

# The Excited Utterance Paradox

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## ABSTRACT

Based on nothing more than John Henry Wigmore’s personal belief that a witness under the throes of excitement is unable to fabricate an untruthful statement, the excited utterance exception allows parties to present out-of-court statements to the jury or judge without any of the safeguards the judicial system uses to promote honest and accurate testimony. This Article collects and examines much of the scientific evidence bearing on Wigmore’s premise and identifies two paradoxical conclusions that undermine the exception. First, the premise itself is unfounded; science absolutely does not support the notion that a witness is incapable of lying while emotionally agitated. But, there is a second phenomenon at work that counteracts the premise (were it valid); witnesses under extreme emotional stress are unreliable observers and reporters of the events causing the stress. Thus, in the unlikely event that an occurrence was sufficiently stressful to impede the ability to lie, the stress would also interfere with the ability to perceive and describe the occurrence reliably. Based on this paradox, this Article concludes that the excited utterance exception is both broken and irreparable, and therefore recommends abandoning the excited utterance exception altogether.

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#### INTRODUCTION

A truck driver swerved off the road into an embankment and was badly injured.<sup>1</sup> A second truck driver stopped and helped pull the injured driver from his burning truck.<sup>2</sup> Twenty-three minutes later, the second driver called a friend and described the incident in emotional terms, apparently moved by the severity of the injured driver's condition.<sup>3</sup> When he arrived at his house a couple of hours later, the second driver described the same incident to his wife.<sup>4</sup> The following morning, he described the event to a co-worker.<sup>5</sup> All three times, he told the same story: he was following the injured driver's truck, saw the accident, stopped in Good Samaritan fashion to help, and was traumatized by the experience.

In ensuing litigation, the admissibility of these three out-of-court statements by the second driver was challenged. The court held that the first statement fell within the excited utterance exception to the hearsay rule, coming less than thirty minutes after the accident—a presumptive time limitation for the exception.<sup>6</sup> The court deemed the other two statements outside the exception based on the greater passage of time.<sup>7</sup>

The consequence of an excited utterance is that it comes into evidence without any of the safeguards the judicial system uses to promote honest and accurate testimony such as placing the speaker under oath, cross-examining, and observing the witness's demeanor. The premise of the excited utterance exception is that when a witness is sufficiently emotional following an event, the witness will be incapable of fabricating, and, therefore, these safeguards are unnecessary. What leads the law to presume that extreme stress prevents a witness from lying? What leads the law to presume that a witness so emotionally overwrought as to be incapable of lying is a reliable observer and reporter of the event causing

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1. *Prescott v. R & L Transfer, Inc.*, 111 F.Supp.3d 650 (W.D. Pa. 2015).

2. *Id.* at 654.

3. *Id.* at 655.

4. *Id.* at 659.

5. *Id.* at 657–58.

6. *Id.* at 655–56.

7. *Id.* at 655–56.

the emotional upheaval? What leads the law to presume that thirty minutes is a critical, or even meaningful, period of time in this analysis?

Certainly not science. Edward Cleary, a twentieth-century evidence scholar, wrote, “the rules of evidence largely have been constructed out of anecdotes and unsystematic observation, plus what hopefully passes for reason but could more honestly be labeled conjecture about human behavior.”<sup>8</sup> No doctrine is more heavily based on conjecture than the excited utterance exception.

Psychological studies suggest that stressful events trigger the “flight-or-flight” response, and that deceptive statements are not only possible, they can be a natural component of the fight-or-flight response, such as statements designed to deflect guilt or blame away from the speaker or someone with whom the speaker is aligned. Not only are witness statements under intense stress not immutably truthful, but psychology also informs us that these witness statements are also inherently inaccurate. A traumatic event dramatically increases cognitive load, leading to perception deficits and distortions. Thus, excited witness perceptions tend to be unreliable for many reasons.

Furthermore, when one considers these two scientific principles in juxtaposition, one realizes that they operate in an inverse relationship that systemically undermines the excited utterance exception. The premise of the exception is that as the stress of an incident increases, an observer’s ability to lie decreases. At the same time those stress levels are increasing, however, the reliability of the declarant’s observations and communications is also decreasing. If the stress level were to be so high that the declarant was rendered incapable of lying, any statement the declarant made in that condition would likely be unreliable. This paradox eviscerates the excited utterance exception.

In Part I, this Article will start with a brief overview of the history of the excited utterance exception. In Part II, this Article will discuss the manner in which the courts have applied the excited utterance exception, highlighting the inconsistency in the standards that the courts apply. Part III will discuss some of the existing scholarship critical of the excited utterance exception. Part IV will present some of the scientific data that undermines the foundation of the excited utterance exception. Finally, the Article will conclude by recommending the abolition of the excited utterance exception.

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8. See MICHAEL J. SAKS & BARBARA A. SPELLMAN, *THE PSYCHOLOGICAL FOUNDATIONS OF EVIDENCE LAW* 14 (2016) (quoting Edward W. Cleary, *Evidence as a Problem in Communicating*, 5 VAND. L. REV. 277, 278 (1951–52)). The author is extremely grateful to Professors Saks and Spellman for providing an advance copy of their book.

## I. GENESIS OF THE EXCITED UTTERANCE EXCEPTION

The United States civil litigation system places live oral testimony, given under oath and subject to cross-examination, on a pedestal. Cross-examination is, perhaps, the most probing tool for scrutinizing witness testimony. Justice Marshall described cross-examination as “the greatest safeguard of American trial procedure.”<sup>9</sup> Professor John Henry Wigmore lavished even greater praise on cross-examination, deeming it “beyond any doubt the greatest legal engine ever invented for the discovery of the truth.”<sup>10</sup>

In addition to the probative value of cross-examination, other aspects of live testimony advance the truth-seeking function of trials. Witnesses feel pressure to tell the truth when testifying under oath, either from moral obligation or the threat of perjury prosecution.<sup>11</sup> Live testimony also provides the jury or judge the opportunity to observe witness demeanor to evaluate reliability and credibility.<sup>12</sup> For these reasons, the Federal Rules of Civil Procedure place a strong emphasis on live testimony.<sup>13</sup>

The hearsay rule seeks to protect these truth-promoting benefits of live testimony. Wigmore found origins of the concept of hearsay in the 1500s.<sup>14</sup> Prior to that time, jurors were supposed to bring their outside knowledge to trials and they could properly rely on “the communications of trustworthy neighbors” to advance the “prevailing conviction of the community.”<sup>15</sup> That practice contrasts sharply with today’s jurors, who are typically cautioned to avoid any exposure to information or opinion outside the formal proceeding, and who can be excused for cause if they speak to anyone during the pendency of the case.<sup>16</sup>

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9. *United States v. Inadi*, 475 U.S. 387, 410 (1986) (Marshall, J., dissenting) (quoting *New York Life Ins. Co. v. Taylor*, 147 F.2d 297, 305 (D.C. Cir. 1945)).

10. See Alan G. Williams, *Abolishing the Excited Utterance Exception to the Rule Against Hearsay*, 63 K.L. REV. 717, 719 n.10 (2015) (quoting 5 JOHN HENRY WIGMORE, *EVIDENCE IN TRIALS AT COMMON LAW* § 1367 (James H. Chadbourne ed., 1974)).

11. See *California v. Green*, 399 U.S. 149, 158 (1970) (noting that testimony under oath, “(1) insures that the witness will give his statements under oath—thus impressing him with the seriousness of the matter and guarding against the lie by the possibility of a penalty for perjury; (2) forces the witness to submit to cross-examination, the ‘greatest legal engine ever invented for the discovery of truth’; (3) permits the jury that is to decide the defendant’s fate to observe the demeanor of the witness in making his statement, thus aiding the jury in assessing his credibility”).

12. See *Perotti v. Quinones*, 790 F.3d 712, 723 (7th Cir. 2015).

13. See, e.g., *id.*; FED. R. CIV. P. 43.

14. John H. Wigmore, *The History of the Hearsay Rule*, 17 HARV. L. REV. 437, 437 (1904).

15. *Id.* at 439.

16. FED. R. CIV. P. 47; *Remmer v. United States*, 347 U.S. 227, 229 (1955) (creating a rebuttable presumption of prejudice for communications between a third party and a juror); *Barnes v. Joyner*, 751 F.3d 229, 240 (4th Cir. 2014) (“An impartial jury is one that arrives at its verdict ‘based upon the evidence developed at trial’ and without external influences.” (citation omitted)); *Fullwood v. Lee*, 290 F.3d 663, 682 (4th Cir. 2002) (case remanded because juror discussed the death penalty with her husband during the deliberations).

Wigmore found the rule against hearsay to be firmly established by the early 1700s.<sup>17</sup> By the 1800s, courts were creating and regularly applying common law exceptions to the hearsay rule.<sup>18</sup> Under these exceptions, out-of-court statements were admissible if they contained sufficient indicia of reliability to outweigh the intrinsic infirmities of hearsay.<sup>19</sup> Such hearsay exceptions were lumped into a common law doctrine referred to as “res gestae.”<sup>20</sup>

The res gestae exceptions embodied the concept that statements made spontaneously during or immediately following an act were, in essence, part of that act rather than merely a witness’s account of the act, and therefore should be admissible to explain the act.<sup>21</sup> Common law res gestae included dying declarations, declarations of present sense impressions, and declarations of present bodily conditions or mental states.<sup>22</sup>

Professor Wigmore championed the excited utterance exception that became part of the res gestae doctrine, although he used the phrase “spontaneous exclamation.”<sup>23</sup> He greatly preferred it to the present sense impression exception because the excited utterance exception had a more flexible temporal component.<sup>24</sup> Wigmore’s excited utterance exception had three criteria: (1) there must be a startling occasion; (2) the out-of-court statement must be made before the declarant has had time to fabricate; and (3) the declarant’s out-of-court statement must relate to the

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17. Wigmore, *supra* note 14, at 448 (noting that the primary justification for the exclusion of hearsay was that “the other side hath no opportunity of a cross-examination.”).

18. Williams, *supra* note 10, at 720.

19. *Id.*

20. Literally “things done” or “the events at issue or others contemporaneous with them.” BRYAN A. GARNER, A DICTIONARY OF MODERN LEGAL USAGE 761 (2d ed. 1995); *see also* MICHAEL H. GRAHAM, 7 HANDBOOK OF FEDERAL EVIDENCE § 803:2 (7th ed., 2015).

21. Williams, *supra* note 10, at 721–22; William Gorman Passannante, *Res Gestae, The Present Sense Impression Exception and Extrinsic Corroboration Under Federal Rule of Evidence 803(1) and its State Counterparts*, 17 FORDHAM URB. L.J. 89, 96 (1988/89).

22. Williams, *supra* note 4, at 721–22. (noting that Professor Wigmore is generally credited with creating the excited utterance exception, which he championed over the present sense impression exception).

23. Williams, *supra* note 10, at 724 n.29; Aviva Orenstein, “MY GOD!”: *A Feminist Critique of the Excited Utterance Exception to the Hearsay Rule*, 85 CAL. L. REV. 159, 169 (1997). Wigmore did not invent the exception; indeed, he traced its roots back to *Thompson v. Trevanion*, a 1693 case. *Id.* at 170.

24. Williams, *supra* note 10, at 722 n.23 (“Wigmore famously stalled judicial acceptance of the [present sense impression] exception for decades.”) (quoting Jeffrey Bellin, *Facebook, Twitter, and the Uncertain Future of Present Sense Impressions*, 160 U. PA. L. REV. 331, 336–37 (2012)) (“By and large, the courts found Wigmore’s position persuasive. Until the adoption of the Federal Rules of Evidence, only a few jurisdictions recognized the present sense impression.”) (quoting Edward J. Imwinkelried, *The Need to Resurrect the Present Sense Impression Hearsay Exception: A Relapse in Hearsay Policy*, 52 HOW. L.J. 319, 327–28 (2009)).

circumstances of the startling event.<sup>25</sup> Under such circumstances, Wigmore believed, the stress of nervous excitement “stills the reflective faculties and removes their control,” such that any statements are a “spontaneous and sincere response to the actual sensations and perceptions . . . .”<sup>26</sup> In other words, Wigmore thought that a witness in the throes of excitement following a traumatic incident would be so incapacitated by emotion as to be unable, or at least unlikely, to lie. The likely truthful nature of such statements, the reasoning continues, trumps the lack of safeguards ordinarily associated with live, under oath testimony subject to cross-examination. Accordingly, courts should admit such statements even though they are hearsay.

In 1975, with the adoption of the Federal Rules of Evidence, the common law doctrines of hearsay and *res gestae* became codified in federal courts.<sup>27</sup> Hearsay is currently defined as “a statement that: (1) the declarant does not make while testifying at the current trial or hearing; and (2) a party offers in evidence to prove the truth of the matter asserted in the statement.”<sup>28</sup> Federal Rule of Evidence 803 contains twenty-three exceptions to the hearsay rule that apply regardless of whether the declarant is available to testify as a witness.<sup>29</sup> Federal Rule of Evidence 804 contains five exceptions to the hearsay rule that apply only if the declarant is unavailable to testify as a witness.<sup>30</sup> Federal Rule of Evidence 807 contains the residual exception to the hearsay rule, allowing introduction of hearsay testimony that does not fit within the exceptions in Rules 803 and 804 of the Federal Rules of Evidence but is sufficiently trustworthy to warrant admission.<sup>31</sup>

The excited utterance exception is one of the Rule 803 exceptions, available regardless of the declarant’s availability.<sup>32</sup> It exempts from the hearsay rule a “statement relating to a startling event or condition, made while the declarant was under the stress of excitement that it caused.”<sup>33</sup>

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25. *Id.* at 726.

26. *Id.* at 726 n.38 (quoting 6 JOHN HENRY WIGMORE, EVIDENCE IN TRIALS AT THE COMMON LAW § 1747 (James H. Chadbourne ed. 1976)).

27. Pub. L. No. 93–595, 88 Stat. 1926 (1975) (enacting the Federal Rules of Evidence).

28. FED. R. EVID. 801(c).

29. FED. R. EVID. 803.

30. FED. R. EVID. 804.

31. FED. R. EVID. 807 (allowing admission of a hearsay statement that: 1) has equivalent circumstantial guarantees of trustworthiness to those set forth in Rules 803 and 804; 2) is offered as evidence of a material fact; 3) is more probative on the point for which it is offered than any other evidence that the proponent can obtain through reasonable efforts; and 4) if admitted, will best serve the purposes of the Federal Rules of Evidence and the interests of justice). The rule also requires that the party offering evidence under Rule 807 provide adverse parties with advance notice. FED. R. EVID. 807(b).

32. FED. R. EVID. 803(2).

33. *Id.*

Most state rules of evidence employ identical, or nearly identical, language for their excited utterance exceptions.<sup>34</sup> The present sense impression exception, the first cousin of the excited utterance exception, is also found in Rule 803, and exempts a “statement describing or explaining an event or condition, made while or immediately after the declarant perceived it.”<sup>35</sup>

## II. THE COURTS’ APPLICATION OF THE EXCITED UTTERANCE EXCEPTION

Although the excited utterance exception as set forth in Federal Rule of Evidence 803(2) and in many state analogs is expressed in one fairly short sentence, the courts have not construed or applied the doctrine consistently. Rather, the following summaries illustrate the whimsical nature of judicial decisions applying the excited utterance exception.<sup>36</sup>

### A. Trial Court Applications of the Excited Utterance Exception

It is not difficult to find cases that illustrate the lack of consistency in the trial courts’ application of the excited utterance exception. This section presents a sampling of those cases, grouped by category of factors the courts often consider in applying the exception.

#### 1. Passage of Time

The courts are particularly inconsistent in factoring in the passage of time when applying the excited utterance exception. At the shorter end of the time spectrum, consider *Handel v. New York Rapid Transit Corp.*, in which the declarant was caught and dragged by a train.<sup>37</sup> When the train stopped, he fell to the ground.<sup>38</sup> Two witnesses heard his cries, and arrived approximately two and one-half minutes after the train stopped.<sup>39</sup> Both witnesses heard the declarant state, “Save me. Help me—why did that conductor close the door on me?”<sup>40</sup> The trial court excluded the statement as “narrative of a past event.”<sup>41</sup> Similarly, in *Alabama Power Co. v. Ray*, an accident victim’s statement, made just five minutes after the incident,

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34. Williams, *supra* note 10, at 726 n.44 (quoting *White v. Illinois*, 502 U.S. 346, 355 n.8 (1992)).

35. FED. R. EVID. 803(1).

36. Some of the following cases are criminal, not civil, and others are state courts applying the state analog to FED. R. EVID. 803(2). Despite these differences, they still illustrate the problems with the excited utterance exception.

37. 297 N.Y.S. 216, 218, 252 A.D. 142 (1937).

38. *Id.*

39. *Id.*

40. *Id.*

41. *Id.* at 217.

was deemed inadmissible because the witness was “merely giving a narrative of a transaction which was really and substantially past.”<sup>42</sup>

At the longer end of the time spectrum, consider *State v. Duke* in which the defendant was accused of sexually molesting his three-year-old daughter.<sup>43</sup> One evening approximately ten days after the incident, the daughter told her mother about the molestation.<sup>44</sup> The following day, the mother took her daughter to a county agency, where a social worker interviewed the girl.<sup>45</sup> They notified the police, who took the girl to a local hospital, where she spoke with a nurse.<sup>46</sup> The girl was subsequently interviewed by a doctor at another hospital.<sup>47</sup> The trial court held that the mother, social worker, nurse, and doctor could all testify as to the girl’s statements as excited utterances.<sup>48</sup> The court held that there was no set time period for an excited utterance, so long as the statement was made “under the influence of the startling occurrence to such a degree that the statement could not have been the product of reflective thought.”<sup>49</sup>

Similarly, in *State ex rel. Harris v. Schmidt*, the defendant was accused of assaulting his five-year-old stepson.<sup>50</sup> The boy told his mother about it the next day but did not tell the defendant’s probation officer about it until fifteen days after the assault.<sup>51</sup> The court allowed the probation officer to testify under the excited utterance exception.<sup>52</sup>

In between these extremes, courts often seem to use thirty minutes as a default time period during which witnesses are unable to fabricate their testimony.<sup>53</sup> *Prescott v. R & L Transfer, Inc.*, illustrates the arbitrary nature of this default time period.<sup>54</sup> In that case, the declarant witnessed a horrific truck accident and helped pull the driver from the burning truck.<sup>55</sup> After departing the scene, he called a friend on his cell phone and described the

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42. 249 Ala. 568, 571, 32 So. 2d 219, 221 (1947).

43. No. 52604, 1988 WL 88862, \*1 (Ohio 1988).

44. *Id.*

45. *Id.*

46. *Id.*

47. *Id.*

48. *Id.* at \*4–6.

49. *Id.* at \*4.

50. 69 Wis.2d 668, 230 N.W.2d 890 (1975).

51. *Id.* at 672.

52. *Id.* at 684.

53. See Orenstein, *supra* note 23, at 182 (“The excited utterance exception, however, routinely admits statements made thirty minutes after the exciting event.”); see also MICHAEL H. GRAHAM, 30C FED. PRAC. & PROC. EVID. § 7043 (2014) (collecting cases); *Time element as affecting admissibility of statement or complaint made by victim of sex crimes as res gestae, spontaneous exclamation, or excited utterance*, 89 A.L.R.3d 102 (originally published in 1979) (collecting cases).

54. 111 F. Supp. 3d 650, 650–63 (W.D. Pa. 2015), *reconsideration denied*, No. CIV.A. 3:11-203, 2015 WL 5136213 (W.D. Pa. Sept. 1, 2015).

55. *Id.* at 654.

events.<sup>56</sup> There was conflicting testimony about whether this call occurred twenty-three minutes or forty minutes after the accident.<sup>57</sup> The court emphasized that the call was only twenty-three minutes after the accident significant when it admitted the friend's testimony under the excited utterance exception.<sup>58</sup>

Thus, courts seem to use thirty minutes as a presumptive limit for excited utterances but have deemed hearsay statements made as little as two and one-half minutes after an event to be inadmissible as outside the influence of the event and statements made fifteen days after the incident to be admissible as excited utterances. Of course, none of these time periods has any scientific support.

## 2. Nature of the Event

Courts are also inconsistent regarding the nature of the event that can support an excited utterance. For example, courts often require a "startling" event as the predicate for an excited utterance,<sup>59</sup> but just how startling must an event be to "still the reflective faculties"<sup>60</sup> such that the declarant is incapable of lying?

Criminal cases often involve hearsay statements by the victim of the crime. Likewise, tort cases may involve hearsay statements by the person injured by the tort. Presumably, being seriously injured in an incident presents a relatively strong case for the application of the excited utterance exception. Sometimes, though, courts apply the excited utterance exception to statements made after far less impactful events.

