

## Review of Literature

Key reference	Key Method	Strengths	Weaknesses	Findings
Pierre, J. M. (2019).	Standardized psychometric testing	<ul style="list-style-type: none"> <li>• Identification of false malingered auditory verbal hallucinations</li> <li>• Detection of mediating factors and phenomenological features</li> <li>• Determination of AVH factors leading to suicide</li> </ul>	<ul style="list-style-type: none"> <li>• Assessment of malingered AVH do not explain the pneumonology</li> <li>• The assumptions of voice hearers are not explanation of clinical diagnosis of malingered AVH</li> </ul>	<p>Rates of malingering predicted to be common as 65 % of jail inmates receiving psychiatric sessions, 18 % of those common population with psychological disorder.</p> <p>Variations of voice-hearing among hearers provides detailed diagnosis of malingered AVH for forensic researchers and clinicians.</p> <p>Voice-hearing claims do not prove of false positives and false negatives evidences, and can not be applied in assessment of malingering AVH</p>
Hall, R. C., & Hall, R. C. (2007).	Self-reports posttraumatic stress disorder (PST) indicators, questionnaires, specifically the Personality Assessment Inventory (PAI) and the Mississippi Scale (MSS)	<ul style="list-style-type: none"> <li>• Discuss the sign of malingering among PTSD cases</li> <li>• Identify varying indicators of phenomenology of true PTSD and malingering</li> </ul>	<ul style="list-style-type: none"> <li>• Due to review-based study, there is no direct evidence of malingering among PTSD cases</li> <li>• Lack of comparison among PSTD real cases and malingering in context of general population</li> </ul>	<p>(have no statistics)</p> <p>This study reported signs and indicators of malingering PTSD in form of checklist information.</p> <p>It provided future diagnostic criteria for assessment of posttraumatic stress disorder (PST) malingering</p>

Bass, C., & Halligan, P. (2014).

Self-reports, symptom validity testing for diagnosis of factitious disorders

- Provides the detection and information of illness deception or malingering
- Detection of indicators of abnormal health-care-seeking behavior/ illness deception
- Absence of data on on-medical factors for diagnosis and treatment of illness deception or malingering
- Lack of clinical findings and perception about illness deception

(Have no statistics)  
The study reported cluster of illness-related symptoms for factitious disorders and malingering among general population through management of behavior.

Ali, S., Jabeen, S., & Alam, F. (2015).

Diagnostic and Statistical Manual of Mental Disorders, interview, self-reports and psychometric investigations of posttraumatic disorder

- Distinguishes the symptoms of real posttraumatic disorder (PTSD) and malingering among patient population
- Provides diagnosis approaches for detection
- Review based approach does not describe real state of malingering
- Lacks management strategy to control malingering behavior among

Approximately, 20 to 30 % people with factitious and malingering behavior have assessments from self-reporting.

Self-Report Nature leads to high ratio of Malingered PTSD and increase in seek of financial incentives among population

- of malingering behavior among patients
- Aware the public by the consequences of self-report nature

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**Studies for identifying survey/disease falsification: data on malingering behavior**

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Fang, X., Sun, Y., Zheng, X., Wang, X., Deng, X., & Wang, M. (2021).

Use of eye-tracking method during Questionnaire surveys

- Highlighted advantages and disadvantages of Questionnaire among various behavioral studies
- Identification of poor reliability and misconception chances among questionnaire-based studies of eye-tracking

- Poor comparative analysis of lying and telling truth about eye-tracking during survey through question
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The study reported very little difference among lying and truth about pupil size; as  $p = 0.722$   
 The correlation among blink count and frequency reported as  $r = -0.006$ ,  $p = 0.006$   
 Eye-tracking signs of lying did not identify the malingering or deception illness.

Wang, Y., Ng, W. C., Ng, K. S., Yu, K., Wu, T., & Li, X. (2015).	Implementation of electroencephalography (EEG) in interviews for assessment of deception	<ul style="list-style-type: none"> <li>Study highlighted importance of network scale from EEG in truth detection in interviews</li> <li>Provides reliable detection through recording of stimulus delivery phase</li> </ul>	<ul style="list-style-type: none"> <li>Poor comparison among lying and truth telling condition. Only detecting truth through EEG</li> </ul>	<p>The value of Response time (correlation) analysis has been reported as <math>p = 0.058</math> which highlights negative relationship among AV cortex and response time to detect truth.</p> <p>From EEG signals assessment in both the WE and NE activities during the stimuli implementation stage, the finding of this research offered intuitive evidence for distinct aspects of taught lying with respect to instructed truth-telling situations in network scale (SDP)</p>
Schroeders, U., Schmidt, C., & Gnambs, T. (2022).	Assessment of deception through test-taking behavior and response time	<ul style="list-style-type: none"> <li>Defines the state of careless responding and its association with deception among various surveys</li> </ul>	<ul style="list-style-type: none"> <li>There is no implication of this approach in empirical studies</li> <li>There is no strategy defined for diagnosis of aberrant response patterns</li> </ul>	<p>The study reported the deviation of responses from ideal to real world if conducting a survey among defined population.</p>

Summary

## Challenges in Malingering detection/ Underestimated rate of malingering

1. Clinician often have low suspicion for malingering
2. “physician's bias” that presumes help-seeking patients have a disease or disorder.
3. Clinicians tend to be more concerned about inappropriately diagnosing malingering (i.e., false positives) than missing the diagnosis of malingering (i.e., false negatives),
4. In the clinical setting, malingering and psychosis are also not mutually exclusive
5. Malingering is rarely used and often unavailable.
6. malingering may be harder to detect when individuals possess real clinical experience of psychiatric symptoms

## Factitious disorders:

Factitious disorder imposed on another (FDIA) formerly Munchausen syndrome by proxy (MSP) is a mental illness in which a person acts as if an individual he or she is caring for has a physical or mental illness when the person is not really sick.

