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Using the Implicit Association Test to investigate attitude-behaviour consistency for stigmatised behaviour

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To consciously bolster behaviour that is disapproved by others (i.e., stigmatised behaviour) people may hold and report a favourable attitude toward the behaviour. However, achieving such bolstering outside awareness may be more difficult. Explicit attitudes were measured with self-report measures, and the Implicit Association Test was used to assess implicit attitudes toward behaviour held by stigmatised actors (smokers) and nonstigmatised actors (vegetarians and omnivores). Smokers' showed greater attitude-behaviour consistency in their explicit attitudes toward smoking that in their implicit attitudes. By contrast, vegetarians and omnivores showed attitude-behaviour-consistency at both implicit and explicit levels. Smokers' implicit negative attitudes toward smoking may reflect its status as a stigmatised behaviour, or its addictive nature.

There are many behaviours that people engage in despite knowing that others regard the behaviour as unwise, objectionable, and possibly immoral. How do the people who engage in such behaviours cognitively adjust to this stigmatised character of their own behaviour? Smoking provides an interesting behaviour to study because of its having changed in recent years from being a socially

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attractive behaviour to being a stigmatised behaviour. At present, laws restrict smokers' behaviour, smokers are viewed as unhealthy, dirty, weak-willed, and morally bereft (Goldstein, 1991; Rozin & Singh, 1998), and the majority of smokers are aware that their habit increases their chances of heart disease, lung cancer, and premature death (Shopland & Brown, 1987). Because this knowledge and the stigma associated with smoking are inconsistent with knowing that they smoke, smokers may experience a dissonance-like tension (Festinger, 1957). This may prompt their creation or modification of cognitions to support their behaviour (cf. Festinger, 1957, pp. 5–6). By contrast, people who engage in nonstigmatised behaviour have no occasion to respond to such inconsistencies.

People with stigmatised occupations (e.g., topless dancers and morticians) may downplay the negative aspects of their professions, emphasising instead the prosocial benefits they provide (Thompson, 1991; Thompson & Harred, 1992). Along these lines, smokers perceive less health-related consequences of smoking than do nonsmokers (Halpern, 1994; Johnson, 1968), even though both groups have the same factual knowledge (McMaster & Lee, 1991; Miller & Slap, 1989). Further, the more smokers acknowledge the health risks of smoking, the more they produce rationalisations for their habit (Johnson, 1968). And, although smokers' self-reported attitudes toward smoking range from neutral to slightly unfavourable, they nevertheless have more positive attitudes toward smoking than do nonsmokers (Chassin, Presson, Sherman & Edwards, 1991; Stacy, Bentler, & Flay, 1994). In sum, the literature suggests that stigmatised actors—including smokers—cognitively bolster their actions in the face of widespread disapproval.

All prior research on smokers' cognitive bolstering of their smoking habit has been conducted using self-report measures. The present research additionally used implicit measures. The primary goal of this research was to determine whether cognitive bolstering of stigmatised behaviour would also be evident on implicit measures. Smoking was an obvious choice for the stigmatised behaviour, and dietary preferences were used as comparison nonstigmatised behaviours. A priori, there was no reason to suspect that smokers' attitudes would be inconsistent at the implicit level. Existing statements of cognitive consistency theories do not address a distinction between implicit and explicit cognitions. Because Greenwald et al. (in press; Greenwald et al., 1999) have reported greater consistency among implicit than explicit cognitions in other domains, there was actually some reason to anticipate that implicit measures might show greater attitude-behaviour consistency than would explicit measures. Nevertheless, when people act in ways that elicit frequent negative feedback from others, inconsistency may be unavoidable at the implicit level. In support of this view, Greenwald et al. (1999) found one exception to their general observation that people who liked themselves and identified with their group also showed ingroup bias. Elderly subjects with high self-esteem implicitly disidentified with their age group, also showing strongly greater implicit preference for young than

old. This implicit finding in the age attitude domain may indicate the extent to which old age is stigmatised in American society. Similarly, smokers' implicit cognitions may indicate the extent to which smoking is stigmatised.