For example, in *American Craft Hosiery Corp. v. Damascus Hosiery Mills, Inc.*, the court applied the excited utterance exception to a declarant's statements made after a business meeting in which the declarant was told he could not proceed with a proposed contract.<sup>61</sup> In *U.S. v. Vazquez*, the court of appeals affirmed the trial court's ruling that the declarant's statement after learning that a co-defendant denied knowing the declarant (allegedly causing the declarant to fear that he would receive all the blame for the incident in question) was under the stress of excitement and thus within the excited utterance exception.<sup>62</sup>

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56. *Id.*

57. *Id.* at 656.

58. *Id.* (citing *United States v. Mitchell*, 145 F.3d 572, 577 (3d Cir.1998) for the proposition that a forty-minute time span might be too long, while a fifteen to twenty-minute time span was not too long).

59. See the tests from the various courts of appeal described in the following section.

60. Williams, *supra* note 10, at 738 n.93.

61. 575 F. Supp. 816 (W.D.N.C. 1983).

62. 857 F.2d 857 (1st Cir. 1988).

In *U.S. v. Bailey*, the declarant was a juror who a criminal defendant attempted to bribe.<sup>63</sup> The trial court deemed the attempted bribe a “startling event” eligible for the excited utterance exception.<sup>64</sup> In *U.S. v. Lawrence*, the defendant allegedly robbed the declarant.<sup>65</sup> When the police arrested the defendant, they asked the declarant to identify the defendant, who was handcuffed and lying on the ground.<sup>66</sup> The prosecutor then called the police officer to testify as to what the declarant had said.<sup>67</sup> The court found the confrontation with the man who had allegedly just robbed him to support the excited utterance exception, even though the robber was constrained and posed no threat.<sup>68</sup>

In *U.S. v. Napier*, the defendant allegedly kidnapped and physically assaulted the declarant.<sup>69</sup> The declarant was hospitalized for seven weeks following the assault and underwent two brain operations.<sup>70</sup> Approximately one week after the declarant returned home, her sister showed the declarant a newspaper article with a photograph of the defendant.<sup>71</sup> The sister was permitted to testify that the declarant’s reaction was “great distress and horror and upset,” and that she pointed to it and said, “He killed me, he killed me.”<sup>72</sup> The defendant argued that the eight-week lapse since the assault removed the case from the excited utterance exception, but the court held that the startling event was seeing the picture and allowed the testimony.<sup>73</sup>

Finally, in *David by Berkeley v. Pueblo Supermarket of St. Thomas*, the declarant saw the plaintiff’s mother, a pregnant woman, slip and fall on her stomach in a grocery store.<sup>74</sup> The plaintiff’s father testified that he heard the declarant state shortly after the fall, “I told them to clean it up about two hours ago—an hour and a half ago.”<sup>75</sup> The court held that witnessing a pregnant woman fall on her stomach was sufficiently startling to prevent the declarant from fabricating her statement.<sup>76</sup>

As with the passage of time after the event, there is no scientific evidence supporting these decisions—and hundreds or thousands of

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63. 834 F.2d 218 (1st Cir. 1987).

64. *Id.* at 228.

65. 699 F.2d 697 (5th Cir. 1983).

66. *Id.* at 699–700.

67. *Id.*

68. *Id.* at 703–04.

69. 518 F.2d 316 (9th Cir. 1975).

70. *Id.* at 317.

71. *Id.*

72. *Id.*

73. *Id.* at 318.

74. 740 F.2d 230 (3d Cir. 1984).

75. *Id.* at 234.

76. *Id.* at 234–35.

others—deeming certain events sufficiently startling to render the declarant incapable of lying. The courts and treatises certainly do not cite studies suggesting that a declarant is incapable of lying after seeing a photograph of her assailant eight weeks after an assault. Or that attending a meeting where the declarant learns he will not be awarded a contract will render the declarant unable to fabricate.

### 3. Declarant's State of Mind or Demeanor

As with the passage of time after and the nature of the startling event, the courts are inconsistent about the evidence regarding the declarant's state of mind required to bring a statement within the excited utterance exception. Judicial opinions reflect inconsistencies from one court to the next, inconsistencies within single opinions from one statement to another, and inconsistencies regarding the fundamental purpose of the exception.

For example, in *United States v. Tocco*, the declarant was allegedly an accomplice to an act of arson.<sup>77</sup> The witness heard the declarant's statement three hours after the arson, and described the declarant as "all hyped" and "nervous."<sup>78</sup> The court concluded that the declarant's excitement had not yet subsided when he made his statement, and therefore it constituted an excited utterance.<sup>79</sup>

Contrast *Tocco* with *Katona v. Fed. Exp. Corp.*, in which the declarant was in a car accident and subsequently made statements about the accident to a companion at a restaurant about an hour after the accident and to his wife five and a half hours after the accident.<sup>80</sup> Although the declarant "appeared nervous and upset" at the time of his statements, the judge concluded that the passage of time, plus the fact that the declarant was able to drive away from the accident without calling for medical assistance, placed his statements outside the excited utterance exception.<sup>81</sup>

In both cases, the declarant exhibited the same nervous and agitated state and the statements were a few hours after the incident. Yet, the courts reached the opposite conclusions. In reaching these conclusions, neither judge appeared to consider whether appearing nervous and agitated when making a statement—several hours after an incident—could just as easily be symptoms of lying about the incident as they could be indicators of telling the truth.

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77. 135 F.3d 116, 127 (2d Cir. 1998).

78. *Id.* at 128.

79. *Id.*

80. No. 95 Civ. 10951(JFK), 1998 WL 126059 (S.D.N.Y. Mar. 19, 1998).

81. *Id.* at \*4.

*People v. Seymour* provides an example of a court's internal inconsistency within a single case.<sup>82</sup> Two housing officers found the seventy-nine-year-old declarant lying face down in his apartment, hands tied behind his back and head bound with gauze to a table.<sup>83</sup> The declarant had been robbed and confined forty-eight hours earlier, and he had suffered a heart attack in the interim.<sup>84</sup> The declarant had lost his larynx to cancer eighteen years earlier and was unable to speak clearly without a voice box.<sup>85</sup> When he arrived at the hospital, an hour and twenty minutes after being discovered, he was able to communicate to hospital staff that someone he knew who lived on the fourth floor of his building had committed the crimes.<sup>86</sup> Twenty minutes later, a police officer arrived with the declarant's voice box.<sup>87</sup> Using the voice box, the declarant identified his assailant and provided additional details about the events.<sup>88</sup> The declarant died from his injuries a few months after the burglary, and the prosecutor offered witnesses to testify as to the declarant's statements.<sup>89</sup> The trial court admitted testimony regarding both statements under the excited utterance exception, but the appellate court reversed the trial court's decision, holding that only the first statement was an excited utterance, and that the trial court's admission of the second statement was reversible error.<sup>90</sup> Because the declarant was actively receiving treatment at the time of the first statement, the court reasoned, he was too distracted to fabricate.<sup>91</sup> By twenty minutes later, however, this elderly declarant had sufficiently recovered from his confinement and heart attack such that his statements about his assailant were no longer spontaneous.<sup>92</sup>

Similarly, in *Coyle v. Kristijan Palusalu Maritime Co., Ltd.*, the declarant was a deceased stevedoring contractor who had tripped over a wire and sustained injuries.<sup>93</sup> In ruling on a hearsay objection to testimony by someone who heard the declarant's statements after his fall, the court found one of his statements subject to the excited utterance exception and the other contemporaneous statement not covered.<sup>94</sup> The court found that the declarant was "startled" by the incident, thus bringing his statement

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82. 588 N.Y.S.2d 551, 551 (1992).

83. *Id.* at 552.

84. *Id.*

85. *Id.*

86. *Id.*

87. *Id.*

88. *Id.*

89. *Id.* at 551–52.

90. *Id.* at 553–55.

91. *Id.* at 554–55.

92. *Id.* at 552.

93. 83 F.Supp.2d 535 (E.D. Pa. 2000).

94. *Id.* at 542–43.

“clearly” within the exception, because he had sustained a nosebleed from the fall,<sup>95</sup> and because his nose was still bleeding, it demonstrated that he had not had sufficient time to reflect and fabricate.<sup>96</sup> The court found his statement describing the incident to be admissible, but his simultaneous statement about the crew having replaced the wire recently to be outside the exception.<sup>97</sup>

*United States v. Davis* may provide the best illustration of the disconnect between the various courts’ application of the excited utterance exception and the premise underlying the doctrine.<sup>98</sup> In *Davis*, the declarant, a teenage babysitter, saw a man with a gun driving a car and was scared because she believed the man had committed a recent murder.<sup>99</sup> She called 911 almost immediately and reported the incident, giving the license plate and make of the car to the 911 operator.<sup>100</sup> She also told the operator that the man had two guns but later admitted that she had exaggerated that detail in order to prompt the police to respond more quickly—in actuality, she only saw one gun.<sup>101</sup> The judge allowed testimony regarding the 911 call, ruling that the declarant’s statements met all the elements of the excited utterance exception, and that her exaggerations went to weight, not admissibility.<sup>102</sup>

Consider the questionable logic of this result. The justification for the excited utterance exception is that, if the declarant is still emotionally charged after a startling event, the declarant will not be able to think clearly enough to fabricate a statement. Here, the declarant admitted that she had altered her statement in order to achieve a result—a quick response by the police. Obviously, then, the fundamental premise underlying the exception—that the witness’s emotional state would prevent her from fabricating—did not apply to this declarant’s statement. Yet, the judge admitted the testimony.

Furthermore, not only was the judge’s legal ruling inconsistent with the premise of the excited utterance exception, the facts undermine the core precept of the exception. The declarant made her statement thirty seconds to one minute after an event the court deemed startling, but rather than being incapable of fabrication, the declarant was admittedly able to

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95. *Id.* at 542 (holding the presence of blood rendered the incident sufficiently startling to support the exception).

96. *Id.*

97. *Id.*

98. 577 F.3d 660 (6th Cir. 2009).

99. *Id.* at 664.

100. *Id.*

101. *Id.*

102. *Id.* at 669–70.

exaggerate the circumstances for a calculated objective.<sup>103</sup> This remarkable teenage babysitter was apparently able to accomplish something that Wigmore believed impossible—she was able to think quickly enough to distort her description of a startling event in order to advance a personal interest while still in the excitement of the incident.

While Wigmore might have been surprised by the facts of *Davis*, no psychologist would be. As explained below, there is no scientific support for the notion that nervousness, excitement, agitation, anxiety, or any of the other conditions that courts cite as supporting the excited utterance exception are more likely to be associated with truthfulness than with fabrication, exaggeration, or inaccuracy.

### *B. Approaches in the United States Courts of Appeal*

As the trial courts struggle to apply the excited utterance exception intelligently and consistently, they are frequently applying tests crafted by the appellate courts. According to an analysis by Professor Matthew Janssen, the United States Courts of Appeal have developed seven distinct approaches to the excited utterance exception.<sup>104</sup> Most of these tests entail lists of elements for assessing the applicability of the exception. The First, Seventh, and Tenth Circuits apply a three-factor test that turns on whether: “1) a startling event or condition occurred; 2) the statement was made while the declarant was under the stress of excitement caused by the event or condition; and 3) the statement relates to the startling event or condition.”<sup>105</sup> The Sixth Circuit employs a different three-factor test that admits hearsay statements when: (1) there is a startling event; (2) the declarant makes the statement before there is time to fabricate; and (3) the statement is made under the stress of the event’s excitement.<sup>106</sup>

The Eighth Circuit expands the number of factors to six when considering whether a hearsay statement was an excited utterance: (1) the amount of time between the startling event and the statement; (2) whether the statement was the product of an inquiry; (3) the declarant’s age; (4) the declarant’s physical and mental condition; (5) the event’s characteristics; and (6) the statement’s subject matter.<sup>107</sup> The Fourth Circuit applies a two-pronged test that also pulls in many of the Eighth Circuit’s factors. The Fourth Circuit requires: (1) the declarant to experience a startling event or condition, and (2) the declarant to react from the stress caused by the event

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103. *Id.* at 664.

104. Matthew D. Janssen, *The Butler Did It!!!: A Critical Analysis of the Excited Utterance Exception to the Hearsay Rule as Applied in the Third Circuit*, 47 VILL. L. REV. 1117, 1124 (2002).

105. *Id.* at 1124–25 (citations omitted).

106. *Id.* at 1128–29 (citations omitted).

107. *Id.* at 1126–27 (citations omitted).

and not from reflection or fabrication, using five of the Eighth Circuit's factors to make this determination.<sup>108</sup>

The Third Circuit has its own four-factor approach. It requires: “(1) a startling occasion, (2) a statement relating to the circumstances of the startling occasion, (3) a declarant who appears to have had opportunity to observe personally the events, and (4) a statement made before there has been time to reflect and fabricate.”<sup>109</sup>

Two circuits have tests that do not contain elements or factors. The Fifth Circuit asks “whether the statements were the product of reflective thought or whether they were the result of the startling event.”<sup>110</sup> The Second Circuit “simply tries to determine whether the declarant was still under the excitement caused by the startling event.”<sup>111</sup>

These seven approaches—with zero, two, three, four, or six factors—reflect the murky subjectivity in the excited utterance exception. Yet, there are some common themes. The courts know that every statement following an incident is not automatically trustworthy. They accept the notion that a declarant in a sufficient state of excitement or emotional arousal from witnessing or experiencing a “startling” event should be considered trustworthy. They vest the trial judge with the discretion to assess whether the declarant made the hearsay statement in question under temporal and emotional circumstances rendering fabrication or distortion unlikely. Most importantly, though, they provide virtually no scientific guidance for the trial judge to exercise this discretion.

### C. Consideration by the United States Supreme Court

The United States Supreme Court has discussed the excited utterance exception in F.R.E. 803(2) at least five times.<sup>112</sup> In none of these cases was the Court actually adjudicating a lower court's evidentiary ruling applying the excited utterance exception. Rather, the cases were all criminal cases, typically appealed on the basis of alleged violations of the Confrontation Clause, with the Court's discussion of the excited utterance exception appearing in dicta.

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108. *Id.* at 1129 (citations omitted).

109. *Id.* at 1130 (citations omitted).

110. *Id.* at 1126 (citations omitted).

111. *Id.* at 1129 (citations omitted).

112. The five cases are *Navarette v. California*, 134 S. Ct. 1683 (2014); *Michigan v. Bryant*, 562 U.S. 344 (2011); *White v. Illinois*, 502 U.S. 346 (1992); *Idaho v. Wright*, 497 U.S. 805, 820 (1990); and *Coy v. Iowa*, 487 U.S. 1012 (1988). The Supreme Court has only referenced the phrase “excited utterance” in thirty-three reported cases, most of them in the 1800s. In addition to the five cases referenced in this section, the Court referred to the excited utterance exception a handful of times after the enactment of the Federal Rules of Evidence in 1975, but only in passing.

Uniformly, the Court discussed the excited utterance exception in language that accepted both the exception itself and the reasoning underlying the exception. The Court generally repeated, without any probing analysis, Wigmore's proposition that declarants are unable to fabricate or distort testimony when in a state of excitement. Likewise, the Court did not probe the lower court's application of the exception with any meaningful scrutiny.

For example, in *White v. Illinois*, the defendant was accused of sexually assaulting a four-year-old girl.<sup>113</sup> The girl's babysitter was awakened by the girl's screams and saw the defendant leave the girl's room.<sup>114</sup> The babysitter spoke to the girl immediately, and the girl described inappropriate touching.<sup>115</sup> The girl's mother returned home about thirty minutes later, and the girl repeated her story.<sup>116</sup> The mother called the police, who arrived about forty-five minutes after the incident, and the girl, once again, repeated her story.<sup>117</sup> Approximately four hours after the incident, the girl was taken to the emergency room, where she repeated the story to a nurse and doctor.<sup>118</sup> Over the defendant's hearsay objection, the babysitter, mother, investigating officer, nurse, and doctor were all permitted to testify as to the girl's out-of-court statements.<sup>119</sup>

Although the appeal centered around the Confrontation Clause, the Court discussed the hearsay implications of these out-of-court statements.<sup>120</sup> The Court opined that, not only were the hearsay statements sufficiently trustworthy to warrant admission, they were more likely reliable than live, in-court, after-the-fact testimony.<sup>121</sup> The Court wrote that the statements should carry more weight because they were offered "in a moment of excitement—without the opportunity to reflect on the consequences."<sup>122</sup> Similarly, a statement "made in the course of procuring medical services, where the declarant knows that a false statement may cause misdiagnosis or mistreatment, carries special guarantees of credibility."<sup>123</sup> The Court did not discuss, or even recognize, any uncertainty about whether the statements of a four-year-old child warranted the same deference that the hearsay exceptions accord to statements of adults. Similarly, the Court did not discuss whether the time

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113. 502 U.S. 346, 349 (1992).

114. *Id.*

115. *Id.*

116. *Id.*

117. *Id.* at 349–50.

118. *Id.* at 350.

119. *Id.*

120. *See id.* at 347.

121. *Id.*

122. *Id.*

123. *Id.*

difference of the various statements—ranging from essentially contemporaneous with the event to four hours following—was material to its analysis.

The Court's language in these cases suggests that the Court embraces Wigmore's belief that excited utterances are inherently trustworthy. In *Idaho v. Wright*, the Court expressed its view that excited utterances are sufficiently reliable so as to render cross-examination "superfluous."<sup>124</sup> In *Michigan v. Bryant*, the Court stated that excited utterances are "considered reliable because the declarant, in the excitement, presumably cannot form a falsehood."<sup>125</sup> The Court also quoted language from Weinstein's *Federal Evidence*: "The basis for the 'excited utterance' exception . . . is that such statements are given under circumstances that eliminate the possibility of fabrication, coaching, or confabulation . . . ."<sup>126</sup> Thus, the Court seemed to endorse the idea that, not only is it less likely that a declarant would lie while still in an excited state, it is impossible.

Only in *Navarette v. California*, did the Court seem to question the broad application of the excited utterance exception.<sup>127</sup> The Court wrote, "It is the immediacy that gives the statement some credibility; the declarant has not had time to dissemble or embellish."<sup>128</sup> The Court reasoned that a declarant who had time to observe the license number of the offending vehicle, bring her car to a halt, copy down the license number, and call the police had "[p]lenty of time to dissemble or embellish."<sup>129</sup>

#### D. Scientific Guidance for Judges

One explanation for why the courts are so inconsistent in their application of the excited utterance exception is that there are no rigorous science-based explanatory materials available for judges. Judges are given broad discretion to implement the doctrine, but not supplied with any evidence-based basis for exercising that discretion.

The Advisory Committee notes to Rule 803(2) certainly are not much help. The original 1975 notes explain the exception: "The theory of Exception (2) is simply that circumstances may produce a condition of excitement which temporarily stills the capacity of reflection and produces utterances free of conscious fabrication."<sup>130</sup> This explanation is followed

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124. 497 U.S. at 820 (1990).

125. 562 U.S. at 361 (2011) (emphasis added).

126. *Id.* at 362 (emphasis added).

127. 134 S. Ct. at 1683–96 (2014).

128. *Id.* at 1694.

129. *Id.*

130. FED. R. EVID. 802(2) advisory comm. notes.

by a brief discussion of whether the statement itself may be the only proof of the startling event or whether additional evidence is required, and concludes that the statement alone may be sufficient. And that is it.<sup>131</sup>

Many judges use *Federal Courtroom Evidence*<sup>132</sup> as their desk reference for evidence issues. Although much more detailed and substantive than the Advisory Committee notes, *Federal Courtroom Evidence* does not provide meaningful guidance on the application of the excited utterance exception either.

*Federal Courtroom Evidence* contains three subsections discussing the excited utterance exception.<sup>133</sup> The first subsection is titled “Startling Event or Condition.”<sup>134</sup> Regarding the nature of the event that qualifies for the exception, this subsection provides the following helpful instruction: “In addition to deciding whether the event took place, the **judge must determine whether it was startling.**”<sup>135</sup> The only illumination that the manual provides regarding how the judge should decide whether an event was sufficiently startling is that the “presence of **blood from an accident or assault** seems to lead to an automatic conclusion of excitement.”<sup>136</sup> In the absence of blood, applicability of the excited utterance exception depends on “the court’s assessment of the **shock value** of the event in question on the declarant.”<sup>137</sup>

The second subsection is titled “Personal Perception,” and it discusses the requirement that the declarant have personally observed the startling event.<sup>138</sup> The final subsection is titled “Under the Stress of Excitement.”<sup>139</sup> It instructs judges that, “[f]or this exception to apply, the court must be able to find that the declarant’s state of mind at the time of making the declaration **ruled out the conscious reflection essential for fabrication.**”<sup>140</sup> It explains that the rule “**does not require that the declarant be completely incapable of deliberative thought** at the time he or she made the statement.”<sup>141</sup> Rather, “[a]ll that the exception

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131. Rule 803 was amended in 1987, 1997, 2000, 2011, and 2014, but none of the amendments affected the substance of Rule 803(2) and none of the Advisory Committee Notes mention Rule 803(2).

