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SHORT COMMUNICATION: Visualizing Actions from a Third-Person Perspective: Effects on Health Behavior and the Moderating Role of Behavior Difficulty

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Abstract

Visualizing behavior from a third-person (vs. first-person) perspective can produce stronger motivation to enact the behavior. However, the effects of perspective on health behaviors have been mixed. Hypothesizing that the difficulty of the visualized behavior might moderate the effect of perspective, two experiments manipulated the difficulty of the visualized behaviors (fruit/vegetable consumption; exercise) plus perspective and subsequently measured motivation (Experiments 1 and 2) and behavior (Experiment 2). In both experiments, the third-person perspective produced stronger motivation to perform the easier, but not the more difficult, behavior. This effect extended to behavior in Experiment 2. Under certain conditions, encouraging people to visualize behavior from a third-person perspective could represent a useful and cost-effective means of promoting health behavior change.

Keywords: visualization, perspective, motivation, health behavior change

Third-Person Perspective Visualization: Effects on Health Behavior and the Moderating Role of Behavior Difficulty

People often imagine themselves engaging in different behaviors, in part to facilitate processes such as planning (Buehler, Griffin & Ross, 1994), coping (Taylor & Schneider, 1989), and to initiate goal-directed behavior (Oettingen, 2012). Research suggests that the perspective that people use to imagine engaging in a behavior can be important in determining whether they are motivated to subsequently engage in that behavior. That is, when visualizing themselves engaging in a behavior, people often use a first-person perspective; they picture the event unfolding exactly as they would see it were the event occurring in real life. However, people can also visualize events from a third-person perspective, in which they see the events unfolding from the perspective of an observer. That is, they see themselves in the image, in addition to their surroundings.

Libby, Shaeffer, Eibach, and Slemmer (2007) asked registered voters to imagine themselves voting, using either the third-person or first-person perspective, on the eve of the 2004 US presidential elections. They found that participants who visualized themselves voting from the third-person perspective were significantly more motivated to vote than those who visualized themselves voting from the first-person perspective and were more likely to subsequently report having actually voted (90% in the third-person condition vs. 72% in the first-person condition). Drawing on the literature on actor-observer effects (e.g., Jones & Nisbett, 1972), Libby and colleagues reasoned that when people use the third-person perspective, they are more likely to attribute their behavior to dispositional (vs. situational) factors, which is more motivating. Similarly, Vasquez and Buehler (2007) found that students who imagined studying for a forthcoming academic task from a third-person perspective were significantly more motivated to study than those who visualized the same behavior from the first-person perspective. Vasquez and Buehler drew on the predictions of action identification

theory (Vallacher & Wegner, 1987) and construal level theory (Trope & Liberman, 2010), to suggest that visualizing the task from a third-person perspective resulted in more abstract construals, which made the behavior seem more important.

The beneficial effect of visualizing actions from the third-person perspective holds obvious appeal for those interested in promoting health behaviors: Visualization has been shown to have reliable effects in other domains, such as sports performance (Driskell, Cooper, & Moran, 1994), and there are indications that it may be effective in motivating changes in health behavior (Armitage & Reidy, 2008; Hagger, Lonsdale, & Chatzisarantis, 2011; Ouellette, Hessling, Gibbons, Reis-Bergan, & Gerrard, 2005; Knauper, McCollam, Rosen-Brown, Lacaille, Kelso, & Roseman, 2011). It therefore seems possible that the use of the third-person perspective could enhance these effects. However, initial studies on the effects of visualizing health behaviors from the first- versus the third-person perspective have found the reverse: Namely, that visualizing health behaviors from the first-person perspective seems to be more effective in motivating engagement in health behaviors, such as blood donation and smoking cessation (Rennie, Harris, & Webb, 2014) and healthy eating (Rennie, Uskul, Adams, & Appleton, 2014) than visualizing the same behaviors from the third-person perspective.

