

Running Head: GAMBLING FOR ESCAPE

Gambling on Electronic Gaming Machines is an escape from  
negative self reflection

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## Abstract

*Aims:* An experiment tested whether thinking about oneself, particularly in negative terms, increases gambling intensity on Electronic Gaming Machines (EGMs). *Setting:* Forty male and 65 Female participants, aged 18-76 ( $M = 46.2$ ,  $SD = 15.3$ ), were recruited through newspaper advertisements to play a laptop simulated Electronic Gaming Machine (EGM) in Hervey Bay, Queensland, Australia. *Design:* Prior to play, subjects in the test conditions audio tape-recorded 2 minutes of self reflection on either: 1) "things you like about yourself," or 2) "things you don't like about yourself." Immediately after the recordings, the subjects played an EGM that was programmed (rigged) with 5 wins in the first 20 spins, and indefinite losses thereafter. *Findings:* Participants gambled more intensively in terms of Average Bet Size, Number of Trials Played, and Speed of Betting in the negative self reflection condition compared to the control condition. *Conclusion:* The experiment supports the proposition that EGM gambling behavior is motivated by escape from negative self reflection.

*Key Words:* Gambling, Pathological Gambling, Poker, Fruit, Slot, Self Esteem

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Escapism is a potentially important psychological motivation for problematic gambling behavior (Rockloff & Dyer, 2006). Gambling provides a temporary relief from conflicts with work colleagues, friends and family (Wood & Griffiths, 2007); and may be a dissociative experience equal to Alcohol and Drug abuse (Jacobs, 1987; Ledgerwood & Petry, 2006). Play on Electronic Gaming Machines (EGMs), in particular, may be motivated in part by a drive to escape interpersonal conflicts by engaging in a dissociative experience. A corresponding view of the Escape motivation is that players use gambling to avoid unpleasant self reflection, while simultaneously entertaining a potentially more complimentary view of the self (Jacobs, 1986). Gambling allows punters to bask in the glory of winning, and enjoy the potential for social approval that accompanies their successes.

*Compulsive gamblers picture themselves leading a pleasant gracious life, made possible by the huge sums of money they will accrue from their 'system'... When compulsive gamblers succeed, they gamble to dream still greater dreams. When failing, they gamble in reckless desperation and the depths of their misery are fathomless as their dream world comes crashing down. (Gamblers Anonymous)*

Gambling can be a means of deconstructing a negative view of the self, through escapism, while concurrently constructing a more positive outlook supported by the fantasy, and the occasional reality, of winning. The present experiment sought to test the relationship between self reflection and subsequent gambling behavior on Electronic Gaming Machines (EGMs). If gambling behavior is a form of escapism, then prompting people to think about themselves - particularly in negative terms - should motivate them to gamble more intensely in order to escape this unpleasant state of self reflection.

#### *Objective Self Awareness*

Self Awareness Theory (Silvia & Duval, 2001) guided the design and hypotheses of the present study. According to this theory, focusing attention on ourselves causes us to evaluate our behavior with respect to an internal standard of correctness. In this state of "objective self-awareness" the self becomes the object of our attention. Most often this self awareness is a negative feeling state, since we often fail to conform completely to our ideals. Research has supported that self awareness does not always produce negative affect, because occasionally we meet our expectations (Greenberg & Musham, 1981). Nevertheless, self reflection can be a source of negative emotion wherever we fall short of our goals.

In contrast to the state of *objective self-awareness*, our attention can be directed outward to the environment, termed

"subjective self-awareness," whereby instead we are the subject who perceives and acts on the environment. In this state, we are not judging ourselves by a standard of correctness, and thus *subjective* self awareness is more often associated with positive affective states. In related theorizing, Csikszentmihalyi (1991) contends that "Flow," described as a state of complete absorption with a task, is associated with high levels of self-rated happiness. Gambling may be an activity that moves people away from a negative self reflective state, toward participation in a Flow inducing activity that generates positive moods. As such, gamblers may be motivated to use gambling to modify negative moods brought about by self reflection.

