The DUI Game: A Study of a Psychoeducational Intervention for DUI Treatment

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Abstract

The purpose of this research was to determine the effectiveness of an intervention, The DUI Game, designed based on self-efficacy theory, to improve attitudes and behaviors among clients in DUI treatment. The research included an experimental design, randomly assigning participants to a control group that used standard treatment approaches, and a treatment group that used The DUI Game to augment standard treatment. There were 52 participants in a control group and 60 participants in a treatment group, using a series of Z-Tests to compare results on the Behaviors and Attitudes Drinking and Driving Scales (BADDS) (Jewell et al., 2007a), with a Pairwise Comparisons of Driving Behaviors (DB), and a Pairwise Comparisons Post-Hoc Test of Driving Behaviors. There was a significant improvement for Drinking and Driving Behaviors (DB) for the treatment group, compared to the control, demonstrating that The DUI Game helped to improve driving behaviors among clients of DUI treatment. The researchers recommended further experimental study for The DUI Game as an intervention in DUI treatment and further research for self-efficacy as a pedagogy for DUI education and therapy.

Keywords: DUI Education, DUI Therapy, Self-Efficacy Theory, Interactive Journaling, BADDS

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Since the late 1980's, the United States has focused sharply upon decreasing the number of convictions for driving under the influence (DUI) of alcohol and other drugs (National Transportation Safety Board, 2013). DUIs are a long-time threat to drivers in the United States, and those who are convicted of a DUI continue to recidivate at a rate of 33 percent since 1995 (National Transportation Safety Board, 2013). Each year, more than 150,000 traffic accidents occur due to DUIs, with more than 27,000 injuries and more than 30,000 fatalities per year (The Change Companies, 2017; National Transportation Safety Board, 2013; Wanberg et al., 2001). Every 48 minutes, someone dies in an accident caused by inebriated driving (The Change Companies, 2017), and an injury occurs every two minutes (The Change Companies, 2017; National Transportation Safety Board, 2013; Wanberg et al., 2001). The financial cost to the public is $114,300,000,000 per year (Blincoe et al., 2002; Zaloshnja & Miller, 2009), including costs for roadway fatalities, injured survivors, lost work productivity, lost household productivity, property damage, medical costs, and travel delays (Blincoe et al., 2002; Zaloshnja & Miller, 2009). One in three people will be affected by a DUI, either being in an accident or

knowing someone who is in such an accident (The Change Companies, 2017; National Transportation Safety Board, 2013; Wanberg et al., 2001).

Multiple approaches have been used to reduce DUIs in the United States, including victim impact panels, incarceration, technologies, laws, vehicle restrictions, education, and therapy (National Transportation Safety Board, 2013). The most effective manner of reducing DUIs is to combine the use of license restriction, court fines, jail sentences, probation, education and therapy for alcohol and drug usage (Deyoung, 1997; National Transportation Safety Board, 2013). Among these combined methods, counseling remains the most effective modality for reducing DUIs (National Transportation Safety Board, 2013; Wells-Parker, 1994), and manual-driven counseling accounts for 50 percent of the work that is necessary to influence drivers to stop driving while inebriated (National Transportation Safety Board, 2013). The clients of these DUI education courses and therapeutic groups have a limited interest in attending such groups (DiClemente et al., 2004; Hon, 2003; Scheck et al., 2013;) and, since 1995, clients who attend counseling continue to recidivate at a rate of 33 percent (The Change Companies, 2017; DrinkingAndDriving.Org., 2012; National Transportation Safety Board, 2013; Wanberg et al., 2001). Because DUI counseling is the most effective modality for reducing DUIs, and because the recidivation rate remains at 33 percent since the mid 1990's, improving the effectiveness of DUI counseling is important for reducing the impact of DUIs upon society.

Definition or DUI Level II Education

In considering the improvement of DUI counseling, it is important to consider the definition of DUI treatment that was augmented in this study by The DUI Game. In accordance with Colorado Revised Statutes (C.R.S., 2019), people who have received a conviction for driving while under the influence of alcohol or drugs (DUI) may be required to attend Level II Education. Level II Education is defined by the C.R.S. (2019), 42-4-1301.3(3)(c)(IV), as a comprehensive, long-term, therapeutic education treatment program that is approved by the Department of Human Services. The Colorado Department of Human Services (CDHS, 2021) approves of Level II Education that "consists of 24 hours of DUI education over 12 weeks" that is "conducted in a group setting, class size is limited to not more than 12 regularly attending" (CDHS, 2021), which is provided by counselors in programs that are licensed by the Office of Behavioral Health (OBH) (CDHS, 2021).

Self-Efficacy Theory

One pedagogy that has been discussed often with regard to DUI treatment is self-efficacy theory (Bandura, 1997). Self-efficacy is an empirically supported manner of altering attitudes and behaviors about drinking and driving (Collins et al., 2011; Demmel & Beck, 2004; Ewing et al., 2015; Haug et al., 2017; Hennessy et al., 2006; Jang et al., 2013; Penberthy et al., 2011; Rossheim et al., 2015). One manual-driven intervention for DUI treatment that hopes to increase the self-efficacy of clients is Interactive Journaling (The Change Companies, 2017). The Change Companies (2017) hope that Interactive Journaling will help counselors and clients to collaborate so that clients will absorb and internalize information about DUIs. Yet, even interventions such as Interactive Journaling (The Change Companies, 2017), which are inspired by self-efficacy theory, have not been experimentally tested to determine whether the interventions are using self-efficacy theory in a manner that improves the attitudes and behaviors of clients in DUI treatment. It remains an ethical concern for counselors to use techniques that are empirically

tested (ACA, 2014). So, there exists a gap in research about the use of self-efficacy-based, interactive, psychoeducational interventions to augment DUI treatments (Miller et al., 2015).

Self-efficacy Theory (Bandura, 1997) requires learning environments that create social pressure to create change (Bandura, 1982, 1994, 1997; Bandura & Locke, 2003). Self-efficacy is the set of personal values that people learn from their communities and is powerful for changing a person's behaviors and beliefs (Bandura, 1982, 1994, 1997; Bandura & Locke, 2003). When a client believes that he or she is capable of change, and believes that change is meaningful, the client is more likely to successfully change (Bandura, 1982, 1994, 1997; Bandura & Locke, 2003) his or her attitude and behavior about drinking and driving (Demmel & Beck, 2004; Hennessy et al., 2006). People with high levels of self-efficacy are more likely to attempt things that are more challenging, recover quicker from failure, and relate failure to a lack of knowledge, which could be increased (Bandura, 1994). Meanwhile, people with low levels of self-efficacy tend to be more reticent about challenging situations, recover more slowly from failure, and relate failure to personal qualities, which they perceive as unchangeable (Larson & Daniels, 1998).