In order to explore what might explain these conflicting findings, it is useful to examine the processes thought to underlie the effects of perspective. Libby and Eibach (2011) formulated a model to explain how perspective influences the way that people understand events. The model proposes that use of the third-person perspective provides greater distance and involves a top-down style of "meaning making" in which the visualized event is integrated with broader contexts and goals, leading to relatively abstract construals. In contrast, use of the first-person perspective involves a bottom-up style of meaning making in which the concrete features of the event dominate the picture and define understanding. Consistent with

this idea (and as mentioned above), Vasquez and Buehler (2007) showed that participants who used the third-person perspective tended to describe their visualization in more abstract terms (e.g., "being a successful student", "being the best I can be"), whereas those who used the first-person perspective used more concrete descriptions (e.g., "getting a good mark", "trying hard at a task") (for related findings, see Kross & Grossman, 2011; Libby, Shaeffer, & Eibach, 2009; Shaeffer, Libby, & Eibach, 2015). Indeed, Vasquez and Buehler showed that the nature of participants' construals mediated the effect of perspective on motivation. Thus, use of the third-person perspective seems to encourage people to view the "bigger picture" and develop more distanced and abstract visualizations in which they link the imagined behavior to broader goals and contexts. In contrast, the first-person perspective is more detailed and concrete, but less directly connected to such broader goals and contexts.

One striking difference between studies that have found visualizing behavior from the third-person to be more effective (e.g., Libby et al., 2007; Vasquez & Buehler, 2007) and those that have found the first-person perspective to be more effective (e.g., Rennie, Harris et al., 2014; Rennie, Uskul, et al., 2014) is the difficulty of the visualized behaviors. In Libby et al.'s study all participants were already registered voters and voting rates were notably high, regardless of condition (90% and 72%) suggesting that the behavior was relatively easy to perform. Similarly, in Vasquez and Buehler's study, students were asked to visualize themselves studying for an upcoming academic task, a behavior that was presumably very familiar. In contrast, Rennie, Harris, et al. asked participants in the UK to visualize themselves donating blood, a behavior that is engaged in on a regular basis by just 4% of the UK population (National Health Service, 2015), or to visualize smoking cessation, one of the most challenging health behaviors to change, with evidence that 47% of people who quit smoking in the UK relapse within a month (Judge, Bauld, Chesterman, & Ferguson, 2005).

Thus, studies testing the effects of perspective in the health domain have tended to target behaviors that differed from those used in previous studies with respect to how difficult participants likely find them to enact.

The Present Research

In an attempt to reconcile differing effects reported previously, the present research therefore tests whether the difficulty of the visualized behavior moderates the effect of perspective on motivation and action. Specifically, two studies test the possibility that the third-person perspective is more effective when the visualized behavior is relatively easy to carry out, but not when the behavior is harder to carry out. The present research tests this possibility in the context of fruit and vegetable consumption and exercise, by directly manipulating the difficulty of the behavior to be visualized (within the focal domain), in addition to the perspective used to imagine it, and by exploring the effects on behavior as well as motivation. In order to assess whether the intervention would be equally effective for all participants, additional analyses tested whether the effects held for those who engaged and did not engage in the relevant behaviors at baseline. It is predicted that the difficulty of the focal behavior will interact with perspective, such that the third-person perspective will be more motivating than the first-person perspective for easier behaviors, but not for more difficult behaviors. We did not have any a priori grounds for expecting baseline levels of behavior to moderate the effect of the manipulation.

Experiment 1

Method

Participants and design. Participants were 153 undergraduate students at a university in the UK (96 females; M_{age} = 20.37 years) and the experiment employed a 2 (perspective: first-person vs. third-person) x 2 (behavior: easy vs. difficult) between-participants design. Participants were randomly allocated to conditions using an algorithm built into the online

questionnaire, such that each participant had a 25% chance of being in any one of the four conditions. Descriptive statistics for baseline variables by condition are displayed in Table 1.

Materials and procedure. The procedure was approved by the University's departmental ethics committee. Participants were recruited by email for an online study ostensibly about imagination and planning. The email contained a link that randomly allocated participants to one of four different versions of a questionnaire. After providing informed consent, participants provided demographic information and indicated how many portions of fruit (easy behavior condition) or vegetables (difficult behavior condition) they ate (i) in the last 24 hours and (ii) in a typical 24 hour period. A mean score was computed from these two responses ($r = .58$, $p < .001$). Classification of these behaviors as easy versus difficult was based on a pilot study in which participants rated how difficult it would be to eat 3 extra portions of fruit and vegetables the following day on a scale running from 0 (*extremely easy*) to 6 (*extremely difficult*). Eating more vegetables was seen as more difficult ($M = 2.77$, $SD = 1.50$) than eating more fruit ($M = 2.26$, $SD = 1.57$), $F(1, 47) = 4.51$, $p = .039$, $d = 0.75$ (see also, e.g., Naska et al., 2000).

