Computers in Human Behavior 54 (2016) 158–169

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Full length article

Effective data collection modalities utilized in monitoring the good behavior game: Technology-based data collection versus hand collected data☆

Susan Elswick [a, *], Laura Baylot Casey [b], Steve Zanskas [c], Tom Black [d], Randy Schnell [e]

[a] Department of Social Work, The University of Memphis, Memphis, TN 38152, USA
[b] The University of Memphis, 405 Ball Hall, Memphis, TN 38152, USA
[c] University of Memphis, Clinical Rehabilitation Counseling, USA
[d] Middle Tennessee State University, USA
[e] Shelby County Schools, Mental Health Center, USA

ARTICLE INFO

Article history:
Received 1 July 2014
Accepted 29 July 2015
Available online xxx

Keywords:
Behavior
Classroom management
Positive behavior interventions and supports
Data collection
Accuracy

ABSTRACT

The Good Behavior Game (GBG) has been identified as an effective evidence-based class-wide management intervention to decrease maladaptive classroom behaviors. This study was a systematic replication and extension of previous research on GBG. This study looks at the continued effectiveness of the GBG on increasing appropriate student classroom behaviors and on increasing teacher behaviors specific praise statements to students. This research is also attempting to investigate teacher perception of the use of evidence-based interventions and data collection in the classroom, and the differences in accuracy in data collection and the GBG intervention while monitoring teacher's usage of both hand calculated and computer-based data collection modalities.

Because of the current focus in education on data driven decision-making, due to the principals of the Response to Intervention (RtI) model, teachers are now expected to systematically monitor both academic and behavioral growth of all children in the classrooms. While summative academic monitoring has been a staple in the classroom, behavioral tracking is a newer concept for most, but nonetheless, a concept that is needed in all teachers' vocabulary and repertoire as it is well documented that inappropriate classroom behavior directly impacts learning (Brophy, 1986). Often behavioral concerns can be mostly eliminated with effective classroom management strategies (Carpenter & McKee-Higgins, 1996). A noted, effective classroom management technique is the Good Behavior Game (GBG). The GBG is a classroom management technique that teaches students to monitor their own behaviors by way of a group process known as interdependent behavior-contingent reinforcement (Tingstrom, Sterling-Turner, & Wilczynski, 2006). The GBG works well because it uses rewards that are available within the classroom setting, easy to obtain, and easy to implement: (a) teacher attention (Becker, Madsen, Arnold, & Thomas, 1967; Hall & Broden, 1967; Hall, Lund, & Jackson, 1968; Madsen, Becker, & Thomas, 1968; Zimmerman & Zimmerman, 1962), (b) access to desired, appropriate, tangible items, and (c) peer/social approval obtained for assisting the team in earning the wanted reward.

The GBG was originally created by Barrish, Saunders, and Wolf (1969) as a response to reported problematic behaviors exhibited in a fourth grade classroom that had identified several "problem children". This study was the first of its kind that used the theory of group contingent reinforcement within the classroom setting to attempt to decrease unwanted classroom behaviors. This study initiated the GBG game during reading time and later during a math class. This research did utilize the group contingency and the rewards that were offered were things that were considered readily available within the school setting such as extra recess, first in line for lunch, time for special projects, teacher attention, and just winning the game. The targeted behaviors were "talk out" and "out of seat" behaviors that were noted by the teacher and observable

☆ This article is original conceptual piece of work by the above mentioned author(s). This manuscript is being submitted solely to *JTATE* and will not be submitted to other publishers while under review.

* Corresponding author. 115 McCord Hall, Memphis, TN 38152, USA..
E-mail addresses: selswick@memphis.edu (S. Elswick), lpcasey@memphis.edu (L.B. Casey), zanskas1@gmail.com (S. Zanskas), Tom.Black@mtsu.edu (T. Black).

http://dx.doi.org/10.1016/j.chb.2015.07.059
0747-5632/

within the class. The experimental design used was a reversal and a multiple baseline design. The results of this study indicated that the GBG was an effective intervention that dramatically modified disruptive classroom behaviors (talk out and out of seat).

More recently, Lannie and McCurdy (2007), looked at the effects of implementing the GBG on both the student and the teachers' behaviors within an urban school district. This study replicated the positive effects of the GBG on increasing student on-task behavior, while decreasing the maladaptive behaviors for the students but only showed minimal impact on improving teacher behavior such as praise statements.

