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Cover Page Footnote

Positively Waiting: Technology as the Preferred Distractor in a Pediatric Outpatient Setting Running Header: Technology as the Preferred Distractor Timothy Stephen Ernest, BS1; Victoria Lynn Maddex1; Arnaldo Mejias, MA1; Lindy Grief Davidson, PhD1; and Donna Lee Ettel-Gambino, PhD1 1Judy Genshaft Honors College, University of South Florida, Tampa, FL Author contributions: Each author contributed equally to the project design, data collection, analysis, discussion of the findings, conclusions, and manuscript preparation, and ultimate submission. All authors: 1) Timothy Stephen Ernest (ernestt@usf.edu), 2) Victoria Maddex (vlmaddex@usf.edu), 3) Arnaldo Mejias (amejias@honors.usf.edu); 4) Lindy Davidson (lindyd@honors.usf.edu), 5) Donna Lee Ettel-Gambino (ettel@usf.edu) have given final approval for our manuscript 1579. No conflicts of interest exist. Abbreviations: Animal assisted activities (AAA), also known as pet therapy. There was no funding for this project. This article is associated with the Innovation & Technology lens of The Beryl Institute Experience Framework (<https://www.theberylinstitute.org/ExperienceFramework>). You can access other resources related to this lens including additional PXJ articles here: http://bit.ly/PX_InnovTech

Positively waiting: Technology as the preferred distractor in a pediatric outpatient setting

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Abstract

Visiting any pediatric outpatient clinic as a child may be considered a stressful and anxiety-inducing experience. The literature suggests that positive distractions, such as pet therapy and single-user electronic devices, may aid in reducing anxiety and maximizing patient satisfaction throughout the patient's experience at a pediatric outpatient clinic. The aim of this pilot quality improvement project was to determine which positive distractions patients experienced and whether single-user electronic loaner devices should be provided to patients at pediatric outpatient facilities. A quantitative causal comparative approach was utilized in identifying patient exposure to key positive distraction techniques that may significantly decrease anxiety. The independent variable was the patient gender as reported by the caretaker. The term "caretaker" refers to the adult parent, guardian, relative, or friend accompanying the patient. The dependent variables were caretakers' responses to interview questions regarding exposure to and interest in various positive distractors. Most patients reported more interactions with therapy dogs than either clowns or musicians, with none reporting magician interaction while waiting for their appointments. Many patients (71%) demonstrated interest in having access to single-user electronics during clinic appointment wait times. Male patients showed great interest (87%) in having access to single-user electronics. Findings suggest that pediatric healthcare facilities funding single-user electronics to reduce patient anxiety may increase patient satisfaction. Additionally, data suggest administrators may benefit by offering an array of positive distractions, with a particular focus on pet therapy programs. Child life specialists are particularly suited for overseeing the implementation of an efficient and effective program.

Keywords

Patient satisfaction, pediatric healthcare, positive distractions, single-user electronics, technology, toys

Introduction

Positive distractions may aid in maximizing patient satisfaction and combat the anxiety and stress-inducing environment that may be present in an outpatient pediatric waiting room area. These distractions are particularly in demand by pediatric patients in medical/clinic settings and may help shape the social environment of the hospital where some patients spend many hours.

"Wait times to see physicians are a source of potential frustration and dissatisfaction with care quality, as well as lost productivity for individual patients," according to a study analyzing 21million outpatient visits from electronic health records.¹ Another study relevant to pediatrics revealed that patients and their families experienced extended wait times for their appointments. Approximately one third to one-half of participants reported extended wait times in their survey and stated they had trouble attending appointments for this reason.²

It is vital that hospital leadership understand the benefit of patient interaction with funded distractions, shifting future monetary propositions to best supplement the waiting room experience for healthcare consumers.³

Prior to this quality improvement project, this multisystem pediatric outpatient clinic located in the Tampa Bay area lacked information pertaining to the utilization of positive distractions. Though there is substantial funding for positive distractions at this multisystem pediatric outpatient clinic, implementation of this funding was inefficient.

