A 360-Degree Examination of the Placement Fit of Medical Clowns

Dorit Efrat-Treister (tdorit@bgu.ac.il)
Ben-Gurion University of the Negev  https://orcid.org/0000-0003-0827-5255

Daniel Altman
Technion Israel Institute of Technology William Davidson Faculty of Industrial Engineering and Management

Enav Friedmann
Ben-Gurion University of the Negev

Dalit Lev-Arai Margalit
Academic College of Tel Aviv-Jaffa

Kinneret Teodorescu
Technion Israel Institute of Technology William Davidson Faculty of Industrial Engineering and Management

Research article

Keywords: Medical clowns, health care management, health consumer satisfaction, aggression, age

DOI: https://doi.org/10.21203/rs.3.rs-39699/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.  Read Full License
Abstract

Background – Most existing research on medical clowns in health care service has investigated their usefulness among child health consumers. In a 360-degree research stream, we aim to identify the optimal audience (adults or children health consumers), for which medical clowns are most useful in enhancing health consumers’ satisfaction and, in turn, reducing their aggressive tendencies.

Methods – We conducted three studies, which examined the placement fit of medical clowns from a different point of view: medical staff (Study 1a, n = 88), medical clowns (Study 1b, n = 20), and health consumers (Study 2, n = 397).

Results – Studies 1a and 1b demonstrate that both medical staff and clowns believe that child health consumers profit most from the clowns. In Study 2, data from health consumers in seven different hospital wards showed that clowns are useful in mitigating the effect of negative affectivity on satisfaction, thereby reducing aggressive tendencies among children. Surprisingly, the effect of medical clowns on adults is not only weaker, but reversed, such that interactions with medical clowns decrease adults’ satisfaction and increase their aggressive tendencies.

Discussion - The medical clowns are most useful in elevating satisfaction and reducing aggressive tendencies of children. However, older adults show lower satisfaction and higher aggressive tendencies following the performance of the medical clown. The main limitation of the study is investigating aggressive tendencies rather than actual aggression. Future research should examine actual aggression.

Conclusion – Medical clowns should be placed in children’s wards. This conclusion can guide health care service policy makers by indicating the optimal placement of clowns, thereby benefitting most from the clowns’ efforts, elevating health consumer satisfaction, and reducing aggressive tendencies.

Trial registration – article doesn’t report a health care intervention on human participants.

Background

“The role of a clown and a physician are the same - it’s to elevate the possible and to relieve suffering.”

Patch Adams

Background

The use of clowns in hospitals is taken from the circus world an applied to contexts of illness, to improve people's mood and state of mind, as well as to promote health consumer satisfaction and compliance (1). Evidence for the existence of clowns in hospitals goes back to Hippocrates (2), or even prehistoric times (3). Yet, it seems that only after the premier of the movie “Patch Adams” in 1998, did awareness of the potential benefits of medical clowning become widespread (4). While Patch Adams referred to clowning for a variety of audiences, most medical clowns operate in pediatric wards and, accordingly, most studies focus on child health consumers (5). It has recently been suggested that medical clowns can also benefit adults, in line with Adams’ approach (6,7).

A key precursor of purchase intentions for health services is consumer satisfaction (8), and so, just like other service organizations, health services must seek the satisfaction of their health consumers (9). Consumer satisfaction from
the service a hospital provides is the sense a customer feels that the hospital fulfills some need, desire, goal or so forth and that this fulfillment is pleasurable, or in other words, “satisfaction is the health consumer’s sense that the hospital provides outcomes against a standard of pleasure versus displeasure” (10, p.80). Service satisfaction indicates the extent to which the overall service that health consumers receive is congruent with their expectations (11). Health consumer satisfaction is a unique structure, distinct from regular customer satisfaction, since healthcare services have a major impact on physical wellbeing (12,13). Hence, a bad service experience in the healthcare context is more threatening than a bad service experience in general, as it might constitute a life threat (14). The experience of health consumers creates satisfaction and usage of the service (15), and a clown can influence that experience (16,17). The current study draws from literature in the fields of service management and organizational behavior to better understand the influence of medical clowns on satisfaction in different hospital wards.

The use of medical clowns in hospitals is a growing phenomenon, used as a therapeutic method in addition to traditional medical practices and as a negative affectivity buffer (18). Previous research shows that medical clowns have a positive impact on the physical and psychological well-being of health consumers (19–21), reducing the need for pain medications (22), lowering negative affectivity levels (23,24), increasing positive feelings (16,25,26), and enhancing health consumer satisfaction from the hospital service (1). The positive effect of medical clowns on both health consumers and medical staff can improve medical intervention outcomes (12,16).

Most findings on medical clowns are, however, based on separate children or adult samples, rather than on integrated samples and the placement fit of the medical clown versus audience age has not been addressed (e.g. only adult wards: (6,25,26); only pediatric wards: (19,21,24,27). Medical clowns are usually placed in pediatric wards (28), and so the majority of research on medical clowns is based on children samples. Since the presence of medical clowns in adult wards has increased substantially in the past decade, especially with older (18), and chronical health consumers (29), more research examining the unique effect of medical clowns on adults vs. children is necessary. In the current paper, we aim to fill this gap by comparing the usefulness of medical clowns among these audiences and identifying the optimal placement of medical clowns.

In order to identify the optimal placement of medical clowns, we first identify the current placement of clowns in hospital wards, examine the medical staff’s perceptions regarding the usefulness of clowns among current audiences, and document the clowns’ experience of performing in front of both types of audiences. As managers in healthcare prioritize in implementation processes (30). We aim to give policy recommendations regarding the best placement fit of the medical clown. Building on previous literature that illustrates that most clowns are placed in pediatric wards (18,31) and that most child health consumers are satisfied with the clowns’ performance (1), we expect that medical staff and clowns will report that child health consumers are more satisfied with clowns than adult health consumers. Hence, we predict:

H1. Medical staff and medical clowns will report that medical clowns will increase the satisfaction of children more than that of adults.