The development of implicit measures that are sensitive to individual differences provides the opportunity to examine implicit cognitions associated with stigmatised behaviours. Behaviour-relevant cognitions include attitudes toward the self and toward the behaviour, and association of self with the behaviour. Implicit attitudes are measured by assessing the automatic association between the attitude object and positive or negative valence (Fazio, 1990; Greenwald & Banaji, 1995; Greenwald, McGhee, & Schwartz, 1998—in the emotion literature, this is referred to as automatic affect, e.g., Winkielman, Zajonc, & Schwarz, 1997).[1] Both cognitive and emotion theorists conceptualise implicit cognitions (e.g., attitudes and beliefs) as similar to implicit memory, such that each is revealed when past experience indirectly influences responses "in a fashion not introspectively known by the actor" (Greenwald & Banaji, 1995, p. 4). By contrast, explicit cognitions are presumed to require deliberate retrieval of information.

Evidence from prejudice and stereotype research indicates that implicit and explicit cognitions are only weakly correlated (e.g., Blair, in press; Brauer, Wasel, & Niedenthal, 2000; Greenwald et al., 1998; Rudman, Ashmore, & Gary, 2000); Rudman, Greenwald, Mellott, & Schwartz, 1999). This is not to suggest that these constructs are completely independent or that their relationship cannot be moderated (Rudman et al., 2000; see also Wegner & Bargh, 1998; for a discussion of the interface between implicit and explicit cognitions). However, these findings do suggest that the psychological properties of implicit and explicit cognitions can and do diverge.

The Implicit Association Test

The Implicit Association Test (IAT; Greenwald et al., 1998) is a flexible measure of implicit social cognition, including attitudes, stereotypes, and self-concept (e.g., Greenwald et al., in press; Rudman et al., 2000). The method assumes that performing tasks that oblige people to sort well-associated categories together is easier than performing tasks in which the categories to be grouped together are not associated. For example, the *self-esteem* IAT involves four categories: two contrasted target concept categories (*self* and *other*) and two contrasted attribute categories (*pleasant* and *unpleasant*; see Figure 1). In the data-gathering trial blocks of the IAT, subjects perform two combined cate-

[1] Affect can be conceptualised as emotions or as the evaluation attached to a particular (attitude) object (Isen & Diamond, 1989). The present paper is concerned with affect in the latter sense—specifically, attitudes toward one's self and one's behaviour when the behaviour is stigmatised (e.g., smoking) versus when it is nonstigmatised (e.g., vegetarianism).

IAT Items in the Four Categories	SELF	OTHER	PLEASANT	UNPLEASANT
	me	they	cuddle	Pain
	my	them	happy	Awful
	mine	their	smile	Disaster
	self	other	joy	Grief

	respond left	respond right
Task 1	UNPLEASANT	PLEASANT
Task 2	SELF	OTHER
Task 3	SELF + UNPLEASANT	OTHER + PLEASANT
Task 4	OTHER + UNPLEASANT	SELF + PLEASANT

Figure 1. Illustration of the Implicit Association Test (IAT). The IAT starts by introducing subjects to the four categories used in the task. In this example, the categories are introduced in Tasks 1 and 2. In Task 1, subjects are asked to respond "left" to *pleasant* words and "right" to *unpleasant* words. In Task 2, subjects respond "left" to *self* words and "right" to *other* words. The IAT measure is obtained by comparing response latencies in the next two tasks, one in which *self* and *unpleasant* are assigned to "left" and *other* and *pleasant* to "right", and another in which *other* and *unpleasant* are assigned to "left" and *self* and *pleasant* are assigned to "right". If the subject responds more rapidly when *self* and *pleasant* share a response, this indicates that the *self-pleasant* association is stronger than the *self-other* association.

gorisation tasks that map the four categories of stimuli (self, other, pleasant and unpleasant) onto two response keys. In one combined task (self+unpleasant), subjects are instructed to rapidly press one key for both *self* and *unpleasant* stimuli and to press another key for both *other* and *pleasant* stimuli. In the second combined task (self+pleasant), both *self* and *pleasant* get one response and both *other* and *unpleasant* get the alternative response. (Order of the two combined tasks is counterbalanced across subjects.) The IAT effect is the difference between latencies for these two combined categorisation tasks. For subjects with high implicit self-esteem, the self+pleasant combined task is expected to be performed substantially more rapidly than the self+unpleasant combined task.

EXPERIMENT 1

In an initial study of smokers' implicit attitudes toward smoking, Experiment 1 contrasted smoking with two different target concepts (sweets or exercise) to create IATs that might discriminate between smokers and nonsmokers, provided smokers' cognitions were consistent with their actions. The choice of contrast categories was based on the hypothesis that nonsmokers should prefer sweets to smoking as an oral gratification, whereas smokers might show a reverse pattern. In addition, nonsmokers should prefer a healthy behaviour (exercise) to an

unhealthy behaviour (smoking), whereas smokers might not show a preference. Finally, self-report attitudes toward smoking and either sweets or exercise were assessed for comparison purposes and were expected to discriminate between smokers and nonsmokers.