Review of Literature

Previous research indicated positive distractions in the pediatric healthcare setting may provide benefits for patients, including improved behavioral/emotional well-being, in alignment with reducing stress and anxiety.⁴ Utilizing distraction therapy may be a contributing factor

to a positive experience for families and their children, further promoting the need for exploring effective distraction methods for pediatric centers. One study describes how the role of the child life specialist positively contributes as a key distractor in pediatric units. The literature suggests that the role of the child life specialist implements, builds upon, and complements other positive distractors. Utilizing the resource of the child life specialist alleviates nursing staff from extra tasks in delivering patient care, thereby maximizing the patient care experience.⁵

The remaining review of available literature focused on five types of positive distractions relevant to ultimately shaping the outcomes of the current quality improvement project: pet therapy, musicians, magicians, clown therapy, and single-user electronics (gaming technology).

Pet Therapy

Animal assisted activities (AAA), also known as pet therapy, allow children and therapy animals to informally interact in a healthcare setting. A recent study (2019) found that pet therapy reduced anxiety levels of children in an inpatient pediatric unit by a greater margin than any other anxiety reducing method, such as jigsaw puzzles. After recording the children's baseline anxiety levels and then having the child participate in either a 10-minute dog therapy visit or a jigsaw puzzle activity, researchers found that post-intervention anxiety levels were significantly lower in the pet therapy group. Further, almost all parents from the pet therapy group stated that they believed their child benefited from the program, would like another session with the pets, and would highly recommend AAA to their friends.⁶

Evidence suggests that exposure to a pet therapy program led to significant decreases in emotional distress, worry, tiredness, fear, sadness, and pain in a hematology/oncology unit. Ultimately, findings suggested that patients, parents, and staff agreed that pet therapy had positive effects in patients.⁷

Musicians

The literature provided evidence that music performed by musicians may have a beneficial effect in reducing pain, anxiety, and stress—before and after—blood tests. Moreover, data suggest that the presence of musicians has a significant positive effect with pain management.⁸

Magicians

Patients (25%) and caregivers (24%) experienced a reduction in anxiety post therapy in a recent (2019) study. “Magic therapy significantly reduced anxiety in caregivers with a similar suggested benefit to that of patients ~1 hour after therapy. A majority of staff reported that they believed magic was helpful for the child (81%) and parent (57%), and many also reported that they believed it was

helpful for the staff (47%)”.⁹ In an exploration of methods to “reduce the psychological discomfort and anxiety of pediatric patients and their caregivers,” a 2018 study also found that “compared to participants who received the ‘standard services’, those in the magic-based intervention were significantly less anxious”.¹⁰

Clown Therapy

One study demonstrated that the utilization of medical clowns prior to and during procedures in the pediatric emergency department diminished anxiety in patients.¹¹ Staff and clown opinions were noted, and a significant number of participants indicated that clown therapy might be an effective non-pharmacological method to attenuate negative emotions and stress in pediatric patients. Another study found that distraction by medical clowns reduced the duration of crying and anxiety levels in children undergoing blood tests or line insertion and were more beneficial than the usage of a local anesthetic.¹²

Gaming Technologies

A systematic review of 75 studies in 2018 focused on gaming technologies in pediatric settings. Researchers identified a disproportionate focus on elementary age children and concluded that these studies mostly explored rehabilitative motivating technology. The review focused on single-user electronics, rather than multiplayer technology. As handheld devices have become increasingly available and affordable, their popularity has increased within pediatric units. Despite gaps in the current literature, the review found that a demand existed for more information regarding the impact of technology implementations to include wider technology types, intentions, and extended age groups.¹³ Other researchers agree that further investigation is needed to establish technology for social spaces due to limited reach outside of clinical practices.³

Single-User Electronics

A study on hands-free media suggested that young patients were less likely to use materials brought from home (including personal electronics) than with those who were provided with an interactive game, a nature video, or aquarium. In contrast, very young participants were more likely to engage with the aquarium, explore the space, and play with materials brought from home. Older participants were more likely to watch others, observe the environment, as well as interact with personal electronics. Engaging with Screenplay was associated with a statistically significant 1.1-point decrease in anxiety on the State Trait Anxiety Inventory (STAI). Engagement with personal electronics was also associated with a statistically significant 1.0-point decrease in state anxiety on the STAI.^{14, 15}

Methods

Initially, Judy Genshaft Honors College faculty and students met with the President and CEO at a private, not-for-profit, multi-system pediatric hospital in the Tampa Bay area and agreed to form an ongoing partnership. The purpose of this partnership was to assist in a patient satisfaction quality project as an Honors Capstone course component.

