



5-14-2011

Positive Affect During Goal Adoption : Why Happiness Breeds Success

Katherine Wainwright
Butler University

Follow this and additional works at: <https://digitalcommons.butler.edu/ugtheses>



Part of the [Cognitive Psychology Commons](#), and the [Psychiatry and Psychology Commons](#)

Recommended Citation

Wainwright, Katherine, "Positive Affect During Goal Adoption : Why Happiness Breeds Success" (2011).
Undergraduate Honors Thesis Collection. 119.
<https://digitalcommons.butler.edu/ugtheses/119>

This Thesis is brought to you for free and open access by the Undergraduate Scholarship at Digital Commons @ Butler University. It has been accepted for inclusion in Undergraduate Honors Thesis Collection by an authorized administrator of Digital Commons @ Butler University. For more information, please contact digitalscholarship@butler.edu.

BUTLER UNIVERSITY HONORS PROGRAM

Honors Thesis Certification

Applicant Katherine Wainwright

Thesis title Positive Affect During Goal Adoption:

Why Happiness Breeds Success

Intended date of commencement May 14, 2011

Read, approved, and signed by:

Thesis adviser(s) R B Giesler 4/29/11

R. Brian Giesler

Date

Reader(s)

Mandy Gingerich

Mandy Gingerich

4/29/11

Date

Certified by

Judith Harper Morrel

Director, Honors Program

6/2/11

Date

For Honors Program use:

Level of Honors conferred: University

Departmental

Magna Cum Laude
Psychology with
High Honors

Running Head: POSITIVE AFFECT AND GOAL ADOPTION

Positive Affect During Goal Adoption:
Why Happiness Breeds Success

Katherine Wainwright

Butler University

Abstract

Prior research has shown that positive affect helps individuals to achieve their goals, typically by energizing individuals' performance during goal pursuit. However, questions remain as to whether other mechanisms might exist by which positive affect could facilitate success. Specifically, researchers have yet to address the role that positive affect might play during the process of goal adoption. In the current study, I examined whether positive affect experienced at the time of goal adoption facilitates goal achievement. Participants were induced into either a positive or neutral affective state by watching a video clip. They were also asked to adopt the goal of performing well on a mental rotation task. All participants then completed the mental rotation task; performance on the task was analyzed in terms of speed and accuracy. Task performance was significantly better for the positive affect groups compared to the neutral affect group, indicating that positive affect during goal formation may be beneficial. However, the induced positive affect persisted longer than anticipated, and many of the participants in the positive affect groups began the task while still in a positive affective state. Thus, improved performance may have been due to the 'energizing' effects of positive affect instead of the hypothesized effect during goal adoption. This research may help identify what conditions are ideal for goal adoption and explain why people are better able to achieve some goals and not others.

Positive Affect During Goal Adoption:

Why Happiness Breeds Success

The search for happiness has been and continues to be one of humanity's defining pursuits. Throughout history, human beings have routinely sought happiness, joy and other types of positive affect. However, while experiencing positive affect is a worthwhile endeavor in its own right, research conducted over the past two decades has begun to uncover the critical role positive affect plays, not just as an *outcome*, but as a *cause* (e.g., Lyubomirsky, King, & Diener, 2005). Numerous studies have documented the powerful and varied ways that positive affect impacts human behavior and cognition. For example, positive affect facilitates creativity and flexible thinking, improves problem solving, fosters elaboration of information and improves memory (Aspinwall, 1998; Bodenhausen, Mussweiler, Gabriel, & Moreno, 2001; Isen, 1984, 1999).

Positive affect also appears to play an important role in motivation and goal pursuit. For example, it fosters intrinsic motivation, defined as motivation to engage in a task for its own sake instead of as a means to a reward (Isen & Reeve, 2006). Research suggests that positive affect exerts this effect by increasing enjoyment. More specifically, it increases people's expected interest for and enjoyment of an activity and increases actual satisfaction during the activity (Erez & Isen, 2002). Additionally, Erez and Isen (2002) demonstrated that people in a positive mood state also expected a stronger relationship between their effort and their performance, suggesting they might work harder to achieve a goal because of increased self-efficacy.

The foregoing research maps out one route by which positive affect affects goal

pursuit and achievement. Namely, this prior work demonstrates how positive affect can have an 'energizing' effect as people pursue goals. However, the association between positive affect and achievement remains understudied, and accounts of how and why positive affect fosters goal attainment remain noticeably incomplete.

One line of work that offers some unique insight into this topic focuses on the non-conscious processes behind goal pursuit. Custers and Aarts (2005) conducted a series of experiments to demonstrate that goals that incorporate positive affective information in their structure are more accessible (i.e., more likely to be brought to mind and thus drive behavior). Specifically, in these studies, various activity-related goals (e.g., doing puzzles) were subliminally presented to participants, followed immediately by either supraliminal, positively valenced words or supraliminal, negatively valenced words. Later in the experimental session, goals that had been paired with positive words became more accessible, as indicated by participants reporting an increased desire to pursue them. This occurred presumably because those goals had become associated with positive affect.

Although Custers and Aarts (2005) focused on non-conscious aspects in their investigation and did not actually manipulate participants' affect, their findings suggest that linking positive affect to goals may indeed facilitate goal attainment by increasing accessibility. One other finding of note was that participants who already 'had' the goals used in the study (e.g., individuals who already liked to do puzzles) were significantly less likely to exhibit increased accessibility when those goals were linked to positive affect.

The foregoing suggests that positive affect might be particularly beneficial if it

occurs and becomes attached to the goal during goal formation, before the goal can 'solidify'. In other words, all things being equal, a person who considers and adopts a goal while in a good mood, as opposed to a neutral or bad mood, may be more likely to achieve that goal. As described earlier, prior work suggests that positive affect may produce this effect because it causes goals to become more accessible. Although the requisite research has yet to be conducted, this increased accessibility may occur because the presence of positive emotion at the time of goal formation may increase the number of linkages or connections the nascent goal has with other pieces of information stored in memory.