Method

Subjects. These were 93 undergraduates at the University of Washington who received course credit for their participation. Subjects who were ex-smokers ($n=9$) were excluded from all analyses. The final sample consisted of 38 smokers and 46 nonsmokers.

Materials

Explicit measures. Subjects completed a measure that allowed us to classify them as smokers or nonsmokers. Subjects also completed a set of eight semantic differential items for each target concept (smoking and sweets or exercise). Each 7-point item consisted of polar-opposite adjective pairs (*good-bad*, *healthy-unhealthy*, *sexy-unsexy*, *pleasant-unpleasant*, *harmless-harmful*, *sociable-unsociable*, *ugly-glamorous*, *calming-stressful*). Subjects were instructed to check the middle section if the attribute dimension was irrelevant to the target concept. Composite scores for each target concept (e.g., smoking) were calculated by scoring the 7-pt scale from -3 to $+3$ and summing the ratings given on each adjective pair for a target concept. A difference score that corresponded to the IAT target-concept discrimination was calculated by taking the composite scores for the two target concepts and subtracting one from the other. In each case, high scores reflect more positive attitudes toward smoking (compared to exercise or sweets).

Finally, subjects indicated on a feeling "thermometer" how favourable they felt about each target concept. Each thermometer was labelled in 10 degree increments ranging from 0 to 99. In addition, 0 was labelled as "extremely cold or unfavourable", 50 as "neutral", and 99 as "extremely warm or favourable". Thermometer difference scores that corresponded to each of the IAT target concept discriminations were calculated by taking the thermometer scores for the two target concepts and subtracting one from the other. In each case, high scores reflect more positive attitudes toward smoking (compared to exercise or sweets).

Implicit measures. Subjects completed an IAT measuring implicit attitudes toward smoking. Half the subjects completed an IAT that contrasted smoking with exercise and had the attribute dimension of pleasant versus unpleasant. The other half of the subjects completed a similar IAT that contrasted smoking with sweets. The smoking (e.g., cigarettes, ashtray), exercise (e.g., biking, jogging), and sweets (e.g., candy, cookies) stimuli were generated by the authors. The pleasant and unpleasant attributes were selected from Bellezza, Greenwald, and

Banaji (1986). A complete list of the stimuli used in the three experiments is included in the Appendix.

The IAT was administered on IBM-compatible desktop computers.[2] Subjects responded to the categorisation task by pressing either the "A" key with the left forefinger or the "5" key on the numeric keypad with the right forefinger. Each stimulus was presented in black letters in a light grey rectangle in the centre of the screen. The program randomly selected without replacement items from the stimulus lists while not allowing more than three items in a row that would be answered correctly using the same key. An intertrial interval of 150 ms was used. On each side of the stimulus rectangle were labels to remind subjects of the categories assigned to each key for the current task. If the subject responded correctly, a green circle appeared in a small box directly below the stimulus and the program proceeded to the next trial. If the subject responded incorrectly, a red "X" appeared in the box and remained on the screen along with the stimulus, until the subject responded correctly.

Procedure. On entering the lab, subjects were assigned to individual booths for the duration of the experiment. Subjects completed the explicit measures and were instructed to place them directly into a box marked "completed questionnaires" to maintain their anonymity. The experimenter then administered the IAT, instructing subjects to respond to the stimuli as quickly and accurately as possible. The IAT task consisted of seven blocks of trials: (1) practice of single categorisation task for the attribute (e.g., unpleasant/pleasant); (2) practice of single categorisation task for the target concept (e.g., smoking/exercise); (3) practice of combined categorisation task (e.g. smoking+unpleasant/exercise+pleasant); (4) critical trials for the block 3 combined categorisation task; (5) practice of single categorisation task for the attribute dimension, but with the response keys reversed from the block 1 assignment; (6) practice of combined categorisation task (e.g., smoking+pleasant/exercise+unpleasant); (7) critical trials for the block 6 categorisation task. Order in which subjects performed the mixed categorisation blocks (i.e., blocks 3–4 and 6–7) was counterbalanced. Each practice block had 20 trials and each critical block had 40 trials. On completion of the computer task, subjects were debriefed and thanked.