132. JOSEPH W. COTCHETT, *FEDERAL COURTROOM EVIDENCE* (5th ed. 2003) [hereinafter *FEDERAL COURTROOM EVIDENCE*].

133. *Id.* §§ 803.3.1–803.3.3.

134. *Id.* § 803.3.1.

135. *Id.* (emphasis in original).

136. *Id.* (emphasis in original).

137. *Id.* (emphasis in original).

138. *Id.* § 803.3.2.

139. *Id.* § 803.3.3.

140. *Id.* (emphasis in original).

141. *Id.* (emphasis in original).

**requires is that the statement be made contemporaneously with the excitement resulting from the event.”**<sup>142</sup>

Regarding the time period over which “the excitement from the event” persists, the manual is similarly unhelpful. It notes that, “[n]o particular period of elapsed time is decisive. The crucial point is that the court must be able to **find that the declarant’s state** at the time of making the statement **ruled out the possibility of fabrication.**”<sup>143</sup> The only nuance the manual provides is that, “[p]hysical factors, such as shock, unconsciousness, or pain, may **prolong the period** in which the risk of fabrication is reduced to an acceptable minimum.”<sup>144</sup>

This discussion of *Federal Courtroom Evidence*’s treatment of the excited utterance exception is not an indictment of the manual. Rather, the entire legal system largely ignores the scientific data regarding people’s tendencies and abilities to perceive and fabricate in the minutes, hours, or days following a startling event. Judges are left to make these assessments based on their intuition.

### III. SCHOLARLY CRITICISM OF THE EXCITED UTTERANCE EXCEPTION

The excited utterance exception has not escaped criticism from scholars. Indeed, criticism of the excited utterance exception is not new. In 1928, Yale’s Dean Hutchins and Dr. Slesinger wrote, “On psychology grounds, the rule might very well read: Hearsay is inadmissible, especially (not except) if it be a spontaneous exclamation.”<sup>145</sup> They based this opinion in part on their recognition of the perception problems of excited declarants.<sup>146</sup>

Numerous scholars since have criticized the excited utterance exception as inconsistent with what psychologists believe to be the human capacity to fabricate while under emotional stress. Aviva Orenstein included a section in her article on the excited utterance exception titled, “The Psychological Critique of the Excited Utterance Exception,” in which she noted that the time to lie is measured in seconds, not the thirty minutes that courts often use as a default window.<sup>147</sup> Angela Conti and

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142. *Id.* (emphasis in original).

143. *Id.* (emphasis in original).

144. *Id.* (emphasis in original).

145. Donald Slesinger & Robert M. Hutchins, *Some Observations on the Law of Evidence*, 28 COLUM. L. REV. 432, 439 (1928). This article has been frequently quoted or cited, including in the Advisory Committee Notes to FRE 803(2).

146. *Id.* at 438.

147. Orenstein, *supra* note 23, at 178.

Brian Gitnik criticized the excited utterance exception in 1999 as contrary to psychological beliefs.<sup>148</sup>

A number of other scholars recommend abolishing the excited utterance exception. For example, James Donald Moorehead wrote in 1995 that all of the *res gestae* exceptions should be abolished because such statements are not sufficiently reliable to forego cross-examination in open court.<sup>149</sup> Alan Williams reached the same conclusion based on both the courts' struggles to apply the exception consistently and on the science suggesting that lies are frequently spontaneous.<sup>150</sup>

In none of these articles, however, did the authors dig deeply into the scientific evidence. Instead, most provide a relatively high-level conclusion that science does not support the exception. Michael Saks and Barbara Spellman, two law professors with psychology degrees, took a deep dive into the science behind many rules of evidence in their excellent recent book, *The Psychological Foundations of Evidence Law*.<sup>151</sup> Although the excited utterance exception occupies only a small portion of their book, the authors recognize both the doubtful nature of Wigmore's presumption that startled declarants cannot fabricate and the impairment on perception that startling events can cause.<sup>152</sup> They conclude that excited utterances are "not as reliable as the law thinks."<sup>153</sup>

#### IV. SCIENCE VS. THE EXCITED UTTERANCE EXCEPTION

In light of the courts' inconsistent application of the excited utterance exception and the paucity of legal scholarship collecting and describing the relevant science, this Section will attempt to describe in some detail the physiology and psychology of human reaction to startling events.

The primary assumption underlying the excited utterance exception is that a person's spontaneous statement about a "startling event" made while in the state of excitement prompted by those events is so trustworthy that we can forego the safeguards attendant with live testimony designed to detect dishonesty or misperception. From a more scientific point of view, this seemingly simple assumption rests on three main hypotheses:

1. A startling event reliably produces a state of excitement;

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148. Angela Conti & Brian Gitnik, *Federal Rule of Evidence 803(2): Problems with the Excited Utterance Exception to the Rule on Hearsay*, 14 ST. JOHN'S J. LEGAL COMMENT. 227, 247 (1999) ("The idea that stress stills the reflective capacities and enables the declarant's statement to be truthful is also disputed by many psychologists.").

149. James Donald Moorehead, *Compromising the Hearsay Rule: the Fallacy of Res Gestae Reliability*, 29 LOY. L.A. L. REV. 203, 203 (1995).

150. Williams, *supra* note 10, at 738 (quoting Judge Posner).

151. See generally Saks, *supra* note 8.

152. *Id.* at 196.

153. *Id.*

2. That state of excitement interferes with the individual's ability to deceive; and

3. That state of excitement simultaneously neither distorts the individual's perception of the startling event nor impairs the individual's ability to organize the resulting perceptions into congruent and coherent spontaneous statements.

This Section will examine whether the scientific literature supports these three key hypotheses. Specifically, it will apply scientific knowledge about the "fight-or-flight response" to the excited utterance theory, first giving an overview of how humans respond physiologically and psychologically to startling events. Next, it will focus more precisely on the science about how those reactions affect an individual's inclination or ability to lie. Finally, it will describe how the fight-or-flight response affects perception of startling events and the ability to use language effectively to convey those perceptions while in a state of excitement. As this Section demonstrates, reactions to startling events are immensely complex and variable, and are not susceptible to simple generalizations or lists of factors.

#### A. *A State of Excitement: The Fight-or-Flight Response*

For more than a century, science has generally supported Wigmore's first hypothesis—that people do typically respond to startling events with a "state of excitement." The "fight-or-flight response," as the American physiologist Walter B. Cannon first named this state of excitement in 1915, describes the changes that occur in the nervous system and body in the event of a perceived threat to safety or survival.<sup>154</sup> Cannon and contemporary scientists observed a predictable pattern of bodily responses that occurred rapidly, powerfully, and automatically in both humans and other animals in response to perceived threats.<sup>155</sup> Because of the near universality of this chain of reactions even across species and because of their obvious protective value, the scientists concluded that this fight-or-flight response is likely inborn.<sup>156</sup> They discovered that a cascade of responses is triggered first in the nervous system and then spread by the hormone system, with the purpose of optimizing an organism's ability to take immediate protective or defensive action.<sup>157</sup> These physiological changes have been extensively studied in the intervening decades and the findings are summarized below. This discussion will provide helpful

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154. See generally WALTER B. CANNON, BODILY CHANGES IN PAIN, HUNGER, FEAR AND RAGE: AN ACCOUNT OF RECENT RESEARCHES INTO THE FUNCTION OF EMOTIONAL EXCITEMENT (1915).

155. *Id.* at 184–88.

156. See *id.* at 188–94.

157. *Id.*

background for understanding the more targeted science on deception and perception while in a state of excitement.

### 1. The Physiology of the Fight-or-Flight Response

Human beings, like other organisms, gather information about their environment through their sensory organs, like eyes, ears, and skin, and send the information over nerve pathways to the brain for processing.<sup>158</sup> Stimuli suggestive of a threat get special treatment: they are routed to the amygdala, a primitive structure deep in the brain that helps detect danger and process emotion.<sup>159</sup> The stimuli are also simultaneously sent to the neocortex, the thinking part of the brain, but the neocortex engages in more complex, and thus slower, processing—not ideal when emergency action might be required.<sup>160</sup>

If the amygdala processes the stimuli as posing real and imminent danger, it alerts the hypothalamus, which then transmits messages using the sympathetic nervous system, including the pituitary and adrenal glands.<sup>161</sup> The sympathetic nervous system triggers the release of adrenaline (also known as epinephrine) and other hormones.<sup>162</sup> These alarm hormones affect multiple organ systems, spurring changes from normal “at rest” bodily functioning to enable quick and powerful protective action.<sup>163</sup> For example, under the influence of adrenaline, heart rate increases dramatically, blood pressure shoots up, and the small airways in the lungs expand while breathing also becomes more rapid; these shifts speed delivery of blood, oxygen, and fuel to the large muscles.<sup>164</sup> Storage areas in the body, like the liver and pancreas, simultaneously dump fats and sugars into the blood stream in order to provide an energy boost for maximal physical effort.<sup>165</sup> The body’s cooling system adjusts to support the expected physical demands, leading to increased sweating and raising the hairs on the skin.<sup>166</sup> Diversion of

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158. PETER H. RAVEN & GEORGE B. JOHNSON, *BIOLOGY* 1103–06 (6th ed. 2002).

159. GEORGE S. EVERLY JR. & JEFFREY M. LATING, *A CLINICAL GUIDE TO THE TREATMENT OF THE HUMAN STRESS RESPONSE* 33–34 (3d ed. 2013).

160. Thierry Steimer, *The Biology of Fear- and Anxiety-Related Behaviors*, 4 *DIALOGUES CLINIQUES DE NEUROSCIENCES* 231, 238 (2002). But note that although distinct areas of the brain have been associated with certain emotional responses and types of cognition, in reality, neurological processing is complex and different areas of the brain tend to work more in concert in a systems model. See, e.g., Everly, *supra* note 159, at 24–27.

161. Everly, *supra* note 159, at 33–39.

162. See generally J. Wortsman, *Role of Epinephrine in Acute Stress*, 31 *ENDOCRINOLOGY & METABOLIC CLINICS OF N. AM.* 79 (2002).

163. *Id.*

164. KEVIN T. PATTON & GARY A. THIBODEAU, *ANATOMY AND PHYSIOLOGY* 512–16 (9th ed. 2015) (see especially Tables 22-4 and 22-5).

165. *Id.*

166. *Id.*

blood from the skin toward the muscles may cause blanching, flushing, or both, alternating.<sup>167</sup> At the same time, normal bodily processes unnecessary for dealing with an emergency come to a halt: hormones inhibit sexual response and stop digestive processes from salivation on.<sup>168</sup> Blood clotting also increases to reduce blood loss in the event of injury.<sup>169</sup>

At the same time, hormones cause changes in the sensory systems. Vision is altered; pupils dilate to let in more light and improve visual capacity.<sup>170</sup> If the threat is ambiguous or the location of safety unclear, peripheral vision and scanning increase; however, if there is a clearly identified threat, “tunnel vision” typically occurs, allowing intense focus on the specific danger.<sup>171</sup> Hearing is also affected, leading to either hyperawareness of sounds or a serious blunting of hearing, likely related to a quick judgment about whether the sounds are providing useful information or serving as a dangerous distraction.<sup>172</sup> The release of the body’s natural opioids also reduces awareness of physical pain to help the individual cope with possible injury.<sup>173</sup>

Once the threat is resolved, or if additional cognitive processing overrules the amygdala’s initial determination and decides the threat is not serious, the body’s brakes—the parasympathetic nervous system—return the body to its normal homeostatic state, though more gradually than the emergency system was activated.<sup>174</sup> On the other hand, if the threat remains ongoing, another branch of the hypothalamus-pituitary-adrenal axis will stimulate release of additional hormones, which act to keep the body’s “gas pedal” pressed down, maintaining bodily readiness to react with violent physical activity but without the full-alert readiness of the

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167. *Id.*

168. *Id.*

169. Daniel Preckel & Roland von Känela, *Regulation of Hemostasis by the Sympathetic Nervous System: Any Contribution to Coronary Artery Disease?*, 4 HEARTDRUG 123, 123–30 (2004).

170. Margaret M. Bradley et al., *The Pupil as a Measure of Emotional Arousal and Autonomic Activation*, 45 PSYCHOPHYSIOLOGY 602, 602–07 (2008).

171. This tunnel vision phenomenon is so common that there is a whole body of research on “weapon focus” in which witnesses’ attention is so captivated by a gun, for example, that they are unable to recall other readily visible details. See, e.g., Elizabeth F. Loftus, et al., *Some Facts About “Weapon Focus,”* 11 L. & HUM. BEHAV. 55, 55–62 (1987); Jonathan M. Fawcett, et al., *Of Guns and Geese: A Meta-Analytic Review of the ‘Weapon Focus’ Literature*, 19 PSYCHOL., CRIME & L. 35, 35–66 (2013).

172. Christine E. Graham et al., *The Cochlear CRF Signaling Systems and Their Mechanisms of Action in Modulating Cochlear Sensitivity and Protection Against Trauma*, 44 MOLECULAR NEUROBIOLOGY 383, 383–406 (2011).

173. Z. Amit & Z.H. Galina, *Stress-Induced Analgesia: Adaptive Pain Suppression*, 66 PHYSIOL. REV. 1091, 1091–120 (1986) (concluding that the functional advantage of pain reduction during stressful situations is significant because it allows for animals to react in threatening situations as if there were no pain).

174. See Laurie Kelly McCorry, *Physiology of the Autonomic Nervous System*, 71 AM. J. PHARM. EDUC. 78 (2007).

initial response, allowing partial return to normal physiological functioning.<sup>175</sup> Finally, although the general pattern of physiological response is fairly predictable, the degree of response varies with the perceived nature of the threat, as well as with characteristics of the individual experiencing it, affecting the level of arousal and how long it persists.<sup>176</sup>

#### *What Constitutes a Threat*

Because the fight-or-flight response is an inborn protection system, many of the types of stimuli that trigger it are preprogrammed and present from birth; these include threats that carried significant risk of bodily harm or death in the environments that humans evolved in.<sup>177</sup> Human ancestors who could recognize them quickly and mobilize their resources to confront them gained an evolutionary advantage.<sup>178</sup> These primitive cues include things that warn about the proximity of predators (including unfriendly humans), dangerous environmental conditions (e.g., storms, avalanches, and other natural disasters), dangerous situations (with risks of falling, drowning, being burned, etc.), and indications that harm has already occurred—and more may be coming—such as sudden pain, the appearance of blood or internal bodily tissue, or damage to limbs.<sup>179</sup>

The stimuli include ones that are very specific, like the sight, smell, or sound of dangerous animals, as well as others that are more generic, such as loud noises or bright flashing lights.<sup>180</sup> Though not all stimuli that trigger the fight-or-flight response involve an element of surprise, ones that involve elements of being abrupt, unexpected, and unfamiliar will trigger the response both more reliably and more strongly.<sup>181</sup> Characteristics that increase ambiguity or uncertainty, like darkness or fog, and movement or other changes, also amplify the effect of the trigger stimulus.<sup>182</sup>

Direct threats to the individual evoke the fight-or-flight response, of course, but so do threats to one's offspring because of the biological urge

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175. See generally HANS SELYE, *THE STRESS OF LIFE* (New York: McGraw-Hill rev. ed. 1976).

176. See, e.g., Rachel Yehuda & Joseph LeDoux, *Response Variation Following Trauma: A Translational Neuroscience Approach to Understanding PTSD*, 56 *NEURON REV.* 19 (2007).

177. ISAAC MARKS, *FEARS, PHOBIAS, AND RITUALS: PANIC, ANXIETY, AND THEIR DISORDERS* 25–52 (1987).

178. Randolph M. Nesse et al., *Evolutionary Origins and Functions of the Stress Response*, in *ENCYCLOPEDIA OF STRESS* 965, 965–66 (2d ed. 2007).

179. MARKS, *supra* note 177, at 25–52.

180. *Id.*

181. *Id.* at 35.

182. See *id.* at 27–28, 34–35; Dean Mobbs et al., *The Ecology of Human Fear: Survival Optimization and The Nervous System*, *FRONTIERS IN NEUROSCIENCE*, Mar. 18, 2015, at 15.

to preserve one's genes.<sup>183</sup> Because humans rely on each other for safety, being isolated, threatened with loss of important relationships or group membership, or being denied access to essential resources like food, water and shelter, can evoke the fight-or-flight response as reliably as direct physical threats.<sup>184</sup> Situations that pose even less direct threats can also stimulate the response, such as threats to pride and self-esteem or to hierarchical status, because of their ultimate implications for increasing risk of bodily harm or death.<sup>185</sup>

Modern humans generally retain these hardwired stimuli as primary fight-or-flight triggers and acquire additional ones through experience and learning. Many of these stimuli are near universally recognized—the sight of a gun in the hands of a fellow subway passenger may trigger the same strong fear of imminent death that a saber tooth tiger behind the next tree did for a caveman.<sup>186</sup> Other stimuli may affect a narrower group, like gang members learning that a certain color of clothing indicates danger.<sup>187</sup> Note that many of the modern threats that evoke the fight-or-flight response pose psychosocial threats rather than physical ones, yet humans' physiology remains wired for confronting primarily physical dangers.<sup>188</sup>

## 2. *The Psychology of The Fight-or-Flight Response*

In conjunction with the physiological changes described above, the fight-or-flight response also initiates changes in psychosocial functioning, including emotion, attention and memory, perception, cognition, and behavior. Understanding these psychological effects of the fight-or-flight response is important background for evaluating the scientific evidence more specifically related to the validity of the excited utterance exception.

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183. See Shelley E. Taylor et al., *Biobehavioral Responses to Stress in Females: Tend-and-Befriend, Not Fight-or-Flight*, 107 *PSYCHOL. REV.* 411, 413–17 (2000).

184. Jennifer R. Spoor & Kipling D. Williams, *The Evolution of an Ostracism-Detection System in EVOLUTION AND THE SOCIAL MIND: EVOLUTIONARY PSYCHOLOGY AND SOCIAL COGNITION* 181–82 (Joseph P. Forgas et al. eds., 2007); see also Saul L. Miller & Jon K. Manner, *Coping with Romantic Betrayal: Sex Differences in Responses to Partner Infidelity*, 6 *EVOLUTIONARY PSYCHOL.* 413, 413–26 (2008) (concluding males are more likely to respond to threats to primary romantic relationships with “fight” behaviors and females with affiliative behaviors).

185. Ethel S. Person, *Introduction*, in *RAGE, POWER, AND AGGRESSION* 3 (Robert Glick & Steven Roose eds., 1993).

186. See Elaine Fox, et al., *The Detection of Fear-Relevant Stimuli: Are Guns Noticed as Quickly as Snakes?*, 7 *EMOTION* 691, 691–96 (2007).

187. ELLEN E. PASTORINO & SUSANN M. DOYLE-PORTILLO, *WHAT IS PSYCHOLOGY? ESSENTIALS* 378 (2d ed. 2012).

188. See generally Nesse, *supra* note 178, at 969–70.

*a. Emotion*

The fear system is the primary emotional system associated with the fight-or-flight response, occurring in response to a serious threat.<sup>189</sup> Anger and aggression can be another part of the fight-or-flight response, either on its own or in conjunction with fear.<sup>190</sup> Some individuals, particularly those who feel cornered or without adequate escape or attack resources, may go “numb” or feel emotionally blunted instead.<sup>191</sup>

Though some people are able to regulate their emotional responses in fight-or-flight situations, primarily by reappraising the situation as not threatening or by deliberately suppressing at least outward emotion during the event,<sup>192</sup> most individuals automatically experience the emotional responses that accompany the fight-or-flight response.<sup>193</sup> They feel unable to shift or even moderate their emotions during immediate and strong threats.<sup>194</sup> The degree of the experienced emotion may vary, though; for example, fear may range from wariness and apprehension to full-blown terror, and anger and aggression from irritation to fury.<sup>195</sup> Emotions may be “pure” or mixed, or may occur in succession at different phases of the event.<sup>196</sup>

Anxiety, an emotion related to fear but generally regarded as its own distinct category, may occur on its own, though it more frequently accompanies the other emotions.<sup>197</sup> Ambiguity about the nature and degree of the threat tends to create and amplify anxiety, as does uncertainty regarding the adequacy of one’s resources and opportunities to counter it.<sup>198</sup> In addition, some individuals are at risk for greater anxiety.

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189. Steimer, *supra* note 160, at 231–49.

190. R. J. R. Blair, *Considering Anger from a Cognitive Neuroscience Perspective*, 3 WILEY INTERDISC. REV. COGNITIVE SCI. 65, 65–68 (2012).

191. Norman B. Schmidt et al., *Exploring Human Freeze Responses to a Threat Stressor*, 39 J. BEHAV. THERAPY & EXPERIMENTAL PSYCHIATRY 292, 292–304 (2008).

192. James J. Gross, *Antecedent- and Response-Focused Emotion Regulation: Divergent Consequences for Experience, Expression, and Physiology*, 74 J. PERSONALITY & SOC. PSYCHOL. 224, 224–37 (1998). Training in techniques like biofeedback and Cognitive Behavior Therapy (CBT) can also enable people to regulate the fight-or-flight response. *See, e.g.*, Michael G. McKee & Christine S. Moravec, *Biofeedback in the Treatment of Heart Failure*, 77 CLEVELAND CLINIC J. MED. S56, S56–S57 (2010).