Although hypothetical, this process is consistent with the "broaden and build" effects of positive affect on cognitive and attentional processes (e.g., Fredrickson et al., 2008). As noted earlier, positive affect broadens attentional scope and fosters elaboration of information (Compton, Wirtz, Pajoumand, Claus, & Heller, 2004; Dreisbach & Goschke, 2004; Fredrickson & Branigan, 2005; Gasper & Clore, 2002; Rowe, Hirsch, & Anderson, 2007). Theoretically, when a person considers and adopts a goal while in a positive mood, these processes should serve to increase the number of connections the goal has with other pieces of information stored in memory. From a cognitive processing perspective, the other pieces of information the goal becomes linked to are referred to as nodes. Any time one of the associated nodes becomes active, the activation will travel to the connected goal via the process of spreading activation, thus activating the goal, thus increasing the likelihood that it will drive behavior (Collins & Loftus, 1988; Quillian, 1967).

Generally, the more nodes a goal is linked to, the more opportunity the goal has to

become activated. For example, a goal linked to four nodes (i.e., four pieces of information) is twice as likely to become active compared to a goal linked to two nodes, all things being equal. Because a goal formed while a person is experiencing positive affect should be linked to a greater number of associated nodes, the goal is more likely to become active and drive behavior. Although increased accessibility does not always result in improved goal pursuit (Utman, 1997), at the very least, the increased accessibility should help an individual to stay focused on the goal and minimize the performance-detracting effects of competing goals (e.g., the desire to rest, etc.).

Currently, whether positive affect experienced at the time of goal formation facilitates goal achievement is unknown. Although a theoretical basis for this claim exists, an actual demonstration of this effect has yet to be accomplished. Thus, my thesis attempts to fill this gap in the literature. The resulting knowledge will allow for a better understanding of the conditions that foster ideal goal adoption and may help to explain why people are able to achieve some goals but not others.

Method

Overview

Participants were randomly assigned to one of the following three conditions: 1) they were induced into a neutral affective state, then asked to adopt the goal of maximizing performance on the mental rotation task; 2) they were induced into a positive affective state, then asked to adopt a goal involving maximizing performance on a mental rotation task; or 3) they were first asked to adopt the goal involving maximizing performance on the mental rotation task, then induced into a positive affective state. After a period of time had passed to allow any induced affective states to dissipate, all

participants then completed the mental rotation task. Number correct and speed served as the primary dependent variables.

Participants

Ninety-one students at Butler University participated in this study (17 males, 74 females). Participants were recruited from a mix of psychology classes and offered extra credit as an incentive. Participants ranged in age from 18 to 22, with a mean age of 19.43 years ($SD=1.04$) and spanned from first to fourth year of study with a mean of 1.86 years ($SD=.94$). The racial composition of the sample was 92% Caucasian, 7% Asian, and 1% mixed ethnicities.

Procedure

Before arriving at the study, participants were randomly assigned to one of three conditions. As explained further below, two conditions involved being induced into a positive affective state, and one involved being induced into a neutral affective state. After students arrived at the study, informed consent was obtained, and they were told that they were participating in two separate studies. The first study, involving watching videos, supposedly consisted of analyzing stimulus material to be used for later studies. The true purpose of the videos was to induce participants into either a positive or a neutral affective state. Past research has demonstrated that affective induction can be accomplished in a laboratory setting (Gross & Levenson, 1995). Westermann, Spies, Stahl, and Hesse (1996) compared the effectiveness and validity of eleven mood induction techniques for adult populations. They found that the most effective procedure for inducing positive affect was the presentation of a film or story. Film induction successfully induced the targeted mood in more than 75% of participants (Martin, 1990).

This effect was especially large when the participant was explicitly told to not resist but embrace the mood state.

In the current study, participants watched either a clip of babies laughing (in the two positive affect conditions) or an instructional video on bird watching (in the one neutral affect condition). They were given explicit instructions to become as emotionally involved as they could in the situation and feelings expressed in the video. To provide a manipulation check, participants' affective reactions to the video were assessed shortly after watching the video. Participants were asked to use a 7-point Likert scale, anchored by 'Definitely disagree' and 'Definitely agree', to assess perceptions of the video in terms of how funny, boring, stimulating, entertaining, and laugh-provoking they found it to be. Because it was necessary to measure affective state twice during the study, participants completed this video assessment at this point instead of the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988), which was administered later in the study, in order to reduce demand characteristics.

As part of a supposed second study, participants were also asked to adopt a goal involving maximizing performance on a mental rotation task. As explained in the following section, depending on condition, participants either adopted the goal immediately after watching the video or just prior to watching the video. To increase the likelihood that participants adopted the goal, the instructions indicated that the performance of Butler University students on this task would be compiled and compared to other universities as part of a nationwide assessment project of college students' cognitive abilities. After watching the video and adopting the goal (or vice versa), the experimenter had a brief conversation with the participant, which past work has indicated

tends to eliminate the effects of affect induction techniques (Erber, Wegner, & Therriault, 1996). (Recall that the goal of the proposed study is to evaluate the impact of positive affect experienced specifically during goal adoption).

Participants then used a computer program to complete a standard mental rotation assessment (Krantz, 2010). The assessment consisted of a series of trials involving the comparison of two images. For each pair of images, participants indicated if the images were the same except for their angle of rotation or if the images were mirror images. Number correct and speed of completion was recorded. For all participants, affect was assessed just prior to undertaking the mental rotation task using the previously validated Brief Mood Introspection Scale, or BMIS (Mayer & Gaschke, 1988), which uses a four-point Likert scale response format and contains items that assess four types of current mood: positive-high intensity, positive-low intensity, negative-high intensity and negative-low intensity. Only the data from the positive mood subscales were used in the current study. Because the two positive scales were highly correlated, all the positive items were summed and averaged into a single measure of positive affect.

Once the mental rotation task was finished, the participants completed a demographic questionnaire and several scales assessing variables that may moderate the hypothesized effects:

1. Task perception was measured before and after participants completed the computer program using a seven-point Likert scale. Participants were asked to indicate how well a series of adjectives described their perception of the task (e.g., challenging, interesting, burdensome, etc.) and to indicate their confidence and motivation levels.

2. Achievement-Motivation. A six item achievement motivation measure adopted

from Cassidy and Lynn's (1989) Pursuit of Excellence inventory using a 5-item Likert scale anchored by 'Definitely disagree' and 'Definitely agree' was used to assess possible differences in individual achievement levels. This variable was measured as a possible control variable in case achievement motivation affected performance. Example items included "I hate to see bad workmanship," "I get a sense of satisfaction out of being able to say I have done a very good job on a project," and "There is satisfaction in a job well done."

3. Dispositional happiness. An investigator generated eight item measure of dispositional happiness was also administered. The measure used a 7-point Likert scale anchored by 'Definitely not me' and 'Definitely me.' This scale included items such as "I often experience joy and elation," "It is easy for me to get into a good mood," and "My mood doesn't change much during the typical day." This variable was assessed as a possible control variable in case dispositional happiness moderated the effect of the affect induction.