Results and discussion

Data reduction. These procedures were consistent with Greenwald et al. (1998). The first two trials in each block were discarded because these response latencies were typically longer. Trials that had latencies greater than 3000 ms or shorter than 300 ms were recoded to 3000 ms and 300 ms, respectively to control

[2] This experiment used the 2/17/97 version of the WinIAT program developed by Shelly Farnham.

for inattention or anticipation. Latencies were log-transformed to meet distributional assumptions for analysis of variance.

Smoking IAT effects. Each subject's smoking IAT effect was calculated by taking the latency for the smoking + unpleasant task minus the latency for the smoking + pleasant task. Thus, more positive scores indicated greater facility for the smoking + pleasant task than the smoking + unpleasant task and were interpreted as more favourable implicit attitudes toward smoking relative to the contrast category (i.e., sweets or exercise). Because the contrast categories did not influence results, $F(1, 83) = 0.23$, $p = .633$, they were combined for the remaining analyses.

If smokers' implicit attitudes are consistent with their behaviour, their IAT effects should be more positive than those of nonsmokers. However, smokers and nonsmokers alike strongly preferred the contrast category over smoking (Ms = −300 ms vs. −354 ms, respectively), and their IAT effects did not differ significantly, $F(1, 83) = 0.83$, $p = .366$. By contrast, the explicit measures showed group differences in each case. That is, smokers liked smoking relative to the contrast category more than did nonsmokers, using both the thermometer, $F(1, 82) = 18.52$, $p = 10^{-5}$ and the semantic differential, $F(1, 82) = 10.62$, $p = .002$. These findings suggest that smokers cognitively accommodate their stigmatised behaviour at the explicit, but not implicit, level.

The correlations between the attitude IAT and the explicit measures were significant when the thermometer was used, $r(80) = .30$, $p = .007$, or marginally significant when the semantic differential was used, $r(80) = .21$, $p = .060$. The explicit attitude measures were also related, $r(80) = .52$, $p = 10^{-7}$.

The findings that smokers and nonsmokers have comparably negative implicit attitudes toward smoking, whereas explicit measures discriminated them, suggest that smokers are more successful at bolstering their smoking behaviour at the explicit than implicit level. However, an alternative explanation is that smokers may not implicitly identify themselves with the behaviour. If smokers dissociate themselves from an activity they dislike (as elderly people dissociated from their age group; Greenwald et al., in press), their cognitions could be described as consistent. Thus, Experiment 2 was conducted, in part, to test differences in implicit identification with smoking between smokers and nonsmokers. In addition, Experiment 2 sought to compare the psychological characteristics of stigmatised actors (smokers) and nonstigmatised actors (vegetarians and omnivores).

EXPERIMENT 2

The lack of differences in smokers' and nonsmokers' implicit attitudes in Experiment 1 suggested that smokers engage in a behaviour they do not implicitly like. However, the contrasts used in Experiment 1 were positive for both smokers and nonsmokers (sweets and exercise). One objective of

Experiment 2 was to test implicit attitudes toward smoking using a negative contrast (stealing). In this case, the contrast category is even more stigmatised and less justifiable than the behaviour of interest. We therefore expected smokers and nonsmokers alike to prefer smoking to stealing, but if implicit attitudes for smokers were consistent with their behaviour, we expected smokers to show this preference more so than nonsmokers.

We also examined the extent to which smokers and nonsmokers implicitly identified with smoking versus stealing.[3] We expected smokers to identify more with smoking than with stealing, and to show this identification more than nonsmokers. If smokers showed greater tendency to identify with smoking, but nonetheless possessed implicit attitudes that were similar to those of nonsmokers, the results would suggest that smokers' behaviour-relevant cognitions are indeed inconsistent at the implicit level.

Experiment 2 also examined implicit and explicit attitudes toward vegetarianism, a nonstigmatised behaviour. One objective was to replicate earlier findings indicating attitude-behaviour consistency among vegetarians and omnivores with respect to eating meat versus other sources of protein (Swanson & Greenwald, 1998). The contrasts used were white meat versus other protein. Swanson and Greenwald (1997) showed that white meat was eaten more frequently and liked more (explicitly and implicitly) by omnivores than red meat. The category of other protein contained sources of protein that most lacto-ovo vegetarians use in place of meat (e.g., tofu and nuts). Because vegetarians and omnivores are nonstigmatised actors, we expected each group to show consistent relations between their attitudes toward the foods they ate, identification with their status as vegetarians or omnivores, and their behaviour (see also Rozin, Markwith, & Stoess, 1997). These consistent cognitions could be characterised as, "If I do X, then I identify with X, and X is good" (cf. Heider, 1958). Thus, vegetarians should identify with other proteins and have more favourable attitudes toward other protein (and less favourable attitudes toward meat), compared to omnivores. These predictions were examined using implicit and explicit measures.

