



Contents lists available at ScienceDirect

## American Journal of Emergency Medicine

journal homepage: [www.elsevier.com/locate/ajem](http://www.elsevier.com/locate/ajem)

Original Contribution

## Perceived vs. actual distractions in the emergency department

Michelle Shiao-Bin Eng<sup>a</sup>, Kyle Fierro<sup>a</sup>, Shauna Abdouche<sup>a</sup>, Daohai Yu, PhD, MS<sup>b</sup>,  
Kraftin E. Schreyer, MD<sup>c,\*</sup><sup>a</sup>Lewis Katz School of Medicine at Temple University, Philadelphia, PA 19140, United States of America<sup>b</sup>Lewis Katz School of Medicine at Temple University, Dept. of Clinical Sciences, Philadelphia, PA 1940, United States of America<sup>c</sup>Temple University Hospital, Department of Emergency Medicine, Philadelphia, PA 19140, United States of America

## ARTICLE INFO

## Article history:

Received 17 August 2018

Received in revised form 7 November 2018

Accepted 4 January 2019

## Keywords:

Emergency medicine

Perception

Distraction

## ABSTRACT

**Introduction:** The emergency department (ED) has been shown to be an interrupt-driven workplace fraught with potential for distractions and interruptions that increase the potential for medical error. Accuracy of provider perception of these distractions and interruptions has yet to be investigated.

**Methods:** An observational two-phase study was conducted over a 9-week period in the highest acuity zone of the ED at an urban, academic medical center with about 90,000 visits/year. Phase I, conducted over the initial 5-week period, consisted of observers recording the type and frequency of all overhead pages in the ED. In phase II, conducted over the final 4-week period, direct observation of faculty and residents was done to record all individual interruptions for different levels of training. Actual data was compared to provider perceptions, as determined by survey responses.

**Results:** 2438 overhead pages were recorded and occurred, on average, 23.2 times per shift. The perceived rate of overhead pages was 43.2 per shift. 333 individual interruptions occurred, on average, 4.26 times per shift. The perceived rate was 53.5 per shift. Attending providers perceived a significantly higher number of individual interruptions compared to all resident providers.

**Conclusion:** The perceived amount and rate of distractions and interruptions are significantly higher than the actual amount and rate of distractions and interruptions. Attending physicians both perceive and experience more distractions and interruptions. Further work should be done to evaluate the power of provider perception, and the potential contribution of inaccurate perception to medical error and provider burnout.

© 2019 Elsevier Inc. All rights reserved.

## 1. Introduction

The Emergency Department (ED) has been described as a “natural laboratory for error” and emergency medicine (EM) has been known as “a practice prone to error” [1,2]. Wears and colleagues described several features that make the ED particularly complex, including the need to simultaneously evaluate patients with varying characteristics, high levels of uncertainty, and a lack of feedback regarding treatment success [3]. These are compounded by an “unbounded” potential for patients, severe time constraints, and multiple shift changes and handoffs [4,5]. These complexities all contribute to high error rates in the ED. A point of potential error is the overlap between multitasking and interruptions [5].

Interruptions are more common in the ED than in other specialties [6,7]. One study showed that ED physicians are interrupted three times as much as primary care physicians [8,9]. Academic EDs have also been shown to have twice the amount of interruptions as community EDs. High volume EDs are also subject to more interruptions, as both interruptions and the associated need to change tasks to deal with the interruption increase with the number of patients seen [8]. Not surprisingly, distractions and interruptions in the ED are most often initiated via telephone or face to face interactions, and physicians and nurses have been shown to be the most frequent receivers of interruptions [10].

Interruptions have been shown to occur in the ED as frequently as every 6–9 min [5,11]. This has been compared to rates of distractions for distracted drivers and distracted pedestrians, who are more prone to accidents that result in injury to themselves or others [11]. In medicine, as in life, the relationship between medical errors or adverse events and interruptions is complex [12].

Although difficult to prove, it is generally accepted that medical errors are likely to increase as the number of distractions or interruptions increases [13,14]. This study sought to compare the

\* Corresponding author at: 1316 W. Ontario Street, 1004 Jones Hall, Philadelphia, PA 19140, United States of America.

E-mail addresses: [tuf95486@temple.edu](mailto:tuf95486@temple.edu) (M.S.-B. Eng), [tuf88773@temple.edu](mailto:tuf88773@temple.edu) (K. Fierro), [tuf99415@temple.edu](mailto:tuf99415@temple.edu) (S. Abdouche), [dyu@temple.edu](mailto:dyu@temple.edu) (D. Yu), [kraftin.schreyer@tuhs.temple.edu](mailto:kraftin.schreyer@tuhs.temple.edu) (K.E. Schreyer).

perception of distractions and interruptions by EM physicians with actual occurrences in the ED.

## 2. Methods

### 2.1. Study design and setting

An observational two-phase study was conducted over an 9-week period in an urban, academic center with an annual volume of about 90,000 patients. Observations were recorded by 9 work-study research students, who were not involved in direct patient care, and worked shifts in parallel with ED physicians. All observations were made in the highest acuity zone of the ED, which is staffed by 2 attending physicians and 4 resident physicians. The residency program is a 3-year training program, and residents of all training levels rotate through the high acuity zone. In the study ED, attending physicians work 8-hour shifts, as do third year residents (R3) and second year residents (R2). First year residents (R1) work 10-hour shifts. Resident physicians all rotate through the same circadian clinical schedule. While some attendings do have set hours and preferentially work certain shifts, most of the faculty work an equal number of day, evening and overnight shifts. Observations were made by the work-study research students 24 h per day for the 8-week study period, with one student on each 8-hour shift. The students were trained to recognize and appropriately categorize the distractions and interruptions prior to the study period. Approval from the institutional review board was obtained for the study.

### 2.2. Measurements and outcomes

For the purposes of this study, observations were recorded as 'distractions' if they were overhead pages and could potentially affect multiple providers at once, and 'interruptions' if they were experienced only by individual providers. Phase I focused on distractions and phase II focused on interruptions.