#### *Aims of the Present Study*

Players were recruited through local area newspaper advertisements, and thus purposefully sampled persons both with and without preexisting gambling problems. This mixed composition of players was chosen to be reasonably representative of EGM players in gaming venues. Audio recordings made by select subjects prior to gambling were designed to heighten their objective self-awareness: causing them to reflect on how they fall short of their ideal standards of behavior, personality and appearance. Heightened self-awareness, by generally provoking a negative feeling state, was hypothesized to motivate increased gambling

intensity on EGMs to counter aversive self-awareness. Moreover, the gambling intensity was predicted to be greater for the Negative Self-reflection condition than the Positive Self-reflection condition; as the former is likely to produce a greater perception of divergence of the self from internal standards for correctness.

### Methods

*Participants.* Newspaper flyers distributed in Hervey Bay, Australia recruited subjects to play an Electronic Gaming Machine (aka. Poker, Slot or Fruit Machine). Potential participants were told that they would be provided the initial gambling stake (\$20), and that they could keep any winnings. One-hundred and five participants, including 40 males and 65 females, successfully completed the experiment between April and November, 2007. Five persons refused to gamble with the \$20 initial stake, and are not included in the 105 person dataset and the analyses that follow. The mean age of participants was 46.2 years ( $SD = 15.3$ , Range 18-76). The cultural backgrounds of participants included: 92 (87.6%) Australian, 3 (2.9%) English, and 10 (9.5%) other. According to the Canadian Problem Gambling Index of Severity (PGSI, Ferris, J. & Wynne, H., 2001), the problem-gambling status of participants included: 41 (39.0%) non-problem gambler, 32 (30.5%) low-risk, 16 (15.2%) moderate-risk, 11 (10.5%)

problem-gamblers, and 5 (4.8%) unclassified, due to incomplete questionnaires.

*The Simulated EGM.* The study used a laptop simulated EGM programmed by the principal researcher as a 3-reel traditional EGM (see Figure 1; cf., Rockloff & Greer, 2010; Rockloff, 2008; Rockloff, Signal & Dyer, 2007; Rockloff and Dyer, 2007). The EGM was programmed to pay off on trials 2, 6, 8, 13 and 20. All bets placed past trial 20 were programmed as losses. Players could place bets of 25, 50 or 100 cents on each trial, and winning bets paid off at 10 times the amount bet (i.e., \$2.50, \$5.00 or \$10.00, respectively). Credits were presented in cents, with an initial bankroll of \$20 (or 2,000 cents) at the start of play. The theoretical maximum payout was \$61.50 (\$20 starting bankroll + \$50 maximum wins - \$8.50 in minimum bets required). The EGM produced typical noises of play, including the spinning of the reels and winning bells.

*Design and Procedure.* Participants were given \$20 as compensation for their arrival at the experimental session. After receiving their \$20 compensation, subjects completed a questionnaire which included basic demographic questions and the Canadian Problem Gambling Index of Severity, (PGSI, Ferris & Wynne, 2001). Subjects were assigned at random and without their awareness to 1 of 3 experimental conditions, including: a) the Negative Self-reflection condition ( $n = 35$ ), b) the

Positive Self-reflection condition ( $n = 37$ ), or c) the Control condition ( $n = 33$ ).

In the Negative Self-reflection condition, subjects made a private audio-recording using a digital recorder with instruction to talk about "things that you DON'T like about yourself." This was presented to subjects as a "memory test," without further explanation. The female research-assistant left the subject alone in the room to make the recording, and instructed them to retrieve the experimenter when they were finished speaking. To aid the participants in producing detailed verbal descriptions, they were asked to speak about things that they could remember regarding: a) what I have said to others, b) what I have done to/for others, c) my mood and personality, d) my importance to others (friends, family, co-workers), e) my ability to care for my appearance, f) my ability to do work, g) my ability to live-up to my own moral standards or values, h) my ability to make decisions, and i) my ability to think and reason.