Health Consumer Satisfaction and Aggressive Tendencies

Hospitals are a stressful environment for health consumers (32), leading them to a state of emotional negativity and dissatisfaction (33,34). In the hospital context, dissatisfaction is considered a central cause of health consumer aggression against medical staff (35). We define aggression, as per Rippon (36, p. 456) as “a behavior with intent that is directed at doing harm to a living being whether harm results or not...aggression can be physical or verbal,
active or passive, and can be focused on the victim(s) directly or indirectly”. Aggressive behavior of health consumers towards medical staff in hospitals is a dangerous global problem that has potentially detrimental outcomes for staff (37–39), as well as high financial costs for the hospital (40). This phenomenon is therefore labelled as an "epidemic" (41), which constitutes an occupational hazard (42). Health consumer aggression against medical staff affects all parties involved (43), ranging from the targeted staff who suffer verbal and physical abuse, through other health consumers who receive medical care from burnt-out staff with depleted cognitive resources (44), to the hospital that suffers high turnover (37).

Health problems are considered among the top ten most stressful life events (45,46). When an illness is serious enough to warrant an individual’s confinement to a hospital, the mere process of hospitalization may produce even greater negative affectivity (47). Individuals who exhibit high negative affectivity tend to show distress, sensitivity to negative events, and a pessimistic view of events and of their surroundings (48,49). When negative affectivity increases, individuals report lower satisfaction (for a meta-analysis, see (50)). In a meta-analysis examining the relationship between negative affectivity and satisfaction, negative affectivity was consistently related to lower satisfaction (51). Other scholars suggested negative affectivity is directly related to aggressive tendencies in the hospital setting (52,53), in the form of interpersonal conflict, bullying and physical assault (54,55). In hospitals, this aggression is frequently targeted towards those trying to help others, i.e. the medical staff. Research aimed at understanding aggression in service organizations, as a consequence of satisfaction in general, and in hospitals in particular, is scarce (41), even though an understanding of this issue would help in developing active attempts to curtail aggression.

Health consumer satisfaction is a product of the interaction between health consumers and medical staff (56). Although health consumers arrive at the hospital with expectations of relieving their pain and illness and improving their overall wellbeing (57), hospitalization raises negative affectivity in general, and anxiety in particular (58). Negative affectivity includes a spectrum of negative emotions, ranging from anger to fear, to annoyance and anxiety (49). These negative emotions paint the health consumers’ experience (15,59), and lower their satisfaction with the service organization (60), which if low, can even elicit their tendency to behave aggressively. In this study, we examine whether medical clowns can buffer the harmful effect of negative affectivity on health consumer satisfaction, and whether this buffering effect depends on health consumer audience age. We aim to identify the mechanism by which negative affectivity elicits aggression. To this end, we suggest satisfaction as the underlying mechanism that explains why negative affectivity influences aggression:

\[ H2. \] Health consumer satisfaction mediates the indirect relationship between health consumers’ negative affectivity and their aggressive tendencies towards medical staff.

**Medical clowns as moderators of the relationship between negative affectivity and satisfaction**

A practice commonly used to enhance health consumer satisfaction is the use of medical clowns in hospital wards. As noted, hospital wards are characterized by high stress, negative affectivity, and aggression (32,47), yet very little research has been done to reduce such aggression. The few attempts that have been made, such as (61), focused on providing health consumers with information to enhance perceived justice, and did not focus on elevating their satisfaction. As a result, the emotional state of the health consumers was never fully examined in this context. In the current study, we aim to fill this gap by empirically testing the medical clowns’ ability to buffer the harmful effect of negative affectivity on satisfaction. We predict that the medical clowns have this ability since they are known to create a positive mood and change people’s negative state of mind to more humorous, thus promoting health consumer satisfaction (1,15,16).
Most research on medical clowns focuses on children, showing the positive effect of medical clowns on young health consumers (17, 18). For example, medical clowns reduced stress among 6-7 years old, as was evident in a study that measured children's their cortisol levels following interaction with a medical clown (23). Moreover, medical clowns reduced pain, crying, and anxiety in children aged 2–10 years old undergoing venous blood drawing (27). A systematic review of medical clowns in pediatric wards shows their positive influence in reducing anxiety and pain (62).

Far less research examined the influence of medical clowns on adult populations, and the few studies that did, found positive effects (6, 25, 26, 29). Strikingly, these studies examined either children or adult samples, separately, without comparing the two age groups or examining the placement fit of the medical clown to audience age. Indeed, humor and laughter are known to have a positive effect on both populations (63, 64), and research that empirically tests the unique effect of medical clowns on adults versus children is necessary. In the current paper we aim to fill this gap by comparing the usefulness of medical clowns among these audiences and identifying the optimal placement of medical clowns. We predict that medical clowns affect both populations positively, with a stronger positive influence on children, due to the common placement of clowns in pediatric wards, the large body of research examining child health care consumers, and the tendency of children to seek play and humor (65). We therefore predict:

\[ H3. \] The usefulness of medical clowns in enhancing health consumer satisfaction and, in turn, in reducing aggression, depends on the health consumers' age, such that the positive effect of clowns on the relationship between negative affectivity and satisfaction will be stronger among children compared with adult health care consumers.

See Figure 1 for research model.

**Overview of studies**

In a 360-degree research stream, we examine and the optimal health consumer audiences for medical clowns. Study 1a examines the perceptions of medical staff regarding the audience that will be most satisfied by the clowns. Study 1b examines the perception of the medical clowns regarding their optimal placement. Study 2 examines the optimal placement of the medical clown from the health consumers' point of view, with both child and adult health consumer participants.

**Availability of data and materials:** Data can be found at: [https://osf.io/8j7ar/?view_only=c0cd6308be634b948235132df01612bd](https://osf.io/8j7ar/?view_only=c0cd6308be634b948235132df01612bd)

**Study 1a: Medical Staff - Method**

**Participants and Procedure**

Data were collected from 88 medical staff members who were attending a health care management course. They completed a paper-and-pencil survey (Mage = 37.35, sd = 7.08; 75% women; Mtenure = 11.38 years, sd = 7.59). Of the medical staff, 25% were health care managers (in different professions, doctors, nurses, etc.). The medical staff’s professions were as follows: 12% were doctors, 61% were nurses, 7% were X-ray technicians, 10% were paramedical professionals (physical therapists, dieticians, speech therapists), and the remaining 10% preferred not to report their profession.
Measures

Current placement policy was measured by asking the medical staff where their medical clowns are currently placed.