#### 2.2.1. Phase I

In phase I of the study, which took place over the first 5-weeks of the study period, observers recorded the type and frequency of all overhead pages in the ED during all shifts. Overhead pages are heard by everyone present in the department at the time of the page, and therefore, could potentially distract all providers at the same time. The overhead pages recorded were those listed in [Table 1](#).

#### 2.2.2. Phase II

In Phase II, which took place over the latter 4 weeks of the study period, the work-study research students directly observed attendings and residents of different training levels. Each week of the 4-week period was dedicated to observing a physician of a different level of training. Attendings were observed during the first week, followed by R3s, R2s, and then R1s. Interruptions recorded during this phase were those that only affected the providers at whom they were directed, rather than all providers in the department. At the study institution, there is a graded increase in responsibility, in which additional tasks are taken on as the level of training progresses. There are certain tasks which are managed by R1s, R2s, R3s, and attendings. Those tasks are independent of both the transitions within the residency program and years of experience for attendings. Individual interruptions that were recorded are listed in [Table 2](#).

#### 2.2.3. Survey

Prior to the observation study period, a survey, developed by the study investigators, was sent to all EM faculty and resident physicians at the study hospital. Survey questions included an estimation of the number of distractions and interruptions on individual shifts,

**Table 1**  
Overhead pages.

Triage Alert	Rapid Head room "X" <sup>b</sup>
Trauma in the Trauma Bay	X-ray to room "X"
Stroke Alert	Respiratory to room "X"
Trauma Evaluation <sup>a</sup>	Fire Rescue Haste
Neuro Evaluation <sup>a</sup>	Housekeeping to room "X"
Nurse/PCA to room "X"	One-to-one needed to room "X"
EKG room "X"	Hospital-wide page <sup>c</sup>
EMS coming to the back for charge nurse placement	Other <sup>d</sup>
Patient coming to the back for charge nurse placement	

Actual overhead pages recorded by work-study students during the Phase I of the study.

<sup>a</sup> In the study ED, Trauma and Neuro Evaluations are performed by attendings or senior residents on patients, who, based on existing evaluation criteria, are determined at the time of triage to possibly require a trauma team activation or stroke team activation.

<sup>b</sup> "Rapid head" is a designation used for patients who undergo trauma evaluation and, although they do not require a full trauma activation, do usually require rapid evaluation with head and/or neck computed tomography scans, and are prioritized to get imaging studies done by being designated as a "rapid head". The overhead page notifies patient care associates of the need for transport of the patient to radiology.

<sup>c</sup> Hospital-wide pages included those heard throughout the hospital, such as "Code Blue", "Code Red", or "Visiting hours are now over".

<sup>d</sup> Pages in the "Other" category were those that did not fall into a previously designated category.

the impact of those distractions and interruptions on patient care, and a ranking of the frequency of different categories of both distractions and interruptions. Distractions and interruptions included in the survey reflected common overhead pages and individual tasks that were an established part of departmental operations. Specific questions asked on the survey are listed in [Appendix A](#).

Survey responses were anonymized outside of level of training. No residents were individually identified, and no distinction was made between the number of years of experience of attending providers. This study did take place during a transition time within the residency and the beginning of a new academic year. Therefore, survey responses for distractions and interruptions were, for the latter part of the study period, compared to actual distractions and interruptions for different individuals. However, regardless of the individual provider, the same tasks are managed by residents of different levels of training, so survey responses from specific residency levels should accurately reflect the observations recorded for those same training levels. Likewise, the distinction amongst attending providers would not have impacted the recorded observations, as all attendings, regardless of their years of clinical experience, are expected to manage the same tasks during each shift.

### 2.3. Data analysis

Attending and resident survey responses for both Phase I and Phase II were compared using a one-way analysis of variance

**Table 2**  
Individual interruptions.

EKG read	Call from Radiology
Trauma Evaluation <sup>a</sup>	Call from Outside Hospital
Neuro Evaluation <sup>a</sup>	Command Phone Call
Call from Lab	Other <sup>b</sup>
Call from Inpatient Provider	

Actual individual interruptions recorded by work-study students during the Phase 2 of the study.

<sup>a</sup> In the study ED, Trauma and Neuro Evaluations are performed by attendings or senior residents on patients, who, based on existing evaluation criteria, are determined at the time of triage to possibly require a trauma team activation or stroke team activation.

<sup>b</sup> Individual interruptions in the "Other" category were those that did not fall into a previously designated category.

(ANOVA). Data were transformed using a log(10) function (or log(10 + 1) function if a value of zero needed to be accounted for) to assure normality and homogeneity of variance. Post hoc analysis was performed using a Tukey's Honestly Significant Difference (HSD) test. Results from Phase I and Phase II were then compared to results from the survey using a Spearman's rank order test, to differentiate between perceived and actual distractions. Distractions and interruptions that occurred the same number of times were assigned the same rank, as were those perceived to occur the same number of times. Significance was assessed at  $p < 0.05$ .

**3. Results**

**3.1. Characteristics of study subjects**

Out of 48 faculty members, 79% (38) responded to the survey. Out of 36 residents, 64% (23) responded. Of the resident responses, 8 were R3s, 6 were R2s, and 9 were R1s. Of all providers, 98.4% (61/62) felt they were distracted or interrupted during a shift, of whom 90.3% felt that being distracted or interrupted negatively impacted the care they provide to patients.