Elswick and Casey (2011) replicated and extended the 2007 study to further investigate the notion of the reciprocal effects of the GBG on increasing teacher behavior-specific praise statements within an urban school district. The results of this study were that the GBG continued to be effective in decreasing students' maladaptive behaviors (talk out, out of seat, and disrespectful behavior) within an urban setting but also found that the GBG had a positive reciprocal effect on improving teacher behavior-specific praise statements towards students. While reciprocal effects were noted and teachers were pleased with improvements on the part of themselves and the students, teacher concerns were also found which included the following: 1) his/her ability to monitor all student behaviors and 2) the ability to teach in a comfortable manner while collecting data (e.g., being position in the front of the classroom in order to make tally marks on the instead of roaming freely in the classroom). Thus, the current study sought to investigate different data collection modalities while implementing the GBG with the same integrity that it has historically maintained.

1. Research on data collection procedures

Appropriate data collection has been noted as a needed and critical component for ensuring the development of effective treatment interventions and demonstrating experimental control within research (Sulzer-Azaroff & Mayer, 1991), particularly in applied settings because data collection that lacks fidelity, reliability, and accuracy is useless and futile in assisting practitioners with determining most effective treatment interventions. There are multiple reasons why practitioners are looking towards computer-based and more technologically advanced methods of data collection over historically used pencil/paper data collection procedures. First, hand calculated data is time consuming. This method of data collection requires the collector/staff to observe and write out data descriptions at the same time or to recall specific moments in time and contingency based information about the target behavior. Secondly, hand calculated data collection systems are often unreliable, often incomplete, and full of inaccuracies (Bellack & Hersen, 1998). Many researchers that favor computerized data collection systems believe that if the data collection process is streamlined, easy to access, and easier to manage, that staff will participate in appropriate data collection at a higher rate than previously seen with hand calculated data collection systems.

There have been many attempts to improve data collection procedures and practices throughout the years and through research. These attempts were employed in hopes to reduce time and effort required in the collection procedures. Methods previously researched as potential ways to improve the efficiency and accuracy of real-time data recording include the use of timers and alarms to prompt recorders to record data (Sulzer-Azaroff & Mayer, 1991), computerized systems for automated recordings to be reviewed at a later time (Bellack & Hersen, 1998), and manually videotaping sessions to be reviewed in future for data collection purposes (Miltenberger, Rapp, & Long, 1999). As computers became more accessible to educators the question was raised as to whether the use of computer-based data collection procedures would be beneficial for the use in the classroom setting.

2. Purpose of study

The purpose of this study was to conduct a replication and extension of an evidence-based classroom intervention known as the Good Behavior Game (GBG) while analyzing teacher's accuracy in data collection procedures when using two forms of data collection: (a) hand collected data and (b) computer-based data collection procedures. The study sought to prove that the GBG continues to be effective as a classroom intervention on both student maladaptive behaviors and teachers behavior-specific praise statements within an urban classroom; while also monitoring the effects of teacher's accuracy while using two different data collection modalities.

3. Research questions

The current research questions under investigation are whether or not different data collection modalities (hand calculated data procedures versus computer-based data collection procedures) used in conjunction with an evidence-based intervention (The Good Behavior Game) will have an effect on the following:

1) Improvements in accuracy in data collection by the teachers
2) Improvements in teacher target behaviors
3) Improvements in teachers' perception and willingness to participate in data-collection when utilizing effective evidence-based interventions in the classroom
4) Improvements in student target behavior

4. Participants and setting

Participants in this study included 1 first grade teacher (age 27) and 1 third grade teacher (age 28), twenty 1st grade elementary aged students (ages 7–8), and twenty 3rd grade students (ages 9–10), in general education/inclusion classrooms within an urban, public school district. The school is located in a large urban metropolitan city in the Mid-South United States. The two targeted teachers had previously made referrals to the school social worker to assist in creating Behavior Intervention Plans for at least one identified student within each of the two classrooms that were described as exhibiting behavioral excesses that were decreasing the effective educational outcomes for the individual student and other learners within the classroom. In addition, the two teachers were previously identified as in need of additional professional development in the area of classroom management by their evaluating principal.

The students continued their regular classroom curriculum throughout the data collection and intervention phases. The only change in the classroom environment was the implementation of the GBG for 1 h and 15 min during two class sessions in the afternoon (1:00 pm) after baseline data was gathered. In order to ensure that the students were aware of the condition changes during the alternating treatment design, a timer was used to indicate the switch from one condition to another. When the timer went off every 15 min, the teacher also announced to the students that the condition was changing and it was visible to the students which scoreboard system was being used (computer-based versus hand scoreboard). The intervention time was determined by the teachers, due to their reports of increased problematic behaviors during the afternoon class session directly following the lunch period.