Perceived optimal placement policy was measured by asking the medical staff whether the current policy regarding the medical clowns’ placement should be changed, using the open-ended question “What is your opinion about the current ward where the medical clowns are placed in your hospital?” Answers were coded by two judges, as follows: 1 - no change to placement policy needed; 2 - change the placement policy so that they are placed more frequently in adult wards; 3 - change the placement policy so that they are placed more frequently in pediatric wards; 4 - change the placement policy so that clowns are generally placed more frequently, in all wards; and 5 - change the placement policy so that clowns are placed less frequently in general.

Perceived health consumer satisfaction with the clowns was measured using 7-point Likert-type scale items based on Wong (66): “To what extent are most adults satisfied with the clown’s performance; happy with the clown’s performance; To what extent are most children satisfied with the clown’s performance; happy with the clown’s performance” (Cronbach’s alpha = .83).

we asked participants for their age, gender, job title and tenure in the current job.

The survey developed for this study is provided as Additional File 1.

Study 1a: Medical Staff - Results

Current placement policy: 63% of medical staff reported that medical clowns are placed only in pediatric wards, 24% reported they are placed in both pediatric and adult wards, 8% of medical staff reported that their organization currently does not employ any medical clowns.

Perceived placement policy: Most medical staff (64 %) perceived the current policy placement of medical clowns as adequate. The remaining 36% thought the current policy should be changed. The recommended policy change was distributed as follows: 44% recommend placing more clowns in pediatric wards, 54% recommended placing more clowns in the adult wards or in all wards (16% in adult wards; 38% in all wards). Only 2% reported that they would decrease the number of clowns in hospitals.

Perceived health consumer satisfaction: A paired sample t test was used to compare perceived adult and child satisfaction with medical clowns. Results indicate that the medical staff perceived the children’s satisfaction with the clowns as significantly higher (M = 6.13, sd = 1.19 ) than that of the adults (M = 4.19, sd = 1.62; t(82) = 10.91, p < 0.001).

Study 1a: Medical Staff - Discussion

Medical staff reported that medical clowns are mainly placed in pediatric wards, and accordingly, they perceive the clowns as better at elevating the satisfaction of children compared with adults. Most medical staff did not think the current policy should be changed. However, out of those who did believe that the policy should be changed, over half recommended placing more clowns in adult wards or generally placing more clowns in both types of wards.
After examining the medical staffs’ reports on clown placement and perceived health consumer satisfaction following clown performances, we turned to examine the medical clowns themselves. Specifically, we were interested in asking the clowns whether they adapt their performance to different health consumer audiences, what criteria they use to adapt their performance, and how they perceive consumer satisfaction following their performance.

**Study 1b: Medical Clowns - Method**

**Participants and Procedure**

Data were collected from 20 medical clowns who participated in an online survey in return for participation in a lottery for a breakfast voucher (Mage = 40.68, sd = 6.10; 50% women; Mtenure = 8.84 years, sd = 4.93). 65% of clowns worked in one hospital and 35% worked in two hospitals. Most of the clowns worked as clowns only part time (85%), of which 64% have a second job as theater actors.

**Measures**

*Audience fit of clowns’ performance* was measured by asking the medical clowns whether they adapt their performance to the audience type, and if so, what criteria they use (age, ward type, medical condition, gender, language).

*Current placement policy* was measured by asking the medical clowns where they are currently placed.

*Perceived placement policy* was measured by asking the clowns about their perspective on the hospital policy regarding their placement in different wards, as described in Study 1a.

*Perceived health consumer satisfaction* was measured using the same measure as in Study 1a (based on Wong 66), adopted to medical clowns. Cronbach’s alpha= .89.

*Demographics* we asked participants for their age, gender, job title and tenure in the current job.

The survey developed for this study is provided as Additional File 2.

**Study 1b: Medical Clowns - Results**

*Audience fit of clowns’ performance:* Most of the clowns (95%) reported that they adapt the show to the audience, according to the following criteria: age (85%), medical condition (80%), gender (55%), ward type (50%), and language (55%).

*Current placement policy:* 60% of clowns are placed only in pediatric wards, and 40% are placed in both pediatric and adult wards.

*Perceived placement policy:* 54% answered that they would change the policy regarding their placement so as to be placed more frequently in adult wards. 15% would not change the placement policy, and 30% answered that they would place more clowns in general, in hospitals.

*Perceived health consumer satisfaction:* Data was analyzed using a paired sample t test, comparing perceived adult and child satisfaction from clowns’ performance. Results indicate that the clowns perceived the children’s
satisfaction (M = 6.63, sd = .48) as significantly higher than the adults’ satisfaction (M = 6.08, sd = .71; t (19) = -5.09, p < 0.001).

**Study 1b: Medical Clowns - Discussion**

Findings of Study 1b show that, nowadays, most medical clowns are placed only in pediatric wards. Clowns also identify that they are significantly better at elevating children’s satisfaction compared with adult satisfaction. However, as our results indicate, both means of perceived satisfaction are high (above 6), indicating that the clowns perceive their performance as always improving satisfaction, when the improvement is larger among children. Clowns report that they adapt their performance to the health consumer type, mostly according to health consumer age and medical condition (which are often related). Even though they identify that their performance suits children better than adults, they would like to be placed in more hospital wards, in general, likely in order to increase their employment, which is part time among most clowns.

Studies 1a and 1b examine the medical staff’s and clowns’ perceptions regarding the ability of medical clowns to enhance health consumer satisfaction among different health consumer audiences. Both studies identify the clowns’ perceived optimal audience (children). Study 2 continues Studies 1a and 1b and using a hospital field study to explore the actual optimal placement of medical clown, comparing adult and child health consumer’s satisfaction following an encounter with a medical clown. Furthermore, Study 2 broadens the scope of Studies 1a and 1b by revealing the antecedent, moderators, and consequence of health consumer satisfaction.

**Study 2: Health Consumers**

The present study aims to achieve three goals: (a) To determine the underlying mechanism that influences health consumers’ aggression towards medical staff, (b) To investigate the usefulness of medical clowns as an intervention aimed at increasing satisfaction and reducing aggression, and (c) To determine which target health consumer audience can benefit the most from this intervention.