**3.2. Main results**

**3.2.1. Phase I**

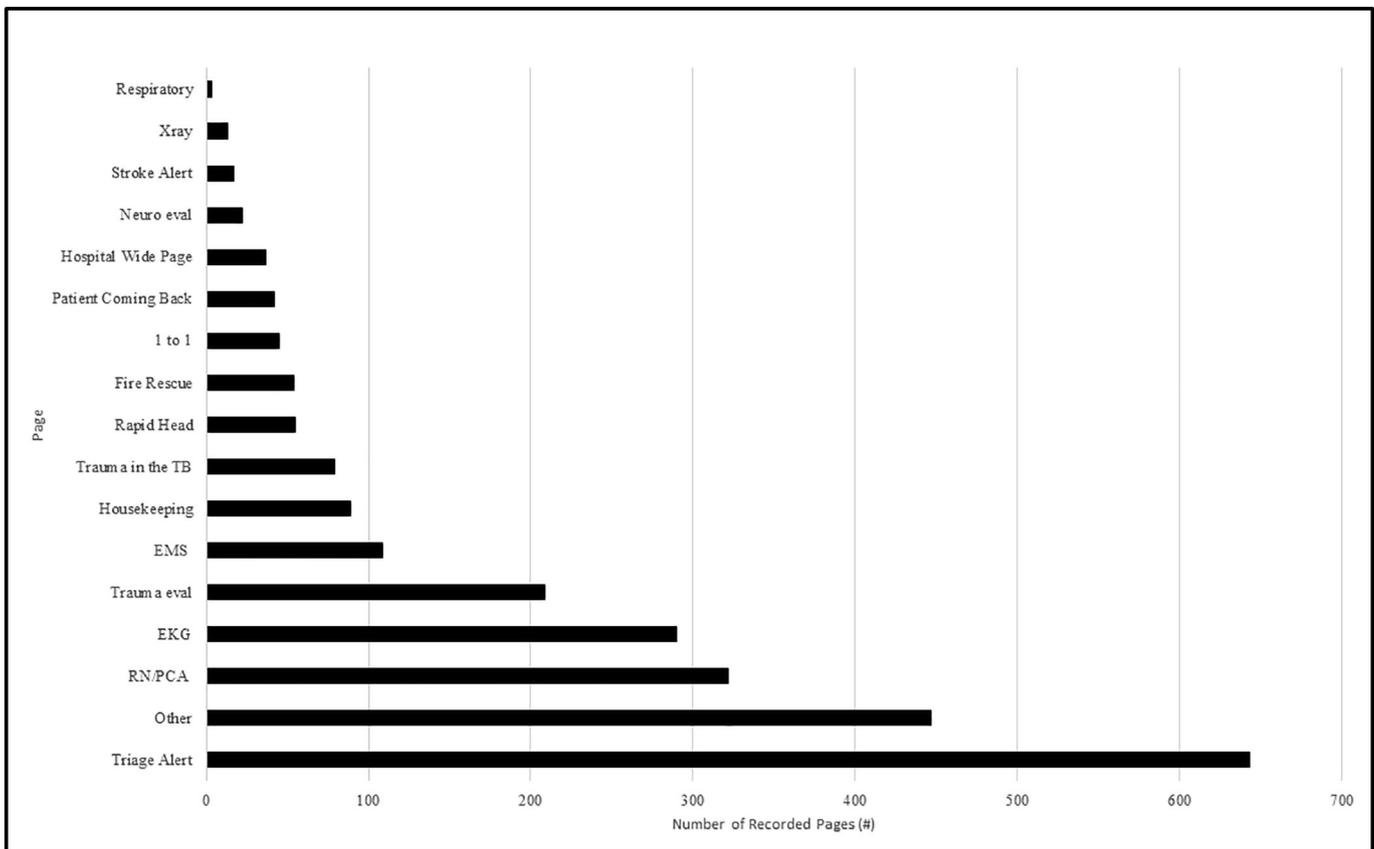
During Phase I, 2438 overhead pages were recorded. The most commonly recorded overhead pages were "Triage Alert" and "Other". In the "Other" category, 168 pages were referring to phone calls or pages to specific individuals or services. Of those pages, 59 pages were not able to be understood because of the poor sound quality of the overhead projection. These were still included in

the analysis as the providers would have stopped their current task to listen to the page, even if it was ultimately unable to be understood. On average, 23.2 overhead pages were recorded per shift, which equates to 2.9 pages per hour. The actual number of all overhead pages is displayed graphically in Fig. 1.

The average perceived number of overhead pages per shift was 43.2, with a median of 32. This equates to an average of 5.4, and a median of 4, pages per hour. Attendings perceived an average of 47.76 overhead pages per shift, R3s perceived 27.6 overhead pages per shift, R2s perceived 47.6 overhead pages per shift, and R1s perceived 29.57 overhead pages per shift. The non-numerical responses of "too many to count", which came from two providers, were excluded from analysis. This resulted in differing group sizes between phase I and phase II, even though the number of survey respondents remained constant. A comparison of the actual average number of overhead pages per shift and the perception of overhead pages per shift, by provider level of training, is shown in Fig. 2.

A one-way ANOVA revealed a significant difference between the perception of distractions amongst the attendings and all resident levels of training ( $F(3,40) = 4.779, p = 0.0061$ ). Post hoc comparisons using Tukey's HSD test indicated that the mean score for the attendings ( $\bar{x} = 1.608, SD = 0.346$ ) was significantly different than the mean score for the R1s ( $\bar{x} = 1.084, SD = 0.318$ ). The attending mean score did not differ significantly from that of the R2s ( $\bar{x} = 1.600, SD = 0.367$ ) or R3s ( $\bar{x} = 1.446, SD = 0.258$ ). There was also no significant difference amongst R1s, R2s and R3s.

The perception of the frequency of each type of overhead page differed from the actual frequency of each type of page (Fig. 3). The page perceived to be the most common was "Trauma Evaluation", but the page that was most common was "Triage alert".



