Journal of Experimental Social Psychology xxx (2008) xxx–xxx

Contents lists available at ScienceDirect

Journal of Experimental Social Psychology

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

FlashReports

The turban effect: The influence of Muslim headgear and induced affect on aggressive responses in the shooter bias paradigm

Christian Unkelbach *, Joseph P. Forgas, Thomas F. Denson

School of Psychology, Mathews Building 502, University of New South Wales, Sydney, NSW 2052, Australia

ARTICLE INFO

Article history:
Received 6 February 2008
Revised 26 March 2008
Available online xxxx

Keywords:
Shooter bias
Mood effects
Stereotypic processing
Prejudice
Muslim headgear

ABSTRACT

Does Islamic appearance increase aggressive tendencies, and what role does affect play in such responses? In a computer game, participants made rapid decisions to shoot at armed people, some of whom wore Islamic head dress. We predicted and found a significant bias for participants to shoot more at Muslim targets. We also predicted and found that positive mood selectively increased aggressive tendencies towards Muslims, consistent with affect-cognition theories that predict a more top-down, stereotypical processing style in positive mood. In contrast, induced anger increased the propensity to shoot at *all* targets. The relevance of these results for our understanding of real-life negative reactions towards Muslims is discussed, and the influence of affective states on rapid aggressive responses is considered.

After the London bomb attacks, in a tragic mistake British police shot dead a Brazilian man who *looked* like a Muslim. Could merely appearing Muslim be a cue facilitating such aggressive reactions? This experiment investigated the influence of Muslim appearance, and participants' affective state on spontaneous aggressive responses, using the shooter bias paradigm (Correll, Park, Judd, & Wittenbrink, 2002).

Negative attitudes towards minority out-groups, such as Muslims in Western countries, are notoriously difficult to assess using explicit measures, as people are often unwilling or unable to reveal such prejudices (Eagly & Chaiken, 1998). Recent implicit measures of prejudice, such as the IAT, also turned out to be less satisfactory than hoped, as their psychometric properties as well as their validity have been questioned (Blanton, Jaccard, Gonzales, & Christie, 2006; Fiedler, Messner, & Blümke, 2006). An elegant alternative is offered by the "shooter bias" paradigm (Correll et al., 2002; Correll et al., 2007), which allows to assess participants' aggressive tendencies towards minority groups. For example, when instructed to shoot only at targets who carry a gun, US participants revealed a strong bias to shoot more at Black rather than White targets, even though race had no diagnostic relevance (Correll et al., 2002, 2007; see also, Payne, 2001; Plant & Peruche, 2005). Are Muslim targets now likely to elicit a similar bias? We predicted that under time pressure, people are more likely to 'shoot' at Muslim targets, revealing their negative attitudes and increased aggressive tendencies towards Muslims.

Such fast and spontaneous responses are likely to be influenced by underlying stereotypes rather than explicit reasoning. There is some precedence for using unobtrusive behavioral measures to assess negative stereotypes. For example, honking by car drivers (an aggressive response) is more likely when obstructing vehicles display disliked rather than neutral or liked national or other insignia (Forgas, 1976, 2003). In a similar way, rapid decisions to shoot may also be influenced by negative associations triggered by the visible identity of the target.

We investigated this hypothesis using a modified version of Correll et al.'s (2002) shooter game, requiring participants to shoot at armed targets only on a computer screen. We created matched targets that did, or did not appear Muslim, manipulating visual cues denoting Muslim identity such as wearing a turban or the hijab. Muslim headgear is a highly salient symbol of identity, and is sufficiently controversial in some countries such as Turkey or France to call for formal regulation. Muslim headgear is also closely associated with terrorists, and the iconic turban is a part of the image of most terrorists such as Osama bin Laden. Accordingly, we expected a greater shooter bias towards targets with Muslim headgear. Race was also manipulated (Caucasian vs. non-Caucasian) to allow a comparison between the effects of Muslim appearance and race on the shooter bias.