FDIA are considered mental illnesses because they're associated with severe emotional difficulties.

Clinical Application in detecting falsification of psychological disorder:

1. [Assessing Malingered Auditory Verbal Hallucinations in Forensic and Clinical Settings](#)
2. [The detection of malingered psychosis](#)
3. [Detection of Malingered PTSD: An Overview of Clinical, Psychometric, and Physiological Assessment: Where Do We Stand?](#)
4. [Factitious disorders and malingering: challenges for clinical assessment and management](#)
5. [Multimodal Approach to Identifying Malingered Posttraumatic Stress Disorder: A Review](#)

Studies for identifying survey/disease falsification: [data](#)

### [Assessing Deception in Questionnaire Surveys With Eye-Tracking](#)

Summary:

- whether eye-tracking could contribute to the detection of deception in questionnaire surveys (with camera)
- pupil size and fixation behaviors are both reliable indicators
- Blink and saccade behaviors do not seem to predict deception. Deception resulted in increased pupil size, fixation count, and duration.
- respondents focused on different areas of the questionnaire when lying versus telling the truth.
- (SVM) deception classifier achieved an accuracy of 74.09%.

Comment:

cons: require camera during the survey

### [An Electroencephalography Network and Connectivity Analysis for Deception in Instructed Lying Tasks](#)

Summary:

The result of the study provides evidence for distinguishable features of instructed lying with respect to instructed truth-telling conditions in a network scale from EEG signals analysis in both the WE and the NE tasks during the stimulus delivery phase (SDP).

### [Detecting Careless Responding in Survey Data Using Stochastic Gradient Boosting](#)

Summary:

**Table 1.** Overview of Data-Driven Mechanisms to Detect Careless Respondents.

Index (Abbr.)	Description	Strengths	Weaknesses	Key references
Statistical outlier functions Mahalanobis distance (Maha.)	Multivariate distance between a respondent's response vector and the vector of sample means	<ul style="list-style-type: none"> <li>• Easy to calculate and understand</li> <li>• Widespread usage</li> </ul>	<ul style="list-style-type: none"> <li>• Effective only for truly random responses</li> </ul>	Mahalanobis (1936)*, Meade & Craig (2012)
Consistency analysis Synonym/antonym score (Ant.)	Within-person correlation between highly correlated item pairs (e.g., $ r  > .60$ )	<ul style="list-style-type: none"> <li>• Good, sensitive detection of careless respondents</li> </ul>	<ul style="list-style-type: none"> <li>• For semantic synonym/antonym score similar/contrasting worded items</li> <li>• Varying and arbitrary cutoff for correlation</li> </ul>	Meade & Craig (2012), Maniaci & Rogge (2014), Curran (2016)
Even-odd consistency (EvenOdd)	Within-person correlation across unidimensional subscales formed by even-odd split halves	<ul style="list-style-type: none"> <li>• High scale dependency</li> </ul>	<ul style="list-style-type: none"> <li>• Relies on unidimensional scales</li> <li>• Sufficient amount of items</li> </ul>	Meade & Craig (2012), Curran (2016)
Intra-individual response variability (IRV)	Intra-individual standard deviation across a set of consecutive item responses	<ul style="list-style-type: none"> <li>• Very easy to calculate and understand</li> </ul>	<ul style="list-style-type: none"> <li>• Should be calculated across multiple constructs and reversely coded items</li> <li>• Both low and high variability might indicate careless responding</li> </ul>	Marjanovic et al. (2015)*, Dunn et al. (2018)
Response pattern functions Longstring (Long.)	Maximum (or average) of consecutive items answered with the same response option	<ul style="list-style-type: none"> <li>• Easy to calculate and understand</li> </ul>	<ul style="list-style-type: none"> <li>• Uniform response scale</li> <li>• Needs larger sets of items covering different constructs</li> <li>• Arbitrary cutoff</li> </ul>	Johnson (2005)*
Number of Guttman errors	Number of item pairs that behave contrary to expectations regarding the solution probabilities	<ul style="list-style-type: none"> <li>• Nonparametric version</li> </ul>	<ul style="list-style-type: none"> <li>• Relies on large sample sizes</li> <li>• Rather complicated to calculate</li> </ul>	Meijer et al. (1994)*, Niessen et al. (2016)
Polytomous $U_3$ person-fit statistics	Extent to which a person's nonparametric polytomous IRT estimate matches the probability of correctly solving items	<ul style="list-style-type: none"> <li>• Nonparametric version</li> </ul>	<ul style="list-style-type: none"> <li>• Relies on large sample sizes</li> <li>• Rather complicated to calculate</li> <li>• Presupposes unidimensional scales</li> </ul>	Emons (2008)*
$Z_n$ statistics ( $Z_n$ )	Extent to which a person's polytomous IRT estimate corresponds to the probability of correctly solving items	<ul style="list-style-type: none"> <li>• Uses information on the structure of the measure</li> </ul>	<ul style="list-style-type: none"> <li>• Relies on large sample sizes</li> <li>• Rather complicated to calculate</li> </ul>	Drasgow et al. (1985)*

Note. References marked with an asterisk (\*) are key references. The intra-individual response variability is also known as inter-item standard deviation and can also be classified as a response pattern function. The abbreviation in parentheses is used in the Results section. IRT = item response theory.