**Fig. 1.** The actual number of recorded overhead pages during the study period.

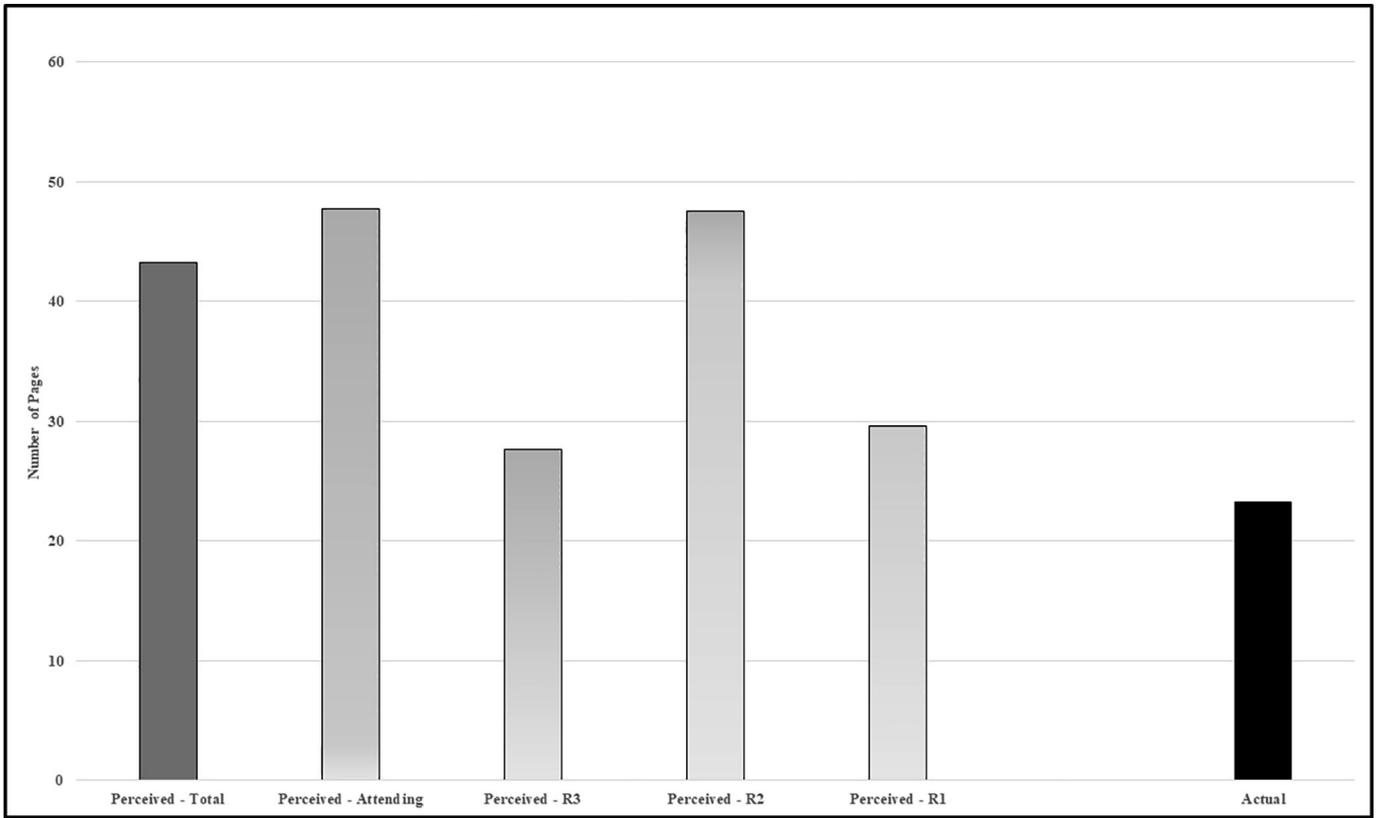


Fig. 2. A comparison of perceived vs. actual average numbers of distractions, per shift.