Once the study was complete, participants were fully debriefed using a funneled debriefing method. During the debriefing the experimenter assessed participants' level of suspicion as well as whether participants had been able to discern the study's true intent.

Rationale for Three Group Design

The most important comparisons consist of comparing the 'positive affect first, goal adoption second' group to the other two groups (i.e., 'goal adoption first, positive affect second' group and 'neutral affect first, goal adoption second' group). These comparisons indicate whether positive affect experienced at the time of goal adoption facilitates performance, with the comparison to the 'goal adoption first, positive affect

second' group providing the strictest test of the hypothesis. The third group, 'neutral affect first, goal adoption second', was included to help clarify the findings in case of a null result between the first and second groups. More specifically, a complete lack of difference across the three groups would likely indicate the positive affect manipulation (i.e., the video of laughing babies) had not been sufficiently strong enough to elicit any effects. However, if the third group exhibited poorer performance compared to the first two, this difference would provide strong evidence that the positive affect induction was sufficiently powerful to engender effects. Of course, in such a scenario, if the two positive affect groups did not differ, my hypothesis would not be supported.

Results

Preliminary Analyses

Before performing the primary analyses, SPSS 16.0.1 was used to conduct outlier analyses using box-and-whiskers plots on the major variables of interest, as described by Warner (2007). Three individuals scored exceedingly low on number correct in the mental rotation task and one individual spent a significantly longer amount of time on the task compared to other participants. These four individuals exceeded the extreme outlier cutpoint (i.e., more than 1.5 times the distance between the 25th and 75th percentiles from the median) and were thus excluded from analysis. One individual was also excluded due to suspicion.

Manipulation Checks

After the participants were induced into either a positive or neutral affective state, they were asked to complete an assessment of their affective reaction to the video as a

means of measuring their current affective state. The items were compiled into one single measure to assess the effectiveness of the affect induction technique (Cronbach's $\alpha = .96$). A one way analysis of variance (ANOVA) showed a significant effect across the three conditions, $F(2,83) = 217.14, p = .000$, partial $\eta^2 = .84$, as shown in Figure 1, with means and standard deviations for each group shown in Table 1. Post-hoc tests revealed that there was a significant difference between group one ('neutral affect first, goal adoption second') and group two ('positive affect first, goal adoption second'), $p = .000$, and a significant difference between group one ('neutral affect first, goal adoption second') and group three ('goal adoption first, positive affect second'), $p = .000$. There was no significant difference between the two positive affect groups, $p = .914$. This was as expected because both groups viewed the laughing baby (i.e., positive affect) video. Consistent with prior research, after viewing the video and being explicitly told to embrace the affective state, subjects were in the appropriate affective state (i.e., those in the positive affect conditions were in a more positive affective state compared to those in the neutral affect condition, who were in a more neutral affective state).

After adopting the goal, the participants were engaged in conversation to eliminate any effects of affect induction and restore all participants to a neutral affective state. Recall that this procedure was enacted to prevent any possible 'energizing' effects of affect on task performance. To verify that all groups were in the same affective state when performing the mental rotation task, affect was measured just before engaging in the task. To reduce demand characteristics, affect was assessed differently this second time using the BMIS. The positive affect items from the BMIS were averaged into one score (Cronbach's $\alpha = .79$) to assess affect. Unfortunately, a one way ANOVA

indicated there was a marginally significant effect across conditions, $F(2,83)=2.73$, $p=.07$, partial $\eta^2=.06$, as shown in Figure 2, with means and standard deviations for each group in Table 2. Post-hoc tests revealed that group two ('positive affect first, goal adoption second') experienced significantly higher levels of positive affect compared to group one ('neutral affect first, goal adoption second'), $p=.058$. Moreover, groups two ('positive affect first, goal adoption second') and three ('goal adoption first, positive affect second'), did not differ significantly from one another, $p=.32$, and there was no significant difference between group one ('neutral affect first, goal adoption second') and group three ('goal adoption first, positive affect second'), $p=.626$. These findings are somewhat problematic because they indicate that positive affect persisted, especially for group two ('positive affect first, goal adoption second'), and that all participants were not in the same affective state during the task.

Primary Analyses

Total number of correct answers on the mental rotation task, the primary dependent variable, was subjected to a one way, between-subjects analysis of variance (ANOVA), with group assignment constituting the independent variable. The results of the ANOVA, shown in Figure 3 with the means and standard deviations displayed in Table 3, indicated a significant effect, $F(2, 83) = 3.5$, $p=.033$, partial $\eta^2=.079$. Post-hoc tests revealed that group one ('neutral affect first, goal adoption second') performed worse than group two ('positive affect first, goal adoption second'), $p=.046$. Additionally, group one ('neutral affect first, goal adoption second') performed marginally significantly worse than group three ('goal adoption first, positive affect second'),

$p=.086$. Group two and group three did not differ significantly in their task performance, $p=.92$. To summarize, these results indicate that positive affect aided goal performance. However, whether positive affect facilitated performance because of 'energizing' effects or because of effects exerted during goal adoption cannot be determined from these data.

As noted earlier, the manipulation check found that participants' affective state prior to undertaking the mental rotation task was not equal for each of the three conditions. In an attempt to control for these differences, an analysis of covariance (ANCOVA) was conducted, using the same independent and dependent variables as before but with participants' affect prior to completing the task included as a covariate. After controlling for affect just prior to the task, the ANCOVA again indicated a significant effect for condition, $F(2, 82) = 3.1$ $p=.048$, partial $\eta^2 = .071$, but the general pattern of results was essentially unchanged when using the covariate, as shown in Figure 4. Additionally, controlling for the other variables I assessed (e.g., achievement motivation, dispositional happiness, etc.) also failed to change the overall pattern of results.

Total time spent on the task, the secondary dependant variable, was also subjected to a one way, between-subjects analysis of variance (ANOVA), with group assignment constituting the independent variable. The ANOVA, shown in Figure 5, indicated there was no significant effect, $F(2, 83) = 1.13$, $p=.33$, partial $\eta^2 = .026$. Means and standard deviations displayed in Table 4. These results indicate that affective state did not aid in goal performance when measured by speed. Specifically, positive affect did not facilitate faster goal attainment.