Affect and the shooter bias

Although aggressive responses are frequently the result of negative affect, the influence of induced affect within the shooter bias paradigm has not been investigated. Does positive or negative af-

* Corresponding author.
E-mail address: cunkelbach@psy.unsw.edu.au (C. Unkelbach).

0022-1031/$ - see front matter © 2008 Elsevier Inc. All rights reserved.
doi:10.1016/j.jesp.2008.04.003

fect promote a stronger shooter bias against Muslims? The answer largely depends on how affect may influence information processing strategies. According to recent affect-cognition theories (Bless & Fiedler, 2006), positive affect should trigger a more top-down, spontaneous and assimilative processing style, increasing the influence of pre-existing schemata and stereotypes on responses. Several experiments confirmed that positive affect promotes heuristic use and increases judgmental errors (Forgas, 1998), enhances reconstructive eyewitness errors (Forgas, Vargas, & Laham, 2005), and reduces attention to concrete information (Forgas, 2007). Extrapolating from this evidence, we expected that people in a positive mood should react to Muslim targets in a more top-down, stereotypical fashion, and hence, display a stronger shooter bias against Muslims.

Alternatively, Muslim headgear may function directly as an aggression-eliciting cue, as occurs with the 'weapons effect' (Berkowitz & LePage, 1967; Bettencourt & Kernahan, 1997). If Muslim headgear is a direct cue for aggression, then angry people should show a stronger bias to selectively shoot at Muslims, as anger directly primes aggression-related constructs and focuses attention on threat signals (Anderson & Bushman, 2002; Berkowitz, 1993).

In summary, we had participants in a positive, neutral or angry mood make decisions whether to shoot or not at armed or unarmed targets who were or were not wearing Muslim headgear. In the first experiment to do so, we expected to observe greater aggressive tendencies against Muslims. Our second aim was to evaluate whether angry affect (linked to externally oriented processing), or positive affect (linked to internally directed, stereotyped processing) would moderate this bias.

Method

Participants and design

Sixty-six University of New South Wales students (35 women; mean age = 19.4) were randomly assigned to one of three emotional conditions: angry, neutral, and happy. Within participants, we manipulated four target properties: gun (gun vs. no gun), Muslim appearance (turban/hijab vs. bareheaded), gender (female vs. male), and race (non-Caucasian vs. Caucasian).

Materials

Pictures from the Florida Department of Correction website (cf. Blair, Judd, & Chapleau, 2004; http://www.dc.state.fl.us) served as targets, showing standardized head and shoulder shots of prison inmates. We selected eight men and eight women, half of whom were non-Caucasian with darker skin, but classified as "non-Black" and "non-Asian" by the website. Each target was then outfitted with a white turban or a white hijab (see Fig. 1 for a "non-Caucasian" example). The resulting 32 targets were then shown with an upraised hand either holding a black or silver gun, or holding a similar sized and colored innocuous object (silver coffee mug, or black bottle), resulting in 128 targets. A computer program controlled the presentation of the targets and measured participants' decisions to shoot and not to shoot.

Procedure

Mood induction

After arrival, in an allegedly separate study, participants were first asked to write an email about their life goals to a partner they expected to meet later in a 'getting to know you' exercise (in reality, the affect induction). They subsequently received derogatory (anger), neutral, or positive mood-inducing feedback from their 'partner' (in fact, the feedback was pre-programmed and delivered via computer; e.g., Moons & Mackie, 2007). The effectiveness of the mood induction was validated by asking participants to rate their affective state in a brief post-experimental questionnaire on 7-point good-bad and happy-angry scales.

The shooting game

Next, the shooting task was introduced as a computer game in which the goal was to shoot at armed targets, but spare those carrying a non-threatening object. The pay-off matrix (cf. Correll et al., 2002; Exp. 1) awarded 10 points for shoot/gun, 5 points for no-shoot/no-gun, −20 for shoot/no-gun, and −40 for no-shoot/gun). The "a" and the "l" keys were clearly marked and randomly assigned to the shoot and no shoot response. After eight training trials, the 128 experimental trials showed an apartment building with three large balconies. After a random interval between 750 and 2000 ms a target appeared on one of the balconies. Presentation order and location (horizontal: which balcony; vertical: where on the balcony) of the 128 targets and were fully randomized. Participants had 800 ms to respond before the trial was terminated and they were told to speed up their responses, receiving −10 points. A thorough debriefing concluded the experiment.