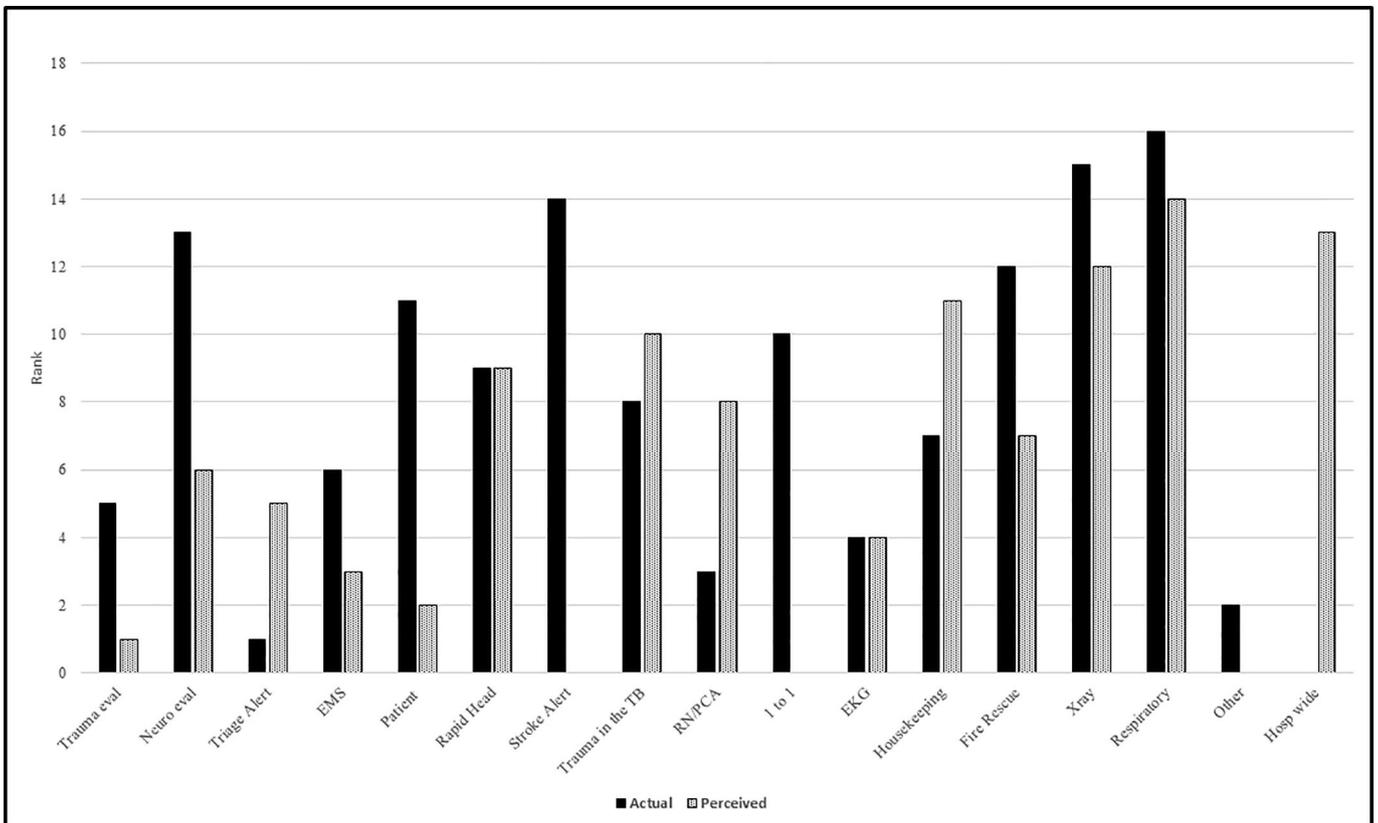


Fig. 3. A comparison of rankings of actual overhead pages vs. the perceived rank of overhead pages by all providers.

Evaluating the two rank order lists in entirety using a Spearman's rank order test revealed a moderate, positive correlation of 0.57. The difference in rank order lists was statistically significant ( $p = 0.036$ ).

3.2.2. Phase II

333 individual interruptions were recorded over the 3-week period. Attendings were interrupted most often, a total of 124 times. The number of interruptions decreased as the level of training did, going from 119 to 70 to 20 from R3s to R2s to R1s. The average numbers of interruptions per shift were 2.95, 5.6, 3.3, and 1, for each respective level of training. A graphic representation of the actual interruptions per shift is shown in Fig. 4.

The average perceived number of interruptions per shift was 53.5 for all levels of training. Attendings perceived an average of 72.13 interruptions per shift. One non-numeric response of “too many to count” was excluded from analysis. R3s perceived an average of 9.42 interruptions per shift. R2s perceived an average of 23 interruptions per shift. One R2 also responded that there were “too many to count”, and this was also excluded from the analysis. R1s perceived 29.42 interruptions per shift, on average. A graphic representation comparing the average actual interruptions per shift to the average perceived interruptions per shift is shown in Fig. 5.

The perceived number of interruptions amongst different levels of training was statistically significant, based on a one-way ANOVA analysis ( $F(3,38) = 15.69, p = 8.50 \times 10^{-7}$ ). Post hoc comparisons using Tukey's HSD test indicated that the mean score for the attendings ( $\bar{x} = 1.756, SD = 0.306$ ) was significantly different than the mean score for the R1s ( $\bar{x} = 0.873, SD = 0.407$ ), and that of the R2s ( $\bar{x} = 1.325, SD = 0.211$ ). However, there was no significant difference between Attendings and R3s ( $\bar{x} = 1.412, SD = 0.248$ ). There was additionally a significant difference between R1s and R3s, but the difference between R1s and R2s, and R2s and R3s was not significant.

Attendings were most often interrupted by an EKG read, while R3s were most often interrupted by a call from an inpatient provider. R2s were interrupted most by both a call from an inpatient provider and doing a trauma evaluation. R1s were most often interrupted by a call from an inpatient provider.

A very weak, positive correlation of 0.08 was found between the perception of interruptions and actual interruptions, using a Spearman's rank evaluation. The perception of the frequency of each type of interruption did not significantly differ from the actual frequency of each type of interruption ( $p = 0.665$ ). This is shown graphically in Fig. 6.

4. Discussion

This study sought to determine if a difference existed between ED provider perception of distractions and interruptions and the actual occurrence of distractions and interruptions. The perception of overall number of overhead pages by all levels of training was significantly greater than the actual number of overhead pages. Moreover, a significant, moderate correlation was found between the rankings of types of overhead pages by providers and actual ranks of overhead pages. This implies that, not only did providers over-estimate the number of overhead pages per shift, they incorrectly estimated which pages were announced the most or least often.

Similarly, providers significantly overestimated the degree of individual interruptions per shift. In fact, providers estimated that interruptions occurred more than ten times as much as they did. There was also a large disconnect between the perception of the frequency of different types of interruptions. As would be expected, however, the perception of individual interruptions differed significantly amongst levels of training, with more experienced providers perceiving more interruptions than less experienced providers. The actual number of interruptions reflected this, and was, in fact, lower for less experienced providers. A similar pattern would likely be found at academic institu-