To encourage change in clients who have deviant behaviors, such as drinking and driving, self-efficacy theory demonstrates that the ability of a person to change behaviors relies upon the person's perception that a goal is valuable and achievable (Bandura, 1982, 1994, 1997; Bandura & Locke, 2003). Increasing self-efficacy about change is effective in orchestrating change in clients, as a higher level of self-efficacy stimulates greater challenges and encourages quick recovery from failure (Bandura, 1982, 1994, 1997; Bandura & Locke, 2003). Personal performance encourages the belief that one can achieve a goal and stimulates motivation and thinking about the goal (Bandura, 1982, 1994, 1997; Bandura & Locke, 2003). Because giving information to DUI clients about the effects of driving intoxicated is not effective by itself to change these behaviors (Scheck et al., 2013), and giving these clients skills is not as effective as increasing their self-efficacy about changing the behaviors (Bandura, 1991), it is important to begin using interventions that increase self-efficacy for clients in DUI treatments. One method that is empirically supported to alter self-efficacy is the use of games in teaching and counseling.

Games as a Reinforcement of Self-Efficacy

Personal performance can be stimulated by using a game to create self-efficacy that improves attitudes and behaviors around DUIs, as demonstrated by the multiple uses of games in education and counseling. Using games that simulate reality is more effective than purely instructional learning, because it creates an effective and thoughtful process (Sitzmann, 2011; Tennyson & Jorczak, 2008). Several examples of games that have been successful for improving self-efficacy exist in counseling to include the following: 1) KidWAVE: Get Healthy Game for children (Wylie-Rosett et al., 2010), 2) *Good Behavior Game (GBG)* (Kellam et al., 2008), and 3) *ShopTalk* (Wiener et al., 2011), among others.

Games can improve attitudes and behaviors longitudinally (Kellam et al., 2008; Petras et al., 2008; Wiener et al., 2011; Wylie-Rosett et al., 2010). Games have helped to improve self-efficacy in counseling for adolescent clients (Fischhoff et al, 1999; Rivers et al, 1996; Small, 2008; Widome, 1997). Games have been used to create life-long improvements for resisting peer-pressure for risky behaviors (Norris et al., 2013). Games have been used to improve self-efficacy for young adult clients with poor eating habits (Peng, 2009), have been used to create

healthy lifestyles for children (Wylie-Rosett et al., 2010), and have been effectively used for learning to read (Holmes, 2011). As well, games have been used to effectively improve self-efficacy in clients with chronic mental illness, such as improving socialization with schizophrenic clients (Blackmon, 1994), and games have been used to assist children with cancer to learn coping skills for better family relationships, coping skills for depression and sadness, coping skills for stress, coping skills for dealing with prognosis, coping skills for peer relationships, and for improving self-esteem (Wiener et al., 2011).

The effects of games upon the self-efficacy of children have not gone unnoticed by the Substance Abuse and Mental Health Services Administration (SAMHSA). SAMHSA provides games to make children more aware of drugs and alcohol, such as *In the game of life, you're her goalie* (SAMHSA, 2015), *Talk, They Hear You* (SAMHSA, 2014), and *Too Smart To Start: Ready, Set, Listen Game* (SAMHSA, 2009). As well, SAMHSA encourages the use of a game, called "*GBG*," which reduces aberrant behaviors in children (Kellam et al., 2008; Petras et al., 2008; SAMHSA, 2017). SAMHSA (2017) recommends the use of *GBG* in first-grade and second-grade classrooms to reduce aggressive and disruptive behaviors, which are associated with the use of alcohol, illicit drugs, cigarette-smoking, antisocial personality disorder, and criminal behaviors. *GBG* works to improve behaviors and reduces the use of substances by young adulthood (Kellam et al., 2008; Petras et al., 2008). These studies demonstrate that games that use peer pressure, role-play, and experience create a learning environment that improves self-efficacy.

Because games create a social environment, wherein self-efficacy is predominant (Card et al., 2011; Culp & Honey, 2002; Fischhoff et al., 1999; Holmes, 2011; Klimmt & Hartmann, 2006; Lanzalotto, 2007; Liu, 2016; Rivers et al., 1996; Small, 2008; Terlecki & Newcombe, 2005; Widome, 1997; Wylie-Rosett et al., 2010;), it is logical that using games in groups is valuable for education, and valuable for various therapeutic modalities due to creating an environment with social pressure that is created for learning and improving self-efficacy (Bandura, 1982, 1994, 1997; Bandura & Locke, 2003). In fact, using interactive interventions can reach groups for whom it is difficult to affect change, such as with teenagers who are at-risk of contracting sexually transmitted diseases (Card et al., 2011). As mentioned already, *GBG* effects entire schools of children to improve behaviors and attitudes into young adulthood (Kellam et al., 2008; Petras et al., 2008).

Educators have long used games to engage students, creating a community of social learning, and affecting critical thinking with an application of thoughts to a clinical but practical situation (Glendon & Ulrich, 2005). Creating interactions in groups produces a meaningful reason to change, shown both through seminal study and studies of specific programs (Bandura & Locke, 2003; Card et al., 2011; Evans et al., 2005; Halgunseth et al., 2012). As well, interactive interventions, such as games, alter the empathetic value in groups (Evans et al., 2005), creating a closer, trusting, social environment, which is crucial to social learning (Akers, 1985; Burgess & Akers, 1966). It is within these social environments that people achieve self-efficacy to improve aberrant behaviors, because self-efficacy is a portion of social-learning (Bandura, 1982, 1994, 1997; Bandura & Locke, 2003).

Though games are used effectively with multiple therapeutic and educational approaches, they have not been used much for DUI treatment. Instead, manual-driven therapies are the predominant manner of affecting change in DUI treatments (Scheck et al., 2013; Thomson

Reuters, 2017;). One gaming intervention for DUI education and therapy is in popular use—Fatal Vision Goggles, (Innocorp, ltd., 2016). The goggles create some change in attitudes and behaviors for a few weeks among those who wear the goggles (Hennessy et al., 2006; Jewell & Hupp, 2005; Jewell et al., 2004). Yet, when Fatal Vision Goggles were measured using the Behaviors and Attitudes Drinking and Driving Scales (BADDS) (Jewell et al., 2007a), the goggles demonstrated no change in attitude or behavior toward drinking and driving (Jewell & Hupp, 2005).

To improve attitudes and behaviors in DUI treatment, it is important to study interventions that create group interactions to produce meaningful, empathetic, social learning strategies. New interventions that have self-efficacy included as a design element may prove to be more useful for improving attitudes and behaviors among DUI clients, rather than using only the current standard of manual-driven counseling.