Method

Subjects. These were 113 undergraduate psychology students at the University of Washington who received course credit for participation. Subjects who were ex-smokers were excluded from the smoking IAT ($n = 7$), and subjects who were ex-vegetarians were excluded from the vegetarian IAT ($n = 5$). Four subjects were excluded from both IATs on the basis of their latency data (e.g., due to error rates >25%); in addition, 5 and 3 subjects were excluded from the

[3] Past research has shown the IAT to be an effective measure of implicit self-concept and identity (e.g., Farnham, Banaji, & Greenwald, 1999; see also Rudman, Greenwald, & McGhee, in press).

smoking and vegetarian IATs, respectively, for similar reasons. The final sample sizes consisted of 59 nonsmokers, 37 smokers, 66 omnivores, and 34 vegetarians.

Materials and procedure

Explicit measures. Subjects completed a measure that allowed us to classify them as smokers or nonsmokers and as vegetarians or omnivores. They also completed a measure that inquired about their smoking behaviour, including number of cigarettes smoked per day. A similar measure assessed the number of times per year that subjects ate white meat and other sources of protein.

Subjects also completed a set of six semantic differential items for each of the four target concepts (smoking, stealing, white meat, other protein). Each 7-point item consisted of polar-opposite adjective pairs (*beautiful-ugly*, *good-bad*, *pleasant-unpleasant*, *honest-dishonest*, *nice-awful*, and *harmless-harmful*). Subjects were instructed to check the middle section if the attribute dimension was irrelevant to the target concept. Composite scores for each target concept (e.g., smoking) were calculated by scoring the 7-pt scale from -3 to $+3$ and summing the ratings given on each adjective pair for a target concept. Difference scores that correspond to each of the IAT target-concept discriminations were calculated by taking the composite scores for the two target concepts and subtracting one from the other. In each case, high scores reflect more positive attitudes toward smoking (compared to stealing) and toward other protein (compared to white meat).

Finally, subjects indicated on a feeling thermometer how favourable they felt about each of the four target concepts. The feeling thermometer was identical in format to those in Experiment 1 except the range was from 0 to 100. Thermometer difference scores that correspond to each of the IAT target concept discriminations were calculated by taking the thermometer scores for the two target concepts and subtracting one from the other. In each case, high scores reflect more positive attitudes toward smoking (compared to stealing) and toward other protein (compared to white meat).

Implicit measures. Subjects completed a total of four IATs: two implicit attitude IATs and two implicit identification IATs. The two target-concept discriminations used for each type of IAT were smoking versus stealing and white meat versus other protein. Each of these was paired with the attribute dimension of pleasant versus unpleasant to assess attitudes, and with the attribute dimension of self versus other to assess identification.

The self, other, and white meat categories each had three stimuli due to the difficulty of finding items that were good exemplars and known to most people. The three self and three other stimuli consisted of pronouns that referred to self (i.e., me, mine, self) or other (i.e., they, them, other), and that have been used successfully in prior research to measure implicit identification (e.g., Farnham et al., 1999; see also Rudman, Greenwald, & McGhee, in press). The three white

meat (chicken, turkey, poultry) and six other protein (e.g., tofu, nuts, cheese) items were from Swanson and Greenwald (1997). The six smoking items (e.g., smoke, cigarette) and the six stealing stimuli (e.g., steal, theft) were generated by the authors. The six pleasant and six unpleasant stimuli were selected from Greenwald et al. (1998). A complete list of the stimuli used in all the experiments is included in the Appendix.

The same procedure was used as in Experiment 1, with the exception that subjects performed two IATs instead of one (IAT order was counterbalanced) and a newer version of the IAT software was used (Farnham, 1997, version 4/17/97).

Results and discussion

Other protein vs. white meat measures. Each subject's vegetarian attitude IAT effect was calculated by taking the latency for the other protein + unpleasant task minus the latency for the other protein + pleasant task. Thus, more positive scores indicated favourable implicit attitudes towards other protein relative to white meat. An analogous procedure was used to calculate the vegetarian self-concept IAT such that more positive scores indicated stronger identification with other protein than white meat.

