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Review Article

# Exploring Suspension of Disbelief During Simulation-Based Learning

**Virginia C. Muckler, DNP, CRNA, CHSE***

*Duke University School of Nursing, Nurse Anesthesia Program, Durham, NC 27710, USA*

**KEYWORDS**
suspension of disbelief;
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**Abstract:** Rooted in aviation and used consistently in the training and preparation of health care professionals for decades, simulation is an innovative teaching strategy that facilitates experiential learning in a safe learning environment. Effective simulation hinges on the ability of the learner to suspend disbelief. Participants must accept the otherwise unrealistic aspects of clinical simulation, and yet the concept of suspension of disbelief has not been fully explored in the field of nursing. What allows some simulation participants to fully believe or immerse themselves in simulation while others struggle to ''pretend''? What are the determinants of a participants' ability to suspend disbelief during simulation-based learning activities? Factors that contribute to the learner's ability to suspend disbelief include fidelity, psychological safety, emotional buy-in, the fiction contract, and how learners assign meaning. Various other factors that enable or impede one's ability to immerse in simulation are considered yet need further exploration.

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Rooted in aviation and used consistently to train health care professionals for decades, simulation has been shown to enhance clinical performance in health care settings (Meyer, Connors, & Gajewski, 2011; Singh et al., 2015; Zhang, Cheng, Xu, Luo, & Yang, 2015). Participants and facilitators believe that simulation is an innovative teaching strategy that facilitates hands-on learning and leads to the development of clinical competence and increased confidence levels before the initiation of direct patient care (Brydges, Nair, Ma, Shanks, & Hatala, 2012; Hayden, Smiley, Alexander, Kardong-Edgren, & Jeffries, 2014; Lateef, 2010; McCaughey & Traynor, 2010). One contributing factor toward effective simulation is the suspension of disbelief (SOD) or the ability of participants to believe the unbelievable and resist judgment of the simulation's authenticity—the cognitive act of accepting an imposter (simulation) as genuine (clinical). The concept of suspending disbelief applies to many genres such as literature, movies, simulation, psychology, technology, video games, animation, magic, and fairy tales (Duffy & Zawieska, 2012; Ferri, 2007; Holland, 2009; Rudolph, Simon, & Raemer, 2007; Serby, 2011), yet the SOD as it applies to health care simulation, is not well understood (Table 1).

The concept of SOD originated in 1817. From Samuel Taylor Coleridge, a poet and philosopher who during the romantic period, believed that readers would suspend their doubt and accept the unimaginable if the writer's work

* Corresponding author: chris.muckler@duke.edu (V. C. Muckler).

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resembled truth or reality (Chandler & Munday, 2014; Coleridge, 1817). While Coleridge identified that SOD allowed readers to enjoy a work of fiction, clinical simulation methods ask participants to suspend disbelief to become so engrossed that they are convinced the simulation is real.

**Key Points**

- The ability to suspend disbelief leads the participant to further immerse and engage in simulation activities.
- Suspension of disbelief is affected by aspects of fidelity, emotional buy-in, and how learners assign meaning.
- Participants formulate opinions and assign meaning to simulation activities based on individual factors.

Clinical simulation participants are encouraged to accept the unrealistic aspects of simulation as the means to an end. Despite recent evidence illuminating the benefits of simulation and the positive impact it has on participants' ability to achieve learning outcomes, SOD is not well studied in the clinical context. What allow some simulation participants to fully believe or immerse themselves while others struggle to "pretend"? If the potential barrier to learner engagement and immersion in simulation is the learner's ability to suspend disbelief (Adamson, 2015; McCaughey & Traynor, 2010; Mills, Wu, Williams, King, & Dobson, 2013; Smith, 2014), what determines a participant's ability to suspend disbelief during simulation-based learning activities?