The DUI Game

The DUI Game was designed to augment the current counseling techniques, using self-efficacy theory (Bandura, 1997) to improve attitudes and behaviors among clients in DUI treatment. The DUI Game is a board-game, similar in function to Monopoly, combined with Life and a role-playing game. The game includes the educational material that is found in Interactive Journaling (The Change Companies, 2017), which is one of the current standards of manual-based DUI treatment. The DUI Game is also designed to use a self-efficacy andragogy to augment the current standard for DUI counseling to improve attitudes and behaviors toward drinking and driving.

There are four characters in The DUI Game, all of whom have DUIs at the beginning of the game. The characters in this game compete to be the first character to complete all the required legal and therapeutic tasks of a DUI, be the first to pay their debts, and be the first character to drive home safely. Because there are only four characters in the game, clients play in groups of up to four clients per group. The clients in the groups cooperate to make the decisions for the actions of the four characters. Groups compete against each other to make the best decisions for reconciling their DUIs. After playing the game for one hour in the first half of a group, the clients reconvene as one large group to discuss the similarities and difference between the characters in the game and the lives of the clients. During this discussion, clients and staff also consider the relevance of these decisions as they compare to reality.

The DUI Game is designed to create social pressures that are required by self-efficacy theory (Bandura, 1982, 1994, 1997; Bandura & Locke, 2003) to make decisions for dealing with DUIs. This model is meant to reinforce social expectations through three levels of social interaction, allowing the clients to reinforce effective attitudes and behaviors through cooperation, competition, and finally through the group consideration of the multiple decisions in this game and in reality. Three layers of social interaction in The DUI Game reinforce the requirements for change that are demonstrated in self-efficacy theory. Self-efficacy theory demonstrates that people need to feel a capability to change and need to have a belief that change is meaningful, making it more likely that change will occur (Bandura, 1982, 1994, 1997; Bandura & Locke, 2003) with regard to the attitudes and behaviors about drinking and driving (Demmel & Beck, 2004; Hennessy et al., 2006).

Aims of the Current Study

The purpose of this study was to test a new intervention, designed to improve attitudes and behaviors, concerning driving while inebriated. The name of the intervention is The DUI Game. Those who designed and use the current manual-driven methods of DUI treatment hoped to allow clients to absorb information about DUIs in small amounts and allow clients to collaborate with counselors to internalize this information. Yet, these counseling approaches are not specifically designed to use a pedagogy of self-efficacy. Instead, current methods of DUI treatment use didactic and journaling techniques to inform clients of the impact of DUIs, and clients in DUI treatment remain unmotivated to learn the information provided because they are not well engaged (Hon, 2003; Scheck et al., 2013). Testing the use of The DUI Game, which was designed to improve self-efficacy about choices concerning inebriated driving, helped to increase knowledge about using games with a self-efficacy base to improve attitudes and behaviors about driving intoxicated.

Self-efficacy can improve motivation to change, but there is a gap in research about the use of self-efficacy based, interactive, psychoeducational interventions to augment DUI treatments (Miller et al., 2015). The DUI Game addressed both the educational gap and the research gap by testing an interactive psychoeducational intervention to determine its value for augmenting DUI treatment. Testing psychoeducational interventions for DUI treatments fulfills the obligation that has been presented by the National Transportation Safety Board (2013) to consider new approaches for reducing DUIs. This study compared The DUI Game as the first empirically studied, interactive, self-efficacy-based, psychoeducational intervention to augment DUI treatment.

Methods

To determine the efficacy of The DUI Game, 112 participants in DUI treatment were randomly assigned to two groups. Sixty clients in an experimental group were exposed to The DUI Game as an adjunct to standard DUI treatment, and 52 clients in a control group were only exposed to standard treatment. Samples were chosen by randomized assignment, by including every other client into the experimental and control groups respectively during the in-take process at the facilities. The intake personnel indicated the group type and number for each client on the upper right-hand corner of the first page of the in-take form—T# for the treatment-group participants, and C# for the control-group participants. The clients were assigned to either the control or treatment group by adding the first client who came to intake to the treatment-group and adding the next client who entered intake to the control group, continuing this in succession for all participants. Each group had up to 12 clients at any given time. Because the entrance of clients into the in-take process was completely random, no blind random assignment process was necessary to remove bias regarding placement on the part of the clients, in-take personnel, and supervisor.

The improvement of attitude and behaviors was compared between the experimental group and the control group, using the BADDS (Jewell et al., 2007a) to measure Rationalizations for Drinking and Driving (RD), Lenient Attitudes Toward Drinking and Driving (LA), Likelihood of Drinking and Driving (LD), Drinking and Driving Behaviors (DB), and Riding Behaviors with a Drinking Driver (Jewell et al., 2007a). The BADDS (Jewell et al., 2007a) was used as a pre-test and post-test in both the treatment group and control group, creating a baseline from which to measure change, allowing a comparison of changes in both groups, regarding

attitude and behaviors toward drinking and driving. After analyzing the independent changes in both groups, the results were compared between the treatment group and the control group.

The BADDS (Jewell et al., 2007a) was valid and reliable for all five subscales within the assessment (Collins, 2007; Jewell, J. D., Hupp, S. D. A., Lazowski, L. E., & Miller, G. A., 2007b). The internal consistency reliability for the five scales had a Cronbach's Alpha coefficient ranging from .71 to .95 (Jewell et al., 2007b). Only one of the scales was below .87, being the Lenient Attitudes Toward Drinking and Driving (LA) scale, which was .71 (Jewell et al., 2007b). The other four scales ranged from .87 to .95 respectively (Jewell, Hupp et al., 2007). The test-retest stability range was between .74 and .88, with two scores in the .70's, one at .74 for Drinking & Driving Behaviors (DB) for the past six months, and one at .75 for Drinking and driving Behaviors (DB) for the last month (Jewell et al., 2007b). All other test-retest scales were .80 to .88 respectively (Jewell et al., 2007b).

Discriminant validity was also found to be high, as the BADDS (Jewell et al., 2007b) was tested against five sample groups, including adults with DUIs, adults in treatment for substance usage, adults with misdemeanor traffic tickets without a DUI, college students, and high school students (Jewell et al., 2007b). These discriminant tests demonstrated a valid expression of group usage in terms of all five subscales (Jewell et al., 2007b). Criterion and construct validity were also high. Criterion validity was high, although the test was a self-report, as the reports were measured against future reports and events to demonstrate validity (Jewell et al., 2007b). The scales were shown to have high correlations to the actions that occurred within the month following the test, and the six months following the test (Jewell et al., 2007b). For the sake of construct validity, the scales were shown to relate to the future frequency of DUI events, rather than the quantity of drinking (Jewell et al., 2007b), which showed a more significant measure of DUI's occurring than what would make the DUI's occur. These results demonstrated that the BADDS (Jewell et al., 2007b) was reliable as a measure of DUI treatment outcomes, including the five sub-scales: 1) Rationalizations for Drinking and Driving (RD), 2) Lenient Attitudes Toward Drinking and Driving (LA), 3) Likelihood of Drinking and Driving (LD), 4) Drinking and Driving Behaviors (DB), and 5) Riding Behaviors with a Drinking Driver (RB) (Jewell et al., 2007b).