We excluded 7 participants who did not respond in time on more than 20% of the trials, leaving 20 angry, 20 neutral, and 19 happy participants.

Results

Mood validation

Happy participants reported feeling better ($M = 5.11$, $SD = 0.94$) than neutral ($M = 4.90$, $SD = 0.97$) and angry participants ($M = 4.25$, $SD = 1.16$), $F(2,56) = 3.70$, $p < .05$; linear contrast $F(1,56) = 6.73$, $p < .01$, $d = 0.69$. Those in the angry condition also felt significantly more angry ($M = 4.40$, $SD = 1.16$), than did neutral ($M = 5.05$, $SD = 0.94$) or happy participants ($M = 5.21$, $SD = 0.98$), $F(2,56) = 4.33$, $p < .05$; linear contrast $F(1,56) = 7.64$, $p < .01$, $d = 0.74$, confirming the effectiveness of the mood manipulation.

Discrimination ability

Shoot/no shoot responses were used to estimate signal-detection parameters for discrimination ability d' and response bias β (Stanislaw & Todorov, 1999). We defined shooting at an armed target as a "hit" and shooting at a target with a harmless object as a "false alarm". Thus, higher d' values indicate a better ability to discriminate between weapons and harmless objects, with zero indicating no discrimination ability at all. Response bias β is a ratio, and thus, values smaller (greater) than 1.00 indicate a bias to shoot (not to shoot), while a β value of 1.00 indicates no bias. A shooter bias against Muslims should be visible in relatively lower β values for targets with a turban/hijab compared to bareheaded targets. Both parameters were analyzed using mixed ANOVA evaluating the influence of affect, gender, Muslim headgear, and race, with repeated measures on the last three factors. Overall, participants discriminated significantly better than zero ($M = 1.775$, $SD = 0.467$) between the *gun* and the *no gun* conditions, $t(59) = 29.20$, $p < .001$, $d = 7.56$. Happy participants also showed slightly better discrimination ($M = 1.898$, $SD = 0.208$) than neutral ($M = 1.779$, $SD = 0.401$) or angry participants ($M = 1.654$, $SD = 0.657$), $F(1,56) = 2.70$, $p < .10$, $d = 0.44$. Discrimination was also better when the target was female ($M = 1.928$, $SD = 0.593$) compared to male ($M = 1.622$, $SD = 0.675$), $F(1,56) = 53.17$, $p < .001$, $d = 1.95$. Finally, discrimination was better for non-Muslim ($M = 1.823$, $SD = 0.627$) compared to Muslim targets ($M = 1.727$, $SD = 0.675$), $F(1,56) = 5.34$, $p < .05$, $d = 0.62$.

Please cite this article in press as: Unkelbach, C. et al., The turban effect: The influence of Muslim headgear and induced affect on ..., *Journal of Experimental Social Psychology* (2008), doi:10.1016/j.jesp.2008.04.003