## Suspension of Disbelief Determinants

### Fidelity

Aspects of SOD overlap with aspects of fidelity. This altered reality or degree of realism is optimized by the physical, functional, and psychological fidelity of the simulation. Physical fidelity encompasses the equipment, supplies, sounds, staff, and setting in which the scenario might actually occur (i.e., suction is available and on following nasogastric tube placement or when a Certified Registered Nurse Anesthetist responds to a call for an emergency intubation; a noninvasive blood pressure cuff is available in the triage area of the simulated emergency department; an audible alarm sounds when the patient's pulse oximetry decreases to 80%). Participants need to be well oriented to the capabilities and limitations of the simulated environment if they are to fully engage in the learning experience. The room design should be similar to the work environment of the hospital. The equipment should be familiar to the participant, and any deficiencies from reality should be introduced during the prebrief (Page-Cutrara, 2014; Rudolph, Raemer, & Simon, 2014). Appropriate resources should be made available during the simulation such as multimedia displays for vital signs, documentation, and medical history to increase the realism of the simulation experience (Cheng, Duff, Grant, Kissoon, & Grant, 2007).

The ambiguous concept of fidelity has been discussed for >50 years (Hays, 1980; Rehmann, 1995) as an expansive number of categories have emerged. Functional fidelity refers to the realistic responsiveness of the simulator. This type of fidelity is demonstrated by improvement of the manikin's lung sounds following chest physical therapy, administration of albuterol, and endotracheal tube suctioning. Psychological fidelity is "the degree to which the trainee perceives the simulation to be a believable surrogate for the trained task" (Beaubien & Baker, 2004, p. i52) and differs from SOD. The degree of psychological fidelity created by the facilitator affects the participant's ability to suspend disbelief, yet the onus of psychological fidelity lies with the facilitator who aims to create a believable environment. The onus of SOD lies with the participant and his ability and willingness to believe. According to Gillman, Widder, Blaivas, & Karakitsos (2016), psychological fidelity ignites emotion in participants and is perhaps the most important type of fidelity. The participant acting as the recorder in a simulated code situation, for example, experiences tachycardia, anxiety, and a sense of dread or doom. The stress of the situation is real for the recorder, who is visibly perspiring.

With references dating to 1962, the U.S. Army Research Institute for the Behavioral and Social Sciences reviewed various types of fidelity including equipment, environmental, psychological, and behavioral fidelity with obscure definitions (Hays, 1980). This report also suggests that the degree of fidelity influences the way the simulation is accepted and recognizes that some participants sense and perceive the simulation differently. What are these sensory and perceptual differences and what influences these differences? Do these differences affect the participant's ability to suspend disbelief?

Wilson and Wittmann-Price (2015) believe that SOD during simulation is vital in order for the participant to maximize learning and knowledge retention. They also believe that it is the simulation facilitator's responsibility to determine and implement the most effective techniques to ensure physical and functional fidelity for participant immersion in simulation. However, SOD, as part of psychological fidelity,

**Table 1** Determinants of a Learner's Ability to Suspend Disbelief During Simulation-Based Education

| Determinants | |
|---|---|
| Fidelity | Attitudes |
| Fiction contract | Previous learning experiences |
| Psychological safety | Feelings of presence |
| Emotional buy-in | Personality differences |
| Assigned meaning | Imagination |

is dependent on the learner (Rudolph et al., 2007; Wilson & Wittmann-Price, 2015). Participants must consciously augment their perception during a simulated activity to optimally immerse themselves in it and function *as if* the activity is an authentic event (Vaihinger, 1935).