The Validity of the BADDS was high for discriminating between people with DUI risk behaviors and those without risk behavior, and high for discriminating between people with and without DUI histories (Jewell et al., 2007b). The BADDS scored high for determining attitudes as a predictor for future drinking and driving behaviors and correlated well when compared to the SASSI-3. Because showing determination with long and short interventions was strong for demonstrating sensitivity, because the BADDS was sensitive to attitudinal changes when using short interventions and when using longer interventions, and because the BADDS predicted the likelihood of recidivism, the BADDS was effective for scoring the differences between pre-tests and post-tests in the study to determine changes in attitudes and behavior toward drinking and driving, and the possibility of reducing recidivism (Jewell et al., 2007b).

To determine the differences in means between the control group and treatment group, an Alpha (α) level was set at .05. This level was used because there were five subscales that were addressed using z-tests. The Alpha was set at .05 in order to reduce the possibility of Type I errors, when research might have indicated that the null hypothesis was false, but it was actually

true. The Alpha was set at .05 to balance the power (Mertler & Vannatta, 2013) of the study so that the probability of accurately rejecting the null hypothesis would be great. The researcher considered any effect below .05 to be significant.

Research Question and Hypotheses

The study maintained one central premise, to determine the value of augmenting Interactive Journaling (The Change Companies, 2017) with The DUI Game. Specifically, the research question was as follows: "When using The DUI Game to augment standard DUI treatment, compared to using only standard DUI treatment, do attitudes and behaviors toward drinking and driving reduce significantly among DUI clients, as measured by the subscale scores of the Behaviors and Attitudes Drinking and Driving Scale (Jewell, Hupp, Lazowski, & Miller, 2007a)?" To fully consider the answer to this research question, five hypotheses were presented, using the five subscales from the BADDS (Jewell et al., 2007a). First, the significance in improving the score for Rationalizations for Drinking and Driving (RD) on the BADDS was greater when using The DUI Game as an augmentation to standard DUI treatment, compared to using only standard DUI treatment. Second, the significance in improving the score for Lenient Attitudes Toward Drinking and Driving (LA) on the BADDS was greater when using The DUI Game as an augmentation to standard DUI treatment, compared to using only standard DUI treatment. Third, the significance in improving the score for Likelihood of Drinking and Driving (LD) on the BADDS was greater when using The DUI Game as an augmentation to standard DUI treatment, compared to using only standard DUI treatment. Fourth, the significance in improving the score for Drinking and Driving Behaviors (DB) on the BADDS was significantly greater when using The DUI Game as an augmentation to standard DUI treatment, compared to using only standard DUI treatment. Fifth, the significance in improving the score for Riding Behaviors with a Drinking Driver (RB) on the BADDS was greater when using The DUI Game as an augmentation to standard DUI treatment, compared to using only standard DUI treatment.

Analysis

Rationalizing.

Wilcoxon Signed-Ranks Test were conducted for the BADDS (Jewell et al., 2007a) Rationalizations for Drinking and Driving (RD) scale for the pre and post Treatment Group data ($Z = -2.428$, *p* value = 0.015) and the pre and post Control Group data ($Z = -2.070$, *p* value = 0.038) (Table 1). Both groups demonstrated a significant decrease in the BADDS (Jewell et al., 2007a) RD scale. A Mann-Whitney Wilcoxon Signed Rank Test for the BADDS' (Jewell et al., 2007a) RD scale was conducted between the Treatment Group and the Control Group ($U = 1590.0$, *p* value = 0.704) (Table 2). There was no significant difference on the BADDS (Jewell et al., 2007a) RD scale between the Treatment Group and the Control Group.

Table 1

Wilcoxon Signed-Ranks Tests for the BADDS Rationalizing Scale for Treatment and Control Groups

Variable	n	Z^a	*p* Value
Rationalizing Treatment Group	60	-2.428	0.015

Rationalizing Control Group	52	-2.070	0.038

ª Z = (sum of signed ranks)/Square root (sum of squared ranks)

Table 2

Mann-Whitney Wilcoxon Signed Rank Test for BADDS Rationalizing Scale

Groups	n	Sum of ranks	Df	U statistic	Chi-Square Approx.	p level
Rationalizing Treatment Group	60	3,355.0	1	1,595.0	0.145	0.704
Rationalizing Control Group	52	2,973.0				

Kruskal-Wallis Test Statistic: 0.145

The *p*-value is 0.704 assuming chi-square distribution with 1 *df*.

Lenient Attitudes.

Wilcoxon Signed-Ranks Test were conducted for the BADDS (Jewell et al., 2007a) Lenient Attitudes Toward Drinking and Driving (LA) scale for the pre and post Treatment Group data (Z = 1.000, *p* value = 0.317) and the pre and post Control Group data (Z = 0.775, *p* value = 0.439) (Table 3). Neither group demonstrated a significant decrease in the BADDS (Jewell et al., 2007a) LA scale.

Table 3

Wilcoxon Signed-Ranks Tests for the BADDS Lenient Attitudes Scale for Treatment and Control Groups

Variable	*n*	Zª	*p* Value
Lenient Attitudes Treatment Group	60	1.000	0.317
Lenient Attitudes Control Group	52	0.775	0.439

ª Z = (sum of signed ranks)/Square root (sum of squared ranks)

Likelihood.

Wilcoxon Signed-Ranks Test were conducted for the BADDS (Jewell et al., 2007a) Likelihood of Drinking and Driving (LD) scale for the pre and post Treatment Group data (Z = -4.422, *p* value = 0.000) and the pre and post Control Group data (Z = -2.855, *p* value = 0.004) (Table 4). Both groups demonstrated a significant decrease in the BADDS (Jewell et al., 2007a) Likelihood scale. A Mann-Whitney Wilcoxon Signed Rank Test for the BADDS Jewell et al., 2007a) LD Scale was conducted between the Treatment Group and the Control Group (U = 1,753.5, *p* value = 0.194) (Table 5). There was no significant difference on the BADDS (Jewell et al., 2007a) LD scale between the Treatment Group and the Control Group.