It was predicted that vegetarians would have more favourable attitudes toward other protein than meat and identify with other protein more than meat. Omnivores were expected to have more favourable attitudes toward meat than other protein and identify with meat more than other protein. Table 1 reveals that vegetarians preferred other protein to meat (M = 114 ms) and omnivores preferred meat to other protein (M = −70 ms). Omnivores and vegetarians implicit attitudes were significantly different, $F(1, 76) = 24.03$, $p = 10^{-6}$. The effect size for this difference was large, $d = 1.01$. No other effects emerged, with the exception of an uninterpretable interaction between the procedural variables, IAT effect, and diet, $F(2, 76) = 3.17$, $p = .05$.

Vegetarians also implicitly identified more with other protein than meat (M = 66 ms), and omnivores implicitly more with meat than other protein (M = −46 ms). Omnivores' and vegetarians' implicit identification with other protein and meat was significantly different, $F(1, 76) = 15.19$, $p = 10^{-4}$, and the effect size for this difference was large, $d = .80$. However, this difference was somewhat qualified by a significant interaction with IAT task order. The differences between omnivores and vegetarians decreased the later the dietary self-concept IAT was presented, $F(2, 76) = 4.14$, $p = .020$.

Both explicit measures indicated that vegetarians preferred other protein to white meat and that omnivores preferred white meat to other protein. The effect sizes for these group differences were large (ds > 2.00; see Table 1). In sum, vegetarians and omnivores alike showed cognitive consistency between self-

TABLE 1
Summary statistics for implicit and explicit measures (Experiment 2)

Measure		*Vegetarians* ($n=34$) *M*	*(SD)*	*Omnivores* ($n=64$) *M*	*(SD)*	*Difference* Cohen's d[a]	p[b]
Implicit measures							
Other Protein + Pleasant[c]	IAT	113.7	(225.3)	−69.7	(159.8)	1.01	10^{-6}
Other Protein + Me[d]	IAT	66.5	(132.5)	−45.8	(144.4)	.80	10^{-4}
Explicit measures							
Thermometer (prefers other protein)[c]		59.0	(32.5)	1.1	(23.6)	2.18	10^{-17}
Semantic differential (prefers other protein)[c]		15.8	(10.0)	−0.5	(5.1)	2.43	10^{-18}

Measure		*Smokers* ($n=37$) *M*	*SD*	*Nonsmokers* ($n=59$) *M*	*(SD)*	*Difference* Cohen's d[a]	p[b]
Implicit measures							
Smoking + Pleasant[e]	IAT	173.0	(112.0)	137.1	(150.1)	.27	.133
Smoking + Me[f]	IAT	140.4	(96.3)	92.8	(124.5)	.42	.003
Explicit measures							
Thermometer (prefers smoking)[e]		40.0	(22.3)	5.7	(11.9)	2.14	10^{-17}
Semantic differential (prefers smoking)[e]		9.5	(6.5)	2.1	(2.4)	1.85	10^{-17}

[a] Effect sizes, *d*, were computed by dividing mean difference scores by their pooled SDs. Conventional small, medium, and large effects for *d* are .2, .5, and .8, respectively.

[b] *p*-values correspond to *F*-tests of the differences between group means for the IAT measures and to *t*-tests of the differences between group means for the thermometer and semantic differential measures.

[c] Higher scores reflect more favourable attitudes toward other protein vs. white meat. Thermometer scale ranges from −100 to 100. Semantic differential scale ranges from −36 to 36.

[d] Higher scores reflect stronger association between the self and other protein than the self and white meat.

[e] Higher scores reflect more favourable attitudes toward smoking vs. stealing. Thermometer scale ranges from −100 to 100. Semantic differential scale ranges from −36 to 36.

[f] Higher scores reflect stronger associations between the self and smoking than the self and stealing.

identification, attitudes, and behaviour at both the implicit and explicit level supporting our predictions for nonstigmatised behaviours.