Simulation facilitators bear the responsibility to create an environment that promotes SOD by providing the participant with a learning experience that most closely resembles the real-world experience (Cheng et al., 2007; Hamstra, Brydges, Hatala, Zendejas, & Cook, 2014). Many believe that simulation experience that replicates the real world leads to greater learner involvement and a more effective simulation (Bullock, Davis, Lockey, & Mackway-Jones, 2015; Davis, 2014; Dieckmann, Gaba, & Rall, 2007a; Durham & Alden, 2008). When learners suspend disbelief during simulation, they can verbalize and complete tasks as though they are engaged in a real patient encounter, and the augmented perception continues to build upon itself making it easier to delve into the experience wholeheartedly. Participants can also feel the raw emotion of the scenario. Simulation facilitators who design realistic scenarios and environments provide an opportunity for participants to psychologically immerse themselves in a simulated event that spurs emotional, psychological, and physical responses similar to those felt in an actual event. Participants are able to perform tasks and interventions while allowing for assessment of their ability and preparedness for real-life clinical scenarios (Rudolph et al., 2014). In addition, Kneebone (2010) suggests that in order for simulation to serve as a proxy for clinical experience, the simulation must recreate the same sensations and perceptions that would be generated in an event with a patient. An effective simulated clinical experience requires immersing the learner in a scenario that is representative of true patient care; the scenario must mimic the actual environment in which the event would take place with sufficient realism to allow the participant to suspend disbelief (Waxman, 2010). Essentially, the learner can get ''caught up'' in the experience and, to an extent, forget that it is not real.

## The Fiction Contract

Simulation boasts a safe learning environment that produces a climate of immersive, reflective, and multifaceted learning where skills can be repeated and refined (Rudolph et al., 2014; Sadideen, Hamaoui, Saadeddin, & Kneebone, 2012). A learner's ability to immerse in simulation is multifactorial and somewhat depends on fidelity and SOD. When learners suspend disbelief in simulation, they cognitively agree that the situation is real and they are functioning in an actual clinical encounter (Power et al., 2016; Rudolph et al., 2014). They believe the story that is being told despite knowing it is actually a substitute for a real encounter; it is pretend, make believe, or role play (i.e., the nursing student is playing the role of a nurse in preparation for the profession following graduation). This unspoken agreement to suspend disbelief becomes codified with the fiction contract (Dieckmann, Manser, Wehner, & Rall, 2007b; Rudolph et al., 2007, 2014; Simon, Raemer, & Rudolph, 2010). The fiction contract is introduced before simulation activities and serves as an opportunity to engage learners in simulation (Dieckmann, Friis, Lippert, & Ostergaard, 2014; Simon et al., 2010), set ground rules, establish expectations including those of communication and mutual respect (Arafeh, Hansen, & Nichols, 2010), and reassure learners that the intent is for learning to occur without repercussions for mistakes (Rudolph et al., 2014). The fiction contract encourages engagement before, during, and after simulation. It serves as an agreement that facilitators will do their best to optimize the simulation experience, and learners will do their best to overlook the unrealistic aspects of the simulation and immerse in the experience merely for the sake of learning. Cheng et al. (2007) encourage participants to be psychologically engaged in their learning and emotionally committed to the experience to achieve full immersion while instructors are encouraged to remain as hands-off as possible during the simulation.

## Psychological Safety

Reassurance of intentions is essential to create a safe emotional environment, an environment that is conducive to learning, and one in which learners feel they have psychological safety. Psychological safety in the workplace involves the perceptions individuals have about the consequences of taking risks (Edmondson, 1999, 2002, 2003). To make the most of a learning opportunity, individuals must feel confident enough to take risks, ask questions, and overcome the fear of being humiliated or reprimanded for mistakes or poor decisions. A sense of psychological safety authorizes employees to overcome their fears and step out of their comfort zones. Similarly, learners engaged in simulation, who feel a sense of psychological safety, are more apt to overcome fears of embarrassment and failure; they sense that they will be safe and accepted despite mistakes. This allows them to engage more fully in simulation. Some simulation activities ask learners to attempt to play a role with which they are not completely familiar and by taking this risk, develop a greater understanding of the role and the skills it requires. Despite oversights or errors, learners feel confident that peers and instructors will accept and respect them regardless of what transpires in the simulation activity. Learners are willing to be vulnerable and risk their reputations when they trust their instructors (West, Tjosvold, & Smith, 2003). How do facilitators establish this sense of trust with and among learners?