Exploratory Analyses

To explore further the relationship between affect and goal achievement, I performed a series of sample-wide correlational analyses examining associations between affect and performance on the mental rotation task. There was a significant relationship between participants' affect immediately after watching the video and their performance on the subsequent mental rotation task, $r(86) = .253$, $p = .019$. Recall that, regardless of whether participants adopted the goal just before or just after the video, all participants adopted the goal of maximizing performance close in time to watching the video. In other words, it is possible that positive affect occurring temporally close to when a goal is adopted may become 'attached' to the goal structure, thereby increasing the likelihood of successful goal attainment. By contrast, when performance was correlated with participants' affective state just before completing the mental rotation task, the resulting association was not significant, $r(86) = .099$, $p = .36$. These findings suggest that the improved performance associated with positive affect was not due to an energizing effect, but rather to effects exerted temporally close to the time of goal adoption.

Discussion

As predicted, participants in the 'positive affect first, goal adoption second' condition outperformed participants in the 'neutral affect first, goal adoption second' condition in terms of number correct on the mental rotation task. Unexpectedly, participants in the 'goal adoption first, positive affect second' condition also performed quite well. In fact, their performance was statistically equivalent to the 'positive affect first, goal adoption second' condition. More generally, the two conditions in which the participant was in a positive affective state (either right before or right after goal

adoption) performed significantly better on the task compared to the neutral affect condition on total number correct. The other primary dependent variable, speed of task performance, did not vary across conditions. These results do not fully support the primary hypothesis, but do indicate that positive affect aids in goal performance and success in terms of accuracy, but not necessarily speed.

One possible explanation for why the two positive affect groups both outperformed the neutral affect group is that positive affect, if experienced any time near the formation of a goal (i.e., either directly before or after a goal is adopted), becomes 'attached' to the goal. This should facilitate the goal becoming linked to a greater number of nodes, which in turn should foster higher levels of goal achievement, as explained in the Introduction (Collins & Loftus, 1988; Fredrickson et al., 2008; Quillian, 1967).

Unfortunately, as described in the Results, the three conditions were not in the same affective state at the start of the mental rotation task. The 'positive affect first, goal adoption second' condition reported a relatively high level of positive affect. Although they did not differ from the level reported by the 'goal adoption first, positive affect second' condition, they experienced significantly higher levels of positive affect at the start of the task relative to the 'neutral affect first, goal adoption second' condition. Since the manipulation check indicated that participants were not in the same affective state at the start of the task, it is difficult to discern if the increased performance of the positive affect conditions is the result of an 'energizing' effect or due to the effect hypothesized to occur during goal adoption. Recall also that the ANCOVA analysis that controlled for level of affect at the start of the task was inconclusive.

However, there is correlational evidence to suggest that the effects of positive affect at the time of goal adoption may be the cause of the increased performance.

Specifically, across the sample, positive affect experienced around the time of goal formation (i.e., right before or right after goal formation) correlated with performance on the task. However, the level of positive affect experienced right before the task did not predict performance, which would tend to rule out the 'positive affect as energizer' explanation. These findings suggest that the improved performance associated with positive affect was not due to an 'energizing' effect, but rather to effects exerted temporally close to the time of goal adoption.

Before closing this section, the power of the affect induction manipulation used in the current investigation deserves comment. Consistent with prior research, the affect induction technique of viewing a video and being told to explicitly embrace the affective state was an effective procedure (Gross & Levenson, 1995; Westermann, Spies, Stahl, & Hesse, 1996). Participants in the positive affect condition were in a much more positive affective state compared to those in the neutral affect condition after the induction, as indicated by the large effect size. Moreover, even after being engaged in conversation by the experimenter, which traditionally dissipates the effects of affect induction techniques (Erber, Wegner, & Theriault, 1996), many of the participants remained in a positive affective state. Using video clips of laughing babies may prove to be a very effective way to induce positive affect, and this technique should be investigated in other studies. In the meantime, were the current study to be attempted again, it would be necessary to make adjustments to the procedure to insure the dissipation of the induced positive affect. For example, increasing the interval of time between affect induction and goal adoption

(or goal adoption and then affect induction) as well as including distracter tasks should help to eradicate the induced affective state. In turn, this would help to rule out the 'energizing' effects of positive affect and isolate the presence of affect to the time of goal formation.

Conclusion

Although past research suggests that positive affect plays an important role in facilitating goal achievement, little is known about whether such effects may be driven by processes occurring during goal adoption. Additional research will be needed to verify the implications of the current study's results, but my findings suggest that positive affect during the time of goal formation facilitates goal achievement and leads to improved goal attainment.

References

- Aspinwall, L. G. (1998). Rethinking the role of positive affect in self-regulation. *Motivation and Emotion*, 22, 1–32.
- Bodenhausen, G., Mussweiler, T., Gabriel, S., & Moreno, K. (2001). Affective influences on stereotyping and intergroup relations. *Handbook of affect and social cognition* (pp. 319–343). Mahwah, NJ US: Lawrence Erlbaum Associates Publishers.
- Cassidy, T., & Lynn, R. (1989). A multifactorial approach to achievement motivation: The development of a comprehensive measure. *Journal of Occupational Psychology*, 62(4), 301–312.
- Collins, A., & Loftus, E. (1988). A spreading-activation theory of semantic processing. *Readings in cognitive science: A perspective from psychology and artificial intelligence* (pp. 126–136). San Mateo, CA US: Morgan Kaufmann.
- Compton, R., Wirtz, D., Pajoumand, G., Claus, E., & Heller, W. (2004). Association between positive affect and attentional shifting. *Cognitive Therapy and Research*, 28(6), 733–744.
- Custers, R., & Aarts, H. (2005). Positive affect as implicit motivator: On the nonconscious operation of behavioral goals. *Journal of Personality and Social Psychology*, 89, 129–142.
- Dreisbach, G., & Goschke, T. (2004). How positive affect modulates cognitive control: Reduced perseveration at the cost of increased distractibility. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 30(2), 343–353.
- Erber, R., Wegner, D. M., & Theriault, N. (1996). On being cool and collected: Mood regulation in anticipation of social interaction. *Journal of Personality and Social*