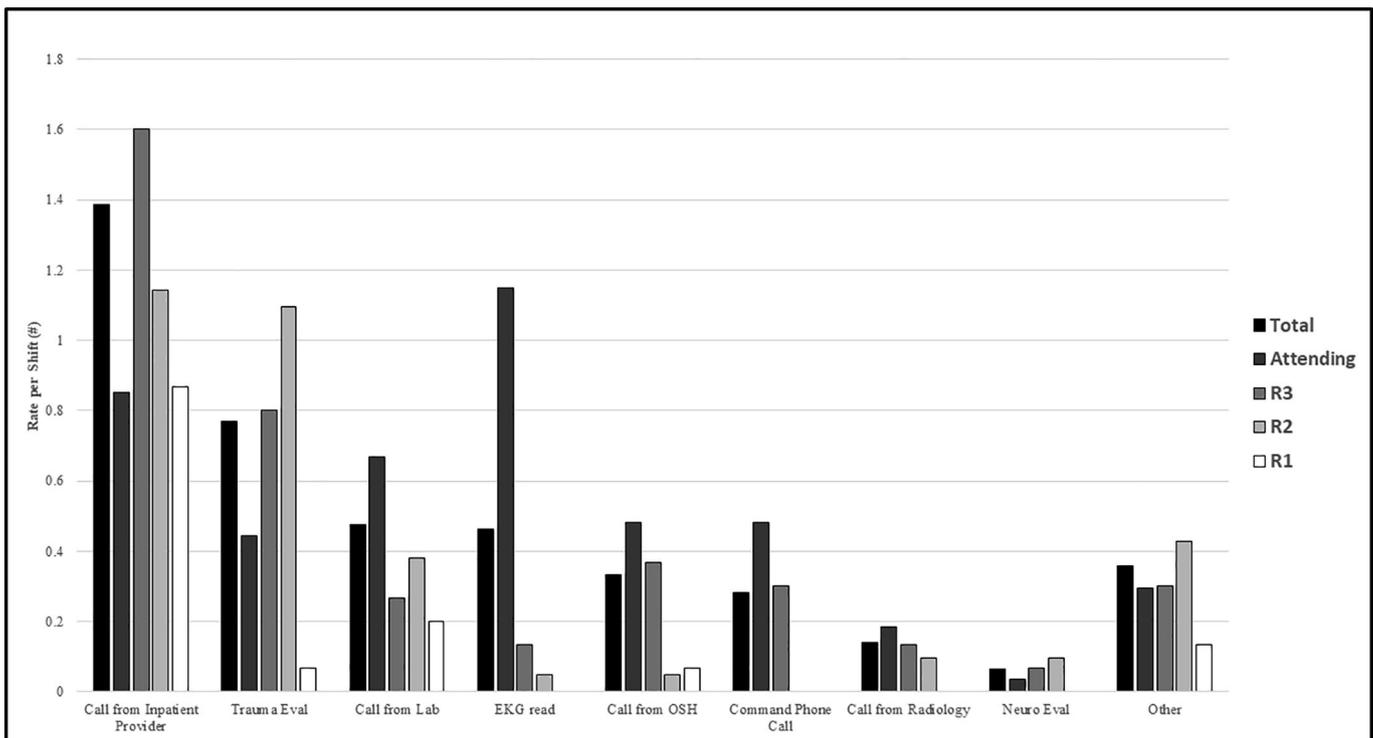


Fig. 4. Actual number of recorded interruptions in each category for each provider level of training.

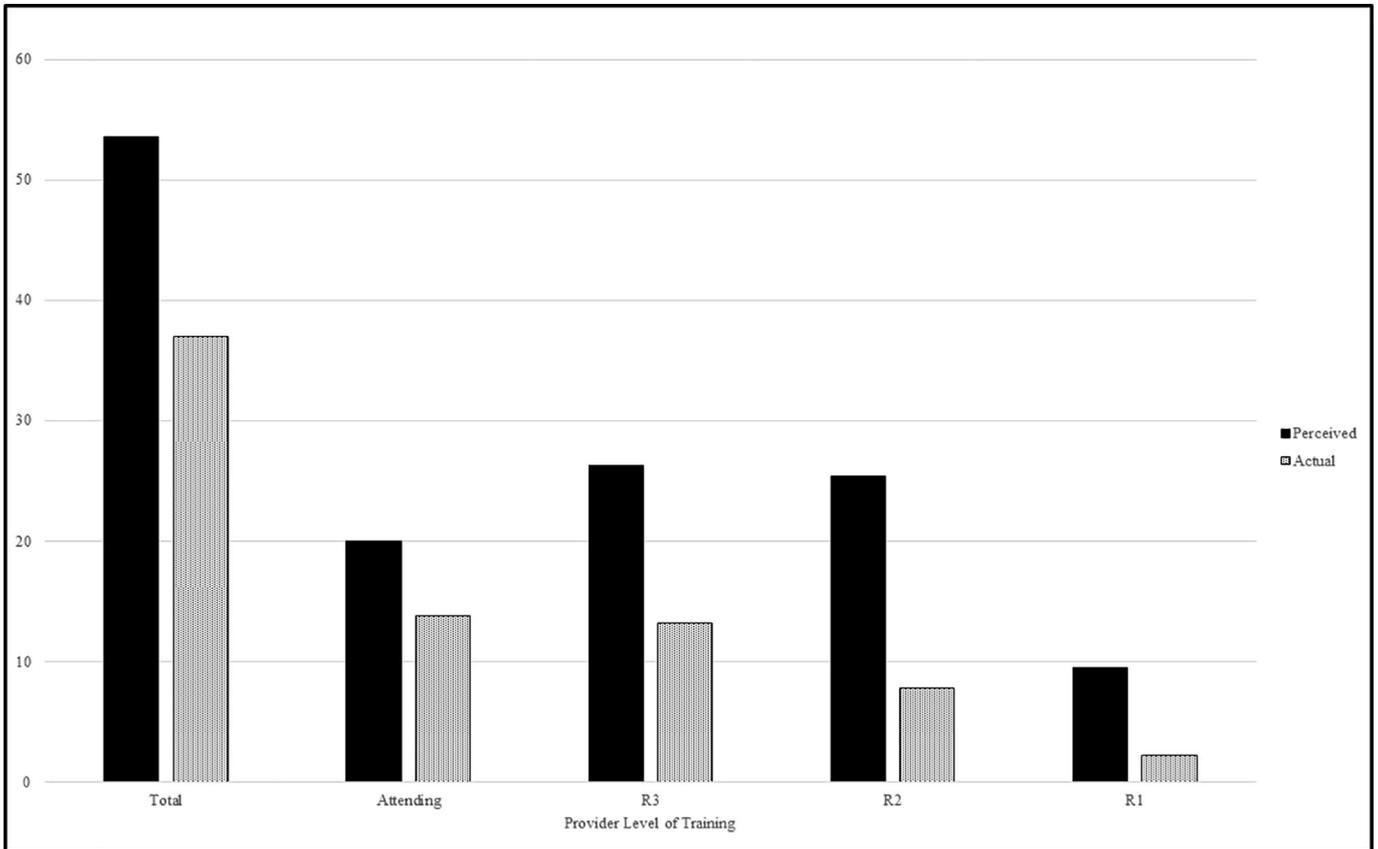


Fig. 5. A comparison of perceived vs. actual average numbers of interruptions, per shift.

tions with a graded increase in assigned responsibilities that parallels advances in training, similar to the study hospital.