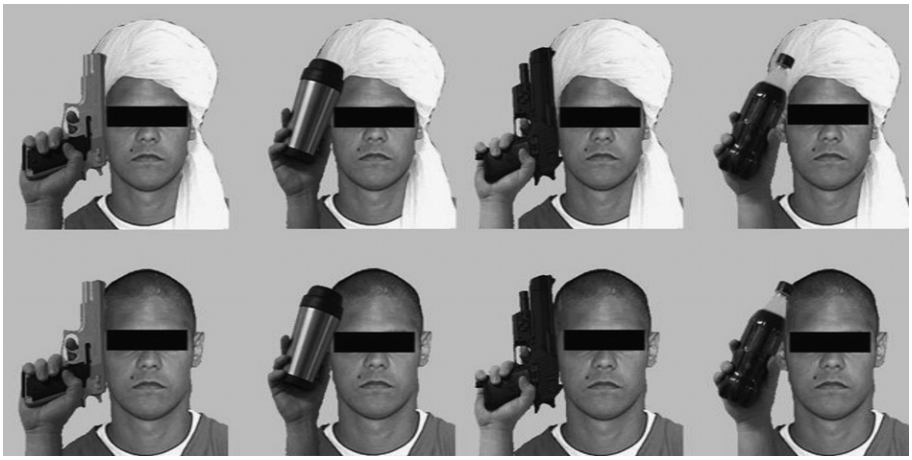

Fig. 1. An example of a male non-caucasian target with and without turban and holding a gun or an innocuous object (in the experimental task, the eyes were not blocked out).

Shooter bias

Table 1 shows the mean parameter estimates of response bias β. Again, smaller β values indicate a stronger bias to shoot. Overall, participants showed a significant bias to shoot, ($M = 0.903$, $SD = 0.097$), $t(59) = -7.65$, $p < .001$, $d = 1.99$, compared to a "no-bias" value of 1, which is consistent with the pay-off matrix favoring "shoot" responses. Participants also showed a greater bias to shoot at Muslim targets ($M = 0.872$, $SD = 0.240$) compared to non-Muslims ($M = 0.935$, $SD = 0.272$), $F(1,56) = 10.46$, $p < .01$, $d = 0.86$, confirming our main hypothesis that Muslim appearance facilitates aggressive reactions towards a target.

Angry participants also showed a slightly greater bias to shoot than did happy or neutral participants; $F(1,56) = 2.78$, $p < .10$, $d = 0.45$ (see top part Fig. 2). Finally, there was also a bias to shoot at males ($M = 0.862$, $SD = 0.279$) rather than females ($M = 0.944$, $SD = 0.229$), $F(1,56) = 6.51$, $p < .05$, $d = 0.68$.

We also found an interaction between headgear, race, and gender, $F(1,56) = 5.22$, $p < .05$, $d = 0.61$: the bias to shoot was strongest for Muslim, non-Caucasian males (see Table 1), and weakest for non-Muslim, Caucasian females, suggesting that Muslim appearance interacted with gender and race effects on aggressive tendencies. A second interaction showed that the turban effect was also moderated by emotional state, $F(2,56) = 4.56$, $p < .05$; comparing the happy condition with the angry and neutral condition shows this effect clearly (see bottom part of Fig. 2), $F(1,56) = 8.75$, $p < .01$, $d = 0.79$. Happy participants showed the strongest selective bias to shoot at Muslims, confirming our theoretical prediction that positive affect facilitated top-down, stereotype-driven responses and thus greater aggressive tendencies against Muslims.

Discussion

As predicted, this experiment demonstrated a shooter bias for targets wearing a turban or a hijab. This effect remains stable even when female and male targets are analyzed separately ($F(1,56) = 5.49$, and $F(1,56) = 4.53$, respectively, both $ps < .05$). This result confirms that there is indeed a negative stereotype associated with Muslim appearance. Using perfectly matched targets (see Fig. 1), the present methods avoid the risk that sampling biases and idiosyncratic target features could have confounded the results.

Interestingly, this effect could be demonstrated with otherwise liberal and tolerant Australian undergraduates, who would be most unlikely to explicitly espouse negative stereotypes about Muslims. As Australia has not been subject to Muslim terrorist attacks on its territory, other countries in the forefront of Muslim terrorism such as the USA and Britain may show an even stronger 'turban effect' than the one we demonstrated here. However, based on the present data, we cannot distinguish whether this turban effect is due to negative stereotypes associated with Muslims or obvious negative stereotypes associated with terrorists (i.e., a person with a turban holding a gun). The symmetrical results for women and men sug-

Table 1
Mean β parameter estimates as a function of headgear, gender, race, and emotional state (standard deviations in parentheses)