In the Positive Self-reflection condition, subjects made a private audio-recording with instructions to talk about "things that you LIKE about yourself." This task was also represented as a memory test, and the same content areas for self reflection were given as were provided in the Negative Self-reflection condition (items a - i, above).

In both the Negative and Positive self-reflection conditions, participants proceeded immediately to the gambling task after making their recordings, with a delay of 2-4 minutes for orientation to the EGM task. No attempt was made to ensure that participants only talked about negative or positive items of self-reflection in the two test conditions, respectively, on the assumption that the experimental instructions were sufficient to provoke the intended mindset. Lastly, the control condition had no self reflection task. Instead, the subjects proceeded immediately to gamble on the simulated EGM.

Prior to the start of the gambling task, the experimenter retrieved the \$20 compensation money from participants. This recovery of the compensation money was intended to give the (correct) impression that subjects were gambling with their own money. Participants were told that they could decide when they would like to quit the game, and that they could retrieve the experimenter from outside of the room when they had finished.

## Results

*Data Analysis.* A multiple regression model was used for each dependent measure of gambling intensity, including Average Bet Size, Final Payouts, Speed of Betting and Total Trials. The independent measures for each model included the 3 conditions (dummy coded as 2 variables) as well as age and

gender. Preliminary analyses failed to reveal any significant interactions between effects-coded conditions, age and gender. For simplicity of exposition, only the models including the main effects are reported below. Beta-weights are reported as standardized values.

Additional preliminary analyses revealed that, as expected from random assignment, there were no significant differences found across the 3 conditions in the demographics of Age,  $F(2,102) = 1.95$ ,  $p = .148$ ,  $\eta^2 = .04$ , Gender,  $\chi^2(2) = .33$ ,  $p = .85$ ,  $\phi = .06$ , or PGSI classification,  $\chi^2(6) = 8.34$ ,  $p = .21$ ,  $\phi = .29$ . Moreover, linear regression failed to find a significant effect for PGSI score on any of the explored measures of gambling intensity, including Average Bet Size,  $\beta = .03$ ,  $t = 0.33$ ,  $p = .74$ , Final Payouts (using rank scores),  $\beta = -.13$ ,  $t = 1.27$ ,  $p = .21$ , Speed of Betting,  $\beta = -.004$ ,  $t = -0.04$ ,  $p = .97$ , and Total Trials played,  $\beta = .06$ ,  $t = 0.64$ ,  $p = .52$ . Lastly, no interactions between PGSI and effects-coded conditions predicted the outcomes. The PGSI score was excluded as a potential covariate in the analyses that follow, as inclusion tended to weaken main effects due to some multicollinearity with the other predictors.

*Average Bet-Size.* As predicted, Average Bet Size was larger in the Negative Self-reflection condition compared to the control,  $\beta = .22$ ,  $t = 1.91$ ,  $p = .03$  (one-tailed, see Figure 2). The pattern of results for the Positive Self-

reflection condition was also consistent with predictions, although the examined differences were not significant. Specifically, the Average Bet Size in the Positive Self-reflection condition was non-significantly higher than the control,  $\beta = .09$ ,  $t = 0.80$ ,  $p = .43$ , ns. Age and Gender were not significant predictors of Average Bet Size,  $\beta = -.02$ ,  $t = 0.16$ ,  $p = .87$ , ns and  $\beta = -.15$ ,  $t = 1.58$ ,  $p = .12$ , ns, respectively.