**Study 2: Health Consumers - Method**

**Participants and Procedure**

The study took place in a large hospital, located in northern Israel. The project was approved by the Hospital Board Committee. The inclusion criteria were as follows: volunteering to participate; children - being accompanied by a family member, aged 5-18, and having parental or legal guardian’s consent to participate; adults – being mentally healthy, understanding the survey, signing consent to participate. Children under the age of 5 were not included since it was thought that they may lack the skills necessary to report their own thoughts and emotions and may misunderstand the response scale options used (following (67)). Children who needed assistance reading and answering the survey got parental help.

Data were collected from a random sample of 387 health consumers, in a between-subject field study. Participants were sampled at random hours and days of the week and in seven hospital wards (Children wards: Pediatrics A and B, Surgical, and Oncology; Adult wards: Dialysis, Hematology, and Oncology). Thirty-three percent of participants were treated ambulatorically, 59.8% were women/girls, and 72.8% were adults. Mean age of children was 11.83 (sd = 3.82) and mean age of adults was 40.26 (sd = 13.88). Mean years of education for adults was 13 (sd = 2.46). The
native tongue for 42.8% of the sample was Hebrew, for 48% it was Arabic, and 4.8% reported that Russian was their native tongue.

One hundred and thirty-eight participants (36.3%) observed a medical clown the same day or one day before completing the survey, and constituted the treatment group, while the rest of the health consumers served as a control group. Random assignment is assumed since research assistants arrived at the hospital on random days and hours. Health consumers were invited to voluntarily participate in a study about the quality of service in their department by responding to a survey (available in the three prevalent languages in Israel; Hebrew, Arabic, and Russian). After responding to our survey, participants were thanked and given a small bar of chocolate as a token of appreciation for their participation.

The survey was composed of items that were all previously published elsewhere, as described below. Items were translated and back-translated from English into Hebrew, Russian, and Arabic.

**Measures**

*Negative affectivity* was measured using nine items out of the PANAS, developed by Watson, Clark, and Tellegen (49). Participants were asked to rank, using a 7-point likert-type scale, the degree to which they feel certain emotions in the current moment. Sample items included: “annoyed”, “stressed”, “angry”. Answers ranged from 1- very little to 7- very much. Cronbach's $\alpha=0.89$.

*Aggressive tendencies* were measured based on Efrat-Treister, Moriah and Rafaeli (61). We asked participants to evaluate the likelihood that other people will engage in four different aggressive behaviors: curse medical staff's family, vandalize hospital property, bang on a table, or complain about medical staff. Answers ranged from 1- very unlikely to 7- very likely. Cronbach's $\alpha=0.69$.

*Satisfaction* was measured based on Wong (66). Participants were asked to evaluate, using a 7-point Likert type scale, the extent to which they are satisfied with the treatment provided by the medical team and the extent to which they are happy with the hospital. Answers ranged from 1- very dissatisfied to 7- very satisfied. Cronbach's $\alpha=0.67$.

*Medical clown.* Participants reported whether or not they encountered a medical clown in the last two days (dichotomous measure). This question was asked in order to determine whether or not the medical clown had an impact on the participants and is in line with recommendations that cognitive and affective processes last two days (68).

*Demographics.* Participants were asked to indicate their age, years of education, religion, mother tongue, and social-economic status.

**Statistical Analysis**

**Study 2: Health Consumers - Results**

To assure sample compatibility (randomness of respondents under the different study conditions of encountering/not encountering a clown in the last two days), demographic variables of respondents (age, years of education, religion, mother tongue, and social-economic status) were compared across conditions. An independent sample t test revealed no evidence of differences in demographic variables across conditions, indicating that the
samples are indeed compatible (TAge \(367\) = -1.8, n.s; TEducation(359) = 0.004, n.s; TReligion(372) = 0.93, n.s; TMotherTongue(370) = -1.23, n.s; TSocialEconomicalStatus(365) = -1.52, n.s).

Exploratory factor analysis with a varimax rotation was used to test the divergent validity of scales comprising the questionnaire. The Kaiser-Meyer-Olkin measure of sampling adequacy was satisfactory and equaled 0.86. Bartlett’s test of sphericity was significant (Chi square = 1723.69; \(p < .001\)). The following three factors were identified, with separate factors corresponding to the following variables: negative affectivity, aggressive tendencies, and satisfaction.

Table 1 presents means, standard deviations, and intercorrelations of Study 2 variables.

Regression analyses examining the influence of negative affectivity verified that negative affectivity increases health consumers’ aggressive tendencies (\(\beta = 0.25; p < 0.001\)), and that negative affectivity reduces health consumers’ satisfaction with their treatment (\(\beta = -0.17; p < 0.001\)). Regression analysis also confirmed that the higher their satisfaction, the lower their tendency to engage in aggressive behavior (\(\beta = -0.41; p < 0.001\)).

H2 was tested using a classic mediation model developed by Hayes ((69), Model 4) and the relationship between negative affectivity and aggression was mediated by satisfaction. As Fig. 2 illustrates, the standardized regression coefficient between negative affectivity and satisfaction was significant, as was the standardized regression coefficient between satisfaction and aggression. The standardized indirect effect was Indirect=0.06, CI, 95%, \([-0.17, -0.34]\). We tested the significance of this indirect effect using bootstrapping procedures. Unstandardized indirect effects were computed for each of 5,000 bootstrapped samples (CI, 95%, \([0.03, 0.1]\)). In other words, the indirect effect was statistically significant (\(R^2 = 0.06, p < 0.001\)). (See Fig. 2).

H3 was tested using the Hayes’ moderated mediation model (ibid; Model 11) and was found to be fully supported. In other words, the indirect influence of negative affectivity on aggression \((R^2 = 0.1, p < 0.001)\) was moderated by satisfaction. The moderating effect of medical clowns on the relationship between negative affectivity and satisfaction, was dependent on age. This process splits continuous moderators into three groups (ibid), and so age was split into (i) one standard deviation below the mean or lower (children, age < 14.57), (ii) one standard deviation above and below the mean (young adults, 14.57 ≤ age ≤ 49.83), and (iii) one standard deviation above mean or older (older adults, age > 49.83).