Table 4

Wilcoxon Signed-Ranks Tests for the BADDS Likelihood Scale for Treatment and Control Groups

Variable	n	Z^{a}	p Value
Likelihood Treatment Group	60	-4.422	0.000
Likelihood Control Group	52	-2.855	0.004

[a] Z = (sum of signed ranks)/Square root (sum of squared ranks)

Table 5

Mann-Whitney Wilcoxon Signed Rank Test for BADDS Likelihood Scale

Groups	n	Sum of ranks	Df	U statistic	Chi-Square Approx.	p level
Likelihood Treatment Group	60	3,196.5	1	1,753.5	1.686	0.194
Likelihood Control Group	52	3,131.5				

Kruskal-Wallis Test Statistic: 1.686

The *p*-value is 0.194 assuming chi-square distribution with 1 *df*.

Driving Behavior.

Wilcoxon Signed-Ranks Test were conducted for the BADDS (Jewell et al., 2007a) Drinking and Driving Behaviors (DB) scale for the pre and post Treatment Group data (Z = -- 2.194, *p* value = 0.028) and the pre and post Control Group data (Z = -2.585, *p* value = 0.010) (Table 6). Both groups demonstrated a significant decrease in the BADDS (Jewell et al., 2007a) DB scale. A Mann-Whitney Wilcoxon Signed Rank Test for the BADDS (Jewell et al., 2007a) DB scale was conducted between the Treatment Group and the Control Group (U = 1,926.0, *p* value = 0.008) (Table 7). There was a significant difference between Treatment Group and the Control Group with the Treatment Group showing a greater decrease in the DB scale for the Treatment Group. Dwass-Steel-Chritchlow-Fligner Post-Hoc Test for All Pairwise Comparisons of Driving Behavior was conducted (1.046, *p* value = 0.459), indicating that the null hypothesis was rejected and that driving behavior on the BADDS (Jewell et al., 2007a) is significantly less than the Control Group (Table 8). Additionally, Conover-Inman Test for Pairwise Comparisons Post-Hoc Test of Driving Behavior was conducted (2.716, *p* value = 0.008), indicating the null hypothesis was rejected and that driving behavior on the BADDS (Jewell et al., 2007a) was significantly less than the Control Group (Table 8).

Table 6

Wilcoxon Signed-Ranks Tests for the BADDS Driving Behavior Scale for Treatment and Control Groups

Variable	n	Z^a	p Value
Driving Behavior Treatment Group	60	-2.194	0.028
Driving Behavior Control Group	52	-2.585	0.010

[a] Z = (sum of signed ranks)/Square root (sum of squared ranks)

Table 7

Mann-Whitney Wilcoxon Signed Rank Test for BADDS Driving Behavior Scale

Groups	n	Sum of ranks	Df	U statistic	Chi-Square Approx.	p level
Driving Behavior Treatment Group	60	3,304.0	1	1,926.0	6.974	0.008
Driving Behavior Control Group	52	3,024.0				

Kruskal-Wallis Test Statistic: 6.974

The p-value is 0.008 assuming chi-square distribution with 1 df.

Table 8

Mann-Whitney Wilcoxon Post-Hoc Tests for the BADDS Driving Behavior Scale

Post-Hoc Tests	Group (i)	Group (j)	Statistic	P Value
Conover-Inman Test for Pairwise Comparisons of Driving Behavior	Driving Behavior Control Group	Driving Behavior Treatment Group	2.716	0.008
Dwass-Steel-Chritchlow-Fligner Test for All Pairwise Comparisons of Driving Behavior	Driving Behavior Control Group	Driving Behavior Treatment Group	1.046	0.459[a]

[a] Dwass-Steel-Chritchlow-Flinger is significant when the *p* value is more than 0.05.

Riding Behavior.

Wilcoxon Signed-Ranks Test were conducted for the BADDS (Jewell et al., 2007a) Riding Behaviors with a Drinking Driver (RB) scale for the pre and post Treatment Group data ($Z = -2.469$, *p* value = 0.014) and the pre and post Control Group data ($Z = -1.994$, *p* value = 0.046) (Table 9). Both groups demonstrated a significant decrease in the BADDS (Jewell et al., 2007a) RB scale. A Mann-Whitney Wilcoxon Signed Rank Test for the BADDS (Jewell et al., 2007a) RB scale was conducted between the Treatment Group and the Control Group ($U = 1,638.5$, *p* value = 0.0.473) (Table 10). There was no significant difference on the BADDS (Jewell et al., 2007a) RB scale between the Treatment Group and the Control Group.

Table 9

Wilcoxon Signed-Ranks Tests for the BADDS Riding Behavior Scale for Treatment and Control Groups

Variable	*n*	Z^a	*p* Value
Riding Behavior Treatment Group	60	-2.469	0.014
Riding Behavior Control Group	52	-1.994	0.046

[a] $Z =$ (sum of signed ranks)/Square root (sum of squared ranks)

Table 10

Mann-Whitney Wilcoxon Signed Rank Test for BADDS Riding Behavior Scale

Groups	*n*	Sum of ranks	Df	U statistic	Chi-Square Approx.	*p* level
Riding Behavior Treatment Group	60	3,311.5	1	1,638.5	0.514	0.473
Riding Behavior Control Group	52	3,016.5				

Kruskal-Wallis Test Statistic: 0.514

The *p*-value is 0.473 assuming chi-square distribution with 1 df.

Discussion

One important aspect of this study was the verification that standard DUI treatment, which utilizes self-efficacy theory, does in fact reduce cognitions and behaviors associated with DUIs. However, the premise of this study was to determine if augmenting standard DUI treatment with the DUI Game would improve treatment outcomes. Although the data represent a mixed result, in every area where standard DUI treatment reduced cognitions and behaviors

associated with DUIs, the addition of the DUI Game into treatment also yielded positive results. Arguably, the most important aspect measured by the BADDS is drinking and driving behaviors. The reduction of this one measure outweighs all the others in the potential for receiving a DUI, causing injury, and loss of life (National Transportation Safety Board, 2013). Hypothesis four measured drinking and driving behaviors, which yielded a significant positive difference from the control group. Where standard DUI treatment demonstrated the ability to reduce drinking and driving behaviors, the addition of the DUI Game yielded a greater result on this measure. Therefore, standard DUI treatment with the DUI Game demonstrated greater efficacy in this single category, which has the greatest potential to lead to DUIs.

While using games in treatment is widely accepted for many mental health issues, it has not become mainstream for substance abuse treatment (Scheck et al., 2013; Thomson Reuters, 2017). Data support the inclusion of games in treatment by using the DUI Game and demonstrate that augmenting treatment does not diminish the results of traditional treatment. The currently accepted recidivism rate among participants in treatment is 33 percent (National Transportation Safety Board, 2013) for all current standard treatment approaches; therefore, an alternate treatment method is needed. One concern with standard treatment is that people do not actively participate with the current standard treatment approaches (DiClemente et al., 2004; Hon, 2003; Scheck et al., 2013), whereas the use of games in treatment requires participation. While more support is likely required prior to using games in substance abuse treatment, the inclusion of this treatment modality can now be considered a potential option for clients.