193. *See* James J. Gross, *Sharpening the Focus: Emotion Regulation, Arousal, and Social Competence*, 9 PSYCHOL. INQUIRY 287, 287–90 (1998).

194. MARKS, *supra* note 177, at 4, 7–9.

195. *See id.* at 3–9.

196. Shichuan Du & Aleix M. Martinez, *Compound Facial Expressions of Emotion: From Basic Research to Clinical Applications*, 17 DIALOGUES IN CLINICAL NEUROSCIENCE 443, 444–46 (2015).

197. Steimer, *supra* note 160, at 233.

198. *See generally* Dan W. Grupe & Jack B. Nitschke, *Uncertainty and Anticipation in Anxiety: An Integrated Neurobiological and Psychological Perspective*, 14 NATURE REV. NEUROSCIENCE 488 (2013).

Individuals with high trait anxiety<sup>199</sup> will typically respond with higher levels of anxiety, as will people already experiencing significant stress.<sup>200</sup>

*b. Attention and Memory*

Many aspects of attention and memory, which are considered primary cognitive processes, are affected by the fight-or-flight response. This section will focus largely on several areas of particular concern for the excited utterance: startle and surprise; working memory; and selective attention. This section will also look at how the fight-or-flight response affects the formation of new memories and the individual's subsequent ability to access those memories.

*i. Startle and Surprise*

The human nervous system has evolved several systems to help mammals notice and respond to danger signals. This section will examine two systems of particular importance for the excited utterance: startle and surprise. Although Wigmore used the term "startling," this section explains that, from a technical perspective, he likely meant surprising.<sup>201</sup>

Startling, in the scientific sense, refers to an inborn, universal physiological reflex-like response that occurs at the level of the spinal cord or brainstem.<sup>202</sup> It involves rapid, automatic, and strong behavioral responses.<sup>203</sup> Because these responses occur without processing in the brain, they cannot be inhibited if unexpected. For example, if you touch a hot stove you believe to be cool, you will jerk your hand away, literally without thinking. If you touch it knowing it is hot, though, you may be able to suppress the startle response and keep your hand in contact even though it burns you.

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199. Trait anxiety refers to an individual's baseline anxiety and tendency to react to novel experiences with anxiety. Trait anxiety appears to have a strong genetic component, but is also "set" by early life experiences and modified by later life events. Powerful life events can reset trait anxiety particularly higher, such as with Post-Traumatic Stress Disorder. See Steimer, *supra* note 160, at 242–44; Carl F. Weems & Stacy Overstreet, *An Ecological-Needs-Based Perspective of Adolescent and Youth Emotional Development in the Context of Disaster*, in *LIFESPAN PERSPECTIVES ON NATURAL DISASTERS: COPING WITH KATRINA, RITA, AND OTHER STORMS* 38–39 (Katie E. Cherry ed., 2009).

200. See Bruce S. McEwen & Peter J. Gianaros, *Central Role of the Brain in Stress and Adaptation: Links to Socioeconomic Status, Health, and Disease*, 1186 *ANNALS N.Y. ACAD. OF SCI.* 190, 190–222 (2010).

201. Although Wigmore likely misused the term, this Article will refer to the type of event that supports the excited utterance exception as "startling" because that is the term that Wigmore and the courts use. See, e.g., *FED. R. EVID.* 803(2).

202. See Paul Ekman et al., *Is the Startle Reaction an Emotion?* 49 *J. PERSONALITY & SOC. PSYCHOL.* 1416, 1416–26 (1985).

203. See M. Koch, *The Neurobiology of Startle*, 59 *PROGRESS IN NEUROBIOLOGY* 107, 108 (1999).

Stimuli that trigger the startle response involve elements of being both sudden and unexpected, and of signaling imminent and serious harm; they include sudden pain or injury, sudden loud noises or bright lights, unexpected stimuli moving rapidly toward the face, abrupt loss of support (e.g., an unanticipated fall), and unexpected proximity to a possible predator (e.g., discovering a stranger in your house).<sup>204</sup> Reflex startling probably does indeed preclude lying—but only for the tiny, undetectable fraction of a second before the information is transmitted to the brain for further processing.

Surprise is the phenomenon more of issue in the excited utterance. Surprise is not a reflex but an emotion that involves cognitive evaluation of something as unexpected.<sup>205</sup> Something that startles you also surprises you—but a fraction of a second later after you have had time to “think” about it. The converse is not true though; something that surprises you did not necessarily startle you physiologically first. Surprise differs from startle in a variety of other ways too. It can be evoked by a greater variety of stimuli and also has an emotional valence.<sup>206</sup>

It is also important to note that the excited utterance treats startling events as binary—they are startling or they are not—but surprise, unlike physiological startle, can vary in degree as well as valence. The more surprising the event, the higher the arousal of the ensuing fight-or-flight response is likely to be.<sup>207</sup>

## ii. Working Memory

Working memory refers to the brain’s active information processing system.<sup>208</sup> This system affects the sensory information and long-term memories an individual can attend to and manipulate for nearly every type of mental task, including interpreting new information, encoding and storing new memories, applying new or well-practiced skills, making judgments and decisions, and solving problems.<sup>209</sup> It has particular relevance to how people respond cognitively to non-normal events, including the ability to lie and perceive events accurately, and so will be reviewed here in some detail.

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204. See Christian Grillon & Michael Davis, *Fear-Potentiated Startle Conditioning in Humans: Explicit and Contextual Cue Conditioning Following Paired Versus Unpaired Training*, 34 *PSYCHOPHYSIOLOGY* 451, 451–52 (1997).

205. Andrew Barto et al., *Novelty or Surprise?*, *FRONTIERS IN PSYCHOL.*, Dec. 11, 2013, at 2.

206. Ekman, *supra* note 202, at 1424.

207. *Id.*

208. Alan Baddeley, *Working Memory: Looking Back and Looking Forward*, 4 *NATURE REV. NEUROSCIENCE* 829, 829–39 (2003).

209. *Id.*

Despite its name, working memory involves not just memory, but also attention and executive functions of the brain.<sup>210</sup> Though there are several competing models of precisely how working memory is structured and operates, researchers generally agree that working memory is central to human cognition.<sup>211</sup> There is also general agreement that, in contrast to long-term memory, working memory is a limited resource, though the capacity of working memory varies among individuals.<sup>212</sup> Psychologists often refer to the amount of effort required to deal with the “stuff” on a person’s working memory desktop as “cognitive load.”<sup>213</sup>

An analogy may be helpful for conceptualizing how working memory operates generally. Visualize the foundational structure of an individual’s working memory as akin to the work surface of an office desk.<sup>214</sup> Some individuals have bigger desks and some have smaller ones; the size of the individual’s desktop will limit the amount of information that individual can readily “see” and either use or act on at any given moment.<sup>215</sup>

What is on someone’s working memory desktop at any given moment is a mix of current sensory information from the environment, recently acquired information that the brain has placed in short-term memory, and previously “filed” information brought out of storage from long-term memory, as well as whatever cognitive tasks the individual is performing at the time.<sup>216</sup> The mix of items on the working memory desk will vary from individual to individual, as well as from moment to moment, according to the demands of the tasks the brain is working on, characteristics of the immediate environment, and the individual’s resources.<sup>217</sup>

In the same way that people can usually only attend to the top paper of a stack, so can people typically only attend to one chunk of complex sensory information or memories at a time. For example, if you are

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210. Executive functions are higher-order cognitive processes that make it possible to resist temptations, cope with novel demands, play around with ideas, delay responses, and remain focused. They are sometimes described as “top-down functions.” See Adele Diamond, *Executive Functions*, 64 ANNU. REV. PSYCHOL. 135, 135–68 (2013).

211. Eric Nestler et al., *Chapter 13: Higher Cognitive Function and Behavioral Control*, in MOLECULAR NEUROPHARMACOLOGY: A FOUNDATION FOR CLINICAL NEUROSCIENCE 313–21 (2d ed. 2009).

212. WORKING MEMORY: CAPACITY, DEVELOPMENTS AND IMPROVEMENT TECHNIQUES (Eden S. Levin ed., 2011).

213. John Sweller, *Cognitive Load During Problem Solving: Effects on Learning*, 12 COGNITIVE SCIENCE 257, 257–85 (1988).

214. Henry L. Roediger III, *Memory Metaphors in Cognitive Psychology*, 8 MEMORY & COGNITION 231, 231–46 (1980).

215. *Id.*

216. *Id.*

217. *Id.*

concentrating on learning a phone number you are reading, you probably cannot be simultaneously memorizing an address printed on a piece of paper in the stack below it. An exception, though, occurs for skills or processes that have been learned and practiced to the point that they have become automatic and require little to no conscious thought to execute.<sup>218</sup> For example, beginning drivers must devote a large space of their working memory desk to every component skill and demand of driving—operating the accelerator and brake smoothly and at the right times; turning the steering wheel to maneuver around corners or obstacles, as well as make small adjustments to keep the car properly oriented in the correct lane; monitoring the positions and speeds of other cars on the road and anticipating any changes in these; using turn signals or windshield wipers effectively; and so on—but an experienced driver can skillfully operate a car along a familiar route without ever thinking consciously about these component tasks.<sup>219</sup> In terms of our desk and papers analogy, think of the beginning driver as having to spread papers for each component task across the entire desk, but the experienced driver can adequately represent the complex but automated skills with a small sticky note that says “drive the car.”<sup>220</sup>

### iii. Selective Attention

Selective attention refers to the ability to control where one’s attention is directed and how focused it is.<sup>221</sup> The metaphor of a spotlight captures how selective attention functions and how it interfaces with working memory.<sup>222</sup> A spotlight can be narrowly focused on just one item on the working memory desk, leaving the peripheral items easily accessed but temporarily in shadow/ignored, or the beam can be expanded to illuminate many items at once for a “big picture” view, but at the cost of making the light more diffuse and leaving details less clear.<sup>223</sup> Individuals vary generally in their ability to use selective attention effectively, and

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218. BRIAN J. HOLT & SHAWN J. RAINEY, U.S. ARMY RES. INST. FOR BEHAV. & SOC. SCI., AN OVERVIEW OF AUTOMATICITY AND IMPLICATIONS FOR TRAINING THE THINKING PROCESS 7–10 (2001).

219. *Id.* at 13–15.

220. *Id.* We can also think of this in terms of cognitive load; for a new driver, a trip to the corner store has a high cognitive load, but for an experienced driver it involves very little.

221. Jon Driver, *A Selective Review of Selective Attention Research From the Past Century*, 92 BRIT. J. OF PSYCHOL. 53, 65–66 (2001).

222. *Id.* at 65.

223. *Id.* This variation is sometimes described as the “zoom lens” model of attention. See Charles W. Eriksen & James D. St. James, *Visual Attention Within and Around the Field of Focal Attention: A Zoom Lens Model*, 40 PERCEPTION & PSYCHOPHYSICS 239 (1986).

their abilities to use selective attention are affected by situational characteristics, including stress.<sup>224</sup>

iv. Startling Events, Memory, and Flashbulb Memories

While memory may not seem a critical component of the excited utterance because it concerns declarations about recent events, it can affect the accuracy of both the content of the declarant's utterance and the recipient's subsequent recall of the utterance. This section will give a general but targeted overview of how memory functions both during a startling event and subsequently. In particular, it will examine flashbulb memories and their implications.

For an individual to utter something about a current event, he or she must first form a sensory memory and then make an effort to transfer it to short-term memory.<sup>225</sup> Sensory memories are very brief, lasting a second or less, and even short-term memories fade quickly; if not transferred to long-term memory within twenty to forty seconds, short-term memories will be "lost" and can never be retrieved after that point.<sup>226</sup> The transfer from short-term to long-term memory is an active process, not an automatic one, though it can occur outside of conscious awareness.<sup>227</sup> Whether the individual is aware or not, though, she is "editing" the content of the memory at each step of the process as she prepares it for storage.<sup>228</sup> Content may be further edited as it is recalled and repeated to self or others.<sup>229</sup>

Most of the excited utterances of concern in legal matters likely involve the declarant's recent long-term memories. They have thus already been subjected to some cognitive processing and the introduction of possible distortion. Although research on the latency that prevents significant contamination of recent memories is lacking, it seems

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224. Driver, *supra* note 221.

225. R.C. Atkinson & R.M. Shiffrin, *Human Memory: A Proposed System and Its Control Processes*, 2 PSYCHOL. OF LEARNING & MOTIVATION 89, 89-195 (1968).

226. Nelson Cowan, *What Are the Differences Between Long-Term, Short-Term, and Working Memory?*, 169 PROGRESS IN BRAIN RES. 323, 323-38 (2008). Failure to encode a memory and transfer it to long-term memory is what underlies problems like not being able to remember the name of the person you met at a cocktail party last week; if you did not first attend to the name and then try to remember it, the name is not stored in your memory and no amount of trying will enable you to recall it.

227. *Id.*

228. Lynn Hasher & Rose T. Zacks, *Automatic and Effortful Processes in Memory*, 108 J. EXPERIMENTAL PSYCHOL. 356, 356-58 (1979). Adults code most memories verbally; acute stress may short-circuit this tendency though.

229. Atkinson, *supra* note 225.

reasonable that the shorter the interval between the event and the utterance, the less chance there will be for contamination.<sup>230</sup>

The memory of the *recipient* is also relevant for the eventual reliability of the excited utterance, though, and the timing and likelihood of contamination of the memory will vary considerably depending on the length of time and circumstances until the recipient first repeats the declarant's utterance and in the interval between the first utterance and when it is presented in court. The considerable body of research on the unreliability of eyewitness testimony likely applies to these vicarious memories as well.<sup>231</sup>

Startling events and the effects of the resulting fight-or-flight response affect memory around the event in several ways. First, information that is new, threatening, or otherwise emotionally powerful is more likely to be attended to and brought into short term memory so that it can be remembered—and more likely to be judged important enough to store in long-term memory.<sup>232</sup> Second, a startling event that is especially sudden or upsetting may cause permanent loss of information held in short-term memory at the time of the event, by preventing it from ever being transferred to long-term memory.<sup>233</sup> Individuals may recognize that they are missing those memories, or they may “fill in” missing details and believe they remember them.<sup>234</sup> This finding suggests that utterances concerning information in the period just before the startling event should likely be considered less reliable. Finally, memories formed during extreme levels of stress are highly susceptible to bias and contamination.<sup>235</sup>

In general, stress and arousal affect both the formation of new memories and retrieval of old memories, according to the Yerkes-Dodson law: simple memories are most likely to be formed accurately when arousal and motivation are high; however, arousal affects the accurate

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230. Ralph Norman Haber & Lynn Haber, *Experiencing, Remembering and Reporting Events*, 6 PSYCHOL., PUB. POL'Y, & L. 1057, 1057–97 (2000). Although quick retrieval minimizes most after-the-fact contamination, it does not undo any bias operating at the time the event was perceived or placed in storage.

231. See Gary L. Wells & Elizabeth A. Olson, *Eyewitness Testimony*, 54 ANN. REV. OF PSYCHOL. 277, 277–95 (2003).

232. Ap Dijksterhuis & Henk Aarts, *On Wildebeests and Humans: The Preferential Detection of Negative Stimuli*, 14 PSYCHOL. SCI. 14, 14–18 (2003).

233. Ulrike Rimmele et al., *Emotion Enhances the Subjective Feeling of Remembering, Despite Lower Accuracy for Contextual Details*, 11 EMOTION 553, 554–55 (2011).

234. *Id.* at 558–61.

235. C.A. Morgan III, et al., *Misinformation Can Influence Memory for Recently Experienced, Highly Stressful Events*, INT'L J.L. & PSYCHIATRY 36 (2013).

formation of complex memories in an inverted-U shape.<sup>236</sup> That is, both very low and very high levels of stress interfere with creating new memories and later recall, while moderate levels of stress create optimal levels for memory.<sup>237</sup> For the excited utterance exception, this means that the declarant's level of arousal and the complexity of the content of the utterance will affect the likely reliability of the memory and subsequent statement, and in ways not necessarily apparent to the recipient or a judge.

In addition, memories of startling events are processed differently from other types of memories and are likely to be vivid and detailed.<sup>238</sup> These "flashbulb memories" are a subcategory of memories for episodes.<sup>239</sup> Both people directly involved in an event and those who hear about it subsequently may form flashbulb memories.<sup>240</sup> Under the influence of stress hormones, these memories are formed using different systems and brain structures than procedural or information-related memories, or even other kinds of episodic memories, and tend to be recalled in holistic fashion, much like a mental snapshot that includes many kinds of sensory detail.<sup>241</sup>

The focus and content of the "snapshot" may vary according to what details are attended to based on level of threat and arousal, as well as other individual factors and situational differences.<sup>242</sup> Thus, a bystander at a safe distance from a startling event like a robbery might have a flashbulb memory resembling a wide-angle snapshot that includes lots of unnecessary detail, like the clothes on a mannequin in a nearby store, while the "snapshot" memory of the victim might be a sharp-focus close-up of the assailant's weapon that fails to capture important details like the face of the robber.

Flashbulb memories have a curious disconnect: individuals' confidence in the accuracy of their flashbulb memories tends to be unusually high—but the actual reliability is no greater than for memories of more mundane events over the same time period (which is to say, not so great after the first few minutes).<sup>243</sup> Researchers who tracked and compared the flashbulb memories of adults for major events like 9/11 and

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236. David M. Diamond et al., *The Temporal Dynamics Model of Emotional Memory Processing: A Synthesis on the Neurobiological Basis of Stress-Induced Amnesia, Flashbulb and Traumatic Memories, and the Yerkes-Dodson Law*, 2007 NEURAL PLASTICITY 33 (2007).

237. *Id.*

238. Roger Brown & James Kulik, *Flashbulb Memories*, 5 COGNITION 73, 73–99 (1977).

239. *Id.*

240. *Id.*

241. *Id.*

242. Emanuele Coluccia et al., *Autobiographical and Event Memories for Surprising and Unsurprising Events*, 24 APPLIED COGNITIVE PSYCHOL. 177, 177–99 (2010).

243. Andrew R.A. Conway et al., *Flashbulb Memory for 11 September 2001*, 23 APPLIED COGNITIVE PSYCHOL. 605, 605–23 (2009).

natural disasters consistently find this inconsistency between accuracy of the memory and confidence that it is correctly recalled.<sup>244</sup> Thus, recipients of excited utterances may believe intensely, but incorrectly, that their memories of the excited utterance are complete and accurate, which could cause judges and juries to accord the hearsay statements unwarranted credibility.

*c. Perception*

Research is clear that the fight-or-flight response affects individuals' perceptions of an event in ways that may increase the likelihood of mistakes.<sup>245</sup> Because the amygdala prioritizes safety and survival, quick assessments and defensive judgments prevail over deliberate and thorough analyses.<sup>246</sup> Thus, independent of reality, people are more likely to perceive threats, more likely to overestimate the degree of threat, and more likely to attribute ill-intent to others when they are experiencing the fight-or-flight response.<sup>247</sup> Because stereotypes and prejudices (consciously or unconsciously held) facilitate fast decision-making, individuals will also tend to rely on them more heavily to evaluate situations and the intents of others; these sorts of perceptual biases can also lead to errors in judgments and decision-making and in subsequent interpretations and memories of the event.<sup>248</sup>

*d. Cognition*

By their nature, the kinds of situations that provoke the fight-or-flight response—typically dynamic, unpredictable, time-sensitive, and high stakes situations<sup>249</sup>—place high demands on individuals' higher-order cognitive resources.<sup>250</sup> Cognition during the acute phase of a threat focuses on several critical tasks: appraisal of the nature of the threat, appraisal of the individual's resources in dealing with the threat, generation of

244. *Id.*; see also Jennifer M. Talarico & David C. Rubin, *Confidence, Not Consistency, Characterizes Flashbulb Memories*, 14 PSYCHOL. SCI. 455, 455–61 (2003).

245. Deborah Davis & Elizabeth F. Loftus, *Expectancies, Emotion, and Memory Reports for Visual Events*, in THE VISUAL WORLD IN MEMORY 178–214 (James R. Brockmole ed., 2008).

246. Steimer, *supra* note 160, at 238.

247. Jennifer Lerner & Dacher Keltner, *Fear, Anger, and Risk*, 81 J. PERSONALITY & SOC. PSYCHOL. 146, 146–59 (2001); Paul Ekman et al., *Autonomic Nervous System Activity Distinguishes Among Emotions*, 221 SCI. 1208, 1208–10 (1983).

248. Irving L. Janis, *Decision Making Under Stress*, in HANDBOOK OF STRESS: THEORETICAL & CLINICAL ASPECTS 69–87 (Leo Goldberger & Shlomo Breznitz eds., 1982).

