

Exploring Suspension of Disbelief in healthcare simulation: A scoping review protocol.

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Funding- No funding support has been used.

Word Count- Text 2495

Abstract 209

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33 Abstract

34 **Introduction-** Suspension of disbelief (SoD) is a concept that relates to participants in healthcare
35 simulation being willing to suspend their disbelief, being able to accept the unreal elements of a
36 simulation but still act as if the situation was real, so that they may become immersed in the
37 simulation. However, the evidence to support this commonly used concept is not clear. This protocol
38 sets out the methods to be used to undertake a scoping review of the literature relating to SoD in
39 healthcare simulation.

40 **Methods-** A scoping review methodology will be used to undertake a comprehensive database (I:
41 MEDLINE, Psychology and Behavioural Sciences Collection, CINHAL Plus with Full text, APA PsycINFO
42 APAPsycArticles, AMED- The Allied and Complementary Medicine Database and Scopus) literature
43 search focussing on healthcare simulation following the Population, Concept and Context framework
44 (healthcare professionals, SoD and simulation). Included literature will be assessed using the Mixed
45 Methods Appraisal Tool (MMAT) for primary research papers and the Authority, Accuracy, Coverage,
46 Objectivity, Date, Significance (ACCODS) checklist for grey literature.

47 **Analysis-** Data analysis will be undertaken using thematic analysis and narrative reporting.

48 This work will contribute to the wider understanding of the concept within healthcare simulation. It
49 will help to provide guidance and a focus for future research into the concept.

50

51 Introduction

52 Healthcare simulation has adopted a variety of concepts from different fields throughout its
53 evolution. One such concept is the SoD which originated in the field of literature as a concept that
54 writers needed to create a sense of belief in what was being read, heard or seen. Dieckmann, Gaba
55 and Rall¹ suggested SoD in simulation as being a state that is created by the facilitator to help
56 participants feel immersed in their simulation experiences. While the concept is widely accepted in
57 practice as a requirement for healthcare simulation² it is not clear how this is defined and achieved,
58 and whether it contributes to the effectiveness of a simulation.

59 This scoping literature review aims to explore the concept of SoD to help form an understanding of
60 how it is described within the healthcare simulation literature, whether there is any evidence or
61 perceptions on what is required to achieve it, and its impact on learning.

62 Background

63 Dieckmann² describes the requirements of participants in healthcare simulation to be in the
64 'presence' of the simulation. He identified two cues of healthcare simulation, reality and fiction, that
65 impact on the ability of participants to engage. Healthcare simulation has seen the SoD to be a
66 'means to an end' for participants to achieve immersion and a sense of realism during scenarios³
67 However, Dieckmann, Gaba and Rall¹ highlight the importance of creating the optimal conditions for
68 participants to be able to achieve SoD.

69 The concept of SoD originates from the field of literature. Samuel Coleridge is credited with
70 describing the term in his work, *Biographia Literaria*⁴ in 1817. This seminal work described the
71 necessity of authors to create such an environment for the audience that they are able to believe
72 what they are seeing, hearing or reading with the knowledge that it is not real.

73 In line with the literary history, the concept has been extensively explored within the arts. In
74 particular, there has been a good understanding of the importance of SoD in encouraging
75 engagement with the arts and media. Ji and Raney⁵ proposed a model of entertainment where SoD,
76 fed by the narrative of realism and external realism leads to the emotional and cognitive
77 involvement of audiences. This puts the emphasis on the producers to create the necessary realism
78 conditions for audiences to experience SoD and therefore become emotionally and cognitively
79 involved in the entertainment performance.

80 More recently, the field of robotics have looked at the importance of willing the SoD within social
81 robots. Duffy and Zawieska⁶ describe five challenges: temporal limitations, control over context,
82 overlap of fiction and reality, and conversation and strangeness. All are considered important to the
83 science of robotics in ensuring believability in social robots and are seen as needing to be overcome
84 to enable meaningful social interaction with social robots.