The infusion of self-efficacy theory into treatment has a long history through the use of motivational interviewing (Bandura, 1997); however, the DUI Game is the first attempt to merge the use of games in treatment and self-efficacy into one treatment approach in DUI treatment. Self-efficacy is an important learning tool widely used in society and is often used to normalize drinking and driving behaviors (Hammersley, 2008). Peer groups, through social interactions reinforce and glorify the drinking and driving culture (Bandura, 1997). The inclusion of self-efficacy theory in the DUI Game paired with the required participation through the use of games in treatment was intended to reverse this maladaptive learning and acceptance process. Through the use of self-efficacy theory and the game process, client's game characters engaged in drinking behaviors were less likely to 'win' the game, thereby demonstrating the negative impacts of drinking and driving behaviors. The game process demonstrated how receiving a DUI increased legal interventions, time spent getting to and in court, accessing lawyers, and a reduced social life. The potential for supporting healthy behaviors through increased self-efficacy obtained by participating in the DUI Game has the potential for changing substance abuse treatment results by reducing driving behaviors.

Limitations and directions for future research
Limitations in this study included geographic limitations and the DUI Game process. The study was conducted solely in the Rocky Mountain region of the USA and may not apply to other areas of the country or outside of the USA. Additionally, the limitations associated with learning and incorporating a new game into an existing counseling process presented barriers that may have impacted the study. The difficulties most noted by clinicians was the length and complexity of the rules, the cumbersome nature of starting the game, and helping participants understand how to win the game. These limitations should be addressed by revisions to the

handbook, which could be furthered by focus groups or interviewing participants. Another potential limitation is that the participants were primarily seeking treatment for an alcohol use disorder rather than a substance abuse or polysubstance abuse disorder. Therefore, research needs to be done to determine if efficacy is retained with a polysubstance abusing population as well as if the DUI Game might potentially have benefits for other drugs of abuse.

Conclusions and clinical implications

Beyond recognizing the that The DUI Game was probably significant for improving attitude and behaviors toward drinking and driving for clients, the study also had implications for those who were counselors and supervisors. The DUI Game was designed specifically to be used in group counseling, and to improve attitudes and behaviors among DUI clients. Counselors had known for some time that attitudes and behaviors had to be altered to reduce the number of recidivating clients in DUI treatment, and to reduce the number of DUIs. This study worked to improve our understanding of a new intervention for that purpose. Furthermore, the study used the BADDS (Jewell et al., 2007a) to accurately measure attitudes and behaviors among DUI clients. Without assessment, it was difficult to truly understand whether clients improved in treatment. If we did not attempt to improve these practices, then we faced the kind of plateau in counseling that we had faced in DUI Education since 1995. DUI Education had one third of its clients recidivating since the mid-1990s (National Transportation Safety Board, 2013), and limited empirical studies had been conducted to improve this plateau in program efficacy. Research was required for improving these programs. Counselors, supervisors, and educators were responsible to improving these practices.

Clinicians and researchers need to work to make treatment strategies and interventions relevant to the clients, help the clients feel that they could reach these new goals, and help the clients change their attitude and behaviors around driving inebriated. Counseling was the most effective manner of reducing DUIs in the United States, coupled with legal sanctions (National Transportation Safety Board, 2013). Yet, if we did not continue to improve upon our ability to counsel, we would continue to face the kind of recidivism that we had seen since the mid-1990's. Yes, clients were responsible for their behaviors, but counselors, educators, supervisors, and researchers are responsible for making counseling as effective as possible.

References

Akers, R. (1985). *Deviant behavior: A social learning approach* (3rd Ed.). California: Wadsworth Publishing Company.

American Counseling Association. (2014). ACA code of ethics. Retrieved from http://www.counseling.org/docs/ethics/2014-aca-code-of-ethics.pdf

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman and Company.

Bandura, A. (1994). Self-Efficacy. In V. S. Ramchaudran (Ed.). *Encyclopedia of human behavior: Vol. 4* (71-81). New York: Academic Press.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*(2), 122-147. Doi: 10.1037/0003-066X.37.2.122.

Bandura, A. & Locke, E. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology, 88*(1), 87-99. doi:10.1037/0021-9010.88.1.87.

Blackmon, W. D. (1994). Dungeons and dragons: The use of a fantasy game in the psychotherapeutic treatment of a young adult. *American Journal of Psychotherapy, 48*(4), 624-32. Retrieved from http://search.proquest.com/docview/213179115?accountid=34899.

Blincoe, L., Seay, A. G., Zaloshnja, E., Miller, T. R., Romano, E. O., Luchter, S., & Spicer, R. S. (2002). *The economic impact of motor vehicle crashes, 2000*. Washington DC: National Highway Traffic Safety Administration. DOT-HS-809-446.

Burgess, R., Aker, R. (1966). A differential association-reinforcement theory of criminal behavior. *Social Problems, 14,* 128.

The Change Companies. (2017, February 20). Interactive journaling. Retrieved from The Change Companies: https://www.changecompanies.net/interactivejournaling/

Collins, S. E., Witkiewitz, K., & Larimer, M. E. (2011). The theory of planned behavior as a predictor of growth in risky college drinking. *Journal of Studies on Alcohol and Drugs, 72*(2), 322-32. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/864535210?accountid=34899

Card, J. J., Kuhn, T., Solomon, J., Benner, T. A., Wingood, G. M., & DiClemente, R. J. (2011). Translating an effective group-based HIV prevention program to a program delivered by a computer method: Methods and outcomes. *AIDS Education and Prevention, 23*(2), 159-174. Retrieved from http://search.proquest.com/docview/876658275?accountid=34899.

Colorado Department of Human Services. (2021, October 15). *What is Level II Education?* Retrieved from Colorado Department of Human Services: https://cdhs.colorado.gov/behavioral-health/dui-services#:~:text=Level%20II%20Education%20consists%20of%2024%20hours%20of,or%20may%20be%20followed%20by%20Level%20II%20Therapy.

Colorado Revised Statutes. (2019). *Part 13-Alcohol and Drug Offenses.* Retrieved from Casetext: https://casetext.com/statute/colorado-revised-statutes/title-42-vehicles-and-traffic/regulation-of-vehicles-and-traffic/article-4-regulation-of-vehicles-and-traffic/part-13-alcohol-and-drug-offenses

Culp, K., & Honey, M. (2002). Imagining less-gendered game worlds. In N. Yelland, A. Rubin, & E. McWilliam (Eds.), *Ghosts in the machine: Women's voices in research with technology* (pp. 33–53). New York: Peter Lang Publishing

Demmel, R., & Beck, B. (2004). Anticipated outcome of short-term treatment for alcohol dependence: Self-efficacy ratings and beliefs about success of others. *Addictive Disorders and Their Treatment, 3*, 77-82.