Results support our prediction that medical clowns buffer the harmful indirect effect of negative affectivity on aggression via satisfaction, only among children: Among children who did not encounter a medical clown, the indirect effect of negative affectivity on aggression via decreased satisfaction was significant (\(\beta = 0.12, p < 0.05\)), whereas among children who did encounter a medical clown, this harmful effect was buffered (\(\beta = 0.02, n.s\)).

Among young adults, negative affectivity had a significant indirect effect on aggression via decreased satisfaction, whether they encountered a medical clown (\(\beta = 0.07, p < 0.05\)) or not (\(\beta = 0.08, p < 0.05\)). Therefore, it can be said that medical clowns do not buffer the harmful effect of negative affectivity on aggression.

Surprisingly, the interaction with medical clowns had a harmful effect on older adults. Among older adults who encountered medical clowns, negative affectivity had a significant indirect effect on aggression via decreased satisfaction (\(\beta = 0.14, p < 0.05\)). Older adults who did not encounter a medical clown did not exhibit this harmful effect of negative affectivity on aggression via decreased satisfaction (\(\beta = 0.02, n.s\)). (See Table 2 and Figures 2 and 3).
Study 2: Health Consumers - Discussion

Study 2 results indicate that medical clowns buffered the harmful influence of negative affectivity on satisfaction and aggression only among children and had a harmful opposite effect on older adults.

With respect to the first goal, which was to determine the underlying mechanism that influences health consumers’ aggression towards medical staff, we found that negative affectivity has both a direct relationship with aggression as well as an indirect relationship, which is explained by health consumer satisfaction. Our findings are consistent with previous studies that found (a) a negative relationship between negative affectivity and satisfaction (33,34,51,70), and (b) a positive relationship between negative affectivity and aggressive tendencies (48). We extend these findings and show that the mechanism by which negative affectivity influences aggression is by influencing satisfaction.

With respect to the second goal, which was to examine the usefulness of medical clowns as an intervention aimed at reducing aggression, our study suggests that medical clowns moderate the relationship between negative affectivity and satisfaction, such that among health consumers who encountered a medical clown, the relationship between negative affectivity and satisfaction is weaker, thus indicating that medical clowns can buffer the harmful influence of negative affectivity on satisfaction. This relationship, however, depends on the age of the health consumers, and as our findings indicate, exists only for children and is reversed for older adults.

With respect to our third goal, which was to determine the target health consumer audience that can most benefit from this intervention, our findings suggest that medical clowns are a useful method for increasing satisfaction and buffering aggression among children, but not among adults. Surprisingly, medical clowns had a negative effect on adults. Specifically, while in the absence of medical clowns, negative affectivity was not related to satisfaction or aggression, after adults encountered a medical clown, negative affectivity decreased satisfaction and increased aggression.

We propose that these results might stem from general negative attitudes that adults hold towards clowns. This can be illustrated using Lexical metaphors research (e.g., (71,72)), which suggests that the metaphors we use in everyday life convey general perceptions and beliefs, which in turn influence social judgments and behaviors. Looking at common clown metaphors such as “behaves like a clown”, "looks like a clown", suggests that clowns are associated with behaviors that are considered childish, imprudent, and inappropriate for adults. As hospitalization is considered one of life's most stressful events (73), it is reasonable to assume that adult health consumers are nervous and anxious, and expect to be treated in a manner they perceive as professional and serious. Therefore, if hospital health consumers associate medical clowns with behaviors they perceive as childish and irresponsible, the presence of a medical clown might elicit negative attitudes toward them and increase tension instead of easing it. Additionally, health consumers may feel that the use of clowns signifies un-adult-like treatment (i.e., not taking them seriously), which may also enhance negative feelings and decrease willingness to cooperate with medical clowns. These findings highlight the dangers of ignoring the possibility of age as a moderator.

General Discussion

In the current studies, we examined a practice commonly used to enhance health consumer satisfaction – the use of medical clowns in hospital wards. The objective of this research was to identify the optimal health care audience (adults or children) that will benefit most from medical clowns in elevating their satisfaction and thus reducing their aggressive tendencies. This is the first study to compared the two populations and to present a 360-degree
perspective on the optimal placement fit of medical clowns from the point of view of the medical staff, the clowns themselves, and the health consumers. Studies 1a and 1b demonstrated that medical staff and clowns evaluated correctly that children health consumers profit from medical clowns more than do adults. They did not, however, recognize the possibility that clowns might have a negative effect on older adults. Accordingly, medical staff who recommended changes thought that more medical clowns would be generally useful in all wards.

To the best of our knowledge, no studies have yet tested the full model predicting hospital aggression, beginning with the main cause of dissatisfaction- negative affectivity, the mechanism of satisfaction, and the resulting health consumers’ aggression toward hospital staff. Past research that examined health consumer satisfaction and aggression, are mostly descriptive, and measured the phenomenon indirectly through staff self-report, rather than measuring aggression directly among the health consumers themselves, as we do in the current study (74,75). Moreover, no studies have examined the usefulness of specific interventions aimed at elevating health care satisfaction and reducing health consumers’ aggressive tendencies. In this research stream we examined the usefulness of medical clowns, in elevating satisfaction and buffering the aggressive tendencies, among health consumers of different ages, in a 360-degree research stream.

This research contributes to practice by identifying the optimal placement of medical clowns- children’s wards. It contributes to theory by revealing the mechanism of (dis)satisfaction, by which medical clowns can buffer aggression stemming from negative affectivity.

Limitations and future directions

This study has several limitations. First, reliability of our satisfaction measure was low (0.67), although it was higher than the reliability of other satisfaction measures (76). Additionally, we used self-report measures of aggression; future studies should seek to use behavioral measures. Last, we sampled health consumers who encountered or did not encounter medical clowns randomly, but we could not control when the medical clowns were present. We did, however, sample the health consumers at random times of the day and week, thus partially circumventing the limitation of randomness.