The top half of Table 2 shows the relationships among implicit and explicit measures for vegetarians (top matrix) and vegetarians and omnivores combined (lower matrix). As can be seen, the relationship between implicit attitudes and identity was positive in both matrices ($rs > .60$). In addition, the lower matrix reveals that implicit and explicit attitude measures were related, as were the

TABLE 2
Correlations among implicit and explicit measures (Experiment 2)

Measures		*1*	*2*	*3*	*4*	*5*	*6*
Other protein vs. white meat comparison							
Implicit measures							
1. Other protein + Pleasant[a]	IAT	–	*.65*	.28	.31	−.31	.13
2. Other protein + Me[b]	IAT	*.61*	–	.20	.35	−.05	.03
Explicit measures							
3. Thermometer (prefers other protein)[a]		*.54*	*.44*	–	*.70*	−*.57*	.28
4. Semantic differential (prefers other protein)[a]		*.51*	*.40*	*.79*	–	**−.46**	.18
5. No. of times/yr eat white meat		−*.30*	−*.37*	−*.54*	−*.50*	–	−.20
6. No. of times/yr eat other protein		**.23**	.09	*.33*	**.21**	.02	–
Smoking vs. stealing comparison							
Implicit measures							
1. Smoking + Pleasant[c]	IAT	–	**.39**	−.15	.04	−.06	
2. Smoking + Me[d]	IAT	*.29*	–	−.03	−.11	.24	
Explicit measures							
3. Thermometer (prefers smoking)[c]		.11	**.24**	–	*.73*	.08	
4. Semantic differential (prefers smoking)[c]		.09	**.22**	*.81*	–	−.02	
5. No. of cigarettes smoked/day		.14	*.30*	*.60*	*.49*	–	

Bold = $p < .05$. *Italics* = $p < .005$. For the other protein vs. white meat comparison, the lower half of the quadrant contains the correlations for all subjects (*N*s range from 101 to 107) and the upper half contains the correlations for vegetarians (*N*s range from 32 to 34). For the smoking vs. stealing comparison, the lower half of the quadrant contains the correlations for all subjects (*N*s range from 98 to 104) and the upper half of the quadrant contains the correlations for smokers only (*N*s range from 35 to 40).

[a] Attitude measures are scored so more positive scores indicate more favourable attitudes toward other protein relative to white meat.

[b] Identification IAT is scored so more positive scores indicate greater association of self with other protein than self with white meat.

[c] Attitude measures are scores so more positive scores indicate more favourable attitudes toward smoking relative to stealing.

[d] Identification IAT is scored so more positive scores indicate greater association of self with smoking than self with stealing.

implicit identity and explicit attitude measures (with *r*s ranging from .40 to .54). Thus, vegetarians and omnivores showed convergence among implicit and explicit measures of attitude and self-concept. Additionally, self-reported behaviour (frequency of eating white meat and other protein) each correlated in the expected direction with implicit attitudes, implicit identification, and explicit

attitudes (i.e., negative for white meat, but positive for other protein).[4] These results show that when behaviours are nonstigmatised, the relations between implicit and explicit measures are robust (Swanson & Greenwald, 1998). Perhaps due to diminished power, the correlations for vegetarians alone (top matrix) were in the expected direction, but only reached significance when measures were matched on method (i.e., the two implicit measures were related, as were several of the explicit measures).

Smoking vs. stealing measures. Each subject's smoking IAT effect was calculated by taking the latency for the smoking + unpleasant task minus the latency for the smoking + pleasant task. Thus, more positive scores indicated greater facility for the smoking + pleasant task than the smoking + unpleasant task and were interpreted as more favourable implicit attitudes toward smoking relative to stealing. An analogous procedure was used to calculate the smoking self-concept IAT, such that more positive scores indicated stronger identification with smoking than stealing.

Because stealing is more stigmatised than smoking, it was expected that both smokers and nonsmokers would have more favourable attitudes toward smoking than stealing. However, if smokers' implicit attitudes were consistent with their behaviour, they should show this preference more than nonsmokers. Table 1 reveals that both smokers and nonsmokers had more favourable implicit attitudes toward smoking relative to stealing (Ms = 173 ms vs. 137 ms), and that the difference in group means was nonsignificant, $F(1, 72) = 2.30$, $p = .13$. Nonetheless, smokers might show consistent behaviour-relevant cognitions if they also disassociated themselves from their habit. However, as expected, smokers' identification with smoking was significantly greater than nonsmokers' identification, Ms = 140 ms vs. 93 ms, $F(1, 72) = 9.61$, $p = .003$. The effect size for this difference was larger than the attitude effect size (ds = .42 vs. .27). Because smokers automatically identified with a behaviour more than nonsmokers, but nonetheless did not implicitly like the behaviour more than nonsmokers, their implicit attitudes were inconsistent with their behaviour, as in Experiment 1. By contrast, both explicit measures indicated that smokers preferred smoking over stealing more so than nonsmokers, whose attitudes showed little preference for either behaviour. These differences in smokers' and nonsmokers' explicit attitudes were significant (see Table 1).