Physician-patient communication and timeliness are essential to driving positive quality outcomes. Senior leadership considered the point of contact between patient and physician under 10 minutes acceptable, and prolonged wait times between the patient and physician (greater than 10 minutes) as unacceptable. Senior leadership reported concern that many patients were experiencing prolonged wait times (greater than 10 minutes). Minimizing wait times—without adding a financial cost—communication and timeliness may improve. Finally, they seek alternative solutions to maximize the patient experience by using distractors. Specifically, senior leadership was interested in knowing to which positive distractors patients were exposed and whether a preference existed for utilization of loaner single-user electronic devices, if offered. Prerequisites for students to participate in this Honors Capstone included undergoing a 10-panel drug test, a criminal background clearance, and signing confidentiality statements in accordance with hospital policy. Additionally, all students were instructed on infection control practices and had to demonstrate proper hand washing prior to the first hospital encounter. Senior leadership met with faculty and students to develop an interview protocol consisting of five questions (see Appendix). These items referenced the types of positive distractors to which patients had exposure and whether a preference existed regarding use of loaner single-user electronic devices, if provided. Students, faculty, and senior leadership agreed on questions caretakers would be asked (in the presence of the patient).

After receiving authorization from the hospital's leadership, the students began interviewing caretakers (in the presence of the patients) during class time hours under the direct supervision of the professor and hospital staff in the outpatient clinic and lobby/reception areas. Once data collection was completed and analyzed, the findings were presented to senior leadership. Considering the benefit to other healthcare sites, they suggested sharing this valuable information with the medical community. This pilot quality improvement project was not classified as "research" according to 45 CFR 46 thus this project did not fall within the scope of IRB. Nonetheless, collected data were non-identifiable and known risks to participants were minimal.

Participants

Participants in this pilot quality project included pediatric patients ($n=114$), accompanied by a caretaker, who were reporting for follow-up appointment visits at a private, not-for-profit, multisystem pediatric outpatient clinic located in the Tampa Bay area. The racial makeup was White (57%), African American (15%), Hispanic (24%), and other (4%) – those who chose not to identify. The patients' ages ranged from 9 months to 17 years old with a mean age of 8.46 years; 29.8% were male and 70.2% female.

Statistical Analysis

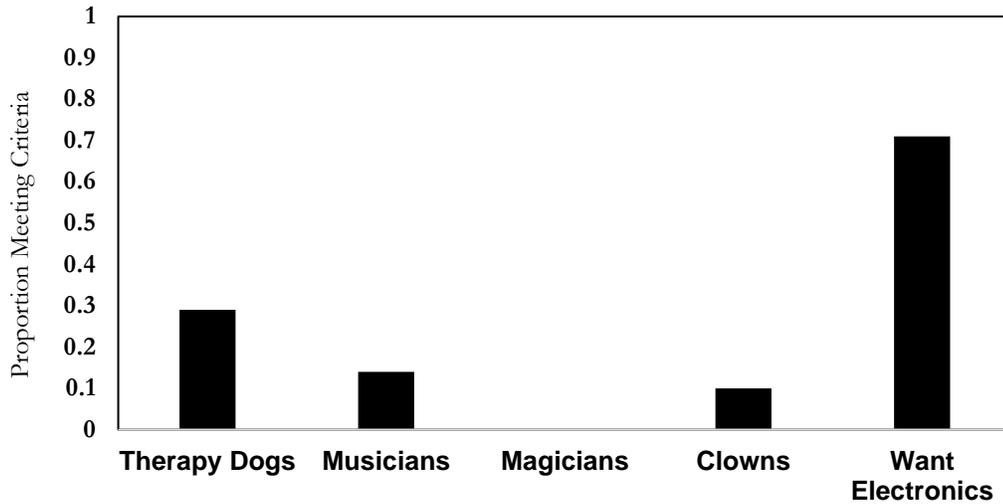
A quantitative causal comparative approach was utilized in identifying patient exposure to key positive distraction techniques that may significantly decrease anxiety while simultaneously improving the patient care experience, which is in alignment with this multisystem pediatric hospital's mission, vision, and service lines. Data were double-entered by separate students to ensure accuracy. The independent variable was the patient's gender as reported by the caretaker. In this project, "caretaker" refers to the adult parent, guardian, relative, or friend who accompanied the child during the appointment. The dependent variables were the caretakers' responses to the interview questions on the following distractors: (a) therapy dogs; (b) musicians; (c) magicians; (d) clown; and (e) single user loaner electronics (if offered). Caretaker interviews ($n=114$) were conducted in the presence of the patient throughout an academic semester of 16 weeks. Descriptive statistics and Multivariate Analysis of Variance (MANOVA) were conducted to compare the level of exposure to each of the five distraction techniques among groups. For significant findings, univariate analysis of variance contrasts were conducted on each dependent variable. Effect size was calculated using Mahalanobis distance.