Provider response to distractions and interruptions is heavily influenced by their perception of those distractions and interruptions. Performance and select responses to stimuli, such as inter-

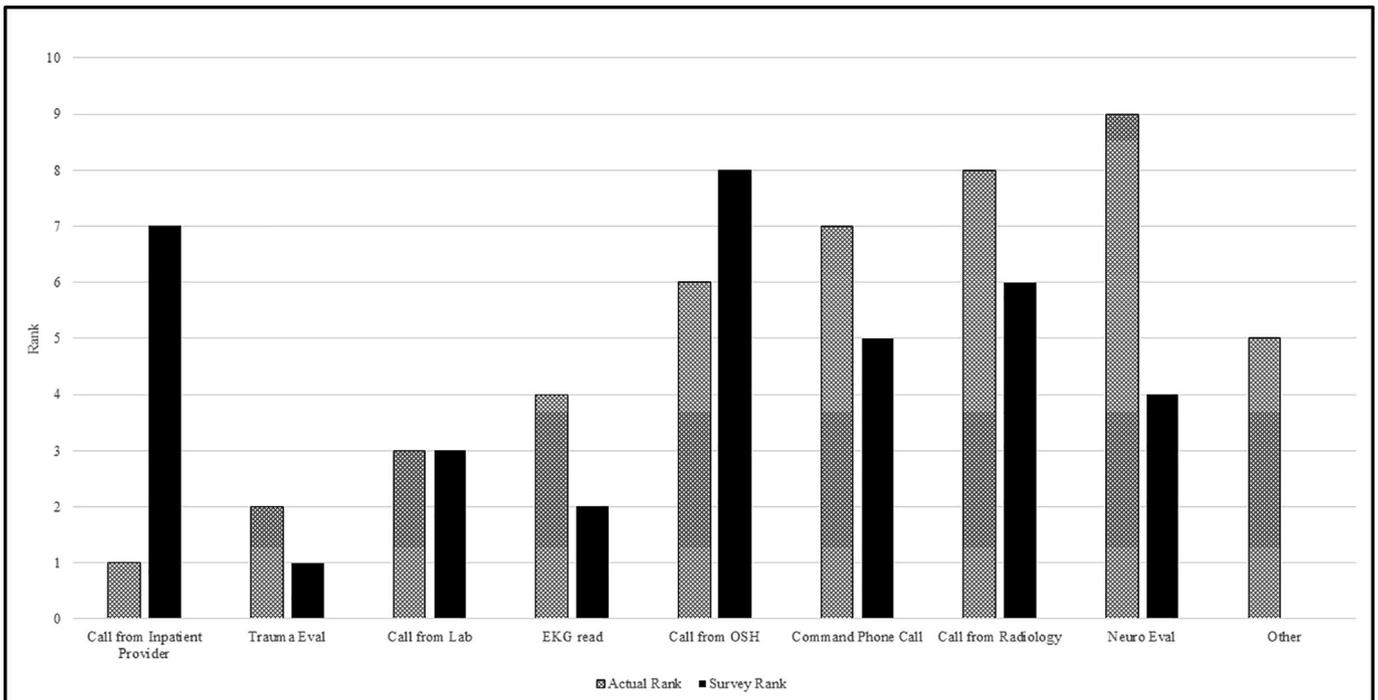


Fig. 6. A comparison of rankings of actual interruptions vs. the perceived rank of interruptions by all providers.

ruptions, are heavily influenced by how those stimuli are perceived. Perception, shortly defined as “assigning meaning to an event or situation” directly affects how one responds emotionally, cognitively and behaviorally to certain stimuli [15,16]. Studies have shown that the same brain response occurred when people were exposed directly to certain stimuli and when they perceived they were being exposed to those same stimuli [17]. It has also been shown, through mood-as-input studies, that behavioral output can be manipulated by affective input. This implies that perceiving something to be true can lead to feeling a certain way, and that feeling will affect performance on a current task and preparation for a future task [18].

When translated to the ED setting, this suggests that the perception of distractions or interruptions could augment the existing consequences of being distracted or interrupted. Those consequences include commission of medical errors, an increase in which could have a substantial negative impact on patient safety, and increased cognitive fatigue, which could contribute to provider burnout.

#### 4.1. Limitations

The distractions and interruptions recorded by the work study students may slightly underrepresent the actual number of distractions and interruptions in the ED. While working in the department, the students were also responsible for enrolling patients in other ongoing research studies. While the students were enrolling patients in other studies, interruptions and distractions may not have been recorded. Of the overhead pages recorded, many were indecipherable, due to poor sound quality, and could only be included in the “other” category as a result. Those pages may have been misallocated and skewed the overhead page data, either closer to or farther from the survey results.

Actual data collected had to be adjusted to perform an ordinal rank comparison with the survey data, as the categories of recorded data did not directly match the categories surveyed. To compare the data, actual data on “stroke alerts” was combined with “neuro evaluations” as both reflect acute neurological complaints, “One to one needed to room ‘X’” was combined with “Nurse/PCA to room ‘X’” as the PCAs are the staff responsible for close observation of patients, and the other category was eliminated as most pages were indecipherable and could not be adequately categorized.

Finally, although work-study students were trained in data collection prior to the onset of the study, no additional assessment of inter-rater reliability of the work-study students was performed.