- Psychology, 70, 757-766.
- Erez, A., & Isen, A. (2002). The influence of positive affect on the components of expectancy motivation. *Journal of Applied Psychology*, 87(6), 1055-1067.
- Fredrickson, B., Cohn, M., Coffey, K., Pek, J., & Finkel, S. (2008). Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology*, 95(5), 1045-1062.
- Fredrickson, B., & Branigan, C. (2005). Positive emotions broaden the scope of attention and thought-action repertoires. *Cognition and Emotion*, 19(3), 313-332.
- Gasper, K., & Clore, G. (2002). Attending to the big picture: Mood and global versus local processing of visual information. *Psychological Science*, 13(1), 34-40.
- Gross, J. J., & Levenson, R. W. (1995). Emotion elicitation using films. *Cognition and Emotion*, 9, 87-105.
- Isen, A. (1984). The influence of positive affect on decision making and cognitive organization. *Advances in Consumer Research*, 11, 534-537.
- Isen, A. (1999). Positive affect. *Handbook of cognition and emotion* (pp. 521-539). New York, NY US: John Wiley & Sons Ltd.
- Isen, A. and Reeve, J. (2006). The influence of positive affect on intrinsic and extrinsic motivation: facilitating enjoyment of play, responsible work behavior, and self-control. *Motivation and Emotion*, 29.
- Krantz, J. H.. (2010). Cognition Laboratory Experiments: Mental Rotation Experiment. [computer program]. Hanover College. Available from <http://psych.hanover.edu/JavaTest/CLE/Cognition/Cognition.html>.

- Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success?. *Psychological Bulletin*, 131(6), 803-855.
- Martin, M. (1990). On the induction of mood. *Clinical Psychology Review*, 10, 669-697.
- Mayer, J. & Gaschke, Y. (1988). The experience and meta-experience of mood. *Journal of Personality and Social Psychology*, 55, 102 – 111.
- Quillian, M. R. (1967). Word concepts: A theory and simulation of some basic semantic capabilities. *Behavioral Science*, 12, 410-430.
- Rowe, G., Hirsh, J., Anderson, A., & Smith, E. (2007). Positive affect increases the breadth of attentional selection. *PNAS Proceedings of the National Academy of Sciences of the United States of America*, 104(1), 383-388.
- Utman, C. (1997). Performance effects of motivational state: A meta-analysis. *Personality and Social Psychology Review*, 1(2), 170-182.
- Westermann, R., Spies, K., Stahl, G., & Hesse, F. (1996). Relative effectiveness and validity of mood induction procedures: a meta-analysis. *European Journal of Social Psychology*, 26, 557-580.

	W	W	W	W
1	20	2000	2100	2000
2	25	2100	2200	2100
3	30	2200	2300	2200
4	35	2300	2400	2300

(1-4 scale: 1 being the most positive affective state)

Table 1. Grouped affect and goal adoption scores.
Group 1: positive affect, goal adoption score
Group 2: positive affect, goal adoption score