*Final Payouts.* Slightly more than one fifth of participants (21%) ended the EGM experiment by gambling away their entire \$20 stake. As such, the analysis of this variable used rank scores. Final Payouts were non-significantly lower in both the Negative and Positive self-reflection conditions compared to the control,  $\beta = -.12$ ,  $t = 1.07$ ,  $p = .29$ , ns and  $\beta = -.12$ ,  $t = 1.03$ ,  $p = .30$ , ns, respectively. There was a significant effect for age,  $\beta = -.21$ ,  $t = 2.08$ ,  $p = .04$ , such that younger participants had lower payouts. There was no significant gender difference in payouts,  $\beta = -.07$ ,  $t = 0.77$ ,  $p = .45$ , ns.

*Speed of Betting.* The Bets-per-minute variable measured the average number of bets in each minute of play at the EGM, with larger mean-values equating to higher speeds (see Figure 3). As predicted, the Negative Self-reflection condition had faster rates of betting than the Control condition,  $\beta = .29$ ,  $t = 2.60$ ,  $p = .01$ . Betting in the Positive Self-reflection

condition was non-significantly faster than the control,  $\beta = .18$ ,  $t = 1.57$ ,  $p = .12$ . There was a significant effect for age,  $\beta = -.23$ ,  $t = 2.40$ ,  $p = .02$ , such that younger participants bet faster. There was no significant gender difference in speed of betting,  $\beta = -.07$ ,  $t = 0.77$ ,  $p = .45$ , ns.

*Total Trials.* Figure 4 compares the three experimental conditions on the total number of trials (or bets) placed during the session. As hypothesized, participants in the Negative Self-reflection condition gambled for a greater mean number of trials than persons in the Control condition,  $\beta = .19$ ,  $t = 1.70$ ,  $p = .05$  (one-tailed). The average number of trials for participants in the Positive Self-reflection condition was non-significantly greater than the Control,  $\beta = .10$ ,  $t = 0.84$ ,  $p = .40$ . Age and gender were not significant predictors of Total Trials,  $\beta = .17$ ,  $t = 1.72$ ,  $p = .09$ , ns and  $\beta = .09$ ,  $t = 0.93$ ,  $p = .36$ , ns, respectively.

*Audio Recording.* The transcript of the audio recording in the Negative and Positive self reflection conditions were analysed according to their content. On average, participants used 171 words ( $SD = 63$ ) for the negative self-reflection task and 206 words ( $SD = 98$ ) for positive self-reflection,  $t = 1.80$ ,  $p = .08$ , ns. Table 1 shows the percentage of subjects that talked about each content area described in the Design and Procedure section (see above). Participants in the Negative

self reflection condition, compared to those in the Positive self reflection condition, talked more often about issues related to social aspects of themselves, including the content areas of: b) what I have done to/for others, d) my importance to others (friends, family, co-workers) and g) my ability to live-up to my own moral standards or values.

The audio recordings were also analyzed using a Grounded Theory methodology (Glaser & Strauss, 1967). A prominent organizing theme of "virtues" emerged (i.e., conformity to standards of correctness). The following virtues were discussed by more than 1 participant in the 72 recordings: Charity (kindness to others, 77%), Faith (steadfastness in belief, 15%), Hope (belief in positive outcomes, 19%), Justice (fairness to others, 46%), Prudence (acting thoughtfully, 68%), Restraint (avoiding wrongful actions, 46%), and Temperance (the practice of moderation, 32%).

#### Discussion

The results of the experiment supported the proposition that gambling on EGMs is motivated by its capacity to distract players from unpleasant self-focused attention. Consistent with *a priori* predictions, participants in the Negative Self-reflection condition placed more bets, wagered larger amounts, and gambled faster than participants assigned to the control condition. Likewise, the positive self reflection condition, presumably by also raising self awareness, produced

intermediate intensification of gambling on these outcomes as expected; although the magnitudes of the effects were not significant. The outcome of Final Payouts did not show reliable differences across conditions. Lastly, Gender was not a significant predictor of gambling intensity, but Age proved a significant predictor overall, where younger players bet faster and left the experiment with less money. Somewhat surprisingly, PGSI gambling symptoms did not predict gambling intensity, although past research suggests that PGSI tends to interact with other variables (e.g., arousal level and emotion; Rockloff and Dyer, 2010; Rockloff, Signal and Dyer, 2007) to affect intensity rather than acting as a main effect.