85 Despite the presumed requirement to understand SoD in healthcare simulation and the extensive
86 work undertaken to understand it within other disciplines, it does not appear to have been explored
87 in detail within the field of healthcare simulation. In addition to the work of Dieckman Gaba and Rall¹
88 and Dieckmann², Muckler³ has explored the concept, describing some of the attributes thought to
89 contribute to the creation of SoD. Muckler and Thomas⁷ researched the lived experiences of nursing
90 students suspending disbelief during simulation-based education events. This showed that
91 environment and tempo of the simulation were important determinates but also that apprehension
92 and confidence with both simulation and the topic of simulation contributed to the participants
93 ability to suspend. The International Nursing Association for Simulation Learning (INACSL), relate SoD
94 to the concept of fidelity⁸ (another highly debated concept in healthcare simulation). However, to
95 the authors knowledge, there has not been any published literature review scoping and exploring
96 the use of the SoD term within healthcare simulation to date.

97 **Research Aims**

98 This scoping review aims to systematically identify and map a range of literature to answer the
99 following research question: How is the term SoD defined and described in the healthcare simulation
100 literature? What evidence or strategies are there of how to achieve SoD? What impact does SoD
101 have on outcomes of the simulation activity?

102 **Objectives**

- 103 • To identify how the term SoD is defined in the healthcare simulation literature.
- 104 • To explore how SoD is described within the literature and practiced.
- 105 • To identify any evidence or strategies that claim to effectively create SoD.
- 106 • To assess SoD's importance in relation to and impact on the intended outcomes in a
107 healthcare simulation.

108 **Methods**

109 This scoping review will follow the Joanna Briggs Institute (JBI) methodology⁹ for scoping reviews.
110 These guidelines will ensure that the review is rigorous in its process and that the review is

111 appropriately and accurately documented. The review will also conform to and use the Preferred
112 Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews (PRISMA-
113 ScR)¹⁰. To undertake the review, a Population, Concept and Context (PCC) framework was
114 developed, as suggested by the JBI⁹. This assisted in converting the research question into a
115 comprehensive search strategy.

116 **Eligibility Criteria**

117 Scoping reviews allow the researcher to explore the extent, range and nature¹⁰ of the literature and
118 help to identify potential gaps in the literature¹¹ that could guide future research efforts. This
119 requires the scoping review to encompass a diverse range of literature to address the question being
120 reviewed. The eligibility criteria that will be applied to identify relevant literature will follow the PCC
121 framework described earlier.

122 *Population*

123 We will include all registered Health Care Professionals (HCP) and trainee HCPs. For the purposes of
124 this review, the definition by Sergen's Medical Dictionary¹² for a HCP will be used. This defines an
125 HCP as a person who is associated with or registered with a HCP regulatory body.

126 *Concept*

127 Articles that make reference to the concept of SoD will be included.

128 *Context*

129 Articles that include healthcare simulation will be included. Articles that focus on educational
130 approaches that do not include simulation will be excluded. Studies from outside of healthcare and/
131 or no focus on healthcare will be excluded

132 *Types of Studies.*

133 This review will include all types of primary research from peer reviewed content (Qualitative,
134 quantitative and mixed methods research) as well as peer reviewed non research articles such as
135 editorials, opinion papers, in practice reports and essays. Book chapters will be included where
136 relevant as will doctoral theses if this is focussed on the concept and meets the inclusion criteria.
137 Excluded literature will include posters, conference abstracts and letters to editors. These are
138 unlikely to go into sufficient detail to provide meaningful data for synthesis.

139 Due to the nature of the concept and the scoping approach, no time limit will be applied and there
140 will be no limit on geographical location or language. Any papers that are not in English will have
141 translation sought. If this is not possible then they will be excluded, and this will be noted in the
142 reporting.

143 Article selection will be carried out by two reviewers (First screening: PG, DP; second screening (PG,
144 SMW) at each point, with a third reviewer overseeing the process and resolving areas of
145 disagreement if needed.