To create a safe container or safe learning environment in simulation Rudolph et al. (2014) suggest facilitators clarify expectations, create a fiction contract, execute the

simulation with attention to details, and respect learners and their psychological safety. After this safe learning environment is established, learners feel secure and less guarded, defensive, and anxious; they will be more open to give and receive knowledge, all of which will result in a more productive learning experience (Rudolph et al., 2014). Similarly, Brighton and Moxham (2012) suggest that the facilitator can promote psychological safety by comprehensively preparing both learner and facilitator, by providing both prebrief and debrief activities in a safe environment, and by providing opportunities for learner feedback. Facilitators should be trained to recognize the negative effects of stress and anxiety, whereas students are provided detailed learning objectives and given adequate orientation to the learning space (Brighton & Moxham, 2012). This is further supported by Brighton, Andersen, and Heaton (2012) in a literature review that examined stress and performance anxiety among nursing students during simulation. They concluded that additional research is needed to determine how facilitators can best assure the psychological safety of students during simulation.

## Emotional Buy-In

SOD is a difficult concept to fully understand and quantify. In attempts to achieve participant buy-in, the simulation must be clearly relevant and invoke the emotions and beliefs of a real-life event. The ability to accept that which mimics reality is dependent on a participant's state of mind and more likely to occur after emotional buy-in is achieved (Bauman, 2012). Emotional buy-in occurs when participants experience an emotional attachment to the scenario; they feel the patient encounter, hear the pulse oximetry monitor alarm, sense the urgency of a simulated code situation, and feel loss when the patient expires. Participants are more likely to function *as if* in reality after emotional buy-in is achieved (Bauman, 2012). The emotional connection allows participants to become emotionally engaged in the simulation for the purpose of learning. The concept of emotional buy-in applies across disciplines including business. The Storytellers and Mergermarket (2013) conducted a mixed methods survey of 100 business executives to explore deal making. The executives reported that those who become emotionally engaged understand the personal role they can play in a deal and that early and continuous communication helps build an emotional connection. A marketing review by Kear (2015) also supports the role of emotions as they pertain to engagement in simulation. If executives recognize that a key means to getting individuals excited about a deal is to create a compelling vision, a certain degree of this is true in simulation. To captivate learners and impassion them, facilitators must secure their emotional engagement by detailing the role of each learner in the simulation (Kear, 2015). This can be accomplished with early, ongoing, and frequent communication that explains roles, expectations, and the purpose of the exercise. The fiction contract may further promote this culture. The facilitator must create a compelling storyline to assist participants in becoming emotionally engaged with the simulation.

## Assigned Meaning

Learners assign meaning to their simulation experiences whether during the prebrief, debrief, or the scenario portion of the experience (Arafeh et al., 2010; Rudolph et al., 2014). Simulation experiences not only differ between learners but may also differ between learner and facilitator, with the facilitator's intended area of focus skewed by the learner's perceptions (Dieckmann et al., 2007a). Learners assign meaning, which varies with the learner's psychological and social experiences (Dieckmann et al., 2007b). Andragogical principles suggest that learning is more meaningful when the content or skill being learned is relevant to the learner and applicable to what he or she is attempting to accomplish (Knowles, 1980). Learners assign meaning to simulation experiences based on their perceptions (Rutherford-Hemming, 2012). Perceptions and meanings assigned to simulation vary as do the individual reactions to simulation. Bauman (2012, p. 105) explains that learner perceptions factor into the phenomenal mode of simulation relating to learners' educational experiences, fidelity, and "emotions, beliefs, and cognitive states that take place during simulation." The phenomenal mode of thinking contributes to the reality individuals experience in simulation and involves emotions, cognition, and self-awareness (Dieckmann et al., 2007a).

In literature, Plutchik (2001) claims that emotions are used by authors to elicit behavioral responses in readers and draw them into the story. The combination of the realistic scenario supported by the fiction contract with emphasis on the psychologically safe environment may similarly assist facilitators to draw participants into the story. Human actions and emotion must be consistent with and support the storyline.