## 5. Conclusion

This study shows that provider perception of not only the frequency, but also the type, of distractions and interruptions, differs from reality. In addition to reducing the number of distractions, more work should be done to target provider perception of distractions and interruptions, and their emotional and physical responses to those perceptions, which could potentially contribute to an increase in medical errors and provider burnout.

#### Sources of support

The authors report no external sources of support for this study.

## Presentations

This work has been presented as a poster presentation at SAEM 2017, a lightning round oral presentation at Mid-Atlantic Regional SAEM 2017, and as a poster presentation at AAEM 2017.

## Declarations of interest

None.

## Acknowledgements

The authors would like to thank George Gadalla, Margaret Anne Rush, Dylan Cuva, and Sam Albanesi, for their contributions to this project.

## Appendix A

### Survey

What level of training are you?

On an average shift, do you think you are distracted/interrupted?

Do you think being distracted/interrupted during a shift negatively impacts the care you provide to patients?

On an average shift, how many overhead pages do you hear?

Please rank the following overhead pages in the order you believe they most frequently occur:

EMS coming back for charge nurse placement

Fire Rescue Haste; Housekeeping to Room “X”

Neuro Evaluation; Trauma Evaluation

Trauma in the Trauma Bay

Hospital-wide Page; Triage Alert Room ‘X’

Nurse/PCA to Room ‘X’

Rapid Head Room ‘X’

Respiratory to Room ‘X’

X-Ray to room ‘X’

Patient coming back for charge nurse placement

EKG room ‘X’

On an average shift, how many times are you interrupted?

Please rank the following interruptions in the order you believe they most frequently occur:

Call from the lab

Call from an inpatient provider

Call from radiology

Call from an outside hospital

Command Phone call

EKG read

Trauma Evaluation

Neuro Evaluation

## References

- [1] Tengs TO. Book reviews: human error in medicine. Edited by MARILYN SUE BOGNER Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1994, 422 pp. Med Decis Making 1995;15(3):291–2. <https://doi.org/10.1177/0272989X9501500317>.
- [2] Croskerry P, Sinclair D. Emergency medicine: a practice prone to error? CJEM 2001;3(4):271–6.
- [3] Werner NE, Holden RJ. Interruptions in the wild: development of a sociotechnical systems model of interruptions in the emergency department through a systematic review. Appl Ergon 2015;51:244–54. <https://doi.org/10.1016/j.apergo.2015.05.010>.
- [4] Wears RL, Leape LL. Human error in emergency medicine. Ann Emerg Med 1999;34(3):370–2. [https://doi.org/10.1016/S0196-0644\(99\)70133-2](https://doi.org/10.1016/S0196-0644(99)70133-2).
- [5] Laxmisan A, Hakimzada F, Sayan OR, Green RA, Zhang J, Patel VL. The multitasking clinician: decision-making and cognitive demand during and after team handoffs in emergency care. Int J Med Inform 2007;76(11):801–11. <https://doi.org/10.1016/j.ijmedinf.2006.09.019>.

- [6] Chisholm CD, Collison EK, Nelson DR, Cordell WH. Emergency department workplace interruptions are emergency physicians “Interrupt-driven” and “Multitasking”? *Acad Emerg Med* 2000;7(11):1239–43. <https://doi.org/10.1111/j.1553-2712.2000.tb00469.x>.
- [7] Brixey JJ, Tang Z, Robinson DJ, Johnson C, Johnson T, Turley P, et al. Interruptions in a level one trauma center: a case study. *Int J Med Inform* 2008;77(4):235–41. <https://doi.org/10.1016/j.ijmedinf.2007.04.006>.
- [8] Chisholm CD, Dornfeld AM, Nelson DR, Cordell WH. Work interrupted: a comparison of workplace interruptions in emergency departments and primary care offices. *Ann Emerg Med* 2001;38(2):146–51. <https://doi.org/10.1067/mem.2001.115440>.
- [9] Chisholm CD, Weaver CS, Whenthmouth L, Giles B. A task analysis of emergency physician activities in academic and community settings. *Ann Emerg Med* 2011;58(2):117–22. <https://doi.org/10.1016/j.annemergmed.2010.11.026>.
- [10] Brixey JJ, Robinson DJ, Turley JP, Zhang J. The roles of MDs and RNs as initiators and recipients of interruptions in workflow. *Int J Med Inform* 2010;79(6):e109–15. <https://doi.org/10.1016/j.ijmedinf.2008.08.007>.
- [11] Kahn CA. Commentary: death by distraction. *Ann Emerg Med* 2016;68(2):234–5. <https://doi.org/10.1016/j.annemergmed.2016.06.020>.
- [12] Grundgeiger T, Sanderson P. Interruptions in healthcare: theoretical views. *Int J Med Inform* 2009;78(5):293–307. <https://doi.org/10.1016/j.ijmedinf.2008.10.001>.
- [13] Chang H. Association of interruptions with an increased risk and severity of medication administration errors. *JAMA* 2010;303(22):2233.
- [14] Ulanimo VM, O’leary-Kelley Colleen, Connolly PM. Nurses’ perceptions of causes of medication errors and barriers to reporting. *J Nurs Care Qual* 2007;22(1):28–33. <https://doi.org/10.1097/00001786-200701000-00007>.
- [15] Bernstein DA. *Essentials of psychology*. 6th ed., 6th ed. Wadsworth, Cengage Learning; 2014.
- [16] Wickens CD. *Engineering psychology and human performance*. 3rd ed. Upper Saddle River, NJ: Prentice Hall; 2000.
- [17] Rice K, Redcay E. Interaction matters: a perceived social partner alters the neural processing of human speech. *Neuroimage* 2016;129:480–8. <https://doi.org/10.1016/j.neuroimage.2015.11.041>.
- [18] Sanna LJ, Meier S, Wegner EA. Counterfactuals and motivation: mood as input to affective enjoyment and preparation. *Br J Soc Psychol* 2001;40(2):235–56. <https://doi.org/10.1348/014466601164830>.