INTRODUCTION

To assess the role of personal memory in attitude evaluations, Johnson et al. (in prep.) compared the evaluation of attitude items to retrieval of autobiographical memories. According to the "computational view," decisions about self-referential material (e.g., traits, values) rely on episodic retrieval. In contrast, the "abstraction view" proposes that these decisions depend on the retrieval of "trait summaries," which are abstracted from episodic memories (Klein et al., 2002). Therefore, we used ERPs to determine the degree to which attitude evaluations elicited a classic parietal episodic memory (EM) effect, which has been associated with recollection of episodic memories. These data revealed an intermediate result in which the parietal ERPs elicited by attitudes were in between those elicited by correctly classified autobiographical memories and foils. However, when the trials were divided on the basis of reaction time, the results showed that rapidly evaluated items elicited ERPs nearly identical to those for the autobiographical memories, whereas slowly evaluated items elicited ERPs like those for the foils. The items in these fast/slow categories were also quite different, with fast evaluations occurring mainly for items related to preferences (e.g., rap music, baseball) and slow evaluations occurring mainly for items related to values (e.g., abortion, capital punishment).

Another possibility is that, although autobiographical, one's values might be viewed as being more "fact-like." Therefore, in the current experiment, we compared the ERPs elicited by the evaluations of two types of self-referential materials, trait adjectives (e.g., intelligent) and preference-free lists of values, with those elicited by Personal Semantic (PS) items. Although PS items, which are facts about one's self (e.g., occupation, address), are also retrieved from episodic memory, they are less likely to be based on any specific episode. Hence, the processes used during decisions about PS items may serve as a more direct comparison for examining the role of episodic memory in self-referential evaluations of traits and values.

METHODS

PARTICIPANTS:
15 right-handed, native-English speakers (2 males) were paid $10/hour Mean age 23.7 (S.D. 4.2) years. Written informed consent obtained prior to experiment.

PROCEDURE:
Approximately one weekly (mean 8.7 days, S.D. 5.6) prior to the ERP recording session participants filled out questionnaires on three types of stimuli, which asked them to rate:

- Traits: How important is the fact that this trait does/does not describe you to who you are as a person? (1=not at all important, 6=very important).
- Values: My evaluation of this statement is (1=strongly against/don't support, 7=strongly for/support)
- Personal Semantic: They provided information about their occupation, phone number, address, relatives' names, etc.

Participants also rated each item on importance or centrality:

- Traits: How important is the fact that this trait does/does not describe you to who you are as a person? (1=not at all important, 6=very important).
- Values: How important is how you feel about this value to who you are as a person? (1=not at all important, 7=very important).
- PS: How central is this to your identity? (1=not at all central, 6=very central).

Individualized stimulus files were created using items with the highest importance/centrality ratings whose stimulus importances per category for traits (like me 5-6; not like me 1-2) and values (agree 5-7; disagree 1-2). There were 35 PS items chosen for each participant.

ERP Session:
- Trait evaluation
- Value evaluation
- Yes/No recognition task on PS items (PS Me) and an equal number of comparable foils (PS Not Me).
- Semantic decision (active/passive) about each item.

Tasks

- PS Me vs. Values

To assess the role of personal memory in attitude evaluations.

Behavioral Results

For comparison purposes, the trait and value items were collapsed over valence (e.g., for/against).

Accuracy

Participants were highly accurate in all conditions and accuracy differed significantly only between PS Not Me and Values (p<.05).

Reaction Time

Reaction times for PS Me items were faster than all others (ps < .00001) and the evaluation of values was slower than for trait and PS Not Me items (ps>.00001).

ERP Results: Episodic Memory Effects

ERPs elicited by the PS items revealed three significant EM effects:

- An early frontal effect (p < .02), which reflects familiarity.
- LPC (p < .005), which reflects recollection.
- The MFN (p < .02), which reflects conflict.

Evaluations of traits and values elicited the early frontal EM effect because they elicited significantly less negativity than the PS Not Me items (ps < .01) and did not differ from those elicited by the PS Me items (ps > .05). In contrast, evaluative decisions did not elicit a significant parietal EM effect (ps > .001) or a MFN EM effect (ps > .05). Moreover, the LPC and MFN amplitudes did not differ from those elicited by PS Not Me items (ps > .05).

DISCUSSION

- The results showed that, although there was a parietal EM effect for Me/Not Me evaluations of personal semantic items, there was no comparable activity during evaluations of traits (like me/not like me) or values (agree/disagree). Given that the parietal EM effect has been strongly linked to recollection-related retrieval processes, the PS results were expected. However, the absence of this EM effect during evaluations of the trait and value items argues against the idea that these evaluations rely on recollection of episodic memories. Thus, current results support the idea that these evaluations are done in an "on-line" manner, which contradicts the "computational view" of self-referential decisions.

- Although the data revealed that the trait and value evaluations elicited the same early frontal EM effect as the PS items, it seems unlikely that this represents a memory contribution to the evaluations of the traits and values. That is, the early frontal EM effect has been linked to familiarity-related processes and, while these processes are sufficient for deciding if a stimulus is old or new, it is unlikely to provide a sufficient basis for making personal evaluations of traits and values. Rather, given that each item was repeated in four different conditions, it is more likely that the familiarity effect here reflects recognition of the fact that the items had been presented previously.

- Nevertheless, the data also revealed a key similarity in the brain activity elicited by the traits and values and PS Me stimuli. That is, each of these stimuli elicited similar activity over medial far-frontal scalp in the 600ms preceding the response. The underlying cortex has been included as part of the brain circuitry underlying the representation of the self, with this area most closely linked to evaluative processing (Northoff and Bermpohl, 2004).

- Thus, the data indicate that, despite the differential role of memory in these different decisions, they appear to share a common role of self-referential processing.