Results

Descriptive statistics including visual displays and summary statistics to include the means, standard deviations, skewness, and kurtosis were calculated. There were statistically significant findings as evidenced by Wilks' $\Lambda(4, 93) = 0.86, p < 0.007$. After rejecting the null hypothesis univariate analysis of variance (ANOVA) contrasts were conducted on each of the five criteria. The following two criteria were found to be statistically significant: (1) therapy dogs ($p < 0.006$) and (2) utilization of single-user electronics, if offered ($p < 0.03$).

For the criterion "therapy dogs" (caretakers who reported exposure with therapy dogs and considered it as a positive distraction technique) findings suggest that 29% of patients were exposed to this distractor. (see Figure 1). A comparison by gender suggests that female patients (37%)

Figure 1. Overall Means



were more likely to be exposed to therapy dogs than those of male patients (16%). (see Figure 2).

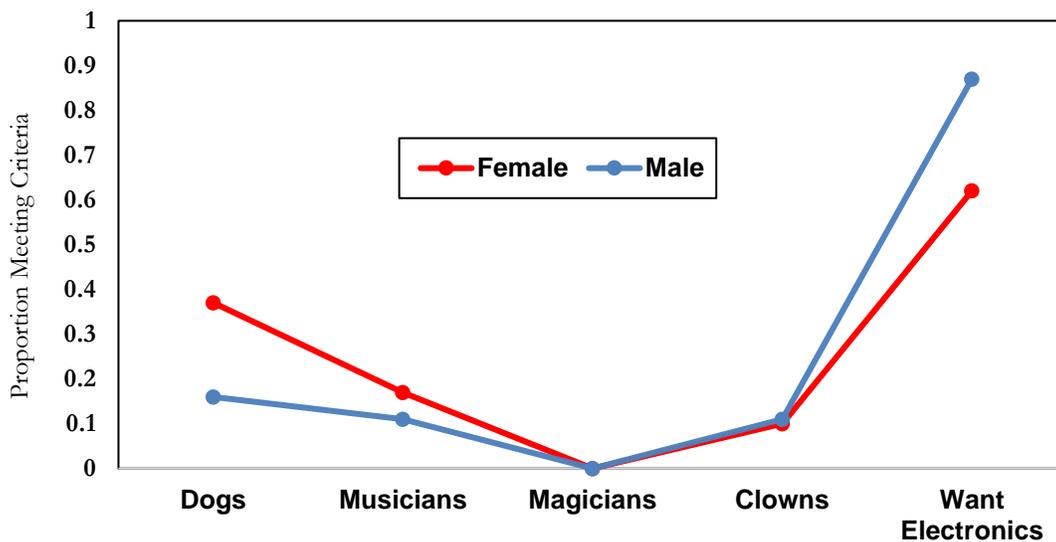
For the criterion “single-user electronics” findings suggest that overall, 71% of caretakers would allow their family member patients to utilize single-user electronics entertainment during wait times, if offered. Currently, this pediatric healthcare facility does not have singer-user electronic distractors to offer patients. Refer to in Figure 1. A comparison by gender indicated that caretakers of male patients (87%) were more likely to permit use and simultaneously considered single-use electronics to be a

positive distractor than caretakers of female patients (67%). (Figures 1 and 2).

