Tran, P.-L., & Li, C.-S. (2023). Randomized response techniques: A systematic review from the pioneering work of Warner (1965) to the present. *Mathematics, 11*(7), 1718. doi:10.3390/math11071718

Leadbeatter, D., & Tjaya, K. C. (2024). Human rights and bioethical principles in correctional settings: A systematic review of the evidence. *Asian Journal of Ethics in Health and Medicine, 4*, 97–106. doi:10.51847/wSNBedLrGt

Lee, Y. T., Tan, Y. J., & Oon, C. E. (2025). An overview of targeted therapy applications in cancer treatment. *Asian Journal of Current Research in Clinical Cancer, 5*(1), 30–35. doi:10.51847/P55dZHZAF2

Maslyakova, A. R., Magomedova, S. A., Romantsov, I. N., Nurbagandov, S. M., Bulovin, M. N., & Podobin, O. R. (2023). Evaluation of the anticancer potential of selenium nanoparticles. *Archives of International Journal of Cancer and Allied Sciences, 3*(2), 41–47. doi:10.51847/POXX7HfEZo

Mickevičius, I., Astramskaitė, E., & Janužis, G. (2024). A systematic review of the implant success rate following immediate implant placement in infected sockets. *Journal of Current Research in Oral Surgery, 4*, 20–31. doi:10.51847/PcPJL1v1XF

Njoroge, E., & Odhiambo, S. (2025). Elucidating the therapeutic mechanisms of *Agrimonia pilosa* Ledeb. extract for acute myocardial infarction via network pharmacology and experimental validation. *Pharmaceutical Sciences and Drug Design, 5*, 48–63. doi:10.51847/eZOWCUj80m

Paccagnella, O. (2011). Anchoring vignettes with sample selection due to non-response. *Journal of the Royal Statistical Society: Series A, 174*(4), 913–924. doi:10.1111/j.1467-985X.2011.00707.x

Pardo-Zamora, F., & Castellano-Rioja, G. (2024). Liquid biopsy in oral cancer diagnosis: A narrative review of emerging diagnostic tools. *Archives of International Journal of Cancer and Allied Sciences, 4*(1), 1–6. doi:10.51847/CcaLqtzvoN

Petchesi, C. D., Kozma, K., Iuhas, A. R., Hodisan, R., & Jurca, A. D. (2025). Co-occurrence of Beckwith-Wiedemann syndrome and familial long QT syndrome type I: A case report. *Interdisciplinary Research in Medical Science Special, 5*(1), 17–22. doi:10.51847/ihFGrsCY5a

Raza, S., Khan, A., Mehmood, F., & Farooq, U. (2025). Nationwide implementation of essential pharmacogenomic testing in the Netherlands: A decision-analytic model of lives saved and cost-effectiveness. *Specialty Journal of Pharmacognosy, Phytochemistry, and Biotechnology, 5*, 39–49. doi:10.51847/PUWEymkYkk

Ried, L., Eckerd, S., & Kaufmann, L. (2021). Social desirability bias in PSM surveys and behavioral experiments. *Journal of Purchasing and Supply Management, 28*, 100743. doi:10.1016/j.pursup.2021.100743

Sagoe, D., Cruyff, M., Spendiff, O., Chegeni, R., de Hon, O., Saugy, M., van der Heijden, P. G. M., & Petróczi, A. (2021). Functionality of the crosswise model for assessing sensitive or transgressive behavior: A systematic review and meta-analysis. *Frontiers in Psychology, 12*, 655592. doi:10.3389/fpsyg.2021.655592

Salem, H. M., Watanabe, S., & Chang, A. H. (2025). Ethical concerns in managing anorexia nervosa: A content analysis of ethics consultation records. *Asian Journal of Ethics in Health and Medicine, 5*, 25–35. doi:10.51847/oHEI6FgL3V

Snodin, D. J., & McCrossen, S. D. (2024). Regulatory considerations of pharmaceutical impurities with emphasis on genotoxic impurities. *Pharmaceutical Sciences and Drug Design, 4*, 1–15. doi:10.51847/ck2yogXhAS

Stinson, L., Liu, Y., & Dallery, J. (2022). Ecological momentary assessment: A systematic review of validity research. *Frontiers in Psychology, 13*, 916327. doi:10.3389/fpsyg.2022.916327

Tian, G.-L., Tang, M.-L., Liu, Z., Tan, M., & Tang, N. S. (2011). Sample size determination for the nonrandomized triangular model. *Statistical Methods in Medical Research, 20*(3), 159–173. doi:10.1177/0962280208099444

Tourangeau, R., & Yan, T. (2007). Sensitive questions in surveys. *Psychological Bulletin, 133*(5), 859–883. doi:10.1037/0033-2909.133.5.859

Tourangeau, R., Rips, L. J., & Rasinski, K. (2000). *The psychology of survey response*. Cambridge University Press.

Warner, S. L. (1965). Randomized response: A survey technique for eliminating evasive answer bias. *Journal of the American Statistical Association, 60*(309), 63–69. doi:10.1080/01621459.1965.10480775

Wolter, F., & Preisendörfer, P. (2013). Asking sensitive questions: An evaluation of the randomized response technique versus direct questioning. *Sociological Methods & Research, 42*(3), 321–353. doi:10.1177/0049124112470850

Yılmazer, E., & Altinok, A. (2024). Innovative approaches to delivering mindfulness-based stress reduction (MBSR) in cancer care: Improving access and engagement. *International Journal of Social and Psychological Aspects of Healthcare, 4*, 1–12. doi:10.51847/4u9e1ZvfMS

Yu, J.-W., Tian, G.-L., & Tang, M.-L. (2008). Two new models for survey sampling with sensitive characteristics. *Metrika, 67*(3), 251–263. doi:10.1007/s00184-007-0131-x

Yu, M., Ma, Y., Han, F., & Gao, X. (2025). Effectiveness of mandibular advancement splint in treating obstructive sleep apnea: A systematic review. *Journal of Current Research in Oral Surgery, 5*, 25–32. doi:10.51847/AInSXrD9rc

Zar, H. J., Moore, D. P., Andronikou, S., Argent, A. C., Avenant, T., Cohen, C., Green, R. J., Itzikowitz, G., Jeena, P., Masekela, R., et al. (2024). Principles of diagnosis and treatment in children with acute pneumonia. *Interdisciplinary Research in Medical Science Special, 4*(2), 24–32. doi:10.51847/4RVz1Zxy4h

Zhang, Y., Pan, A., Wang, J., Pan, X., Chen, J., Li, H., Cao, A., & Liu, G. (2023). Assessing the role of play therapy in easing anxiety and despair in children with cancer. *International Journal of Social and Psychological Aspects of Healthcare, 3*, 40–48. doi:10.51847/S7vZ2lgmuc