Participants were then told that they would be asked to imagine themselves engaging in a particular behavior, but should first read instructions on exactly how to imagine that behavior. At this point, participants received either instructions to imagine the behavior from the first-person or from the third-person perspective (as used in Libby et al., 2007):

> You should picture doing the action from a first-person [third-person] visual perspective. With the first-person [third-person] visual perspective you see the event from the visual perspective you [an observer] would have if the event were actually taking place. That is, you are looking out at your surroundings through your own eyes [you see yourself in the image, as well as your surroundings].

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Participants were subsequently instructed to use the required perspective to imagine themselves "eating 3 extra portions of fruit tomorrow (that is, on top of what you would eat in a normal day)" (easy behavior condition) or "eating 3 extra portions of vegetables tomorrow (that is, on top of what you would eat in a normal day)" (difficult behavior condition).

After the visualization exercise, intentions to enact the target behavior were assessed using 2 items worded according to the recommendations of Fishbein and Ajzen (2010): Specifically, participants were asked to indicate on a 7-point scale how likely they would be to eat 3 extra portions of fruit [vegetables] the following day (*very unlikely* to *very likely*), and the extent to which they agreed with the statement "I intend to eat 3 extra portions of fruit [vegetables] tomorrow" (*strongly disagree* to *strongly agree*). These items were combined to produce a composite score ($r = .77$, $p < .001$). In order to check that participants visualized the behavior from the instructed perspective a final question asked participants what percentage of the time they used the first-person [third-person] perspective when visualizing themselves enacting the target behavior; participants responded on a 6-point scale, ranging from 0% to 100% in increments of 20%.

Results

Two participants (1% of the sample) indicated that they had not used the required perspective, and so were excluded from further analyses. Consistent with predictions, ANOVA revealed a significant interaction between perspective and difficulty on intentions, $F(1, 147) = 4.04$, $p = .046$, $d = 0.33$. Simple effects analyses showed that, in the easy condition, visualizing the behavior from the third-person perspective resulted in stronger intentions ($M = 2.95$, $SD = 1.59$) than the first-person perspective ($M = 2.25$, $SD = 1.44$), a difference that approached significance, $F(1, 147) = 3.03$, $p = .084$, $d = 0.29$, see Table 2. In the difficult condition the effect of perspective was not significant, $F(1, 147) = 1.16$, $p = .28$,

$d = 0.18$. There was no main effect of behavior difficulty, $F(1, 147) = 0.01$, $p = .91$, $d = 0.00$, or perspective, $F(1, 147) = 0.36$, $p = .55$, $d = 0.02$, on intentions.

In order to examine whether the effects of perspective and difficulty (and their interaction) on intentions differed as a function of baseline behavior, we entered mean-centered baseline behavior into a regression analysis of intentions, along with perspective and difficulty, and their interaction terms. Baseline behavior did not interact significantly with perspective, $\beta = -.44$, $t(141) = -1.29$, $p = .20$, with behavior difficulty, $\beta = -.26$, $t(141) = -0.84$, $p = .40$, or with the perspective x difficulty interaction, $\beta = .45$, $t(141) = 1.36$, $p = .18$, suggesting that the manipulations had comparable effects on participants with varying levels of baseline behavior.

Discussion

Experiment 1 found support for our predictions, to the extent that the difficulty of the focal behavior influenced the effect of perspective on intentions – visualizing the behavior from the third-person perspective increased motivation to engage in that behavior relative to visualizing the same behavior from the first-person perspective, but only if the behavior was relatively easy to perform (i.e., increasing fruit, but not increasing vegetable, consumption).

In an effort to replicate and extend these findings, we conducted a second experiment in the context of exercise behavior. Importantly, a measure of subsequent behavior was also taken because, while intentions have been found to predict healthy eating behaviors in the long term (e.g., Conner, Norman, & Bell, 2002), there is often a gap between intention and action (e.g., Sheeran, 2002; Webb & Sheeran, 2006) so it seemed important to examine whether the effects of perspective also extend to behavior. In addition, to further validate our manipulation of the difficulty of the target behavior, we asked participants to rate the difficulty of the specified behaviors.