	Male		Female	
	Non-Caucasian	Caucasian	Non-Caucasian	Caucasian
Happy				
Turban/hijab	0.796 (0.232)	0.823 (0.288)	0.906 (0.257)	0.897 (0.173)
Bareheaded	1.036 (0.350)	0.932 (0.346)	1.022 (0.280)	1.022 (0.216)
Neutral				
Turban/hijab	0.789 (0.262)	0.901 (0.252)	1.010 (0.256)	0.902 (0.168)
Bareheaded	0.867 (0.264)	0.815 (0.267)	0.954 (0.221)	0.996 (0.182)
Angry				
Turban/hijab	0.803 (0.200)	0.861 (0.254)	0.849 (0.207)	0.923 (0.239)
Bareheaded	0.852 (0.304)	0.878 (0.257)	0.860 (0.202)	0.995 (0.275)
Overall				
Turban/hijab	0.796 (0.239)	0.862 (0.262)	0.922 (0.246)	0.907 (0.194)
Bareheaded	0.916 (0.313)	0.874 (0.291)	0.944 (0.241)	1.004 (0.224)

Note. A "hit" was defined as shooting a target with a gun and shooting an unarmed target was defined as a "false alarm". Accordingly, smaller β values denote a stronger bias to shoot.

Please cite this article in press as: Unkelbach, C. et al., The turban effect: The influence of Muslim headgear and induced affect on ..., *Journal of Experimental Social Psychology* (2008), doi:10.1016/j.jesp.2008.04.003