Future research should continue to examine the usefulness of medical clowns among adults and examine whether medical clowns do have a positive effect on adults in other aspects that are beyond the scope of the current work. One possible explanation for our finding that medical clowns benefit children but may detrimentally affect adults, is that the current services provided by medical clowns are not adapted uniquely to adults, and the clowns may simply lack correct guidance in order to provide a suitable approach for amusing adults. Future research should examine the practices used by medical clowns on the different audiences, and determine whether using a tailored approach may elevate their satisfaction. In addition, future research can examine additional methods, other than medical clowns, for mitigating the harmful influence of negative affectivity on aggression via satisfaction, by finding other ways to enhance satisfaction among adult health consumers.

Conclusion

In this paper we identify the optimal audience that will most benefit from medical clowns, namely children, and in contrast, the audience that will least benefit from medical clowns, namely older adults. These findings are especially important since medical staff did not fully recognize the different effect medical clowns have on health consumers of different ages. These findings can guide policy makers by indicating the optimal placement of clowns, i.e. in
pediatric wards, thereby benefitting most from the clowns’ efforts, elevating health consumer satisfaction, and reducing aggressive tendencies.

**Declarations**

*Ethics approval and consent to participate.*

Studies 1a and 1b were approved by the Ben-Gurion University IRB committee. Approval number: DT03012019A.

Study 2 was approved by the Emek Medical Center Helsinki committee. Approval number: 1020-13-EMC.

*Consent to participate:*

Greetings,

We invite you to participate in a 5-minute long questionnaire.

During the questionnaire, you will be asked to answer a number of questions about your experience with medical clowns’ integration into the health system.

The data we collect in the study will be strictly maintained and accessible to the research team only. No personal or identifiable information will be collected. Participation in the study is completely voluntary and you may terminate your participation at any stage.

Do you agree to participate in the study and answer the questionnaire? (circle) yes / no

Are you over the age of 16? (circle) yes / no.

If not, please ask your parent or legal guardian for approval to participate in the study.

As a parent or legal guardian, do you approve of your child to answer this questionnaire? (circle) yes / no

For any questions, please contact:

Dr. Efrat-Treister Dorit, tdorit@bgu.ac.il

* Consent was written. For the participants under 16 years old, written informed consent was obtained from a parent or guardian.

*Consent for publication:* Not applicable

*Availability of data and materials:* Data can be found at: https://osf.io/8j7ar/?view_only=c0cd6308be634b948235132df01612bd

**Competing interests:** The authors declare that they have no competing interests.

**Funding:** The Magi Foundation. Grant receivers: Dorit Efrat-Treister, Dalit Lev-Arai Margalit. The funding agency funded the payment to research assistants who collected the data, and the English editing of the paper. The agency had no role in the writing of the manuscript.

**Authors’ contributions:**
Acknowledgment: We would like to thank the Magi Foundation for their funding and support of this research project.

Abbreviations

Not applicable.

References

1. Dionigi A, Flangini R, Gremigni P. Humor and Health Promotion. In: Gremigni P, editor. Clowns in hospitals. New York: Nova Science Publisher; 2012. pp. 213–28.

2. Koller D, Gryski C. The life threatened child and the life enhancing clown: towards a model of therapeutic clowning. Evidence-based Complement Altern Med. 2008;5(1):17–25.

3. Finlay F, Baverstock A, Lenton S. Therapeutic clowning in paediatric practice. Clin Child Psychol Psychiatry. 2014;19(4):596–605.

4. Finlay F, Lenton S, Baverstock A. G442(P) Therapeutic clowning - history, medicine and evidence. Arch Dis Child [Internet]. 2018;103(Suppl 1):A180–A180. Available from: https://adc.bmj.com/content/103/Suppl_1/A180.2.

5. Dionigi A, Gremigni P. A combined intervention of art therapy and clown visits to reduce preoperative anxiety in children. J Clin Nurs. 2017;26(5–6):632–40.

6. Dionigi A, Canestrari C. Clowning in health care settings: The point of view of adults. Eur J Psychol. 2016;12(3):473–88.

7. Kontos P, Miller K-L, Mitchell GJ, Stirling-Twist J. Presence redefined: The reciprocal nature of engagement between elder-clowns and persons with dementia. Dementia. 2017;16(1):46–66.

8. Choi K-S, Cho W-H, Lee S, Lee H, Kim C. The relationships among quality, value, satisfaction and behavioral intention in health care provider choice: A South Korean study. J Bus Res. 2004;57(8):913–21.

9. Piper LE. Winning loyalty with a vision and a corporate soul. Health Care Manag (Frederick). 2005;24(4):374–8.

10. Moliner MA. Loyalty, perceived value and relationship quality in healthcare services. J Serv Manag. 2009;20(1):76–97.

11. Tam JLM. Customer satisfaction, service quality and perceived value: an integrative model. J Mark Manag. 2004;20(7–8):897–917.

12. Bertini M, Isola E, Paolone G, Curcio G. Clowns benefit children hospitalized for respiratory pathologies. Evidence-Based Complement Altern Med. 2011;2011.

13. Hailu HA, Desale A, Yalaw A, Asrat H, Kebede S, Dejene D, et al. Patients’ satisfaction with clinical Laboratory Services in Public Hospitals in Ethiopia. BMC Health Serv Res. 2020;20(1):1–9.
14. Higginson IJ, Finlay IG, Goodwin DM, Hood K, Edwards AGK, Cook A, et al. Is there evidence that palliative care teams alter end-of-life experiences of patients and their caregivers? J Pain Symptom Manage. 2003;25(2):150–68.

15. Verma R, Teixeira J, Patrício L, Nunes NJ, Nóbrega L, Fisk RP, et al. Customer experience modeling: from customer experience to service design. J Serv Manag. 2012;23(3):362–76.

16. Barkmann C, Siem A-K, Wessolowski N, Schulte-Markwort M. Clowns as a supportive measure in paediatrics— a survey of clowns, parents and nursing staff. BMC Pediatr. 2013;13(1):1–10.

17. Karisalmi N, Mäenpää K, Kaipio J, Lahdenne P. Measuring patient experiences in a Children's hospital with a medical clowning intervention: a case-control study. BMC Health Serv Res. 2020;20(360):1–12.