Deyoung, D. J. (1997). An evaluation of the effectiveness of alcohol treatment, driver license actions and jail terms in reducing drunk driving recidivism in California. *Addiction, 92*(8), 989-97. Retrieved from http://search.proquest.com/docview/199549863?accountid=34899.

DiClemente, C., Schlundt, D., & Gemmell, L. (2004). Readiness and stages of change in addiction treatment. *The American Journal on Addiction*, *13*, 103-119.

DrinkingAndDriving.Org. (2012, July 19). *Reasons and Ways to Prevent Drunk Driving*. Retrieved July 19, 2012, from DrinkingAndDiving.org: http://www.drinkinganddriving.org/about-us.html?tw_p=twt

Evans, S., Lombardo, M., Belgeri, M., & Fontane, P. (2005). The geriatric medication game in pharmacy education. *American Journal of Pharmaceutical Education, 69*(1-5), 304-310. Retrieved from http://search.proquest.com/docview/211287512?accountid=34899.

Ewing, S. W. F., Montanaro, E. A., Gaume, J., Caetano, R., & Bryan, A. D. (2015). Measurement invariance of alcohol instruments with Hispanic youth. *Addictive Behaviors, 46*, 113. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/1673849410?accountid=34899

Fischhoff, B., Crowell, N., & Kipke, M. (Eds.). (1999). *Adolescent decision making: Implication for prevention programs: Summary of a workshop.* Washington, DC: National Academy Press.

Glendon, K., & Ulrich, D. (2005). Using games as a teaching strategy. *Journal of Nursing Education, 44*(7), 338-9. Retrieved from http://search.proquest.com/docview/203961926?accountid=34899

Halgunseth, L. C., Carmack, C., Childs, S. S., Caldwell, L., Craig, A., & Smith, E. P. (2012). Using the interactive systems framework in understanding the relation between general program capacity and implementation in afterschool settings. *American Journal of Community Psychology, 50*(3-4), 311-320. doi:http://dx.doi.org/10.1007/s10464-012-9500-3.

Hammersley, R. (2008). *Drugs and crime: Theories and practices*. Cambridge: Polity Press.

Haug, S., Paz Castro, R., Kowatsch, T., Filler, A., Dey, M., & Schaub, M. P. (2017). Efficacy of a web- and text messaging-based intervention to reduce problem drinking in adolescents: Results of a cluster-randomized controlled trial. *Journal of Consulting and Clinical Psychology, 85*(2), 147. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/1864047808?accountid=34899

Hennessy, D. A., Lanni-Manley, E., & Maiorana, N. (2006). The effects of fatal vision goggles on drinking and driving intentions in college students. *Journal of Drug Education, 36*(1), 59-72.

Holmes, W. (2011). Using game-based learning to support struggling readers at home. *Learning, Media and Technology, 36*(1), 5. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/859536079?accountid=34899

Hon, J. (2003). *Ensuring solutions to alcohol problems, Primer 7: Finding common ground: Improving highway safety with more effective interventions for alcohol problems.* Washington, DC: George Washington University Medical Center.

Innocorp, ltd. (2018, December 13). *Fatal Vision Alcohol Impairment Goggles: A sobering view of what impairment can do.* Retrieved from innocorp, ltd.: https://fatalvision.com/topic/alcohol-drugs/fatal-vision-alcohol-impairment-goggles.

Jang, S. A., Rimal, R. N., & Cho, N. (2013). Normative influences and alcohol consumption: The role of drinking refusal self-efficacy. *Health Communication, 28*(5), 443. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/1417594771?accountid=34899

Jewell, J. D., Hupp, S. D. A., Lazowski, L.E., & Miller, G.A. (2007a). *The BADDS User's Guide & Manual.* Springville, IN: SASSI Institute

Jewell, J. D., Hupp, S. D. A., Lazowski, L. E., & Miller, G. A. (2007b). *Reliability and validity summary of the BADDS.* Springville, IN: The SASSI Institute.

Jewell, J., & Hupp, S. D. A. (2005). Examining the effects of fatal vision goggles on changing attitudes and behaviors related to drinking and driving. *Journal of Primary Prevention, 26*(6), 553-65. doi:http://dx.doi.org.libproxy.edmc.edu/10.1007/s10935-005-0013-9

Jewell, J., Hupp, S., & Luttrell, G. (2004). The effectiveness of fatal vision goggles: Disentangling experiential versus onlooker effects. *Journal of Alcohol and Drug Education, 48*(3), 63-84. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/217438162?accountid=34899

Kellam, S. G., Brown, C. H., Poduska, J. M., Ialongo, N. S., Wang, W. Toyinbo, P. Petras, H., Ford, C. Windham, A., & Wilcox, H. C. (2008, June 1). Effects of a universal classroom behavior management program in first and second grades on young adult behavior, psychiatric, and social outcomes. *Drug and Alcohol Dependence, 95*(Supplement 1), S5-S28. doi: 10.1016/j.drugalcdep.2008.01.004

Klimmt, C., & Hartmann, T. (2006). Gender and computer games: exploring females' dislikes. *Journal of Computer Mediated Communication, 11*(4), 910–931.

Lanzalotto, J. (2007, May 15). How to narrow IT's gender gap. Computerworld. Retrieved from http://www.computerworld.com/s/article/290587/How_to_Narrow_IT_s_Gender_Gap?taxonomyId=57 andintsrc=kc_featandtaxonomyName=hiring_recruiting.

Larson, L. & Daniels, J. (1998). Review of the counseling self-efficacy literature. *The Counseling Psychologist, 26,* 179-218. doi: 10.1177/0011000098262001.

Liu, C. (2016). Understanding player behavior in online games: The role of gender. *Technological Forecasting and Social Change, 111*, 265. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/1826416643?accountid=34899

Mertler, C. A., & Vannatta, R. A. (2013). *Advanced and multivariate statistical methods* (5th Ed). Glendale, CA: Pyrczak Publishing.

Miller, P. G., Curtis, A., Sønderlund, A., Day, A., & Droste, N. (2015). Effectiveness of interventions for convicted DUI offenders in reducing recidivism: A systematic review of the peer-reviewed scientific literature. *The American Journal of Drug and Alcohol Abuse, 41*(1), 16. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/1641986174?accountid=34899

National Transportation Safety Board. (2013). Reaching zero: Actions to eliminate alcohol-impaired driving. *National Transportation Safety Board.* Retrieved April 15, 2015, from National Transportation Safety Board: http://www.National Transportation Safety Board.gov/safety/safety-studies/Documents/SR1301.pdf.