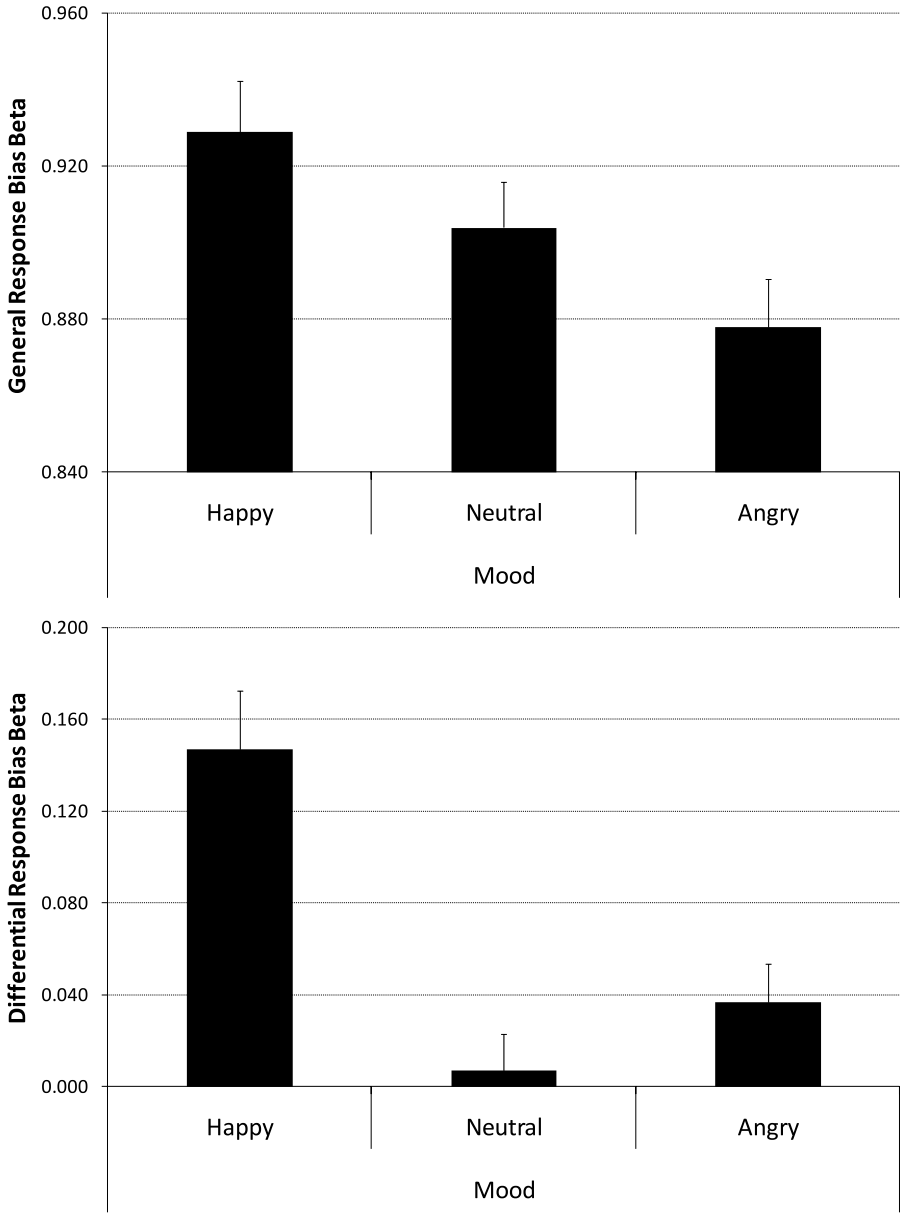

Fig. 2. General and differential shooter bias as a function of affective state. The dependent measure in the lower part is the difference in β between non-Muslim and Muslim targets; thus, higher values indicate a greater bias to shoot at Muslim targets. Error bars show the standard error of the mean.

gest the former. Further, whether a category (e.g., Muslims) elicits negative responses because it is associated with negative stereotypes or a prominent cue denoting a category (e.g., a turban) also denotes a highly negative category (e.g., terrorists) has almost identical implications.

Our findings also elucidate the role of affect in potentiating the influence of negative stereotypes on aggressive response tendencies. The anger induction resulted in an overall increase in shooting responses, but *not* any selective increase in shooting at Muslims. It was only positive affect that produced a significant *selective* bias against Muslims, consistent with recent theories suggesting that positive affect promotes top-down, assimilative processing that facilitates the influence of stereotypes on responses (Bless & Fiedler, 2006; Forgas, 1998, 2007). The findings seem inconsistent with the idea that a turban/hijab simply acts as an aggression-eliciting cue, just as guns do (Berkowitz & LePage, 1967). The evidence supports the prediction that the shooter bias against Muslims was the behavioral manifestation of acquired negative stereotypes towards this group. Angry people shot more at everybody, while happy people shot selectively more at Muslims.

The finding that people shoot more at men than women is not surprising, and is consistent with findings that males are often seen as more threatening/dangerous (Archer, 2004; Archer & Coyne, 2005). However, this result certainly supports the face validity of the dependent variables. Interestingly, although race and gender cues may have adaptive value rooted in our evolutionary past, impermanent features such as attire cannot have such deep-seated informational value, further suggesting that increased aggressive tendencies towards Muslims are more likely due to acquired negative stereotypes.

Conclusion

We found an increased tendency to shoot at Muslim targets, and this effect was magnified by positive mood, suggesting greater

Please cite this article in press as: Unkelbach, C. et al., The turban effect: The influence of Muslim headgear and induced affect on ..., *Journal of Experimental Social Psychology* (2008), doi:10.1016/j.jesp.2008.04.003

reliance on pre-existing stereotypes. These findings show that even tolerant university students will display strong negative biases towards Muslims, when a disguised measure of aggressive tendencies such as the shooter paradigm is used. Although our finding of greater aggressive tendencies in a positive mood is consistent with a stereotyping bias, more research is needed to explore the precise mediating mechanisms that produce this outcome. We suggest that disguised aggressive behavioral tasks such as horn-honking (e.g., Forgas, 2003) or the shooter task offer a sensitive method for demonstrating negative stereotypes when the utility of other explicit and implicit measures such as the IAT is questionable.

References

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53*, 27–51.