Discussion

Many pediatric providers focus on actual treatment encounters when seeking to improve patient satisfaction; however, patients and caregivers spend as much, if not more, time in waiting areas as they do with providers. Children awaiting exams, tests, or treatment may be in a particularly difficult situation as many clinical encounters require unusual preparation such as sleep deprivation, special diets, fasting, or simply the interruption of a

Figure 2. Means by Gender



routine. Positive distractions offer the opportunity to alleviate the anxiety and discomfort of a long wait and improve patient satisfaction. Furthermore, these distractions can be implemented efficiently with the oversight of child life specialists. These professionals are uniquely trained to support patients and parents in improving the overall clinical experience and can ensure the positive distractions are age and ability-appropriate for patients. These data may imply that patients at this outpatient clinic were exposed to this positive distractor. The present project concurs with existing research in finding that pet therapy is a useful tool in helping to reduce anxiety and other negative emotions and feelings in children in healthcare settings and may lead to increases in patient satisfaction. Since pet therapy has positive effects on patients and less than one-third of patients surveyed reported exposure to therapy dogs, outpatient clinics should aim to increase patients' exposure to pet therapy programs to increase the quality of the patients' experience while at the clinic. Therapy dogs and other pet therapy programs may assist outpatient clinic patients' distress, worry, tiredness, fear, sadness, and pain during their visit, as noted in previous studies, and may lead to patients and caretakers continuing to use the services at the clinic and recommending them to others.

Pet therapy programs, however, are labor intensive. They require significant scheduling, planning, and upkeep, and are always not available. Some clinics may have limited access to pet therapy, so other options should be explored. Alternatively, single-user electronics are low-maintenance positive distractions, and this project found that over two-thirds of patients would use single-user electronics during their wait if offered. Male patients (87%) demonstrated more interest than female (67%) patients. These findings align with prior research suggesting that patients who engaged with personal electronic devices displayed statistically significant decreases in anxiety. It is recommended that outpatient clinics invest in the purchase of electronic devices that may mitigate patient boredom and anxiety while awaiting exams, tests, or treatment.

Limitations and Future Research

This project has several limitations. Caretakers were interviewed in the presence of patients at a single pediatric outpatient facility. Specifically, this facility is part of a multi-hospital international pediatric organization and at the time this quality project was conducted, the facility had transitioned from a combined in-patient/outpatient facility to only an outpatient facility. Therefore, the patient population in the outpatient clinic setting does not necessarily reflect the population at large. For this reason, we are reluctant to infer that these findings are generalizable, although our results are similar to other reports. Clearly, these patients had ready access to an outpatient clinic that had laboratory, radiology, physical therapy, occupational therapy, and child life specialists at

their disposal. As such they may represent the "best case scenario" of pediatric outpatient settings. With the onset of Covid-19 (March 2020), student researchers no longer had access to nor could they collect any pre-patient experience data, implement change, or collect post-patient satisfaction information.

Recommendations for future research include studies related to the following: the effects of gaming technology on patient satisfaction; further investigation of other positive distractions in pediatric units; and replication of this project utilizing different pediatric units after interventions have been applied.

Conclusion

Minimal research was available to support reallocation of funding for electronic entertainment rather than other distractors. Evidence suggests that these positive distractions may relieve tension and improve the patient experience. This project suggests that healthcare organization leaders who fund positive distractions for patients may better distribute resources toward those identified as most desired by patients, with particular focus on single-user electronics. Although funding is provided for positive distractions, reported exposure to any single activity did not exceed 30%, according to data from this project.

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Appendix

Interview Questions

1. Was your child exposed to therapy dogs during their clinic wait time?
2. Was your child exposed to musicians during their clinic wait time?
3. Was your child exposed to magicians during their clinic wait time?
4. Was your child exposed to clowns during their clinic wait time?
5. Would you allow your child to utilize a single-user electronic, if offered?