People with gambling problems often indicate that gambling allows a temporary escape from unpleasant reflections on their life circumstances (Custer & Milt, 1985). The current experiment illustrates that negative self reflection modifies gambling behavior among a sample of gamblers both with and without preexisting gambling problems. According to these results, negative self focused attention causes people to gamble with greater intensity, and thereby potentially magnify the financial losses that they experience in the long run.

The analyses of the audio recordings revealed that participants in the Negative self reflection condition, when compared to those in the Positive self reflection condition, more often discussed issues related to the social aspects of

self. Reflecting on the negative aspects the social conceptions of the self (e.g., actions towards others, importance to others and moral rectitude) therefore may particularly intensify gambling behavior, although the nature of this relationship is correlational in this study. The virtues (or standards of correctness) discovered in the recordings furthermore suggest the relative importance of the social conceptions of the self, considering that the more "social" virtues (e.g., Charity, Justice, Prudence and Restraint) were more frequently mentioned in the recordings.

*Limitations.* Like many laboratory experiments, the current study introduces the potential for "nuisance" variables that may be absent in real world gaming environments. For instance, revealing your strengths and weaknesses in an audio recording may be different from thinking about them privately. In particular, the knowledge that someone (i.e., the researcher) will access these recordings in the future may create a unique motive for impression management in the gambling task that might not otherwise exist. For instance, many participants who were asked to reflect on Negative aspects of the self also mentioned their positive attributes.

In addition, the proposed Escape motive to gambling in this study is inferred based on behavior. Specifically, we cannot know if the observed gambling intensity was the result of a "drive" to reduce self awareness. Instead, we infer that

this drive is a plausible explanation based on the propositions of objective self-awareness theory.

*Implications.* This study advances knowledge regarding self-focused attention as a negative reinforcement agent on gambling. Negative self reflection intensified gambling behavior, and was evident in a sample of gamblers that included persons with a mixture of gambling problems. The sample included a few people with many problems and the majority with few or no problems. Therefore, escape from self reflection appears to be a general force intensifying betting on EGMs. By implication, negative self perceptions may motivate people to engage in gambling that is harmful to them, and this knowledge can provide useful new directions for targeted intervention. For instance, Monaghan (2009) has demonstrated that pop-up messages on EGMs are effective in encouraging control during gambling. Presumably pop-up messages reduce the effectiveness of EGMs as an instrument of escape. Moreover, the importance of self awareness can be applied to new treatments for gambling problems. For instance, cognitive behavioral therapy can focus on modifying tendencies toward negative self reflection. This could take the form of increasing the opportunity for positive self reflection (a cognitive component), or decreasing engagement in self focused attention by substituting another activity (a behavioral component).

As an illustrative example in treatment, Petry (2005) introduced a cognitive behavioral program that targets alternative activities (e.g., hobbies, recreational activities, etc.) as a substitute for gambling, and also as a self-reward for abstinence. If these substitute activities likewise induce "Flow," (Csikszentmihalyi, 1991) and help to distract people from unpleasant self focused attention, then these alternatives could be particularly effective in satisfying the need that gambling previously provided.

*Summary.* Gambling on EGMs distracts players from negative self-focused attention, and this feature may be particularly attractive to players with gambling problems. The present study demonstrated that negative self reflection motivates more intense gambling on EGMs by players both with and without preexisting gambling problems. These results support the contention that EGM play is at least partly motivated by escape from self awareness, and that negative self-focused attention can contribute to betting behavior that accelerates long-term gambling losses.