249. See generally Lyle E. Bourne, Jr. & Rita A. Yaroush, *Stress and Cognition: A Cognitive Psychological Perspective* (Sept. 2003) (unpublished manuscript) <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20040034070.pdf> [<https://perma.cc/34D4-DJ39>].

250. *Id.*

solutions for escaping or otherwise combatting the threat, and decision-making regarding the options for doing so.<sup>251</sup>

From brain scans of individuals under stress, though, we know that the parts of the brain involved in processing complex information are less “online” during crises.<sup>252</sup> In addition, because of the urgency necessary to respond to threats that trigger the fight-or-flight response, the brain prioritizes speed of processing, further limiting higher order processes like systematic decision-making.<sup>253</sup> Thus, individuals often find it difficult-to-impossible to use higher order cognitive skills during a threatening situation, which may limit their behavioral responses to ones that are automatic, habitual, or easy.<sup>254</sup> For example, individuals tend to use broad generalizations, black-and-white choices, and stereotyping to guide judgments and to rely on habitual behavioral patterns or first-thought action plans rather than generating and evaluating a range of options to choose between.<sup>255</sup> These mental shortcuts are known as heuristics.<sup>256</sup>

*e. Behavior*

As is obvious from the name, the two most recognized broad behavior patterns evoked by the fight-or-flight response are fighting or fleeing.<sup>257</sup> Flight, which is the more common of the two options, may entail running *away* from the threat and/or escaping *toward* a place (or people) of safety.<sup>258</sup> Similarly, fighting may be aimed *against* the threat or *toward* creating a pathway to safety.<sup>259</sup> Although the body’s responses are best suited for actual physical fight-or-flight, research shows that individuals

251. See Amos Tversky & David Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, 185 SCI. 1124 (1974).

252. Katrin Starcke & Matthias Brand, *Decision Making Under Stress: A Selective Review*, 36 NEUROSCIENCE & BIOBEHAVIORAL REV. 1228, 1228–48 (2012).

253. Bourne, *supra* note 249, at 31–32; see generally Dalal A. ALQahtani, *Does Time Pressure Have a Negative Effect on Diagnostic Accuracy?*, 91 ACAD. MED. 710 (2016).

254. Phillip M. Kleespies, *Training for Decision-Making Under the Stress of Emergency Conditions*, in THE OXFORD HANDBOOK OF BEHAVIORAL EMERGENCIES AND CRISES 21 (Phillip M. Kleespies ed., 2016).

255. MICHAEL ST. PIERRE ET AL., CRISIS MANAGEMENT IN ACUTE CARE SETTINGS: HUMAN FACTORS AND TEAM PSYCHOLOGY IN A HIGH STAKES ENVIRONMENT 10 (2007).

256. Rongjun Yu, *Stress Potentiates Decision Biases: A Stress Induced Deliberation-to-Intuition (SIDI) Model*, 3 NEUROBIOLOGY STRESS 83, 83–95 (2016); Tversky, *supra* note 251, at 1124.

257. D. Caroline Blanchard et al., *Human Defensive Behaviors to Threat Scenarios Show Parallels to Fear- and Anxiety-Related Defense Patterns of Non-Human Mammals*, 25 NEUROSCIENCE & BIOBEHAVIORAL REV. 761, 761–70 (2001).

258. Paulo Domenici & Graeme D. Ruxton, *Prey Behaviors During Fleeing: Escape Trajectories, Signaling, and Sensory Defenses*, in ESCAPING FROM PREDATORS: AN INTEGRATIVE VIEW OF ESCAPE DECISIONS 199–224 (William E. Cooper & Daniel T. Blumstein eds., 2015).

259. Jaak Panksepp, *The Psychoneurology of Fear: Evolutionary Perspectives and the Role of Animal Models in Understanding Human Anxiety*, in 3 HANDBOOK OF ANXIETY: THE NEUROBIOLOGY OF ANXIETY 58 (Graham D. Burrows et al. eds., 1990).

may also or instead resort to symbolic or psychological forms of these behaviors, such as creating psychological distance, using words as weapons, or making threat displays (like brandishing a gun or making threatening gestures).<sup>260</sup>

However, in the century since the response was first identified, research has revealed that the physiological changes associated with the body's response to threats support other common behavior patterns in addition to fight or flight. In particular, research has confirmed that freezing, sometimes described as a "fawn" response, is often the first response to a possible threat, particularly when the threat is distant or uncertain.<sup>261</sup> Additionally, a similar but distinct behavior pattern may occur later in the event when an individual judges that the threat is too great and there is no path for escape. In these situations, individuals may experience tonic immobility (also called the "fright" response)—a temporary but often complete "paralysis" of thought or action, or even actual collapse (e.g., fainting).<sup>262</sup> Related behavior patterns may involve shielding (e.g., cowering or using hands or objects to protect vulnerable body parts), hiding, trying to "fade into the background" in some way (including "playing dead"), or diverting the aggressor's attention.<sup>263</sup>

Another well-documented behavior pattern, known as "tend and befriend," is particularly common in women, for whom fighting and fleeing are less likely to be effective options and in whom the stress response stimulates release of another hormone, oxytocin.<sup>264</sup> The tend and befriend pattern centers on protection and care of young and/or cultivating and enlisting social support, particularly from other women, as protection.<sup>265</sup> In addition, interpersonal threats that result in stimulation of the fight-or-flight response may also result in patterns of submissive and placating behaviors, including efforts to defuse the situation, soothing, agreeing, or efforts at negotiation or reasoning.<sup>266</sup> Attempts at defusing are more likely when individuals perceive themselves as physically mismatched with the peril, lower in the social hierarchy than the aggressor,

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260. *Id.*

261. Norman B. Schmidt et al., *Exploring Human Freeze Responses to a Threat Stressor*, 39 J. BEHAV. THERAPY & EXPERIMENTAL PSYCHIATRY 292, 292–304 (2008).

262. H. Stefan Bracha, MD, *Freeze, Flight, Fight, Fright, Faint: Adaptationist Perspectives on the Acute Stress Response Spectrum*, 9 CNS SPECTRUMS 679, 679–85 (2004).

263. *Id.*

264. Shelley E. Taylor, *Tend and Befriend: Biobehavioral Bases of Affiliation Under Stress*, 15 CURRENT DIRECTIONS IN PSYCHOL. SCI. 273, 273–77 (2006).

265. *Id.*

266. Paul Gilbert, *Defence and Safety: Their Function in Social Behaviour and Psychopathology*, 32 BRIT. J. CLINICAL PSYCHOL. 131, 131–53 (1993).

or skilled at obtaining safety through negotiating.<sup>267</sup> This style of response is common among many of the victims in domestic violence situations.<sup>268</sup> Note that these patterns may explicitly include the use of deception for self- or other-protection.

Because human beings are social animals, their behavior in the face of threat is often modified by the proximity of others.<sup>269</sup> Thus, behavioral patterns when others are present or nearby may include protective actions directed toward others rather than, or in addition to, the self, ranging from sentinel behavior (e.g., shouting warnings) to actively aiding others (e.g., pushing to safety, shielding, or fighting on behalf of another), even at the risk of one's own safety.<sup>270</sup> Protective actions are most likely to be directed toward those for whom the actor feels responsible in some way, such as one's own children, those in one's protective custody, or individuals perceived as members of a vulnerable group or as part of a group to whom the actor also belongs.<sup>271</sup>

People's perceptions of the threat and their initial reactions are also affected by their proximities to others and their relationships to those others. For example, studies of real life crises and natural disasters have found that people are slower to recognize and respond to signs of a threat when they are with close family members than when they are alone or with strangers.<sup>272</sup> Consistent with these findings, witness statements of people on holiday or at a recreational event with friends and family members when a terroristic attack occurred typically contain accounts that the witness perceived the event to be benign in nature, although it was in fact threatening. For example, when an audience member present with fellow Air Force members during the Aurora, Colorado movie theater shooting in 2015 described his reaction to the first shots fired his way, he stated "[t]o be honest, my first idea was fireworks."<sup>273</sup> Derick Spruel, whose friend and fellow airman Jesse Childress was killed in the shooting,

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267. Laura A. Harrison et al., *Exploring the Structure of Human Defensive Responses from Judgments of Threat Scenarios*, 10 PLOS ONE 16 (2015); Blanchard, *supra* note 257, at 761–70.

268. Lisa Goodman et al., *The Intimate Partner Violence Strategies Index: Development and Application*, 9 VIOLENCE AGAINST WOMEN 163, 163–86 (2003).

269. Tsachi Ein-Dor, *Facing Danger: How Do People Behave in Times of Need? The Case of Adult Attachment Styles*, 5 FRONTIERS IN PSYCHOL., Dec. 10, 2014, at 1, 1–6 (2014).

270. *Id.*

271. *Id.*

272. Jonathan D. Sime, *Affiliative Behaviour During Escape to Building Exits*, 3 J. ENVTL. PSYCHOL. 21, 21–41 (1983); Gerta Köster et al., *On Modelling the Influence of Group Formations in a Crowd*, 6 CONTEMP. SOC. SCI. 397, 397–414 (2011).

273. Jordan Steffen, *Aurora Theater Shooting Victims Recall Terror, Confusion Amid Attack*, DENV. POST (Apr. 28, 2016), <http://www.denverpost.com/2015/04/28/aurora-theater-shooting-victims-recall-terror-confusion-amid-attack/> [<https://perma.cc/X4JJ-ZA7D>].

explained “I thought it was a prank at first. I feel real bad to say this, but I really tried to continue to watch the movie.”<sup>274</sup>

Attachment psychology theorists explain this sort of reaction as stemming from the feelings of safety we derive from being with others we know and expect to protect us.<sup>275</sup>

Individuals also take their cues for how to react by observing the behaviors of others. Seeing others running fast in the opposite direction or hearing screams of alarm, for example, can be potent triggers for flight.<sup>276</sup> Many mass panic stampedes seem to be caused by this phenomenon; for example, a panic in a crowd watching a soccer match in a Turin, Italy piazza, possibly triggered by a firecracker, resulted in more than 1,500 people being trampled and injured, some seriously. One witness stated, “No one heard the bang . . . . The noise we heard was that of the crowd running and screaming, and so obviously we thought there had been an attack.”<sup>277</sup> Alternatively, seeing others calmly continuing to go about their normal business may lead people to interpret a crisis as benign and thus fail to act promptly.<sup>278</sup> For example, authorities noted that many of the vulnerable residents of Galveston who failed to evacuate before Hurricane Ike in 2008 may have been lulled into a false sense of safety by the presence of on-scene broadcasters, who apparently thought it was safe enough to remain.<sup>279</sup>

### 3. Situational Differences

In general, the greater, more direct, and more imminent a threat to an individual’s safety or survival—or, more precisely, the more an individual appraises a threat in those ways—the stronger the level of autonomic arousal will be.<sup>280</sup> Arousal will also be stronger when individuals evaluate their resources and opportunities within the situation as inadequate in the

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274. *Id.*

275. See generally Jeffrey A. Simpson, *Attachment Theory in Modern Evolutionary Perspective*, in *HANDBOOK OF ATTACHMENT: THEORY, RESEARCH, AND CLINICAL APPLICATIONS* 115–40 (Jude Cassidy & Phillip R. Shaver eds., 1999).

276. ANTHONY R. MAWSON, *MASS PANIC AND SOCIAL ATTACHMENT: THE DYNAMICS OF HUMAN BEHAVIOR* 235–36 (Kindle ed. 2012).

277. Sofia Lotto Persio, *Turin: How a False Alarm Led to Mass Injuries During a Champions League Match Viewing*, *NEWSWEEK* (June 5, 2017), <http://www.newsweek.com/turin-how-false-alarm-left-more-1500-injured-during-champions-league-620910> [<https://perma.cc/J8ED-W83D>].

278. Daniel Nilsson & Anders Johansson, *Social Influence During the Initial Phase of a Fire Evacuation-Analysis of Evacuation Experiments in a Cinema Theatre*, 44 *FIRE SAFETY J.* 71, 71–79 (2009).

279. Willie Drye, *Why Hurricane Ike’s “Certain Death” Warning Failed*, *NAT’L GEOGRAPHIC NEWS* (Sept. 26, 2008), <http://news.nationalgeographic.com/news/2008/09/080926-hurricane-ike-evacuation.html> [<https://perma.cc/346W-7GPX>].

280. Randolph J. Paterson & Richard W. Neufeld, *Clear Danger: Situational Determinants of the Appraisal of Threat*, 101 *PSYCHOL. BULL.* 404, 404–16 (1987).

face of the threat.<sup>281</sup> Arousal strength is similarly affected by the degree of perceived threat to someone whom an individual is highly motivated to protect.<sup>282</sup>

Moreover, the role of someone in a traumatic situation will also typically affect the degree of arousal. Individuals can be participants—and participants can be either the initiators of the situation or victims—or bystanders/witnesses. Both roles and the various relationships between participants and bystanders affect arousal levels and behavior.<sup>283</sup> The situation may occur between or in proximity to people who know one another or may involve strangers.

Usually, someone directly involved in a traumatic situation will have greater autonomic arousal than a bystander will, and someone who is not directly involved but who identifies strongly with one or more of the participants will respond more strongly than a neutral bystander.<sup>284</sup> These nuances all have implications for the trustworthiness of a particular declarant.

#### 4. Individual Differences in Arousal

Individual differences also affect how easily or strongly the fight-or-flight system is activated. Some of these differences are innate,<sup>285</sup> while others are the result of early life experiences that predispose individuals to be more or less reactive.<sup>286</sup> In addition, later learning experiences, direct or vicarious, affect nervous system reactivity, sometimes powerfully.<sup>287</sup> Learning can also affect which stimuli cause different levels of arousal; Post-Traumatic Stress Disorder (PTSD) is an extreme example of how learning may affect both triggers and arousal strength.<sup>288</sup>

Recent experiences with other threat-related events, whether experienced directly or vicariously, can also “prime” the fight-or-flight

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281. *See id.*

282. David S. Goldstein, *Sympathetic Nervous System*, in 3 *ENCYCLOPEDIA OF STRESS* 558 (George Fink ed., 2000).

283. *See* Gregory R. Janson & Richard J. Hazler, *Trauma Reactions of Bystanders and Victims to Repetitive Abuse Experiences*, 19 *VIOLENCE & VICTIMS* 239, 239–55 (2004).

284. *Id.*

285. W. Thomas Boyce & Bruce J. Ellis, *Biological Sensitivity to Context: I. An Evolutionary–Developmental Theory of the Origins and Functions of Stress Reactivity*, 17 *DEVEL. & PSYCHOPATHOLOGY* 271, 275–78 (2005).

286. Katie A. McLaughlin et al., *Causal Effects of the Early Caregiving Environment on Development of Stress Response Systems in Children*, 112 *PROC. OF THE NAT’L ACAD. OF SCI.* 5637, 5637–42 (2015).

287. Michael Davis, *The Role of the Amygdala in Conditioned and Unconditioned Fear and Anxiety*, in *THE AMYGDALA* 213–87 (John P. Aggleton ed., 2000).

288. Jonathan E. Sherin & Charles B. Nemeroff, *Post-Traumatic Stress Disorder: The Neurobiological Impact of Psychological Trauma*, 13 *DIALOGUES IN CLINICAL NEUROSCIENCE* 263, 263–78 (2011).

response, allowing it to occur more readily or strongly, or in response to particular stimuli.<sup>289</sup> For example, in the wake of the Boston Marathon bombings, many people experienced strong fight-or-flight reactions in the presence of abandoned backpacks, whether or not they had been present at the bombing.<sup>290</sup>

These individual and situational variations are of particular note for the excited utterance exception. Because both objective features of an event and demeanor of the declarant are poor indicators of the declarant's arousal level, it is likely difficult for an untrained observer to judge the declarant's arousal level accurately without at least cursory knowledge of the declarant's innate tendencies and personal history.

#### 5. Latency of the Fight-or-Flight Response

The fight-or-flight response is activated rapidly and is typically perceived by affected individuals as happening instantaneously and globally.<sup>291</sup> How long the response lasts depends largely on how long it is needed; there is no set period for which an individual will be aroused and then recover.<sup>292</sup> Once a threat has passed, the parasympathetic nervous system acts to reverse the changes associated with arousal and return the individual to homeostasis.<sup>293</sup> This system is sometimes known colloquially as the "rest-and-digest" system or the "feed-and-breed" system, for activities that are best carried out in the absence of threats. The parasympathetic nervous system operates more slowly than the sympathetic one; time is needed to remove the circulating stress hormones from the system and replenish resources used during the fight-or-flight response (which is why people often continue to feel "shaky" or "worked up" even hours or days after experiencing a traumatic event).<sup>294</sup>

#### 6. Demeanor and the Fight-or-Flight Response

Because the use of the excited utterance exception partly rests on the ability of those hearing the utterance to distinguish whether an individual

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289. Randall D. Marshall et al., *The Psychology of Ongoing Threat: Relative Risk Appraisal, the September 11 Attacks, and Terrorism-Related Fears*, 62 AM. PSYCHOL. 304, 304–16 (2007).

290. CNN Wire, *Boston Bomb Squad Investigates Backpack Near Boston Marathon Finish Line*, KDVR (Apr. 16, 2014, 6:45 AM), <http://kdvr.com/2014/04/15/boston-bomb-squad-investigates-backpack-near-boston-marathon-finish-line/> [https://perma.cc/667C-9WFJ].

291. Research using fMRI technology and other advanced imaging techniques, however, has shown that the response affects different neurological and hormonal systems in sequence, not all at once. See Hugo D. Critchley, *Psychophysiology of Neural, Cognitive and Affective Integration: fMRI and Autonomic Indicators*, 73 INT'L J. PSYCHOPHYSIOLOGY 88, 88–94 (2009).

292. Steimer, *supra* note 160.

293. McCorry, *supra* note 174, at 3–4.

294. CANNON, *supra* note 154.

is in fact experiencing a state of excitement, it is important to consider whether the effects of fight-or-flight activation are readily and reliably detectable without training.

The classic expectation is that someone who is experiencing the fight-or-flight response will be visibly agitated, with scared, anxious, surprised, or angry facial expressions, obvious rapid breathing, sweating, and other visible indicators of the fight-or-flight response.<sup>295</sup> Research shows, however, that most people are poor judges of whether other individuals are displaying genuine or faked emotions.<sup>296</sup> Even people generally trained in emotional observation tend to be poor judges of whether demeanor is being faked without advanced training or use of equipment that facilitates detection of fleeting facial expressions.<sup>297</sup>

Ordinary observers may make false negative errors too; that is, they confuse controlled or “blank” expressions and body language with lack of emotional reaction.<sup>298</sup> During a crisis, individuals may suppress their emotions for protective reasons. Examples where these kinds of reactions are common include domestic assaults, where the victim may have learned that appearing frightened exacerbates the assault,<sup>299</sup> in people pulled over by police who expect that looking polite or friendly will reduce the risk that a situation escalates, or in first responders who mask their emotions in order to better comfort victims.<sup>300</sup> After a period of such emotional suppression, actual emotions may be expressed later when it seems safe to do so or when the individual can no longer muster the energy to suppress them.<sup>301</sup> Other people respond to abnormal events with inappropriate affect; their behavior too is likely to be misinterpreted.<sup>302</sup>

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295. See, e.g., Margarita Tartakovsky, *Panicked Over Public Speaking? A Holistic Approach That Helps*, PSYCH CENTRAL (May 17, 2016), <https://psychcentral.com/lib/panicked-over-public-speaking-a-holistic-approach-that-helps/> [<https://perma.cc/FY4P-2YZ2>].

296. PAUL EKMAN & WALLACE V. FRIESEN, UNMASKING THE FACE: A GUIDE TO RECOGNIZING EMOTIONS FROM FACIAL CLUES, 144–53 (2003); Stephen Porter & Leanne ten Brinke, *Reading Between the Lies: Identifying Concealed and Falsified Emotions in Universal Facial Expressions*, 19 PSYCHOL. SCI. 508, 508–14 (2008).

297. *Id.*

298. Emily Butler et al., *The Social Consequences of Expressive Suppression*, 3 EMOTION 48, 56–57 (2003).

299. SCOTT ALLEN JOHNSON, PHYSICAL ABUSERS AND SEXUAL OFFENDERS: FORENSIC AND CLINICAL STRATEGIES 13 (2006).

300. Renae Hayward & Michelle R. Tuckey, *Global and Occupation-Specific Emotional Resources as Buffers Against the Emotional Demands of Fire-Fighting*, 60 APPLIED PSYCHOL. 1, 1–23 (2011).

301. *Id.*

302. Richard Lazarus, *The Stable and Unstable in Emotion*, in THE NATURE OF EMOTIONS: FUNDAMENTAL QUESTIONS 78–85 (Richard J. Davidson & Paul Ekman eds., 1994).

*B. Putting It All Together: How the Fight-or-Flight Response Affects Deception, Perceptual Errors, Communication, and, Ultimately, Reliability*

1. Deception

Because the excited utterance exception rests most fundamentally on the hypothesis that people are *unable* to lie when experiencing the emotions of a startling event, the logical first step in evaluating its validity is to examine the research on whether people *can* lie spontaneously while under that kind of acute and severe stress.