18. Raviv A. Humor in the “Twilight Zone” My Work as a Medical Clown With Patients With Dementia. J Holist Nurs. 2014;32(3):226–31.

19. Bornstein Y. Medical clowns at hospitals and their effect on hospitalized children. Harefuah. 2008;147(1):30.

20. Costa Fernandes S, Arriaga P. The effects of clown intervention on worries and emotional responses in children undergoing surgery. J Health Psychol. 2010;15(3):405–15.

21. Tener D, Lev-Wiesel R, Franco NL, Ofir S. Laughing through this pain: medical clowning during examination of sexually abused children: an innovative approach. J Child Sex Abus. 2010;19(2):128–40.

22. Wolyniez I, Rimon A, Scolnik D, Gruber A, Tavor O, Haviv E, et al. The effect of a medical clown on pain during intravenous access in the pediatric emergency department: a randomized prospective pilot study. Clin Pediatr (Phila). 2013;52(12):1168–72.

23. Saliba FG, Adiwardana NS, Uehara EU, Silvestre RN, Leite VV, Faleiros FTV, et al. Salivary cortisol levels: the importance of clown doctors to reduce stress. Pediart Rep. 2016;8(1).

24. Dionigi A. Healthcare clowning: use of specific complementary and alternative medicine for hospitalized children. OBM Integr Complement Med. 2018;3(2):1–12.

25. Monahan K. The use of humor, jesting, and playfulness with traumatized elderly. Soc Work Ment Health. 2015;13(1):17–29.

26. Warren B, Spitzer P. Laughing to longevity—the work of elder clowns. Lancet. 2011;378(9791):562–3.

27. Meiri N, Ankri A, Hamad-Saied M, Konopnicki M, Pillar G. The effect of medical clowning on reducing pain, crying, and anxiety in children aged 2–10 years old undergoing venous blood drawing—a randomized controlled study. Eur J Pediatr. 2016;175(3):373–9.

28. Raviv A. The clown's carnival in the hospital: a semiotic analysis of the medical clown's performance. Soc Semiot. 2014;24(5):599–607.

29. Nuttman-Shwartz O, Scheyer R, Tzioni H. Medical clowning: Even adults deserve a dream. Soc Work Health Care. 2010;49(6):581–98.

30. Uvhagen H, Hasson H, Hansson J, von Knorring M. Leading top-down implementation processes: a qualitative study on the role of managers. BMC Health Serv Res. 2018;18(1):562.

31. Dionigi A. Clowning as a complementary approach for reducing iatrogenic effects in pediatrics. AMA J Ethics. 2017;19(8):775–82.

32. Efrat-Treister D, Cheshin A, Harari D, Rafaeli A, Agasi S, Moriah H, et al. How psychology might alleviate violence in queues: Perceived future wait and perceived load moderate violence against service providers. PLoS One. 2019;14(6).
33. Pugh SD. Service with a smile: Emotional contagion in the service encounter. Acad Manag J [Internet]. 2001;44(5):1018–27. Available from: http://www.jstor.org/stable/3069445?&http://www.jstor.org.ezproxy.uct.ac.za/stable/pdfplus/3069445.pdf? acceptTC=true.

34. Levin I, Stokes JP. Dispositional approach to job satisfaction: Role of negative affectivity. J Appl Psychol. 1989;74(5):752.

35. Dickens G, Piccirillo M, Alderman N. Causes and management of patient aggression and violence in forensic settings: staff and patient perspectives. 2012;1104951.

36. Rippon TJ. Aggression and violence in health care professions. J Adv Nurs. 2000;31(2):452–60.

37. Lim S, Cortina LM, Magley VJ. Personal and workgroup incivility: Impact on work and health outcomes. J Appl Psychol. 2008;93(1):95.

38. Johnsen GE, Morken T, Baste V, Rypdal K, Palmstierna T, Johansen IH. Characteristics of aggressive incidents in emergency primary health care described by the Staff Observation Aggression Scale–Revised Emergency (SOAS-RE). BMC Health Serv Res. 2020;20(1):1–8.

39. Viottini E, Politano G, Fornero G, Pavanelli PL, Borelli P, Bonaudo M, et al. Determinants of aggression against all health care workers in a large-sized university hospital. BMC Health Serv Res. 2020;20(1):1–9.

40. Novaco RW, Taylor JL. Assessment of Anger and Aggression in Male Offenders With Developmental Disabilities. Psychol Assess. 2004;16(1):42.

41. Landau SF, Bendalak Y. Personnel exposure to violence in hospital emergency wards: a routine activity approach. Agress Behav. 2008;34(1):88–103.

42. Lipscomb JA, Love CC. Violence toward health care workers: an emerging occupational hazard. AAOHN J Off J Am Assoc Occup Heal Nurses. 1992;40(5):219–28.

43. Du Y, Wang W, Washburn DJ, Lee S, Towne SD, Zhang H, et al. Violence against healthcare workers and other serious responses to medical disputes in China: surveys of patients at 12 public hospitals. BMC Health Serv Res. 2020;20(1):1–10.

44. Rafaeli A, Erez A, Ravid S, Derfler-Rozin R, Efrat-Treister D, Scheyer R. When customers exhibit verbal aggression, employees pay cognitive costs. J Appl Psychol. 2012;97(5):931.

45. Gillespie NA, Whitfield JB, Williams BEN, Heath AC, Martin NG. The relationship between stressful life events, the serotonin transporter (5-HTTLPR) genotype and major depression. Psychol Med. 2005;35:101–11.

46. Holmes TH, Rahe RH. The social readjustment rating scale. J Psychosom Res [Internet]. 1967 Aug 1 [cited 2017 Sep 24];11(2):213–8. Available from: http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:The+social+readjustment+rating+scale#0.

47. Cheshin A, Rafaeli A, Eisenman A. Encountering Anger in the Emergency Department: Identification, Evaluations and Responses of Staff Members to Anger Displays. Emerg Med Int. 2012;2012.

48. Douglas SC, Martinko MJ. Exploring the role of individual differences in the prediction of workplace aggression. J Appl Psychol. 2001;86(4):547.

49. Watson D, Clark LA, Carey G. Positive and negative affectivity and their relation to anxiety and depressive disorders. J Abnorm Psychol. 1988;97(3):346.