## Additional Determinants of Suspension of Disbelief

Attitudes and previous simulation experiences have an impact on the degree of immersion each participant is able to achieve (Alexander, Brunye, Sidman, & Weil, 2005; Chittaro & Ranon, 2007; DeCarlo, Collingridge, Grant, & Ventre, 2008; Yeun, Bang, Ryoo, & Ha, 2014). In virtual reality and other media environments, a user's willing SOD affects his or her ability to experience presence or a sense of realism (Laarni, Ravaja, Saari, & Hartmann, 2004; Lombard & Ditton, 1997). Conceptually, SOD is similar to feelings of presence (Laarni et al., 2004). Despite fabrications that bridge the unimaginable with the plausible,

**Table 2** Suggested Initial Steps to Facilitate Suspension of Disbelief Before Simulation-Based Learning Activities

| Steps to Facilitate Suspension of Disbelief |
|---|
| 1. Prepare clear, detailed learning objectives |
| 2. Attempt to create a realistic, believable simulation environment |
| 3. Establish an environment of trust and mutual respect that offers participants psychological safety |
| 4. Establish a partnership with learners |
| 5. Establish a fiction contract that specifies expectations from all parties involved in the simulation |
| 6. Conduct a prebrief that clearly orients participants to the learning environment and objectives |
| 7. Offer clarification prior to the simulation activity |

there are many subjective unknowns that determine whether participants will semiconsciously agree to ignore their skepticism, use their imagination, and accept the premise that the simulation is real in exchange for learning. SOD and personality differences such as attentiveness, impulsivity, anxiety level, and extraversion have been shown to partially account for a participant's level of engagement and feelings of presence (Laarni et al., 2004). The interrelated concepts of SOD and feelings of presence suggest personality differences may also affect one's ability to suspend disbelief.

## Conclusion

With today's limited clinical opportunities, Captain James T. Kirk of the USS Enterprise might suggest that simulation allows the learner "to boldly go where no man has gone before" (Roddenberry, Johnson, & Daniels, 1966). Facilitators must work toward a partnership with all participants and emphasize how their individual input collectively contributes to the overall success and achievement of simulation objectives. A determining factor in the decision to immerse in simulation is personal acceptance that the greater goal is that of learning. SOD is an important aspect of simulation, and one that many simulation experts believe is affected by adequate aspects of fidelity (Alinier, 2007; Hamstra et al., 2014; Horcik, Savoldelli, Poizat, & Durand, 2014), psychological safety (Brighton & Moxham, 2012; Rudolph et al., 2014; West et al., 2003), emotional buy-in (Bauman, 2012; Dieckmann et al., 2014; Hupp, Groppel-Klein, Dieckmann, Broeckelmann, & Walter, 2008; The Storytellers and Mergermarket, 2013; Truog & Meyer, 2013), and how learners assign meaning (Dieckmann et al., 2007a), all of which are supported by the fiction contract (Arafeh et al., 2010; Dieckmann et al., 2014; Rudolph et al., 2014; Simon et al., 2010). Despite this agreement, there are gaps in the literature regarding what additional elements contribute to the participant's ability to suspend disbelief.

The Standards of Best Practice: Simulation[SM] developed by the International Nursing Association for Clinical Simulation and Learning provide evidence-based guidelines for simulation and training and aim to advance the science of simulation. The concept of SOD is not defined in Standard I Terminology, nor is it addressed as a responsibility of the facilitator or the learner, but it is linked to educational effectiveness (Hamstra et al., 2014). Perhaps SOD should be defined in Standard I and emphasized as part of the prebrief or addressed in Standards III, V, or IX, which define participant, facilitator, their responsibilities, and simulation design (Boese et al., 2013; Lioce et al., 2013, 2015; Meakim et al., 2013).

As facilitator, what must be considered when attempting to promote SOD? Current suggestions to promote SOD are noted in Table 2 though further research is needed to understand additional determinants of one's ability to suspend disbelief during simulation-based teaching. What facilitates SOD among simulation participants? What is the most effective means to promote immersion? Such investigation may equip facilitators to better assist participants in their quest to suspend disbelief.

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