Experiment 2

Method

Participants and design. Participants were 142 undergraduate students (85 females; M_{age} = 20.00 years) at a university in the UK. Experiment 2 used the same 2 (perspective: first-person vs. third-person) x 2 (behavior: easy vs. difficult) between-participants design, and participants were randomly allocated to conditions as before. Descriptive statistics for baseline variables by condition are displayed in Table 1.

Procedure and materials. The procedure and materials were identical to those used in Experiment 1, except that the target behavior in Experiment 2 was either "doing an extra 20 minute session of exercise of at least moderate intensity this week (that is, on top of what you would normally do in a week)" (easy behavior condition) or "doing an extra 20 minute session of strenuous exercise this week (that is, on top of what you would normally do in a week)" (difficult behavior condition). Levels of behavior at baseline were measured by asking participants to indicate how many 20-minute sessions of exercise of at least moderate intensity (easy behavior condition) or strenuous intensity (difficult behavior condition) they (i) typically performed and (ii) had performed in the previous week. A mean score was computed from these 2 items (r = .20, p = .021).

To check the success of the difficulty manipulation, perceived difficulty of the focal behavior was measured before the visualization task by asking participants to indicate the extent to which they agreed with the statements "It would be easy for me to do moderate [strenuous] exercise more often in a week than I currently do" and "If I wanted to, I could easily do moderate [strenuous] exercise more often in a week than I currently do" (*strongly disagree* to *strongly agree*). Participants were also asked to indicate how easy it would be for them to do more moderate [strenuous] exercise in a week than they currently do (*very difficult* to *very easy*; with scores reversed to indicate difficulty). These three measures proved

internally consistent (alpha = .92) and were averaged to provide a single measure of the difficulty of the focal behavior. A one-way between-participants ANOVA revealed a marginally significant effect of the difficulty manipulation on perceived difficulty, $F(1, 137) = 2.93$, $p = .089$, $d = 0.29$. Doing an extra 20 minute session of vigorous exercise was rated as being more difficult ($M = 2.37$, $SD = 1.70$) than doing an extra 20 minute session of moderate exercise ($M = 1.91$, $SD = 1.44$).

Intentions to engage in the visualized behavior were assessed using equivalent items to those in Experiment 1. Specifically, participants were asked to indicate the extent to which they agreed with the statement "I intend to do an extra 20-minute session of moderate [strenuous] exercise in the following week" (7-point scale: *strongly disagree* to *strongly agree*), and how likely they would be to do an extra 20-minute session of moderate [strenuous] exercise in the following week (*very unlikely* to *very likely*). As before, the two items were combined to create a single index of intention ($r = .76$, $p < .001$).

One week following completion of the questionnaire, participants were contacted by email and asked how many sessions of exercise of at least moderate intensity [strenuous exercise] they had done in the last week. Follow-up data were matched to the earlier measures by email address.

Results

Two participants (1% of the sample) indicated that they had not visualized the behavior from the required perspective, and so were excluded from further analyses. As in Experiment 1, a two-way between-participants ANOVA revealed a significant interaction between perspective and difficulty on intentions, $F(1, 135) = 4.53$, $p = .035$, $d = 0.14$ (see Table 2). Visualizing the easier behavior from the third-person perspective resulted in significantly stronger intentions ($M = 3.60$, $SD = 1.60$) than visualizing the same behavior from the first-person perspective ($M = 2.73$, $SD = 1.86$), $F(1, 135) = 4.62$, $p = .033$, $d = 0.37$.

In contrast, there was no significant effect of perspective on intentions to engage in the more difficult behavior, $F(1, 135) = 0.81$, $p = .37$, $d = 0.15$ (see Table 2). Once again, there were no main effects of difficulty, $F(1, 135) = 0.00$, $p = .98$, $d = 0.00$, or perspective, $F(1, 135) = 0.69$, $p = .41$, $d = 0.04$, on intentions.