50. Bowling N, Hendricks E, Wagner SH. Positive and negative affectivity and facet satisfaction: A meta-analysis. J Bus Psychol. 2008;23(November):115–25.
51. Connolly JJ, Viswesvaran C. The role of affectivity in job satisfaction: A meta-analysis. Pers Individ Dif. 2000;29(2):265–81.

52. Penney LM, Spector PE. Job stress, incivility, and counterproductive work behavior (CWB): The moderating role of negative affectivity. J Organ Behav Int J Ind Occup Organ Psychol Behav. 2005;26(7):777–96.

53. Sprague J, Verona E, Kalkhoff W, Kilmer A. Moderators and mediators of the stress-aggression relationship: Executive function and state anger. Emotion. 2011;11(1):61.

54. Demir D, Rodwell J. Psychosocial antecedents and consequences of workplace aggression for hospital nurses. J Nurs Scholarsh. 2012;44(4):376–84.

55. Gemzøe Mikkelsen E, Einarsen S. Relationships between exposure to bullying at work and psychological and psychosomatic health complaints: The role of state negative affectivity and generalized self-efficacy. Scand J Psychol. 2002;43(5):397–405.

56. Marley KA, Collier DA, Meyer Goldstein S. The Role of Clinical and Process Quality in Achieving Patient Satisfaction in Hospitals. Vol. 35. Decision sciences. [Atlanta: Decision Sciences Institute; 2004. pp. 349–69.

57. Bjertnaes OA, Sjetne IS, Iversen HH. Overall patient satisfaction with hospitals: effects of patient-reported experiences and fulfilment of expectations. BMJ Qual Saf. 2012;21(1):39–46.

58. Smith AB, Selby PJ, Velikova G, Stark D, Wright EP, Gould A, et al. Factor analysis of the Hospital Anxiety and Depression Scale from a large cancer population. Psychol Psychother Theory Res Pract. 2002;75(2):165–76.

59. Zhong S, Guo H, Wang Y, Cook S, Chen Y, Luo C, et al. The experience of long-stay patients in a forensic psychiatric hospital in China: a qualitative study. BMC Health Serv Res. 2019;19(1):617.

60. del Río-Lanza AB, Vázquez-Casielles R, Díaz-Martín AM. Satisfaction with service recovery: Perceived justice and emotional responses. J Bus Res. 2009;62(8):775–81.

61. Efrat-Treister D, Moriah H, Rafaeli A. The effect of waiting on aggressive tendencies toward emergency department staff: Providing information can help but may also backfire. PLoS One. 2020;15(1):e0227729.

62. Sridharan K, Sivaramakrishnan G. Therapeutic clowns in pediatrics: a systematic review and meta-analysis of randomized controlled trials. Eur J Pediatr. 2016;175(10):1353–60.

63. Bennett MP, Lengacher C. Humor and laughter may influence health: III. Laughter and health outcomes. Evidence-Based Complement Altem Med. 2008;5(1):37–40.

64. McGhee P. Humor as survival training for a stressed-out world: The 7 humor habits program. Author House; 2010.

65. Cross J. Humor in contemporary junior literature. Vol. 73. Routledge; 2010.

66. Wong A. The role of emotional satisfaction in service encounters. Manag Serv Qual An Int J. 2004;14(5):365–76.

67. Besenski LJ, Forsyth SJ, von Baeyer CL. Screening young children for their ability to use self-report pain scales. Screening. 2007;9(1).

68. Skurnik I, Yoon C, Park DC, Schwarz N. How warnings about false claims become recommendations. J Consum Res. 2005;31(4):713–24.

69. Hayes AF. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. New York: Guilford publications; 2017.

70. Bougie R, Pieters R, Zeelenberg M. Angry Customers don’t Come Back, They Get Back: The Experience and Behavioral Implications of Anger and Dissatisfaction in Services. J Acad Mark Sci. 2003;31(4):377–93.
Tables

Table 1. Means, standard deviations and intercorrelations of Study 2 variables.

|        | 1      | 2      | 3      | 4      |
|-------|--------|--------|--------|--------|
| 1 Naff  | 2.35   | 1.26   | -      | -      |
| 2 Satisfaction | 4.08   | 0.89   | -0.25** | -      |
| 3 Aggressive tendencies | 1.81   | 1.10   | .281** | -0.33** | -      |
| 4 Age | 32.45  | 17.45  | -0.01  | 0.02   | -0.03  | -      |
| 5 Medical clown | 0.36   | 0.48   | -0.03  | -0.04  | -0.04  | -0.09 |

* p < 0.05 ** p < 0.01 *** p < 0.001

Table 2. Regression analysis testing predicted effects on health consumers’ satisfaction and aggressive tendencies in Study 2.
### Dependent variable

|                     | Satisfaction | Aggressive tendencies |
|---------------------|--------------|-----------------------|
| Constant            | 4.98***      | 2.99***               |
|                     | (0.26)       | (0.30)                |
| Negative affectivity| -0.41***     | 0.16***               |
|                     | (0.10)       | (0.04)                |
| Age                 | -0.02*       | 0.01                  |
| Clown (0=no, 1=yes) | -1.06**      | 0.38                  |
| Satisfaction        |              | -0.38***              |
|                     |              | (0.06)                |
| Negative affectivity x Age | 0.01*       | (0.00)                |
| Negative affectivity x Clown | 0.47**   | (0.15)                |
| Age x Clown         | 0.04**       | (0.01)                |
| Negative affectivity x Age x Clown | -0.02*** | (0.00)                |
| $R^2$               | 0.10         | 0.16                  |

*p < 0.05, **p < 0.01, ***p < 0.001, †p < 0.1

**Figures**
Figure 1

Full research model of Study 2.

H2: mediation

H3: moderated mediation; medical clown moderates the relationship between negative affectivity and satisfaction
Figure 2

Results of the research model of Study 2.

Direct effect: 0.16***
Indirect effect moderated by medical clowns depends on age:
Children: 0.12*; Young adults 0.07*; Adults:
Figure 3

Three-way interaction results of Study 2.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- AdditionalFile1.docx
- AdditionalFile2.docx