146 **Information Sources.**

147 The following databases will be systematically searched to identify the relevant literature: MEDLINE,
148 Psychology and Behavioural Sciences Collection, CINHAL Plus with Full text, APA PsycINFO
149 APAPsycArticles and AMED- The Allied and Complementary Medicine Database, all accessed via
150 EBSCOhost health science research database. Scopus (Accessed via Elsevier) will also be searched.

151 Grey literature will be searched via the website, opengrey.eu. In addition, the International Journal
152 of Healthcare Simulation (IJoHS) and Journal of Healthcare Simulation (JoHS) will also be searched.
153 While this is not currently an indexed journal it is peer reviewed and directly relates to healthcare
154 simulation. This approach will ensure a diverse and wide ranging examination of the literature.

155 *Search Strategy*

156

157 The PCC approach contributed to the development of search strings of key terms and their
158 synonyms as outlined below. The search will employ the use of truncation, proximity operators and
159 wildcards¹⁵ to assist with the search.

160 *Search Strings*

161 With the exception of Scopus, the search terms and query strings set out below will be used:
162 ("Suspension of Disbelief" OR "Suspend* Disbelief" OR Disbelief OR Captivation OR Engage* OR
163 Engrossed OR Immersed) N5 Simula*

164 AND

165 "Simulation Training" OR "Simulation based education" OR "Simulation education" OR "Clinical
166 Simulation" OR "Simula*"

167 AND

168 "Nurs*" OR "Doctor" OR "Medic*" OR "AHP" OR "Allied Health Professional" OR "Physio*" OR
169 "ODP" OR "Operating Department Practitioner" OR "Pharmacist" OR "OT" OR "Occupational
170 Therapist" OR "Radiographer" OR "Paramedic" OR "Emergency Responders" OR "Midwife" OR "Midwi*"

171

172 For Scopus, due to the differing approaches of the database, the query string will be adapted to
173 meet the requirements of the database but still be equivalent to the terms set out in the other
174 database query strings. The query strings for Scopus are as follows:

175

176 {{Suspension of Disbelief} OR {"Suspend*" Disbelief} OR {Disbelief} OR {Captivation*} OR "Engage*"
177 OR {Engrossed} OR {Immersed}) W5 "Simula*"

178 AND

179 {Simulation Training} OR {Simulation based education} OR {Simulation education} OR {Clinical
180 Simulation} OR "Simula*"

181 AND

182 "Nurs*" OR {Doctor} OR "Medic*" OR "AHP" OR {Allied Health Professional} OR "Physio*" OR "ODP"
183 OR {Operating Department Practitioner} OR {Pharmacist} OR "OT" OR {Occupational Therapist} OR
184 {Radiographer} OR {Paramedic} OR {Emergency Responders} OR {Midwife} OR "Midwi*"

185

186 *Data Management.*

187 The completed literature search will be stored within the collaborative AI research platform
188 Rayyan¹³. This will be used as a central storage repository to aid collaboration between the
189 reviewers. Additionally, it aids the identification and resolution of duplicate articles, helping to sort
190 the literature in the first pass review of the results. This aids the selection process.

191 *Selection Process.*

192 The data selection process will be undertaken in two phases. The first phase will see the article title
193 and abstract screened against the eligibility criteria. This will be undertaken by two reviewers (PG,
194 DP). The second phase will see two reviewers independently reviewing remaining full text articles
195 against the eligibility criteria to leave the final eligible papers (PG, SMW). If there are any

196 discrepancies in both phases or the reviewers cannot agree on an article, the third reviewer will
197 review these and make a final decision. The final eligible papers will then be critically appraised.

198 *Eligibility Criteria*

199 To be included, the articles must have:

- 200 • Healthcare simulation focus.
- 201 • Have reference to SoD within title, abstract or full text.
- 202 • All languages will be included, and translation sought where possible.
- 203 • All geographical locations will be included and there will be no time restriction on
204 submissions.

205 The following will be excluded:

- 206 • No reference to SoD or derivatives of.
- 207 • Not related to healthcare simulation.
- 208 • Mathematical modelling simulation focussed papers. Articles relating to chemical
209 suspension.
- 210 • Articles relating to patient immersion.
- 211 • Articles relating to animal studies.