As in Experiment 1, in order to explore whether baseline behavior interacted with other variables in effects on intentions, we entered mean-centered baseline behavior into a regression analysis of intentions, along with perspective and difficulty, and their interaction terms. Again, baseline behavior did not interact with perspective, $\beta = .21$, $t(128) = 0.57$, $p = .57$, with behavior difficulty, $\beta = .42$, $t(128) = 1.28$, $p = .20$, or with the perspective x difficulty interaction, $\beta = -.15$, $t(128) = -0.42$, $p = .67$, suggesting that the manipulations had comparable effects on participants with varying levels of baseline behavior.

Sixty-two participants provided follow-up data. There was no association between whether or not the participant provided follow-up information and condition, $\chi^2(3, N = 139) = 4.02$, $p = .26$, $\Phi_c = .17$. The interaction between perspective and difficulty on levels of physical activity at follow-up approached significance, $F(1, 58) = 3.16$, $p = .081$, $d = 0.48$, and simple effects analyses revealed that, as with intentions, there was a significant effect of perspective in the easy condition, $F(1, 58) = 8.12$, $p = .006$, $d = 0.75$, such that participants who had visualized performing the behavior from the third-person perspective reported doing significantly more sessions of exercise ($M = 6.03$, $SD = 5.13$) than those who had visualized the behavior from first-person perspective ($M = 3.09$, $SD = 3.36$). However, in the difficult condition, there was no significant effect of perspective, $F(1, 58) = 0.07$, $p = .79$, $d = 0.07$ (see Table 2). There was no significant main effect of perspective, $F(1, 58) = 2.38$, $p = .13$, $d = 0.11$, but there was a significant effect of difficulty, $F(1, 58) = 9.23$, $p = .004$, $d = 0.85$, such that participants in the easy condition completed more sessions of exercise ($M = 4.91$, $SD = 4.70$) than those in the difficult condition ($M = 1.89$, $SD = 1.80$). As with intentions, baseline

levels of behavior did not interact with perspective, $\beta = .05$, $t(53) = 0.06$, $p = .95$, with difficulty, $\beta = .12$, $t(53) = 0.27$, $p = .79$, or with the perspective x difficulty interaction, $\beta = .29$, $t(53) = 0.34$, $p = .74$, to influence behavior. This indicates that the observed 2-way interaction effect was not confined to participants who already engaged in the behavior at baseline.

General Discussion

The present research demonstrates that the advantages of visualizing behavior from the third-person perspective apply to relatively easy health behaviors. Specifically, the findings show that visualizing the focal behavior from the third-person perspective results in significantly stronger intentions (Experiments 1 and 2) and means that the person is more likely to subsequently perform the behavior (Experiment 2), compared to visualizing the same behavior from the first-person perspective. Indeed, the effects of perspective on behavior appear to be relatively powerful: In Experiment 2, participants who visualized a relatively easy behavior from a third-person perspective reported engaging in twice as much exercise in the week following the visualization task (6 sessions) as those who visualized the same behavior from a first-person perspective (3 sessions).

In both experiments the difficulty of the visualized behavior was found to influence the effect of perspective on intentions (Experiments 1 and 2) and behavior (Experiment 2). This supports the idea, derived from action identification theory and Libby and Eibach's (2011) model, that the third-person perspective gives an abstract and meaningful visualization linked in with broader goals and contexts that increases motivation to perform easier behaviors (and subsequent enactment) but not motivation to perform more difficult behaviors. The present research therefore adds to our understanding of the effects of perspective on motivation and behavior and suggests an important moderator of the effects reported in previous research. Subsequent research will help tie down exactly which aspects of behavior difficulty are

critical. Action identification theory (Vallacher & Wegner, 1987) proposes that complexity, familiarity, time taken to enact the behavior, and time taken to master the behavior can all determine the level of abstraction at which a behavior is mentally represented, suggesting that these different elements might combine or interact to determine the difficulty of the focal behavior.