Norris, A. E., Hughes, C., Hecht, M., Peragallo, N., & Nickerson, D. (2013). Randomized trial of a peer resistance skill-building game for Hispanic early adolescent girls. *Nursing Research, 62*(1), 25. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/1232775084?accountid=34899

Penberthy, J. K., Hook, J. N., Vaughan, M. D., Davis, D. E., Wagley, J. N., DiClemente, C. C., & Johnson, B. A. (2011). Impact of motivational changes on drinking outcomes in pharmacobehavioral treatment for alcohol dependence. *Alcoholism, 35*(9), 1694-704. doi:http://dx.doi.org.libproxy.edmc.edu/10.1111/j.1530-0277.2011.01516.x

Peng, W. (2009). Design and evaluation of a computer game to promote a healthy diet for young adults. *Health Communication, 24*(2), 115. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/228385072?accountid=34899

Petras, H., Kellam, S. G., Brown, C. H., Muthen, B. O., Ialongo, N. S., & Poduska, J. M. (2008). Developmental epidemiological courses leading to antisocial personality disorder and violent and criminal behavior: Effects by young adulthood of a universal preventive intervention in first- and second-grade classrooms. *Drug and Alcohol Dependence, 95*(Suppl. 1), S45-S59.

Rivers, K., Sarvela, P., Shannon, D. V., & Gast, J. (1996). Youth and young adult perception of drinking and driving prevention programs: A focus group study. *Journal of Alcohol and Drug Education, 41,* 80-91.

Rossheim, M. E., Weiler, R. M., Barnett, T. E., Suzuki, S., Walters, S. T., Barry, A. E., . . .
Thombs, D. L. (2015). Self-efficacy to drive while intoxicated: Insights into the
persistence of alcohol-impaired driving. *Alcoholism, 39*(8), 1547-1554.
doi:http://dx.doi.org.libproxy.edmc.edu/10.1111/acer.12795

Scheck, A. M., Hoffmann, N. G., Proctor, S. L., & Couillou, R. J. (2013). Interactive journaling
as a brief intervention for level-II DUI and DUI offenders. *Journal of Alcohol and Drug
Education, 57*(3), 66-85. Retrieved from
https://login.libproxy.edmc.edu/login?url=http://search.proquest.com/docview/14939915
54?accountid=34899

Sitzmann, T. (2011). A meta-analytic examination of the instructional effectiveness of computer-
based simulation games. *Personnel Psychology, 64*(2), 489. Retrieved from
https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/
docview/869913930?accountid=34899

Small, K. (2008). Interventions to prevent adolescent motor vehicle crashes: A literature review.
Orthopaedic Nursing, 27(5), 283-90. Retrieved from
http://search.proquest.com/docview/195964750?accountid=34899

Substance Abuse and Mental Health Services Administration (SAMHSA). (2017, February 24).
NREPP: SAMHSA's National Registry of Evidence-based Programs and Practices.
Retrieved from Substance Abuse and Mental Health Services Administration: SAMHSA:
http://legacy.nreppadmin.net/ViewIntervention.aspx?id=201

Substance Abuse and Mental Health Services Administration (SAMHSA). (2015, August).
Publications: SMA13-4755-GOALIE-TT. Retrieved from SAMHSA:
http://store.samhsa.gov/product/Talk-They-Hear-You-Underage-Drinking-Prevention-
National-Media-Campaign-In-the-game-of-life-you-re-her-goalie-Table-Top-Display-
/SMA13-4755-GOALIE-TT

Substance Abuse and Mental Health Services Administration (SAMHSA). (2015). *Substance
Abuse and Mental Health Services Administration (SAMSHA)*. Retrieved from
http://www.samhsa.gov/**.**

Substance Abuse and Mental Health Services Administration (SAMHSA). (2014, July 11). *New
online role-play tool helps talk about underage drinking with children*. Retrieved from
Substance Abuse and Mental Health Services Administration: SAMHSA:
https://www.samhsa.gov/newsroom/press-announcements/201407110545

Substance Abuse and Mental Health Services Administration (SAMHSA). (2009, December).
Publications: SMA09-4469. Retrieved from SAMHSA:
http://store.samhsa.gov/product/Too-Smart-To-Start-Ready-Set-Listen-Game/SMA09-
4469

Tennyson, R. D., & Jorczak, R. L. (2008). A conceptual framework for the empirical study of
instructional games. In H. F. O'Neil & R. S. Perez (Eds.), *Computer games and team and
individual learning* (pp. 3-20). Amsterdam, The Netherlands: Elsevier.

Terlecki, M., & Newcombe, N. (2005). How important is the digital divide? Relating computer and videogame usage to spatial ability, *Sex Roles, 53*, 433–441.

Thomson Reuters. (2017). *DUI Laws.* Retrieved from FindLaw: http://dui.findlaw.com/dui-laws-resources/dui-laws.html

Wanberg, K. W., Milkman, H. B., & Timken, D. S. (2001). *Driving With Care: Alcohol, Other Drugs and Driving Safety Education: Strategies for Responsible Living and Change.* Center for Addiction Research and Evaluation (CARE).

Wells-Parker, E. (1994). Mandated treatment. *Alcohol Health & Research World, 18*(4), 302. Retrieved from http://libproxy.edmc.edu/login?url=http://search/ebscohost.com/login.aspx?direct=true&db=rzh&AN=106066301&site=ehost-live

Wiener, L., Battles, H., Mamalian, C., & Zadeh, S. (2011). ShopTalk: A pilot study of the feasibility and utility of a therapeutic board game for youth living with cancer. *Supportive Care in Cancer, 19*(7), 1049-54. doi:http://dx.doi.org/10.1007/s00520-011-1130-z.

Widome, M. D. (Ed.). (1997). *Injury prevention and control for children and youth* (3rd ed.). Elk Grove, IL: American Academy of Pediatrics.

Wylie-Rosett, J., Isasi, Carmen,M.D., PhD., Soroudi, N., PhD., Soroker, Edeet,PhD., R.D., Sizemore, Cindy,M.S., R.D., Groisman-Perelstein, A., . . . Gandhi, R. (2010). KidWAVE: Get healthy game-promoting a more healthful lifestyle in overweight children. *Journal of Nutrition Education and Behavior, 42*(3), 210. Retrieved from https://login.libproxy.edmc.edu/login?url=http://search.proquest.com.libproxy.edmc.edu/docview/356813677?accountid=34899

Zaloshnja, E., & Miller, T. R. (2009). Cost of crashes related to road conditions, United States, 2006. *Annals of Advances in Automotive Medicine 53*, 141–53.