212

213 **Data Extraction.**

214 Data extraction will be undertaken using an extraction form (Microsoft Excel spreadsheet)
215 developed by the reviewers to extract and analyse key information from the eligible literature. This
216 information will be focussed on answering the research questions. To ensure that relevant results
217 can be extracted and that potential mixed research methodology can be easily compared, the tool
218 will be piloted as suggested by Li, Higgins and Deeks¹⁴.

219 Data to be extracted will include the author(s), year of publication, country of publication, title,
220 aims/ purpose, type of article (Primary or secondary research, other types of literature and if so
221 what), methodology, SoD definition, how the term SoD is used and in relation to what, any
222 evidence/methods describing how SoD is created/ achieved/ applied, any evidence/outcomes
223 relating to SoD and any other comments.

224 *Risk of Bias*

225 To address potential bias, a quality appraisal process will be carried out on all articles using
226 structured validated tools. The Mixed Methods Appraisal Tool (MMAT)¹⁵ will be used to appraise
227 eligible research articles in relation to their validity and methodological rigour. The MMAT tool is
228 versatile and able to appraise qualitative, quantitative or mixed methods research studies. This
229 versatility will help to reduce bias by ensuring consistency in application by reviewers. For all other
230 literature, the Authority, Accuracy, Coverage, Objectives Date Significance checklist (ACCODS)¹⁶ will
231 be applied to assess the quality. As per the MMAT tool, this will be used by both reviewers.

232 **Data Synthesis.**

233 The data analysis and synthesis will be carried out in accordance with the research question set out.
234 This will include tabular and narrative methods of knowledge synthesis. The tabulated extraction
235 results will be reported and data from the extraction tool used to graphically display appropriate

236 results. Further synthesis will be through thematic analysis and reported as a narrative. Any
237 additional or extended synthesis will involve narrative and/ or a tabular format if appropriate, in
238 particular any consistencies in the way SoD is described and created. This approach is consistent
239 with the guidance from the JBI⁹ and will ensure that a full results analysis is identified and shared. It
240 is anticipated that the literature extracted will contain a mixture of research and non-research
241 articles. Thematic analysis and narrative discussion will allow for flexibility in the synthesis of the
242 data.

243 *Limitations.*

244 There are some notable limitations that need to be considered. Firstly, where selected articles
245 cannot be accessed via the means available to the researchers, the article authors will be contacted
246 for a copy of the article. If this is not possible then the article will be excluded. This will be recorded
247 for transparency. Secondly, while the term, suspension of disbelief, has been used in some notable
248 resources such as the work of Dieckmann² and Rodgers¹⁷ it is associated with other terms and
249 concepts such as immersion. Therefore, these terms have been included within the search strategy
250 but with the knowledge that this may lead to a large dataset to manage. This will be addressed by
251 application of the inclusion/ exclusion criteria which will ensure that articles that do not specifically
252 refer to SoD are excluded. By doing this, the strategy is expected to encompass the widest possible
253 initial results with the knowledge that the first screen will undoubtedly include a wider range of
254 irrelevant literature but include the most amount of relevant literature to be searched. Finally,
255 there is the possibility that the concept and its terminology may not be recognised or used in
256 different cultures and countries, or in the same way that it appears to be used and understood
257 within the English-speaking world. This will be explored further through analysis of final results
258 location and any wider literature identified.

259

260 **Conclusions**

261 This scoping review will explore the use of the concept of SoD. It will help to contribute to the wider
262 understanding of how the simulation community are defining and achieving SoD, as well as any
263 associated evidence of its creation and benefit. We aim to systematically search the literature and
264 report our findings following a systematic scoping approach. The results for the review will help to
265 identify not only current practice but also any knowledge gaps that future research could address
266 and inform simulation practice. With the evolution of more complicated simulation methodologies,
267 it is pertinent to explore fundamental concepts of healthcare simulation and ensure that we
268 understand these well to help inform future development of healthcare simulation.

269

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