The present research builds on the findings of Libby et al. (2007) in showing that the effects of perspective translate to behavior in the health domain and that these effects are not confined to the short-term. Specifically, while Libby et al. (2007) found effects of perspective on behavior one day post-intervention, in the present research the effects of perspective were found to have an effect on behavior up to 7 days later. This is noteworthy given the subtlety and the brevity of the intervention – participants were not exposed to any information in addition to the visualization task. Practically speaking, a visualization task could be incorporated into more traditional health campaigns and used to complement other established behavior change techniques. For example, it has been found that a third-person visualization task employed alongside instructions to form an implementation intention (Gollwitzer, 1999; Gollwitzer & Sheeran, 2006) reduced binge drinking among students (Rivis & Sheeran, 2013). Studies have also shown that repeated visualizations increase the beneficial effects (Anderson, 1983), suggesting that interventions might also be enhanced further in this way. However, before perspective and visualization can be incorporated into health campaigns, further research will need to be conducted focusing on different health behaviors in order to establish with more certainty the factors that influence the effect of perspective on outcomes, (especially as this effect can seemingly switch direction as a function of such factors).

Although the current studies provide some promising results, they also have limitations. First, as discussed, the notion of the difficulty of the focal behavior needs further refinement in order to identify which aspect(s) of difficulty explains its moderating influence on the

effects of perspective. Second, and related to this, the effect of perspective was seemingly "switched off" for difficult behaviors in the present experiments, rather than reversed as previous studies have found (e.g., Rennie, Harris, & Webb, 2014)[1]. This might indicate that the behaviors deemed 'difficult' in the present research were not difficult enough. Indeed, every effort was made to ensure that the behaviors used in the two difficulty conditions were as equivalent as possible, and this may have been to the detriment of the strength of the manipulation. Third, both experiments recruited samples of UK students and, as such, it is not known whether these findings translate to non-student or culturally divergent samples (cf. Rennie, Uskul, Adams, & Appleton, 2014; Uskul & Kikutani, 2014). Finally, we regarded it as important to measure baseline behavior for this initial set of studies. However, it is possible that encouraging participants to reflect on their current behavior (diet/activity levels) affected responses. For example, the more difficult the target behavior, the less likely participants' current level of behavior is to reach target levels. Thus, participants in the difficult condition may have experienced more negative affect, which may have contributed to the reversed effect of perspective. Future studies should control for this by manipulating whether or not participants are asked to reflect upon their behavior before the other manipulations are introduced.

Conclusion

In summary, the present research presents evidence to suggest that, when visualizing health behaviors, the difficulty of the visualized behavior is important in determining whether the third-person perspective will be advantageous in motivating action. As such, this research adds to an emerging literature exploring the effects of perspective on motivation and behavior. The findings point to the potential of the third-person perspective in particular, and

[1] It should be noted that the pattern of means suggests a reversed effect of perspective in the difficult behavior condition, but this effect was not statistically significant.

visualization in general, in promoting health behavior change, and show that small changes in the way that people visualize performing behavior can have positive effects up to a week later. As such, under certain conditions, the third-person perspective could represent a useful and cost-effective means of promoting health behavior change.

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Table 1

Descriptive statistics for baseline variables in Experiments 1 and 2, by perspective and difficulty conditions.

	Difficult behavior		**Easy behavior**	
	First-person perspective	Third-person perspective	First-person perspective	Third-person perspective
	Experiment 1			
Age (years)	19.84 (2.25)	20.53 (3.96)	20.22 (3.57)	20.92 (4.54)
% female	59.09	63.41	60.71	70.27
Baseline portions of fruit/vegetables per day	2.66 (1.05)	2.69 (1.55)	2.55 (2.37)	2.84 (1.55)
	Experiment 2			
Age (years)	19.91 (4.49)	19.64 (2.95)	20.25 (2.46)	19.28 (1.50)
% female	75.76	57.58	46.88	63.41
Baseline sessions moderate/strenuous exercise per week	4.45 (6.60)	3.91 (7.43)	5.25 (4.43)	4.66 (3.21)

Table 2

Means and standard deviations for intentions and behavior in Experiments 1 and 2, by perspective and difficulty conditions.

	Difficult behavior		Easy behavior	
	First-person perspective	Third-person perspective	First-person perspective	Third-person perspective
	Experiment 1			
Intentions	2.76 (1.59)	2.38 (1.77)	2.25 (1.44)	2.95 (1.59)
	Experiment 2			
Intentions	3.35 (1.73)	2.97 (1.68)	2.73 (1.86)	3.60 (1.60)
Behavior	1.98 (1.80)	1.80 (1.88)	3.09 (3.36)	6.03 (5.13)