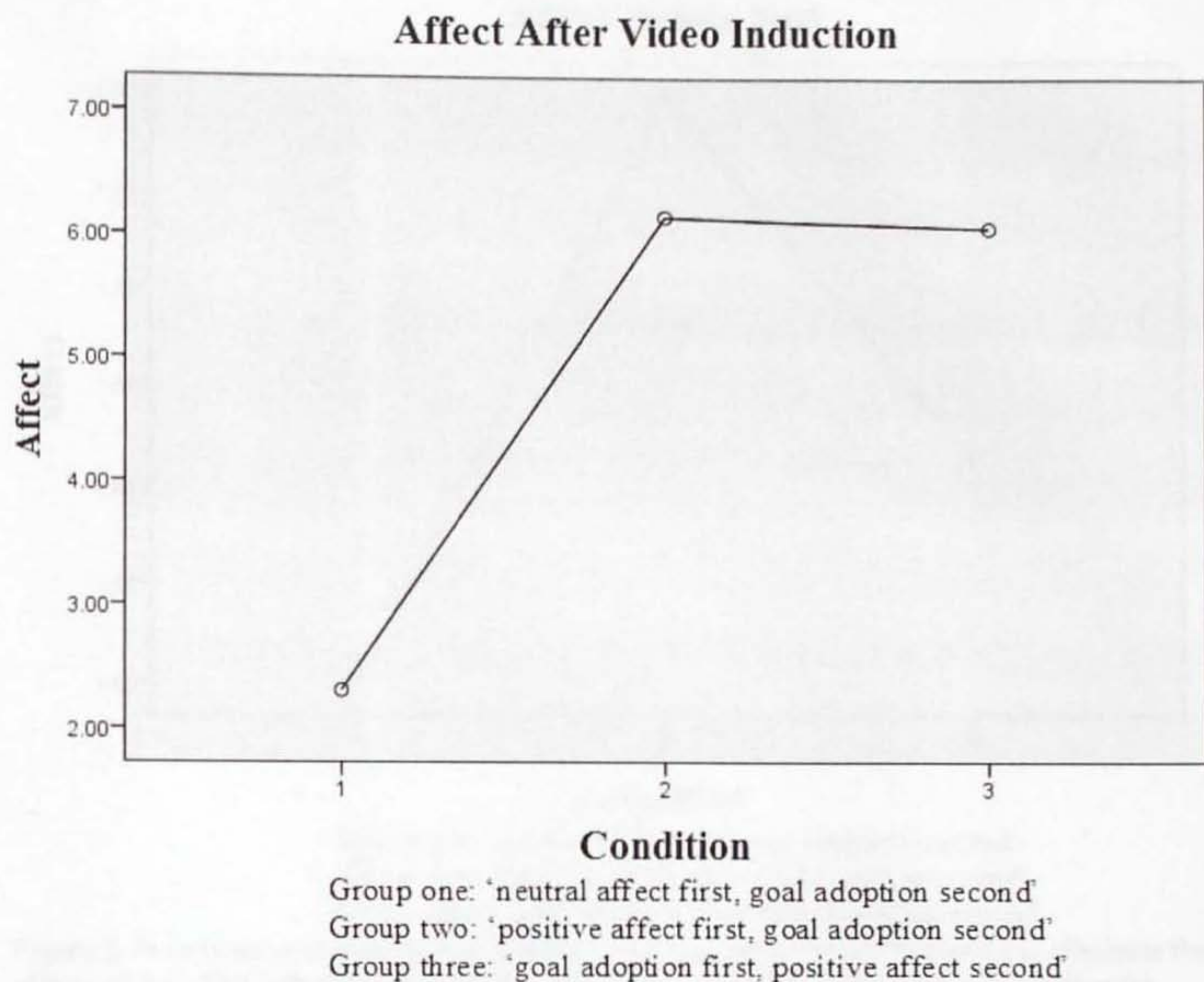


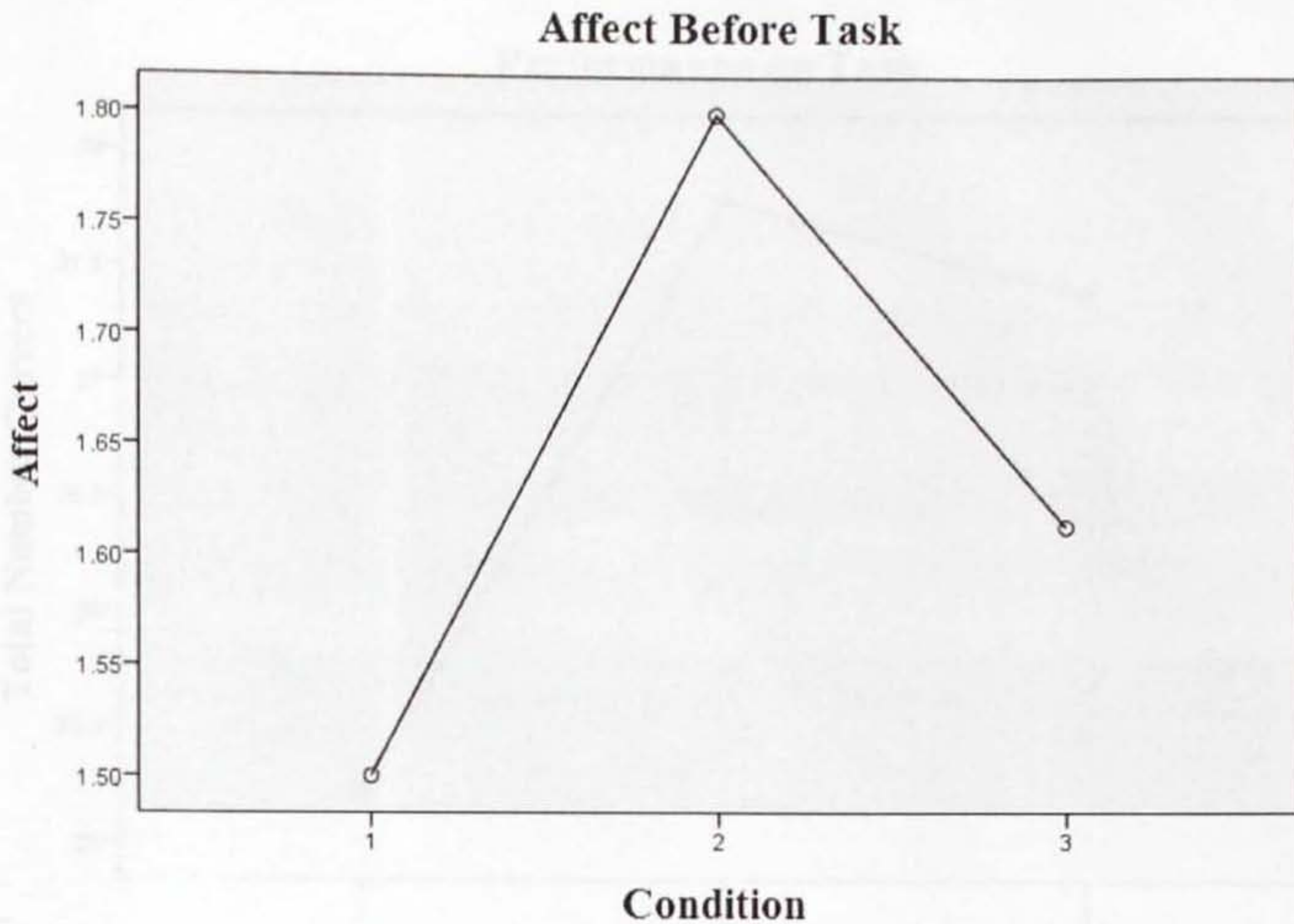
Figure 1. As a manipulation check, affect was measured after participants viewed the video and compiled into a single measure on a 1 to 7 scale, with 7 being the most positive affective state. Those in the positive video conditions were in a significantly happier affective state compared to those in the neutral group, indicating that the affect manipulation was adequate.

Affect After Video Induction

	N	Mean	Std. Deviation	Std. Error
1	30	2.3000	1.02755	.18760
2	25	6.1520	.46289	.09258
3	31	6.0645	.78041	.14016
Total	86	4.7767	1.99043	.21463

(1-7 scale, 7 being the most positive affective state)

Table 1. Group one: 'neutral affect first, goal adoption second'
Group two: 'positive affect first, goal adoption second'
Group three: 'goal adoption first, positive affect second'



Group one: 'neutral affect first, goal adoption second'

Group two: 'positive affect first, goal adoption second'

Group three: 'goal adoption first, positive affect second'

Figure 2. Prior to engaging in the task, participants were engaged in conversation to eliminate the effects of the affect induction. A second manipulation check was performed to verify that the affect had been eliminated. Participants in the positive affect groups remained happier than those in the neutral group, indicating affect persisted, and that all participants were not in the same affective state during the task.