Archer, J. (2004). Sex differences in aggression in real-world settings: A meta-analytic review. *Review of General Psychology, 8*, 291–322.

Archer, J., & Coyne, S. M. (2005). An integrated review of indirect, relational, and social aggression. *Personality and Social Psychology Review, 9*, 212–230.

Berkowitz, L. (1993). *Aggression: Its causes, consequences, and control*. New York: McGraw-Hill.

Berkowitz, L., & LePage, A. (1967). Weapons as aggression-eliciting stimuli. *Journal of Personality and Social Psychology, 7*, 202–207.

Bettencourt, B. A., & Kernahan, C. (1997). A meta-analysis of aggression in the presence of violent cues: Effects of gender differences and aversive provocation. *Aggressive Behavior, 23*, 447–456.

Blair, I. V., Judd, C. M., & Chapleau, K. M. (2004). The influence of afrocentric facial features in criminal sentencing. *Psychological Science, 15*, 674–679.

Blanton, H., Jaccard, I., Gonzales, P. M., & Christie, C. (2006). Decoding the implicit association test: Perspectives on criterion prediction. *Journal of Experimental Social Psychology, 42*, 192–212.

Bless, H., & Fiedler, K. (2006). Mood and the regulation of information processing and behavior. In J. P. Forgas (Ed.), *Affect in social thinking and behaviour* (pp. 65–84). New York: Psychology Press.

Correll, J., Park, B., Judd, C. M., & Wittenbrink, B. (2002). The police officer's dilemma: Using ethnicity to disambiguate potentially threatening individuals. *Journal of Personality and Social Psychology, 83*, 1314–1329.

Correll, J., Park, B., Judd, C. M., Wittenbrink, B., Sadler, M. S., & Keesee, T. (2007). Across the thin blue line: Police officers and racial bias in the decision to shoot. *Journal of Personality and Social Psychology, 92*, 1006–1023.

Eagly, A. H., & Chaiken, S. (1998). Attitude structure and function. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (pp. 269–322). New York: McGraw-Hill.

Fiedler, K., Messner, C., & Blümke, M. (2006). Unresolved problems with the "I," the "A," and the "T"—Logical and psychometric critique of the implicit association test. *European Review of Social Psychology, 17*, 74–147.

Forgas, J. P. (1976). An unobtrusive study of reactions to national stereotypes in four European countries. *The Journal of Social Psychology, 99*, 37–42.

Forgas, J. P. (1998). On being happy but mistaken: Mood effects on the fundamental attribution error. *Journal of Personality and Social Psychology, 75*, 318–331.

Forgas, J. P. (2003). Why don't we do it in the road...? Stereotyping and prejudice in mundane situations. *Psychological Inquiry, 14*, 249–255.

Forgas, J. P. (2007). When sad is better than happy: Negative affect can improve the quality and effectiveness of persuasive messages and social influence strategies. *Journal of Experimental Social Psychology, 43*, 513–528.

Forgas, J. P., Vargas, P., & Laham, S. (2005). Mood effects on eyewitness memory: Affective influences on susceptibility to misinformation. *Journal of Experimental Social Psychology, 41*, 574–588.

Moons, W. G., & Mackie, D. M. (2007). Thinking straight while seeing red: The influence of anger on information processing. *Personality and Social Psychology Bulletin, 33*, 706–720.

Payne, B. K. (2001). Prejudice and perception: The role of automatic and controlled processes in misperceiving a weapon. *Journal of Personality and Social Psychology, 81*, 181–192.

Plant, E. A., & Peruche, B. M. (2005). The consequences of race for police officers' responses to criminal suspects. *Psychological Science, 16*, 180–183.

Stanislaw, H., & Todorov, N. (1999). Calculation of signal detection theory measures. *Behavior Research Methods, Instruments, and Computers, 31*, 137–149.

Please cite this article in press as: Unkelbach, C. et al., The turban effect: The influence of Muslim headgear and induced affect on ..., *Journal of Experimental Social Psychology* (2008), doi:10.1016/j.jesp.2008.04.003