Unfortunately, the gold-standard controlled experiments that would best answer the question are neither ethically nor practically feasible; therefore, that level of directly relevant scientific evidence does not exist and likely never will. But useful evidence to answer this question can be culled from other sources, including controlled experiments of lying under lower levels of stress and arousal (such as while performing complex arithmetic or holding one's hand in ice water), as well as from experiments of performance of different complex behaviors in high-stress simulations (e.g., military, medical, and aviation crises), and from observations of deception that occur in natural startling situations.

This section will show that the short answer to the question, "Can people lie while in an excited state after a startling event?" is yes. In fact, to the extent that lying may be a useful or well-practiced protective behavior, it may even be a likely behavior in response to many threatening situations.<sup>303</sup> The scientific evidence, though, will also show that a full answer to this question is longer and more complicated: individuals vary in their inclination and ability to lie while under stress, in the types of lies they tell while in an excited state, and in the sorts of conditions under which they are more or less motivated or able to lie.

This section will open with a review of relevant general research about lying, including a working definition of lying, an examination of who lies (including developmental, cultural, and individual characteristics), and situational and individual factors that affect why and when people are more or less likely to lie. It will conclude with a more specific look at the science about lying while in an excited state.

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303. Bella M. DePaulo et al., *Serious Lies*, 26 BASIC & APPLIED SOC. PSYCHOL.147, 147–67 (2004).

a. *Definition of Lying*

A lie is a statement the speaker believes to be untrue told with the intent of deceiving a target.<sup>304</sup> Thus, when a magician says she is sawing a man in half, it is not lying because she knows the audience realizes it will be an illusion. If a young child says something untrue because of misunderstanding, that also is not lying, because the child's intent is not to deceive. Telling a child that Santa Claus is a real person who will bring him gifts if he behaves well, however, is lying—the speaker knows the statement to be untrue and intends for the target to believe it.

Although that definition of lying is simple and straightforward, lies are actually a complex phenomenon and can vary on many dimensions.<sup>305</sup> They can:

1. *Have different intents/motivations.* Lies can be intended to obtain something desired, or to protect against a negative consequence. More specifically, they can be self-serving (also known as egoistic—like someone inflating his income or deflating his weight to seem more attractive on a dating site), prosocial (also known as other-oriented—like a doctor lying about a patient's prognosis to prevent despair), antisocial (or other-harming—like falsely accusing a work rival of mismanagement simply to cause him harm), or some combination of the above.<sup>306</sup>

2. *Vary in magnitude of consequence.* Lies may range from minor or low-stakes (like responding to a telephone inquiry of “How are you?” with “Fine,” when you are actually battling a cold) to serious or high stakes (like falsely blaming someone else for a serious crime).<sup>307</sup>

3. *Range in complexity and degree.* Lies may involve fudging—slightly exaggerating or deceiving by omitting a minor fact—to creating a complex, detailed fiction.<sup>308</sup>

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304. Bella M. DePaulo et al., *Lying in Everyday Life*, 70 J. PERS. SOC. PSYCHOL. 979, 979–95 (1996).

305. Bella M. DePaulo, *The Many Faces of Lies*, in THE SOCIAL PSYCHOLOGY OF GOOD AND EVIL 303–26 (Arthur Miller ed., 2004); Jeffrey J. Walczyk et al., *A Social-Cognitive Framework for Understanding Serious Lies: Activation-Decision-Construction-Action Theory* 34 NEW IDEAS IN PSYCHOL. 22, 22–36 (2004).

306. DePaulo, *supra* note 304; Walczyk *supra* note 305, at 26.

307. DePaulo, *supra* note 304, at 991–94.

308. *Id.*; see also *List of Confidence Tricks*, WIKIPEDIA, [https://en.wikipedia.org/wiki/List\\_of\\_confidence\\_tricks](https://en.wikipedia.org/wiki/List_of_confidence_tricks) [<https://perma.cc/F86T-4QU4>].

4. *Vary in how false impressions are created.* There are lies of omission and commission, lies that withhold relevant information or add distracting extraneous information to create or permit a wrong impression, and lies that involve falsely denying knowledge or pleading poor memory. “Half-lies” and other partial truths can have the same impact as a complete lie while being cloaked with true elements.<sup>309</sup>

5. *Finally, lies may morph from deliberate to mistaken.* People may come to believe their lies, either quickly or over time.<sup>310</sup>

For purposes of the excited utterance, the focus is primarily on a subset of the possible types of lies—spontaneous ones of commission that potentially have significant consequences. This subset, though, still encompasses a wide range of different kinds of lies, including a range of intents and degrees of seriousness. In addition, the exception sometimes includes part-lies of omission, where something true is uttered but additional known information that would change the impact of the statement is omitted,<sup>311</sup> as well as wholly true statements intended to create deception through distraction or misdirection. It is useful to keep this complexity in mind when considering the possibility of lying under stress.

#### b. *Who Lies*

We are all Pinocchio; lying is a near universal behavior with a high rate of frequency. Studies of self-reported lying using diary reports commonly find that virtually all cognitively healthy adults lie, with the mean frequency of lying ranging from about 0.59 to 1.96 lies per day.<sup>312</sup> One large-scale study using retrospective recall of the previous twenty-four hours found a similar mean number of lies but lower prevalence, with less than half of adults (just over 40%) reporting lying during the previous day, and a small percentage of individuals (about 5%) responsible for the majority of lies during that period—though nearly all the subjects reported

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309. DePaulo, *supra* note 304, at 983.

310. William von Hippel & Robert Trivers, *The Evolution and Psychology of Self-Deception*, BEHAV. & BRAIN SCI., Feb. 3, 2011, at 1, 1–56.

311. For example, a mostly true statement like, “I saw a tall man running from the scene who looked suspicious!” might create a false impression of the guilty party’s identity if what is unsaid is, “But I know he didn’t commit the crime because I did.”

312. DePaulo, *supra* note 304; Joey George & Alastair Robb, *Deception and Computer-Mediated Communication in Daily Life*, 21 COMM. REP. 92, 92–103 (2008); Jeffrey T. Hancock et al., *Deception and Design: The Impact of Communication Technology on Lying Behavior*, 6 PROC. OF THE SIGCHI CONF. ON HUM. FACTORS IN COMPUTING SYS. 129, 129–34 (2004).

lying during the previous week.<sup>313</sup> A study that used videotaped interactions between strangers found that 60% of the subjects lied at least once in the course of a ten-minute conversation and those 60% told three lies on average; the biggest liars told a dozen lies in ten minutes.<sup>314</sup>

In any event, lying is universal and frequent but varies considerably in rate between individuals. It also varies in seriousness; the majority of lies are minor or prosocial, with most people reporting telling one or fewer significant lies per week.<sup>315</sup> Among significant lies, several studies have found that protective lies are more common than lies told for gain.<sup>316</sup> The important takeaways of this research for the excited utterance are that lying is a common protective tool, and that most people are capable of telling serious lies.

The ability to lie develops early in life and the timing seems to be related to the level of cognitive development.<sup>317</sup> Laboratory observations and experiments with young children subjected to strong temptations followed by self-report of their behavior find that young children yield to temptation at a high rate and may well lie about whether they did, particularly when they fear negative consequences for their misbehavior.<sup>318</sup> Lying to avoid negative consequences or for personal gain develops in many children as early as two or three years of age and is almost universal by age four, though it may take children years to become skilled liars whose falsehoods are hard for adults to detect.<sup>319</sup> Nonetheless, the early onset of the ability to lie is important to consider when weighing the use of hearsay statements by children in legal proceedings.

As pretty much every parent discovers, lying is more common at some ages than at others. In general, the rate of lying is lowest at the youngest ages and increases through adolescence when it typically reaches its lifetime peak.<sup>320</sup> The frequency of lying then declines over the course

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313. Kim B. Serota et al., *Prevalence of Lying in America: Three Studies of Self-Reported Lies*, 36 HUMAN COMMUNICATIONS, 2–25 (2010). Note, though, that because survey studies like this and the ones above rely on self-report, it is possible that subjects lied about lying.

314. Robert S. Feldman et al., *Self-Presentation and Verbal Deception: Do Self-Presenters Lie More?*, 24 BASIC & APPLIED SOC. PSYCHOL. 163, 163–70 (2002).

315. DePaulo, *supra* note 304.

316. Beata Arcimowicz et al., *Motivation and Consequences of Lying: A Qualitative Analysis of Everyday Lying*, 16 FORUM: QUALITATIVE SOC. RES. 16 (2015); DePaulo, *supra* note 304.

317. Kang Lee, *Little Liars: Development of Verbal Deception in Children*, 7 CHILD DEV. PERSP. 91, 91–96 (2013).

318. *Id.*

319. Victoria Talwar & Kang Lee, *Social and Cognitive Correlates of Children's Lying Behavior*, 79 CHILD DEV. 866, 866–81 (2008).

320. Lene Arnett Jensen et al., *The Right to Do Wrong: Lying to Parents Among Adolescents and Emerging Adults*, 33 J. YOUTH & ADOLESCENCE 101, 101–12 (2004).

of adulthood and returns to about the same level as during the preschool years after the age of sixty.<sup>321</sup>

The probability that a given individual will lie in a given circumstance is influenced partly by experience. Frequent liars are more likely to lie again; lying is like other skills and habits in that practice strengthens it. A recent study shows that telling small lies actually creates changes in the individual's brain (specifically in the amygdala) which increase the likelihood that he or she will tell more, and bigger, lies in the future—a sort of neural slippery slope for lying.<sup>322</sup> The chances of lying are also influenced by the individual's learning about the rewards and risks of lying or telling the truth, and by their experiences with getting caught—or getting away with lying.<sup>323</sup>

Lying is also affected by cultural and subcultural norms that define circumstances when lying is expected—or unacceptable. For example, certain groups and subcultures may see lying to authorities as reasonable (or even demanded) to protect one another (e.g., “honor among thieves” and “brotherhood” loyalty among fraternity members),<sup>324</sup> and police may see lying as honorable to protect one another (i.e., the “blue wall of silence”)<sup>325</sup> or to achieve what they believe to be justice (e.g., “testilying”).<sup>326</sup> In the United States, lying is commonplace to the point of being generally assumed in situations where people are expected to put their best selves forward, such as in job interviews<sup>327</sup> or on online dating sites<sup>328</sup> but the degree of misinforming is generally small.<sup>329</sup> Americans

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321. Evelyne Debey et al., *From Junior to Senior Pinocchio: A Cross-Sectional Lifespan Investigation of Deception*, 160 ACTA PSYCHOLOGICA 58, 58–68 (2015).

322. Neil Garrett et al., *The Brain Adapts to Dishonesty*, 19 NATURE NEUROSCIENCE 1727, 1727–32 (2016).

323. Talwar, *supra* note 319.

324. Patricia Yancey Martin & Robert A. Hummer, *Fraternities and Rape on Campus*, 3 GENDER & SOC. 457, 457–73 (1989).

325. Gabriel J. Chin & Scott C. Wells, *The “Blue Wall of Silence” As Evidence of Bias and Motive to Lie: A New Approach to Police Perjury*, 59 U. PITT. L. REV. 233 (1998).

326. Radley Balko, *How Do We Fix the Police ‘Testilying’ Problem?*, WASH. POST (Apr. 16, 2014), <https://www.washingtonpost.com/news/the-watch/wp/2014/04/16/how-do-we-fix-the-police-testilying-problem/> [<https://perma.cc/LRB6-XWW9>].

327. Julia Levashina & Michael A. Campion, *Measuring Faking in the Employment Interview: Development and Validation of an Interview Faking Behavior Scale*. 92 J. APPLIED PSYCHOL. 1638, 1638–56 (2007).

328. One study of online dating profiles found that nine out of ten people fudged at least one of the assessed areas on their profile. See Jeffrey T. Hancock et al., *The Truth About Lying in Online Dating Profiles*, PROC. OF THE SIGCHI CONF. ON HUM. FACTORS IN COMPUTING SYS. 449, 451–52 (2007).

329. See *id.*; Levashina, *supra* note 327. Both studies found that there is essentially an unspoken agreement about how much lying is acceptable; for example, people may shave five pounds off their weight, but not falsely claim to have performed military service; people may exaggerate their salary at their previous job by 5% but not claim to have earned a degree they did not.

also expect—and often forgive—a certain degree of lying by politicians, salespeople, and, yes, lawyers.<sup>330</sup> On the other hand, lies told for personal gain that harm innocent people are almost universally considered unacceptable.<sup>331</sup>

For purposes of the excited utterance, the important takeaways from this review of who lies are: a) lying is a universal and frequent behavior; b) most lying is minor, but the majority of people nonetheless tell some significant lies on a regular basis; c) there are significant group and individual variables that affect who is most likely to lie and when—but mostly these are not readily observable characteristics.

c. *The Decision to Lie*

i. Dual Processing Theory: A Social Cognitive Framework for Lying

Whether or not to tell a lie in a given situation is often influenced by a number of variables and judgments. Social scientists have proposed a number of theoretical frameworks to guide understanding of the cognitive decision process.<sup>332</sup> Though different researchers have emphasized different elements, most frameworks include the individual's judgments of: a) the risks or rewards of being honest versus lying; b) the odds of avoiding detection; and c) the consequences of getting caught.<sup>333</sup>

For example, suppose you accidentally bumped the car in front of yours while parallel parking. You are in a hurry to get to an important appointment, but you check and see that there is a small dent in the other car's bumper. There is also a little rust near it, though, suggesting that it probably happened a while ago. While you are inspecting the dent, the owner of the car returns and asks you if there is a problem. At this point you have to decide whether to lie.

Applying a rational lying-decision framework, you would weigh the *benefits* of being honest and admitting you bumped the car (e.g., it will make you feel good) with the *risk* of being honest (the other driver may lie and insist you pay for a repair of a dent you believe you did not actually cause). You will also consider the benefits of lying (you might make it to your appointment on time; you will not have to pay for repairs) and the risks of doing so (if you get caught, it would be embarrassing and could compound the consequences). You might glance around to see if other

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330. Frank Newport, *Congress Retains Low Honesty Rating*, GALLUP POLL (Dec. 3, 2012).

331. Sverre Lindskold & Pamela S. Walters, *Categories for Acceptability of Lies*, 120 J. SOC. PSYCHOL. 303, 303–13 (1983).

332. See Walczyk, *supra* note 305, at 22–36.

333. *Id.*

people might have been watching and also consider whether you will be able to lie convincingly. After processing these variables, you will decide whether to lie.

This framework presumes that lying is at least a quasi-rational process. This decision process obviously increases cognitive and emotional load and takes time. Sometimes, though, the decision to lie is made under time pressure or other stresses. Dual-processing theory proposes that deciding whether to lie is not always a quasi-rational process. Particularly in higher stress situations, people may skip the slow and systematic central cognitive processing approach and opt instead for a peripheral route that uses shortcuts like heuristics.<sup>334</sup> In the example, you might quickly make a “satisficing” judgment—a heuristic that focuses on a speedy evaluation of a few key details and judgments for a good-enough decision.<sup>335</sup> This judgment could go either way: you could focus on your self-concept as someone with integrity and decide to be honest or you could focus on your judgment that you caused no harm and lie—“Oh, just making sure I left you enough space to get out!”

ii. Some Specific Variables that Can Affect the Decision to Lie

Whether an individual uses a quasi-rational approach or a short cut, there are some known variables that influence the likelihood of lying in a particular situation. Substance use, fatigue, and social influences can affect the chances that people will lie, although not in a consistent manner. For example, use of alcohol and other psychoactive drugs that impair judgment, reduce inhibitions and increase risk-taking, or amplify grandiosity or a sense of entitlement can increase willingness to lie by decreasing fear of consequences for lying—or they can decrease the likelihood by reducing fear of negative consequences for telling the truth.<sup>336</sup> Similarly, internal conditions like fatigue, substance-induced lethargy, pain, or illness can reduce the ability to resist the temptation to lie via a phenomenon known as ego depletion.<sup>337</sup> Alternatively, lying can be less likely under ego depletion if the individual’s energy reserves are too depleted to fabricate a believable falsehood.<sup>338</sup> Fatigue is a particularly

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334. Richard E. Petty & J. T. Cacioppo, *The Elaboration Likelihood Model of Persuasion*, 19 *ADVANCES IN EXPERIMENTAL SOC. PSYCHOL.* 123, 123–205 (1986).

335. Peter M. Todd & G. F. Miller, *From Pride and Prejudice to Persuasion: Satisficing in Mate Search in SIMPLE HEURISTICS THAT MAKE US SMART* 287–308 (Gerd Gigerenzer & Peter M. Todd eds., 1999).

336. Kristina Suchotzki et al., *In Vino Veritas? Alcohol, Response Inhibition and Lying*, 50 *ALCOHOL* 74, 74–81 (2015).

337. Nicole L. Mead et al., *Too Tired to Tell the Truth: Self Control Resource Depletion and Dishonesty*, *J. EXPERIMENTAL SOC. PSYCHOL.* 594, 594–97 (2009).

338. *Id.*

important variable to consider for the excited utterance exception because it is a common condition as the body starts to shift from the fight-or-flight response back to resting function.

Similarly, social contagion refers to a tendency of the behavior of others in the vicinity to influence one's own behavior. Lying appears to spread easily, especially if others appear to be benefitting as a result of lying or at least failing to be punished for it and if the lies are small or justifiable.<sup>339</sup> On the other hand, being surrounded by people behaving honestly seems to inhibit the willingness to lie or cheat.<sup>340</sup>

As well as having a bit of Pinocchio in us, we typically have a lot of Jiminy Cricket in us too. Most people are mostly honest most of the time—especially about matters of consequence.<sup>341</sup> The impulse to be honest is likely genetically ingrained, the result of an evolutionary advantage for those who could maintain a trusting social compact that allowed groups to live harmoniously.<sup>342</sup> Explicit childhood training and the resulting pride/integrity and guilt/shame emotional systems serve to reinforce the inborn moral bent, even in the absence of specific rewards and punishments.<sup>343</sup> Ironically, this tendency for honesty to be not just the best, but the most frequent, policy likely contributes to the typical person's difficulty in detecting lies; we expect people to be truthful because mostly they are.

Internal moral compass notwithstanding, when temptation threatens to override an individual's better angels, external reminders of consequences can affect the probability of honest behavior. Reminders that others are monitoring and/or that dishonesty will incur severe penalties make truthful statements more likely.<sup>344</sup> Interestingly, reminders to behave with integrity, like requiring individuals to sign their names or raise their hands to affirm that their answers are truthful, or notices requesting that people behave honestly, can increase the likelihood of honesty to levels comparable to those achieved through warnings, threats,

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339. Francisco Gino et al., *Contagion and Differentiation in Unethical Behavior: The Effect of One Bad Apple on the Barrel*, 20 PSYCHOL. SCI. 393, 393–98 (2009).

340. David Pascual-Ezama et al., *Peer Effects in Unethical Behavior: Standing or Reputation?*, 10 PLOS ONE (2015).

341. Kim B. Serota et al., *The Prevalence of Lying in America: Three Studies of Self-Reported Lies*, 36 HUM. COMM. RES. 2, 2–25 (2010).

342. E. Somanathan & Paul H. Rubin, *The Evolution of Honesty*, 54 J. ECON. BEHAV. & ORG. 1, 1–17 (2004).

343. CHARLES S. CARVER & MICHAEL F. SCHEIER, ON THE SELF-REGULATION OF BEHAVIOR ch. 2 (1998).

344. Uri Gneezy, *Deception: The Role of Consequences*, 95 AM. ECON. REV. 384, 384–94 (2005).

and surveillance.<sup>345</sup> The timing of the reminders and appeals matters, with those just prior to performance generally being more effective.<sup>346</sup>

The implications of these findings for the excited utterance are that the conditions associated with live testimony, like promising to tell the truth, visible and auditory reminders of the consequences for perjury, and courtroom symbols of moral obligation like Lady Justice and the Bible, are likely to increase honesty—suggesting again that hearsay exemptions do sacrifice meaningful protections.

*d. Startling Events and Excited Lies*

Even if individuals are typically able to lie easily and frequently under low to moderate stress, that does not necessarily indicate that they will be able to do so in highly challenging circumstances, or that they will be able to do so well enough that others will not readily detect their lies. Accordingly, this section will look at the ability of people to lie following a startling event and draw on evidence from a range of sources, including laboratory experiments, parallels with other challenging tasks performed in startling situations, and a theoretical model of lying under stress and surprise.

*i. From Cain to “Alternative Facts”*

History abounds with Big Lies, told to get something, save face, or save someone’s skin. “Abel? Haven’t seen him.” “We have a nice big wooden horse for you as a gift!” “I am not a crook!” “I did not have sex with that woman!” “I have never had a single positive doping test, and I do not take performance-enhancing drugs.” “You’re saying it’s a falsehood. And...[he] gave alternative facts.”