Affect Before Task

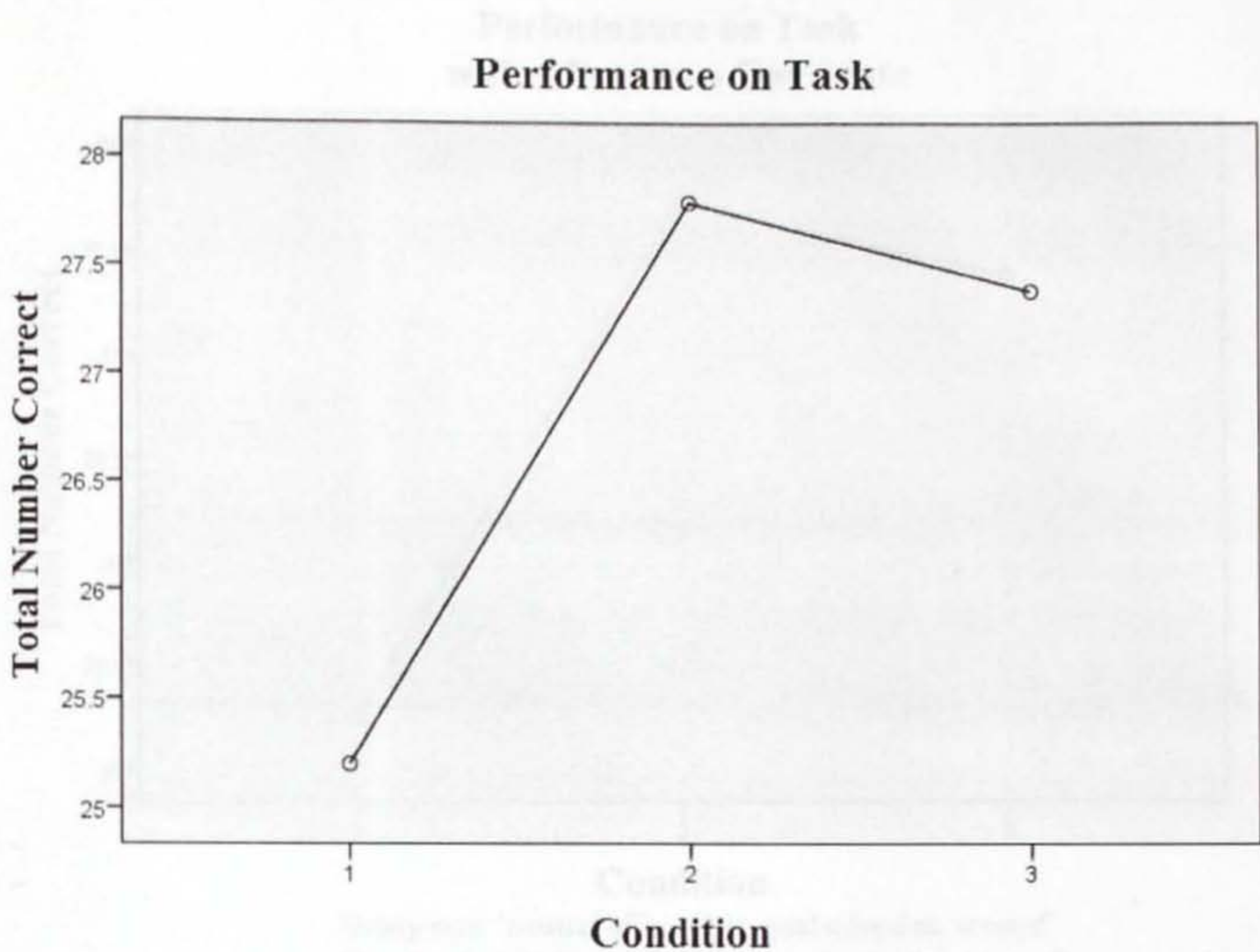
	N	Mean	Std. Deviation	Std. Error
1	30	1.5000	.50855	.09285
2	25	1.8000	.40825	.08165
3	31	1.6129	.49514	.08893
Total	86	1.6279	.48620	.05243

(1-7 scale, 7 being the most positive affective state)

Table 2. Group one: 'neutral affect first, goal adoption second'

Group two: 'positive affect first, goal adoption second'

Group three: 'goal adoption first, positive affect second'



Group one: 'neutral affect first, goal adoption second'

Group two: 'positive affect first, goal adoption second'

Group three: 'goal adoption first, positive affect second'

Figure 3. Participants in the positive affect conditions scored significantly better on the mental rotation task compared to those in the neutral affect condition (out of 30 trials). This implies that positive affect aids in goal formation or goal pursuit.

Performance on Task

	N	Mean	Std. Deviation	Std. Error
1	30	25.20	5.659	1.033
2	25	27.80	1.871	.374
3	31	27.39	3.148	.565
Total	86	26.74	4.091	.441

(out of 30 trials)

Table 3. Group one: 'neutral affect first, goal adoption second'

Group two: 'positive affect first, goal adoption second'

Group three: 'goal adoption first, positive affect second'