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Figure 1. Illustration of Laptop-Simulated Electronic Gaming Machine



Figure 2. Average-Bet-Size by Condition

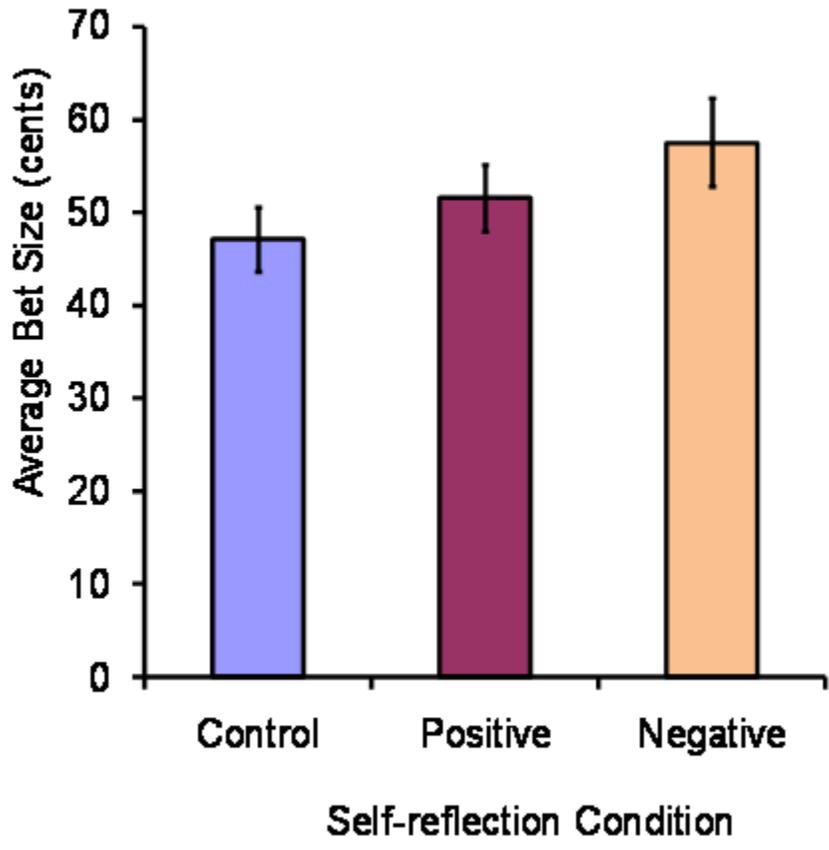


Figure 3. Speed of Betting by Condition

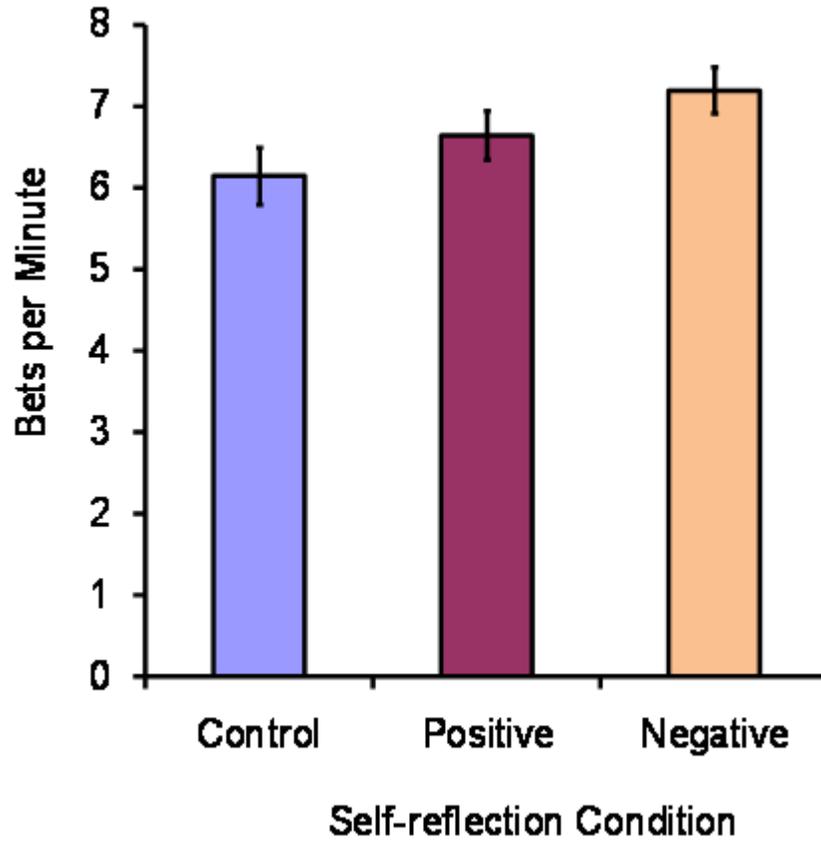


Figure 4. Number of Trials Played by Condition

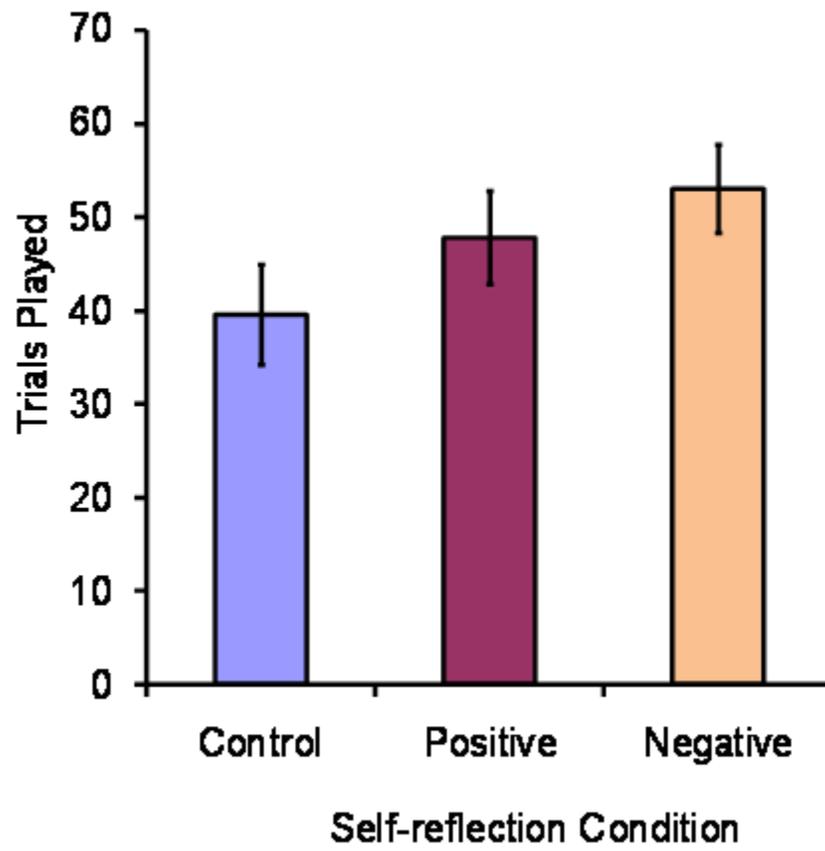


Table 1

Percentage of Participants who discussed each content area in the Positive and Negative self-reflection conditions

Content Area	Positive	Negative	$\chi^2(1)$
	(n = 37)	(n = 35)	
a) what I have said to others	54.3%	43.2%	0.88
b) what I have done to/for others	68.6%	91.9%	6.25*
c) my mood and personality	80.0%	81.1%	0.01
d) my importance to others (friends, family, co-workers)	57.1%	86.5%	7.72**
e) my ability to care for my appearance	57.1%	62.2%	0.19
f) my ability to do work	74.3%	86.5%	1.71
g) my ability to live-up to my own moral standards or values	40.0%	64.9%	4.46*
h) my ability to make decisions	51.4%	56.8%	0.21
i) my ability to think and reason	42.9%	56.8%	1.39

\* p < .05

\*\* p < .01