This list could go on and on. But most of these lies, though high stakes and told under stress, do not actually quite fit the excited utterance definition because the liar had a hiatus between the shock of discovery and the time to speak, time to get composed and dream up a fabrication. It is the added demand of telling a lie spontaneously in the wake of a startling moment that might make some lies extra tough—perhaps too tough.

And yet...Ryan Lochte arrives at the Olympic Village in the early morning with a story about being robbed at gunpoint.<sup>347</sup> Killers dial 911 to

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345. Deepak Malhotra, *(When) are Religious People Nicer? Religious Salience and the ‘Sunday Effect’ on Pro-Social Behavior*, JUDGMENT & DECISION-MAKING 138, 138–43 (2010).

346. Lisa Shu et al., *Signing at the Beginning Makes Ethics Salient and Decreases Dishonest Self-Reports in Comparison to Signing at the End*, 109 PROCEEDINGS NAT’L ACAD. SCI. 15197, 15197–200 (2012).

347. Melissa Chan, *How Ryan Lochte’s Rio Robbery Story Fell Apart*, TIME ONLINE (Aug. 18, 2016), <http://time.com/4458405/ryan-lochte-rio-robbery-olympics/> [<https://perma.cc/YF6W-YSRW>].

report stumbling on homicides or accidents they actually committed.<sup>348</sup> A teenager can't imagine how that bag of pot ended up under his mattress. When the police pull her over for weaving along the street on her way home from a party, your neighbor insists she only had one glass of wine.

Though these kinds of lies have received startlingly little attention from the scientific community, there is nonetheless plenty of anecdotal evidence that people do tell them. So how do they manage?

## ii. Lying and Stress in the Laboratory

Laboratory research provides some support for Wigmore's belief that lying does indeed require more brain structures and energy. Experiments show that: a) it often takes longer to formulate a lie than to tell the truth; b) lying is a more complicated cognitive task than telling the truth; and c) stress makes it even more difficult to lie.

Laboratory experiments using precise measurement of response latency (how long it takes to start to answer) and functional Magnetic Resonance Imaging (fMRI) mostly find that lying is in general a slower task than being honest. For example, when subjects are instructed to lie in some circumstances and be truthful in others, it takes longer to answer when subjects have to lie.<sup>349</sup> Similar studies with fMRIs have shown that lying requires activation of more and different parts of the brain than truth telling.<sup>350</sup> Lying involves first activating the areas involved in telling the truth—but is followed by additional areas, as the liar carries out the additional cognitive components of lying, including deciding whether to lie, inhibiting speaking the truth, and creating a fiction.<sup>351</sup> Most of the research agrees that lying puts significant demands on the deceiving individual's working memory and executive functions—cognitive functions that are overtaxed when there is a startling event.<sup>352</sup>

Laboratory studies show that the addition of moderate stress increases a liar's working memory and cognitive load, making it even more difficult to lie. When subjects are directed to tell lies while or immediately after being stressed psychologically (such as by performing

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348. Mary B. Burns & Kevin C. Moffitt, *Automated Deception Detection of 911 Call Transcripts*, 3 SEC. INFORMATICS 6–9 (2014).

349. Jeffery J. Walczyk et al., *Cognitive Mechanisms Underlying Lying to Questions: Response Time as a Cue to Deception*, 17 APPLIED COGNITIVE PSYCHOL. 755, 755–74 (2003).

350. Giorgi Ganis et al., *Neural Correlates of Different Types of Deception: An fMRI Investigation*, 13 CEREBRAL CORTEX 830, 830–36 (2003).

351. See, e.g., Emma J. Williams et al., *Telling Lies: The Irrepressible Truth?*, 8 PLOS ONE (2013).

352. Ganis et al., *supra* note 350, at 830–36; Matthias Gamer, *Detecting of Deception and Concealed Information Using Neuroimaging Techniques*, in MEMORY DETECTION: THEORY AND APPLICATION OF THE CONCEALED INFORMATION TEST 90–113 (Bruno Verschuere et al. eds., 2011).

difficult math problems) or physically (such as by holding their hands in ice water), their performance degrades as their cognitive load is increased (such as by manipulating consequences for quality of performance, increasing the time or severity of physical stress, increasing the number of choices, requiring more complex discriminations about when to lie or tell the truth, or increasing time pressure).<sup>353</sup> With greater cognitive load, subjects make more errors (like lying under the wrong conditions, offering a different lie from what they were instructed to, or leaking the truth) or take longer to begin speaking.<sup>354</sup> With greater load, subjects also often simplified their responses, offering fewer details and shorter verbalizations with simpler vocabulary and less complex grammar.<sup>355</sup>

In the end, though, these experiments provide at best weak support for Wigmore's theory. First, even under stress, subjects were still able to lie, even if it took them longer. Second, the time difference between telling the truth and a lie, while statistically significant, would be meaningless in real world conditions: in these studies, the time variations between true statements and lies are typically measured in thousandths of a second.<sup>356</sup> Discrepancies this brief go unnoticed by casual observers.<sup>357</sup> In addition, differences in latency are relative within individuals; no universal latency indicates that a speaker is lying.

These studies do confirm that lying is typically a more cognitively challenging task than telling the truth. In addition, because they involved simple falsehoods (like lying about the color of a card) under moderate stress, they leave unanswered questions about real world, high-stakes lies during actual startling events.

### iii. Challenging Task Performance Under Startling Events

Pilots land suddenly disabled jetliners safely; surgical teams perform complicated surgeries under time pressure after something major unexpectedly goes very, very wrong; military teams carry out life-or-death missions in situations clouded with uncertainty and pocked with unplanned mishaps. Even completely ordinary people perform remarkable

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353. See Williams et al., *supra* note 351; Anna E. van't Veer et al., *Limited Capacity to Lie: Cognitive Load Interferes with Being Dishonest*, 9 JUDGMENT & DECISION MAKING 199, 199–206 (2014).

354. Williams et al., *supra* note 351.

355. van't Veer et al., *supra* note 353; Judee K. Burgoon & Tiantian Qin, *The Dynamic Nature of Deceptive Verbal Communication*, 25 J. LANGUAGE & SOC. PSYCHOL. 76 (2006).

356. Bruno Verschuere & Jan De Houwer, *Detecting Concealed Information in Less Than a Second: Response Latency-Based Measures*, in MEMORY DETECTION: THEORY AND APPLICATION OF THE CONCEALED INFORMATION TEST 46–62 (Bruno Verschuere et al. eds., 2011).

357. It is important to note, however, that the types of lies examined in these studies are minor ones (such as lying about the number on a playing card) and that the consequences for lying or telling the truth are small.

feats when surprised and stressed: they improvise equipment and try strategy after strategy to save others' lives under difficult physical conditions—like Joseph Kolanchick<sup>358</sup> and thousands of other Carnegie Medal winners have done.<sup>359</sup> Clearly, people are capable of performing highly complex tasks after being startled and faced with high-stakes peril.

But can they lie under those conditions?

Although studies of stress and stress simulations cannot directly indicate lying capacity, these studies offer insights on individual coping methods. To cope with startling events, individuals use: anticipation and preparation; rehearsal or practice of similar behaviors; reliance on habitual or recent behaviors, minimization of choices; and use of heuristics and other shortcuts.<sup>360</sup> Many of these processes are ones that are used (though perhaps in less sophisticated or systematic ways) by ordinary liars.

Anticipating situations where lying might be demanded makes later performance of lying easier in a couple ways. First, anticipation reduces surprise, which in turn reduces the emotional load. This facilitating mechanism is supported experimentally; research subjects who are warned that they will later need to lie generate lies faster and tell more elaborate ones than others who are prompted to lie at the last minute.<sup>361</sup> Second, anticipation may enable a liar to prepare by fabricating a lie under lower cognitive load and even to rehearse lying and make subsequent adjustments to content or delivery. In one laboratory experiment, both instruction to try to lie faster and training on how to lie quickly improved response time for lying, relative to a control group.<sup>362</sup> The training group also improved their performance on lying correctly (i.e., lying under the target condition and not lying under non-target conditions).<sup>363</sup> In another experiment, liars who had opportunities to prepare and practice their lies were less likely to be detected.<sup>364</sup>

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358. Joseph Kolanchick, CARNEGIE HERO FUND COMMISSION, <http://www.carnegiehero.org/joseph-kolanchick/> [https://perma.cc/Y286-4LMC].

359. See generally *Carnegie Hero Fund Commission Recognizes 19 for Acts of Extraordinary Civilian Heroism*, CARNEGIE HERO FUND COMMISSION, <http://www.carnegiehero.org/awardees/> [https://perma.cc/93DG-PQGU].

360. R. Key Dismukes et al., *Appendix A: Selective Review of Stress Literature*, in R. KEY DISMUKES, TIMOTHY E. GOLDSMITH & JANEEN A. KOCHAN, *EFFECTS OF ACUTE STRESS ON AIRCREW PERFORMANCE: LITERATURE REVIEW AND ANALYSIS OF OPERATIONAL ASPECTS*, NASA/TM-2015-218930 A1-A-39 (2013).

361. Jeffrey J. Walczyk et al., *Cognitive Lie Detection: Response Time and Consistency of Answers as Cues to Deception*, 24 J. BUS. PSYCHOL. 33, 33–49 (2009).

362. Xiaoqing Hu et al., *A Repeated Lie Becomes a Truth? The Effect of Intentional Control and Training on Deception*, 3 FRONTIERS IN PSYCHOL., Nov. 12, 2012, at 1, 1.

363. *Id.*

364. G.R. Miller et al., *Self-Monitoring, Rehearsal, and Deceptive Communication*, 10 HUM. COMM. RES. 97, 97–117 (1983).

People often mentally prepare and rehearse lies for commonly encountered situations where lying may be advantageous (e.g., “The dog ate my homework!” “Your new haircut looks great!”); it is likely that people who are risk-takers prepare, and may even practice, for lying in high-stake, high arousal situations (e.g., “I swear I only had one drink, Officer,” or “Honey, I just happened to run into my old girlfriend and she asked me to have a drink; it wasn’t anything more than that.”).

Strategies that minimize choices also make it easier to lie in demanding circumstances. Keeping the lie close to the actual truth and only changing a key variable is a common strategy. Liars can also stick to easily-accessed content in their memories, for example, by repeating a recent lie or a successful lie.<sup>365</sup> People can also avoid the need to fabricate content by “borrowing” their lies, like using stories they have encountered from others or through media; individuals with extensive and frequently used “story banks” may be able to retrieve appropriate long-term memories relatively easily. In addition, most people have heuristic, multipurpose “autolies” –like “Not my fault!” or “No, I didn’t!”

Finally, there is evidence that lying is not invariably a more challenging cognitive task than telling the truth. For example, when the truth is complex or fuzzy, when the speaker is highly motivated to be accurate and thorough, when it is necessary to adjust the communication for a given listener, or when the speaker has mixed feelings about being truthful versus lying, deciding to be honest can create greater cognitive load than simply telling a short and simple lie.

iv. The Goldilocks Theory: People Lie After a Startling Event When it’s the Just-Right—or Good-Enough—Option

If instead of escaping out the window, Goldilocks had been cornered by the trio of talking carnivores who startled her awake, there is a good chance she would have resorted to lying to protect herself. “Look over there! It’s the Wicked Witch!” “I’m so sorry! I thought this was my granny’s house!” “You don’t want to eat me! I have mad cow (bear?) disease and you’ll get infected if you have even one bite!”

According to the social-cognitive framework used to predict a decision to lie discussed above,<sup>366</sup> deciding to lie would be a rational choice for someone in a high threat situation like this one with few better defensive options. Goldilocks would have multiple motivations to lie—to protect herself from getting eaten, being punished by her parents, or going to juvenile court. The chances of getting caught lying are likely low—

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365. Judee K. Burgoon, *When is Deceptive Message Production More Effortful than Truth-Telling? A Baker’s Dozen of Moderators*, 6 FRONTIERS IN PSYCHOL., Dec. 24, 2015, at 1, 5 (2015).

366. Walczyk, *supra* note 305.

mostly people get away with lies.<sup>367</sup> And in any event, she has little to lose—if she does not lie, she probably gets eaten, if she does lie, maybe she escapes. And finally, we can feel confident that a junior burglar and vandal like her has the ability to lie well within her wheelhouse. Fibbing will probably be one of the first options that comes to mind once she is confronted.

More likely, though, Goldilocks will decide to lie in this situation without even going through a rational analysis. The dual processing model suggests that this situation—high-stakes, time-pressured, and trapped—is one where the decision to lie—and the decision about which lie to tell—will occur more or less automatically without thorough consideration of alternatives or longer term consequences. Instead, heuristics will come to the rescue. Common lies used in no-time-to-think-must-act scenarios include “distract” (the Wicked Witch option), “deny wrongdoing” (the granny’s cottage option) and “imitate success” (the mad cow option).

In the end, Goldilocks’s choice may prove to be less than optimal, but that would not be surprising either. Because in these conditions, people make mistakes. And that brings us to the next, and more likely, source of error in excited utterances.

## 2. Mistakes

In 1981, Jerry Parr, President Reagan’s Special Agent in Charge, was on duty during the assassination attempt.<sup>368</sup> Shots rang out at close range as Reagan and his entourage left the venue where the president had been speaking—a clear startling event for everyone present.<sup>369</sup> Parr shoved the president into the waiting limousine and scrambled in after him, directing the driver to go.<sup>370</sup> Shortly after departing the scene, Parr made a statement that could obviously be classifiable as an excited utterance: “Rawhide [Reagan] is okay!” and directed the limousine to return to the White House.<sup>371</sup>

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367. Arcimowicz et al., *supra* note 316.

368. Marc Ambinder, *Full Secret Service Transcript: The Moment Reagan Was Shot*, ATLANTIC (March 11, 2011) <https://www.theatlantic.com/politics/archive/2011/03/full-secret-service-transcript-the-moment-reagan-was-shot/72343/> [<https://perma.cc/YL4E-CVEY>]. For video footage of the assassination attempt, see Jessica McBride, *WATCH: Reagan Assassination Attempt Videos*, HEAVY (July 27, 2016, 12:22pm), <http://heavy.com/news/2016/07/reagan-assassination-attempt-video-news-coverage-live-photos-watch-uncensored-hinckley-ronald/> [<https://perma.cc/UBN2WPHU>]. Note that all three major networks incorrectly reported that Press Secretary Brady died in the attack—another error (likely via excited utterances from their reporters on the scene).

369. *Id.*

370. *Id.*

371. *Id.*

His utterance was not a lie—but it was completely wrong. Reagan was not okay.<sup>372</sup> No one, including Reagan, realized he had been shot.<sup>373</sup> After a few moments, it became obvious that Reagan had some injuries—sore ribs and bleeding from his mouth—but it took longer before anyone in the limo realized that Reagan’s injuries were not minor—that the discomfort he was experiencing in his side was not caused by being shoved into the vehicle, and that the blood coming from his mouth was not from a cut lip, but that both were caused by a bullet hitting the president’s rib and puncturing his lung.<sup>374</sup>

Imagine if John Hinckley, Jr.’s attorney had been able to introduce this statement as evidence that his client did not harm the president, that his injuries must have been incurred subsequently to his client’s actions?

Though Wigmore’s theory focused on lying as the behavior likely to make an utterance unreliable, as the example above demonstrates, there are other ways an excited utterance can be untrue: through mistakes in perception and cognition. The fact-finder’s lack of opportunity to assess the witness’s accuracy—through cross-examination and observation of the witness’s demeanor—is another significant problem with the excited utterance exception. This section will show how high stress can increase the likelihood of misperception in ways that affect the reliability of excited utterances and countenance against admitting them into evidence.

Just as characteristics of combat situations like noise and other intense stimuli can produce “fog of war” confusion,<sup>375</sup> comparable conditions in more mundane startling events lead to misinterpretations of reality. The misstatements about what happened that occur in these confusing situations are not lies—they are not told with the intent to mislead—but they are just as untrustworthy and unlikely to advance justice in a courtroom as deliberate deception.

Most perceptual errors happen automatically, outside of conscious awareness or control. They tend to be experienced as “real” and not as an effort to adjust reality, and they often persist or, frequently, become compounded, over time.<sup>376</sup>

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372. *Id.*; Howell Raines, *Reagan Wounded In Chest By Gunman; Outlook ‘Good’ After 2-Hour Surgery; Aide And 2 Guards Shot; Suspect Held*, N.Y. TIMES (March 30, 1981), <http://www.nytimes.com/learning/general/onthisday/big/0330.html#article> [<https://perma.cc/UV4P-7FE7>].

373. *Id.*

374. Jerry S. Parr, ‘Lord, Let Him Live,’ *Reagan’s Secret Service Agent Prayed*, USA TODAY, [https://usatoday30.usatoday.com/news/washington/2011-03-30-secret-service-agent-reagan-shot\\_N.htm](https://usatoday30.usatoday.com/news/washington/2011-03-30-secret-service-agent-reagan-shot_N.htm) [<https://perma.cc/ZJ4V-VTZN>].

375. H.R. Lieberman et al., *The Fog of War: Documenting Cognitive Decrements Associated with the Stress of Combat*, PROCEEDINGS 23<sup>RD</sup> ARMY SCIENCE CONFERENCE (Dec. 2002).

376. See T.D. Wilson & N. Brekke, *Mental Contamination and Mental Correction: Unwanted Influences on Judgments and Evaluations*, 16 PSYCHOL. BULL. 117 (1994); S.A. Hawkins. & R.

Certain perceptual and cognitive processes are particularly likely to be sources of error during startling events because of their tendencies to be used as shortcuts for decision-making under time pressure and high cognitive load.<sup>377</sup> Some of the more common perceptual errors are:

1. *Closure*. Humans' brains are pre-programmed to "fill in the blanks" when information is missing.<sup>378</sup> If, for example, observers' views were obscured or competing noise made them unable to hear something clearly, their brains will automatically, and often out of conscious awareness, fill in the missing information.

2. *Stereotyping, Priming, Halo Effects, and Other Expectation Biases*. These are universal heuristic errors that lead people to "see" what they expect or perhaps hope to see. Stereotyping refers to automatic judgments of certain groups or situations; they can be favorable or unfavorable and can powerfully bias perception.<sup>379</sup> The Trayvon Martin shooting highlighted common stereotypes about young black men—and showed how those stereotypes could influence perception; George Zimmerman was sure he "saw" a gun in Martin's hand, but it was a bag of Skittles.<sup>380</sup> Priming refers to the tendency of recent experiences (direct or vicarious) to influence near-future interpretations.<sup>381</sup> Halo effects are similar to stereotyping, but are attached to a particular individual rather than a group, in that one's global evaluation of someone can influence how other actions by that same individual

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Hastie, *Hindsight: Biased Judgments of Past Events After the Outcomes Are Known*, 107 PSYCHOL. BULL. 311 (1990).

377. Tversky & Kahneman, *supra* note 251; K. Mogg et al., *Attentional Bias to Threat: Roles of Trait Anxiety, Stressful Events, and Awareness*, 47 Q. J. EXPERIMENTAL PSYCHOL. 841 (1994).

378. Arie W. Kruglanski & Donna Webster, *Motivated Closing of the Mind: "Seizing" and "Freezing"*, 103 PSYCHOL. REV. 264 (1996).

379. Mahzarin R. Banaji, *Social Psychology of Stereotypes*, in N. SMELSER & P. BALTES, INTERNATIONAL ENCYCLOPEDIA OF THE SOCIAL AND BEHAVIORAL SCIENCES 15101–04 (1st ed. 2001).

380. Melanie Tannenbaum, *Trayvon Martin's Psychological Killer: Why We See Guns That Aren't There*, SCIENTIFIC AMERICAN (Mar. 26, 2012), <https://blogs.scientificamerican.com/guest-blog/trayvon-martins-psychological-killer-why-we-see-guns-that-arent-there/#> [https://perma.cc/Q4V5-NL7J].

381. John A. Bargh, Mark Chen, & Lara Burrows, *Automaticity of Social Behavior: Direct Effects of Trait Construct and Stereotype Activation on Action*, J. PERSONALITY & SOC. PSYCHOL., Mar. 3, 1996, at 230, 230–44. *But see* Ulrich Schimmack et al., *Reconstruction of a Train Wreck: How Priming Research Went off the Rails*, REPLICABILITY INDEX (Feb. 2, 2017), <https://replicationindex.wordpress.com/2017/02/02/reconstruction-of-a-train-wreck-how-priming-research-went-of-the-rails/> [https://perma.cc/LR58-LNXA] (commenting on flaws in the research).

are perceived.<sup>382</sup> Finally, people may have come to expect an event to play out a certain way or others to react in a particular fashion as a result of prior experiences or training; these expectations affect what they notice or how they interpret contrary information.