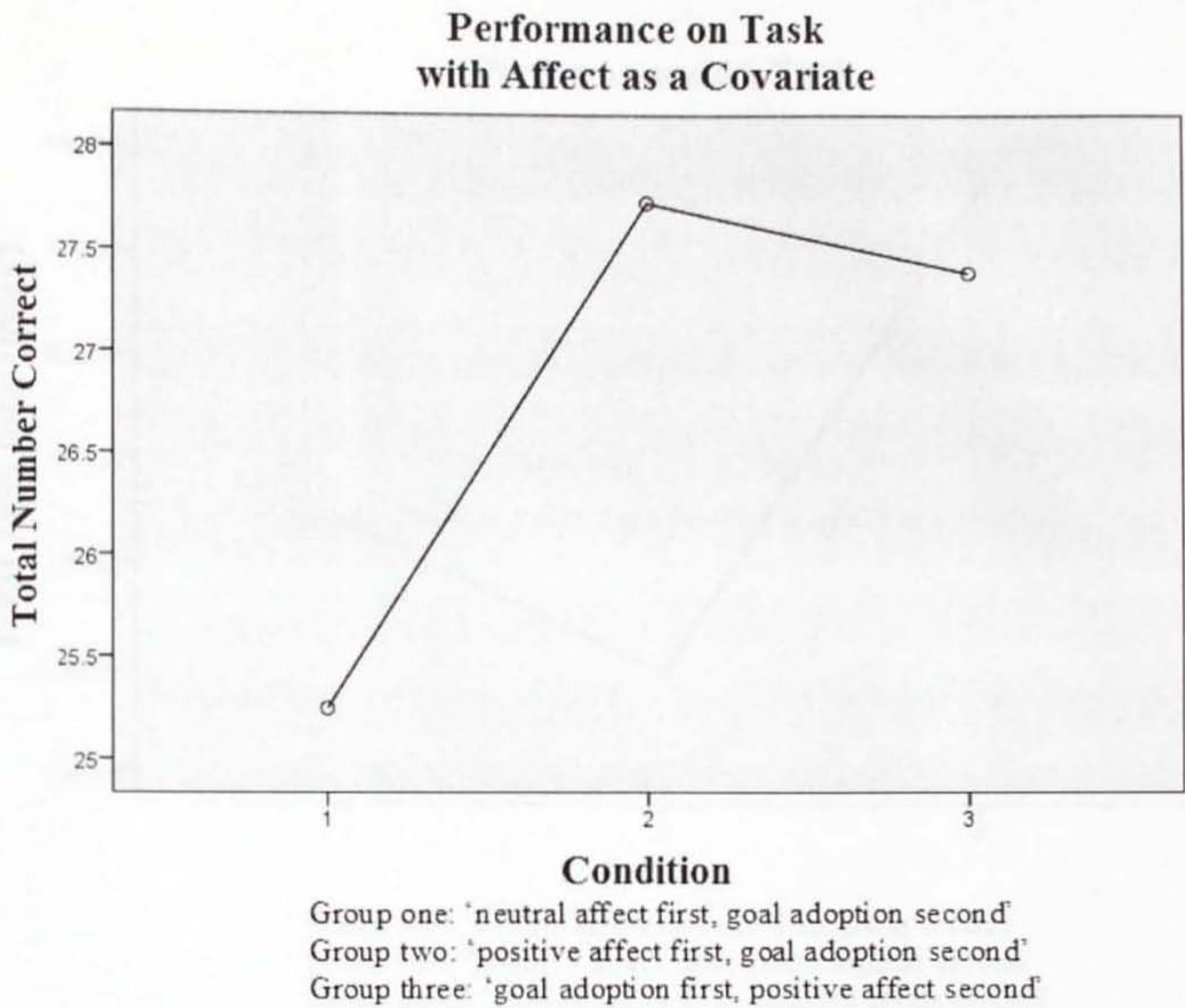


Figure 4. In an attempt to control for the differences in affective state at the time participants undertook the task, performance on the task was compared using an analysis of covariance (ANCOVA) with participants' affect prior to completing the task included as a covariate. After controlling for affect just prior to the task, the pattern of results remained unchanged.

Total Task Time (min)

		EPA - Comparison Period	
Group	Task Time	Task Time	Task Time
Group one: 'neutral affect first, goal adoption second'	10:00:00	10:00:00	10:00:00
Group two: 'positive affect first, goal adoption second'	10:00:00	10:00:00	10:00:00
Group three: 'goal adoption first, positive affect second'	10:00:00	10:00:00	10:00:00

Table 4. Comparison of total task time for each group. Group one: 'neutral affect first, goal adoption second'. Group two: 'positive affect first, goal adoption second'. Group three: 'goal adoption first, positive affect second'.

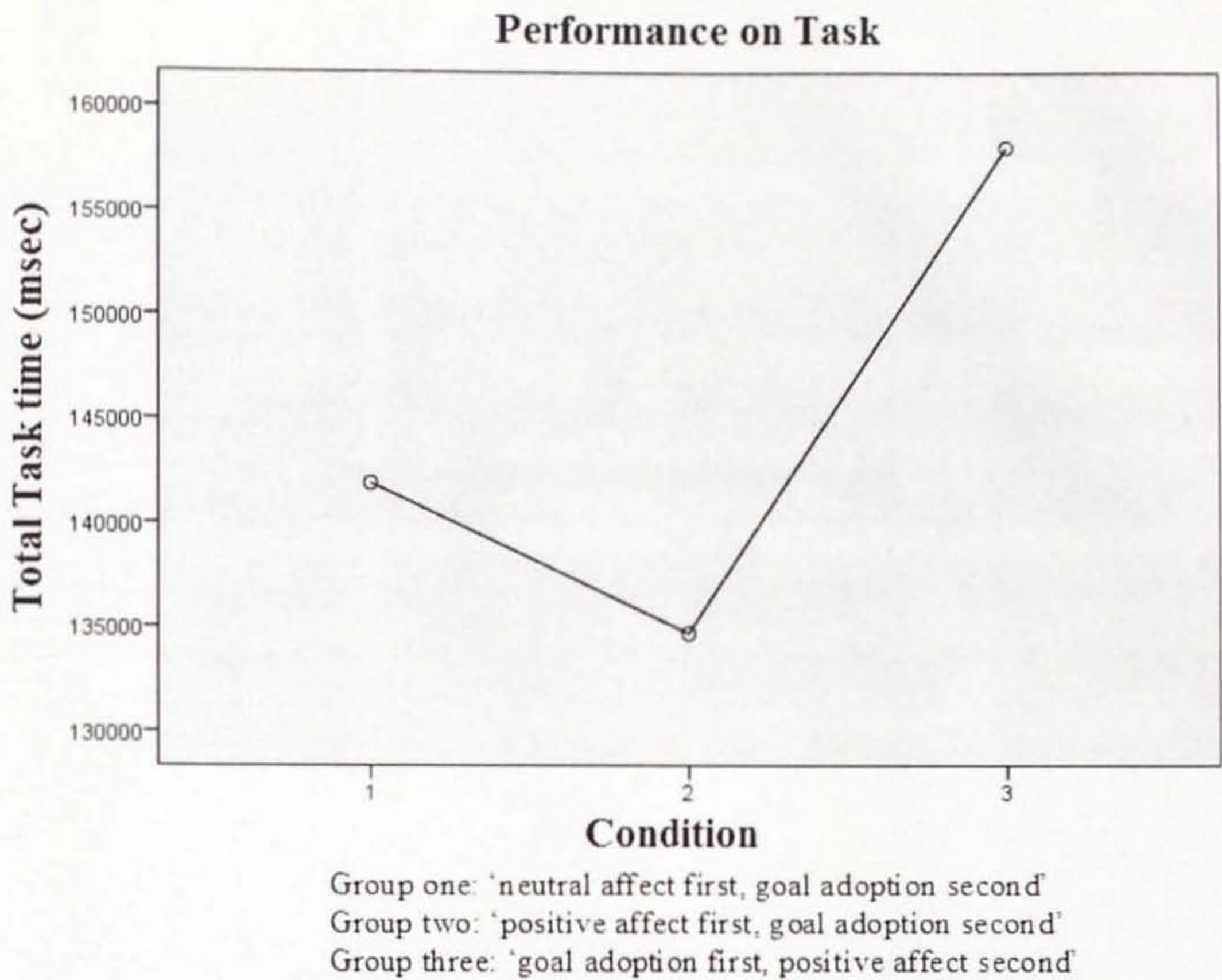


Figure 5. There was no significant difference between any of the three conditions on the total time spent on the mental rotation task. These results indicate that affective state did not aid in goal performance when measured by speed. Specifically, positive affect did not facilitate faster goal attainment.

Total Task Time (msec)

	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	141906.333	11027.211	119973.653	163839.013
2	134699.480	12079.705	110673.433	158725.527
3	158097.323	10847.895	136521.295	179673.350

Table 4. Group one: 'neutral affect first, goal adoption second'
Group two: 'positive affect first, goal adoption second'
Group three: 'goal adoption first, positive affect second'