3. *Perceptual Tunneling, Weapon Focus, and Other Attentional Biases.* Alterations in attention during the fight-or-flight response affect what sensory information is detected, given weight, and remembered even moments later.<sup>383</sup> Perceptual tunneling may stem from visual tunneling (when a visual field is limited to a narrow area of concern), resulting in an inability to describe anything beyond that field because one simply never even noticed it, or it may be the result of what one decides to concentrate on.<sup>384</sup>

4. *Knowledge Biases.* Knowledge relevant to a particular event can contribute dramatically to what is noticed or missed, and how the information is interpreted. Footage of family members and school children watching the tragic launch of the Challenger space shuttle reveals this phenomenon vividly.<sup>385</sup> Those with less knowledge about normal shuttle launches appear unconcerned or mildly confused when there is a small explosion and smoke appears as the shuttle ascends and reaches another stage.<sup>386</sup> The faces of NASA workers and others with more experience, though, show they instantly understand that tragedy has occurred.<sup>387</sup> Another common knowledge bias occurs with recognition of faces of people whose racial background differs from the viewer's; most people are less able to describe or remember facial features, hairstyle details, and other characteristics of people from a race not their own.<sup>388</sup>

5. *Attribution Error.* Attribution error refers to the near universal tendency to place blame for others' poor behavior on their own internal characteristics and intentions, while tending to see

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382. See Sean N. Talamus, *Blinded by Beauty: Attractiveness Bias and Accurate Perceptions of Academic Performance*, PLOS ONE 1–18 (Feb. 17, 2016).

383. See Lisette J. Schmidt et al., *The Time Course of Attentional Bias to Cues of Threat and Safety*, 31 COGNITION & EMOTION 845, 845–57 (2017).

384. Dismukes et al., *supra* note 360, at A-7.

385. To view the video footage, see davidwrightatloppers, *Challenger Shuttle Disaster – Raw Uncut Footage*, YOUTUBE (Aug. 20, 2009), [www.youtube.com/watch?v=vd7dxmBLg48](http://www.youtube.com/watch?v=vd7dxmBLg48).

386. *Id.*

387. *Id.*

388. Siegfried L. Sporer & Ruth Horry, *Recognizing Faces of Other Ethnic Groups: An Integration of Theories*, 7 PSYCHOL. PUB. POL. & L. 36, 36–97 (2001).

external events or circumstances as largely responsible for one's own missteps.<sup>389</sup>

6. *Cognitive Dissonance.* Cognitive dissonance happens when what one believes is at odds with what one perceives (or does). This creates an uncomfortable state that the mind corrects by either changing beliefs or by deciding one's perception is wrong. Because belief and attitude changes are generally complex and lengthy processes occurring after many contrary experiences, disbelieving the correctness of one's perception is the more likely response to this kind of discrepancy.<sup>390</sup>

7. *Cognitive Models.* Cognitive or mental models are acquired global mindsets about complex situations that are used to guide expectations, judgments, and decisions while a situation unfolds. In some cases, these models may cause exaggerated or false perceptions of threats, even triggering or amplifying fight-or-flight reactions unnecessarily.<sup>391</sup> Post-Traumatic Stress Disorder, for example, often involves the operation of cognitive models about potentially threatening situations or stimuli.<sup>392</sup> Likewise, possessing a weapon can create a cognitive model that leads to the perception of danger and the assumption that others' intents are threatening.<sup>393</sup>

8. *Anchoring.* The order in which information is presented affects the likelihood that it will be attended to, remembered, or interpreted as important. In general, information at the beginning and end of an event will act as anchors, and be remembered as more significant than information in the middle.<sup>394</sup>

Obviously, these kinds of perceptual errors can affect all participants and witnesses to an event. The reason that they are important for the excited utterance exception is two fold. First, many kinds of perceptual

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389. Lee Ross, *The Intuitive Psychologist and his Shortcomings: Distortions in the Attribution Process*, in *ADVANCES IN EXPERIMENTAL AND SOCIAL PSYCHOLOGY* (VOL. 10) 173, 184 (L. Berkowitz Ed., 1977).

390. Saul McLeod, *Cognitive Dissonance*, SIMPLY PSYCHOL. (2014), [www.simplypsychology.org/cognitive-dissonance.html](http://www.simplypsychology.org/cognitive-dissonance.html) [<https://perma.cc/5B98-53ST>].

391. Philip N. Johnson-Laird, *Mental Models and Human Reasoning*, 107 PNAS 18243, 18244 (2010); David A. Clark & Aaron T. Beck, *COGNITIVE THERAPY OF ANXIETY DISORDERS: SCIENCE AND PRACTICE* 32–51 (2011).

392. Richard Meiser-Stedman et al., *Maladaptive Cognitive Appraisals Mediate the Evolution of Posttraumatic Stress Reactions: A 6-Month Follow-Up of Child and Adolescent Assault and Motor Vehicle Accident Survivors*, 118 J. ABNORMAL PSYCHOL. 778, 778–87 (2009).

393. Adam Biggs et al., *Armed and Attentive: Holding a Weapon Can Bias Attentional Priorities in Scene Viewing*, 75 ATTENTION PERCEPTION & PSYCHOPHYSIOLOGY 1715, 1715–24 (2013).

394. Dismukes et al., *supra* note 360, at A-20.

errors are more likely in the “startling” situations that invoke the exception than in other calmer situations. Thus, the frailties of eyewitness perceptions are exacerbated under the excited state that is the premise of the excited utterance exception. Second, the excited utterance exception admits out-of-court statements without the normal safeguards of the trial process—cross-examination and the opportunity for the fact finder to observe the witness. These safeguards protect against not only deliberately deceptive testimony, but also well-intentioned but inaccurate testimony.

### 3. Miscommunications

Finally, the subtler “utterance” component of the excited utterance exception is often overlooked in discussions of whether excited utterances are sufficiently reliable to be automatically admitted in court. Startling events may not only affect a declarant’s ability to deceive or the accuracy of their perceptions but could also interfere with the communication of an utterance.

In terms of communication, there are two primary sources of error: the declarant and the recipient. There has been relatively little research on how acute stress affects spontaneous communications, but this section will examine some of the issues around the ability of a surprised and stressed declarant to frame and express an utterance. It will also present findings of a preliminary exploration of excited utterances in natural situations captured on video and offer suggestions for future research. Second, it will examine factors that could affect the recipient’s ability to absorb, remember, and later repeat the utterance accurately. The role of the receiver (who will later pass along the utterance) has been particularly ignored as a possible source of additional and unique error in excited utterances.

#### *a. Speaker Issues*

Even if an individual has been sufficiently startled by a stressful event such that the individual is unable to lie, and even if that individual was able to accurately perceive the event despite the stress, the individual may or may not be able to communicate adequately. Oral communication imposes additional and unique cognitive load, activating additional areas of the brain and requiring coordination with other cognitive tasks.

To utter a coherent, reality-anchored statement, the individual’s sensory impressions must be encoded into language, “packaged” to match vocabulary and syntax to the needs and abilities of the intended target, and delivered. All while so emotionally overwrought as to be unable to fabricate.

Research on communication under high levels of stress is fairly limited. There is evidence, though, that speech production is affected by high levels of emotion.<sup>395</sup> The length of utterances tends to be shorter, and the structure and vocabulary less complex.<sup>396</sup> Studies of teamwork in crisis situations, like in aviation accidents, show that speaker communication errors are common and varied, affecting the timeliness of communications, the completeness and adequacy of communications, the reading of nonverbal cues, as well as any errors caused by failure to communicate when needed.<sup>397</sup> Research pays even less attention to the semantic content of what people verbalize or to the temporal aspects of utterances. But at a minimum, given the effects on vocabulary and sentence complexity, it is reasonable to assume that utterances will be less detailed and less precise or nuanced.

Because of the paucity of formal evidence, this section will include some tentative and preliminary suggestions of how speech content and timing are affected by real life startling events. These suggestions are based on an anecdotal review of dozens of traumatic events and emergencies captured on videotape and retrieved from YouTube, as well as review of 911 calls from events like the Pulse nightclub attack in Orlando. Examined footage includes well known incidents, such as the assassination attempt on President Reagan in 1981, the Challenger explosion in 1986, the 9/11 terror attack in 2001, the 2013 Boston Marathon bombing, and the 2016 Bastille Day truck attack in Nice, France, all of which involved multiple victims and multiple witnesses and most of which were captured on video from multiple vantage points. Also examined were: dash- and bodycam videos; bystander or participant cellphone videos from several notorious police shooting incidents, such as the Philando Castile shooting in Minnesota, the Samuel DuBose shooting in Ohio, and the Keith Lamont Scott shooting in North Carolina; and amateur video of multiple airshow and auto race accidents.<sup>398</sup> These were “balanced” with assorted home videos of trampoline accidents and other backyard stunts gone wrong.<sup>399</sup>

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395. See generally Tony W. Buchanan et al., *Acute Stress Reduces Speech Fluency*, 97 *BIOLOGICAL PSYCHOL.* 60, 60–66 (2014).

396. Laura R. Saslow et al., *Speaking Under Pressure: Low Linguistic Complexity is Linked to High Physiological and Emotional Stress Reactivity*, 51 *PSYCHOPHYSIOLOGY* 257 (2014), <http://socrates.berkeley.edu/~keltner/publications/Saslow2014.pdf> [https://perma.cc/C3FK-U4KM].

397. Dismukes et al., *supra* note 360.

398. For space reasons, all the reviewed videos are not linked here. Footage from these incidents is widely available on YouTube, though, including videos shot by amateurs, professional media, and authorities.

399. Because of difficulty in locating examples, this analysis did not include many types of startling incidents that might unfold differently, like typical traffic accidents, industrial accidents, etc.

This examination suggests that there are some typical patterns of vocalized responses to startling events, though utterances are affected by variables like magnitude of the event, the role of the speaker in the event, the length and pace in which the event unfolds, the degree of surprise, and the speaker's distance, physically, emotionally, and temporally, from the "action."

The first seconds after the realization of a crisis often precluded true speech, particularly by those most directly affected or nearest the action. Frequently, the first vocalization was not speech, but a sharp intake of breath. This sort of response was often followed by apparently stunned silence or nonverbal vocalizations like cries and screams, gasps, grunts, occasional simple one-word exclamations like "Oh!" or "No!" In the most extreme events and among those most directly affected, these nonverbal vocalizations continued for the duration of the event and even beyond, as if the event had not only stilled reflective capacities but robbed those involved of speech altogether.

After more time or with greater distance, vocalizations still were typically not speech so much as general exclamations—"Oh no!" "Good lord!" "Oh my God!" or swearing. Particularly when the situation involved a young male being filmed doing stupid things in the backyard, there might be inappropriate laughter. If the threat was uncertain and the bystander was at a safe distance, there were sometimes more narrative utterances, though typically these were short, simple statements or questions, couched with uncertainty: "That doesn't look good," or "Is that supposed to happen?" In other cases though, early utterances often included short warnings and commands—"Run!" "Help!" "He's got a gun!" "Call 911!"

For events where a lead-up to the incident occurred and was captured, there were sometimes threats, warnings, or requests by participants and bystanders before the peak of the incident—e.g., "Put the gun down!" "Don't shoot!" "He won't hurt you!" etc. Overall, the emotional tenor of statements by both victims and witnesses was negative and consistent with the kinds of emotion evoked by the fight-or-flight response—with fear predominating and anger second, unless the speaker was obviously confused or uncertain about the nature of the incident.

Transcripts of calls made to 911 during the 2016 Pulse nightclub terrorist attack in Orlando, Florida, showcased some interesting features of communications in the midst of a drawn-out extreme event.<sup>400</sup> First,

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It is also important to bear in mind that many videos do not start until after the incident is well under way, and vary in quality. The results presented here should be considered as informal and preliminary, as suggestions for further research rather than conclusive findings.

400. To view the transcripts for the 911 calls, see Transcript (June 12, 2016, 2:03am) (pp. 1–68), <http://www.cityoforlando.net/cityclerk/wp-content/uploads/sites/12/2016/06/911transcriptspgs1->

action preceded communication; callers did not dial 911 until they got to a safe place.<sup>401</sup> Second, the content and quality of their communications appeared impaired by the stress and confusion.<sup>402</sup> Callers were often unable to provide even fairly basic information they likely once knew (such as the name or location of the club).<sup>403</sup> In addition, their communications were typically disjointed and disorganized, with critical facts omitted or presented in a confusing order; dispatchers typically had to ask clarifying questions.<sup>404</sup> Characteristics of the situation also affected the quality of their utterances; for example, callers who voiced fear of being located by the shooter whispered, impairing the dispatchers' ability to hear, and used short, choppy utterances.<sup>405</sup> Higher levels of physiological stress also impaired communication ability; individuals who had been shot or otherwise injured often had to hand the phone to someone else.<sup>406</sup>

In summary, this anecdotal review suggests that the variables that influence ability to deceive or likelihood of mistakes also affect the quality and content of utterances related to the event.

*b. Recipient Issues*

The recipient's task is also complex and may be affected by the degree to which the recipient was also directly exposed to the startling event or was vicariously "infected" by transmitted stress. The recipient has to absorb a message transmitted by someone experiencing high stress (and likely speaking in the disorganized and choppy manner that stress induces), often still in a distracting environment that makes it hard to hear clearly. The recipient likely has to split attention between expressing concern for the speaker and accurately receiving the message while simultaneously suppressing distractions in the environment. The recipient must then hold the message in short-term memory along with possible additional new concerns resulting from the incident before transferring the message to long-term memory, while also avoiding contamination of the message with statements from others and the recipient's own memories

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68\_June12.pdf [https://perma.cc/JW6Z-HBNX]; Transcript (June 12, 2016, 2:03am) (pp. 69–107) [http://www.cityoforlando.net/cityclerk/wp-content/uploads/sites/12/2016/06/911transcriptspgs69-107\\_June12.pdf](http://www.cityoforlando.net/cityclerk/wp-content/uploads/sites/12/2016/06/911transcriptspgs69-107_June12.pdf) [https://perma.cc/SGZ9-K2XF]. To view other public records, such as recordings of the calls, police body-cam footage, etc. from the shootings, see *Pulse Tragedy Public Records*, CITY OF ORLANDO (Sept. 8, 2016), <http://www.cityoforlando.net/cityclerk/pulse-tragedy-public-records/> [https://perma.cc/J2Y9-95EC].

401. See, e.g., Transcript (June 12, 2016, 2:03am), *supra* note 400, at 2, l. 22.

402. See, e.g., *id.* at 14.

403. See, e.g., *id.* at 18, l. 22, 35, l. 5.

404. See, e.g., *id.* at 26–30, call #9.

405. See, e.g., *id.* at 30–32, call #10.

406. See, e.g., *id.* at 61–65, call #19.

and emotions. That memory must then be stored in long-term memory unchanged by the effects of interim retellings and questioning and any emerging information about the incident, and then finally be retrieved as a good facsimile of the original message at a later—often much later—date without incurring significant decay or distortion. Recipients who were not directly present also have the additional challenge of having to create and access the memory minus the benefit of sensory and motor cues that are helpful for accurate encoding, storage, and retrieval.

Imagine playing a game of telephone where the first person experiences a major trauma, passes the message to the next person within the next half hour, more or less, and then that person passes it along a year or two later. It seems probable that that game will result in even less accurate transmission of the intended message than one that passes through multiple conduits at a birthday party—with none of the hilarity.

The excited utterance exception does not depend explicitly on whether the recipient of the utterance believed the declarant (because of the presumption that the statement must be true). Consideration of whether the utterance is truthful by the person who passes it along may be an informal filter that could screen out some false statements that manage to be uttered despite the relative difficulty of lying under stress, thus increasing confidence in the trustworthiness of the hearsay exception.

### *C. The Excited Utterance Paradox*

People utter untrue things under stress all the time. Sometimes they do so deliberately to deceive, sometimes they do so inadvertently because of mistakes of perception or communication. Why and how they do so, though, is largely irrelevant when the ultimate question is whether excited utterances are so inherently reliable that they need not be subjected to the usual safeguards of live testimony. And the answer seems to be that excited utterances do not meet that high standard.

One intriguing thesis that emerged from reviewing the literature is what might be called the Excited Utterance Paradox: when the levels of arousal are so high that an individual is unable to tell even a moderately detailed and plausible lie, his perception is likely so distorted that he makes mistakes in understanding reality and/or in communicating his impressions. But when arousal is low enough to facilitate more accurate perception and effective communication, it is also low enough to reduce the cognitive load that interferes with fabricating a lie. There may well be a theoretical sweet spot of arousal where perception is accurate and lie-telling is challenging, but that would be a difficult discernment for an ordinary bystander or judge to detect.

## CONCLUSION

Law is social engineering, according to Roscoe Pound, perhaps the country's preeminent legal scholar.<sup>407</sup> It is shaped by the social sciences. Yet peek behind the curtain, and there is very little engineering or science to be found in many of our laws. The excited utterance exception is a prime example of a legal doctrine devoid of the rigors of engineering and science.

Courts exclude hearsay based on the general presumption that the search for truth is improved by bringing witnesses into the courtroom, placing them under oath, subjecting them to cross-examination, and providing the fact finder with an opportunity to observe the witnesses' demeanor. The hearsay exceptions exist for circumstances where an out-of-court statement is so likely to be reliable that the justice system is willing to forego the safeguards attendant with live testimony.

As this Article demonstrates, the scientific evidence, though perhaps not gap-free or perfect, thoroughly undermines the excited utterance exception. As conceived by Wigmore over a hundred years ago, the exception has three elements: (1) there must be a startling occasion; (2) the out-of-court statement must be made before the declarant has had time to fabricate; and (3) the declarant's out-of-court statement must relate to the circumstances of the startling event. Courts today generally apply tests that incorporate some version of these three elements.

Psychology does not implicate the third element, and courts can easily assess the connection between the excited utterance and the startling event. As for the other two elements, however, psychology tells us both that those elements provide no assurance of reliability and that neither the recipient nor the court can accurately assess whether these elements are satisfied.

The first element requires a "startling occasion." The analysis of what constitutes a sufficiently startling condition is not confined to the nature of the occasion itself. Rather, the analysis depends on a myriad of additional circumstances, including the declarant's psychological and physiological condition at the time of the event, the declarant's personal connection to the event, and the declarant's proximity to the event. Thus, the startling nature of witnessing an injury during a sporting event might depend on factors like the witness's stress level at the time of the incident, whether the witness has ever played the sport, whether the witness's child

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407. See, e.g., William L. Grossman, *The Legal Philosophy of Roscoe Pound*, 44 YALE L. J. 605, 608 (1935) (discussing Pound's "Engineering Theory of law"); Linus McManaman, *Social Engineering: The Legal Philosophy of Roscoe Pound*, 33 ST. JOHN'S L. REV. 1, 16 (1958) ("Law is defined as a task of social engineering designed to eliminate friction and waste in the satisfaction of unlimited human interests and demands out of a limited store of goods in existence. This is undoubtedly the most important aspect of Pound's doctrine of law.").

or relative was playing in the game, how well the witness was able to see the injury, etc. Judges have no training or guidance as to how to make these determinations.

While determining how startling or stressful an event was to an individual is problematic, expecting judges to accurately apply the second factor is asking the impossible. There is no scientific support for the exception's fundamental premise that a startling event is likely to render a witness unable to fabricate. Even when excitement freezes fabrication, there is no scientific evidence explicating the duration of the incapacity to fabricate. The science does establish, however, that the intensity and duration of the emotional effects of a startling occasion are idiosyncratic to the particular declarant at the particular point in time in the context of the particular event.

Compounding those idiosyncrasies, the court typically must depend on the perceptions and memory of the recipient of the statement to assess the emotional state of the declarant. Not only does each declarant express emotions uniquely, but the typical recipient is not trained or equipped to accurately assess the emotional state of the declarant. The problem is then further compounded because the judge must attempt an independent assessment of the declarant's emotional state based on, among other things, the recipient's assessment, akin to hearsay on hearsay. As this Article illustrates, all of these determinations are extremely complex and nuanced. Trained psychologists would be hard pressed to determine the effects of a particular occasion on a specific declarant based on the observations of an untrained recipient—asking a judge to make that determination is simply not reasonable.

Furthermore, to the extent that an occasion is sufficiently startling to cause the declarant to be unable to lie, the occasion is also likely to interfere with the declarant's ability to accurately perceive and describe the occasion. This paradox countenances in favor of elimination of the excited utterance altogether. If there is a theoretical "sweet spot" where an occurrence is sufficiently startling to render an observer unable to fabricate but not sufficiently startling to interfere with the observer's ability to accurately perceive and describe the occurrence, searching for such an occurrence would be like hunting the questing beast. Furthermore, it is unlikely that a judge could identify such an occurrence if it presented itself, even with extensive training.

Certainly, the psychological evidence does not support an exception to the hearsay rule premised on the idea that the statement of an observer of a startling occasion is more likely to be reliable than other statements. Rather, the evidence supports the opposite presumption. It is not feasible to refine the exception, adding new factors. As the above discussion of the

science demonstrates, this is an enormously complex issue that is not reducible to a list of elements that an untrained judge could apply meaningfully. The excited utterance exception does not advance the search for the truth in legal proceedings, and it should be abolished.