The lower half of Table 2 shows the correlations among dependent measures for smokers and nonsmokers (lower matrix) in Experiment 1. The relations between implicit and explicit attitude measures were relatively weak, compared to those for the vegetarians and omnivores (all rs < .15). Nonetheless, implicit identification covaried with implicit and explicit attitude measures, and with

[4] Subjects were asked to indicate whether vegetarian or omnivore best represented them. Some self-defined vegetarians (11 out of 34) reported eating white meat infrequently.

self-reported behaviour (number of cigarettes smoked per day), suggesting that greater frequency of smoking was associated with stronger self-identity as a smoker, and generally more positive attitudes. The explicit attitude measures correlated positively with themselves, and with self-reported behaviour. The correlations for smokers alone (upper matrix) were examined for evidence for convergence among implicit and explicit measures. As can be seen, these relations were positive between implicit attitudes and implicit identification, and between the two explicit attitude measures. However, the correlations between implicit and explicit measures were not in the predicted direction and hovered near zero. These results show that when a behaviour is stigmatised (i.e., smoking), the convergence between implicit and explicit measures is relatively weak, compared to when a behaviour is not stigmatised (i.e., dietary preference).

In sum, Experiment 2 replicated Swanson and Greenwald (1998), showing that omnivores and vegetarians have consistent implicit and explicit cognitions associated with the behaviour of eating meat. Omnivores preferred white meat to other protein and identified more with white meat than other protein. Vegetarians preferred other protein to white meat and identified more with other protein than white meat. Experiment 2 also showed that smokers and nonsmokers did not differ in their implicit attitudes toward smoking, although smokers did implicitly identify with smoking more than nonsmokers. In concert with Experiment 1, these findings suggest that smokers' implicit attitudes are inconsistent with their behaviour and self-concept. By contrast, and as in Experiment 1, smokers' explicit attitudes toward smoking were more positive than nonsmokers' attitudes, suggesting that smokers' explicit cognitions are consistent. Taken together, these findings suggest that smokers' cognitive bolstering of their behaviour may be more likely at the explicit than implicit level.

EXPERIMENT 3

Experiment 3 had two goals. The first goal was to test implicit cognitions associated with smoking, using the contrast category of nonsmoking. Advances in IAT technology allowing picture stimuli made using the contrast category of nonsmoking a feasible alternative. Specifically, pictures were taken of common household scenes in which one version had a cigarette and ashtray present. The second version was identical, except for the absence of the cigarette and ashtray. Experiment 3 also examined implicit identification for smokers versus nonsmokers, using pictures in place of semantic stimuli. When contrast categories correspond to the behaviour and its opposite (smoking vs. nonsmoking), people who engage in a behaviour should prefer it to its opposite (e.g., smokers should prefer smoking to nonsmoking) and be identified with it more than its opposite (e.g., smokers should identify more with smoking than nonsmoking). Evidence of consistency among smokers' behaviour-relevant cognitions requires showing that smokers prefer smoking over nonsmoking and showing a difference in

smokers' and nonsmokers' attitudes that matches their expected differences in identification with smoking.

The second goal was to test the possibility that smokers might achieve implicitly consistent cognitions by lowering their self-esteem. The pattern of consistent cognitions can be characterised as "If I do X, and I identify with X, and X is bad, then I am also bad". Therefore, it was important to examine whether smokers' self-esteem is lower than nonsmokers. Because past research has shown robust implicit self-esteem for a variety of social groups (Farnham et al., 1999), it was hypothesised that smokers would have equally positive implicit self-esteem as nonsmokers. As a result, any evidence for inconsistency among smokers' behaviour-relevant cognitions would not be attributable to lowered self-esteem.

Method

Subjects. These were 87 undergraduate psychology students at the University of Washington who received course credit for participation. Of these subjects, 53 were self-reported nonsmokers and 43 were self-reported smokers. A total of 21 subjects (12 nonsmokers and 9 smokers) were excluded from all analyses for technical reasons (e.g., high error rates).[5] The similarity between the smoking and nonsmoking pictures was higher than what is generally found between the target contrast stimuli and may have led to the observed high error rates. The final sample consisted of 35 smokers and 41 nonsmokers.

Materials and procedure

Explicit measures. Smoking behaviour was assessed as in Experiment 2. Attitudes toward smoking were assessed similarly as in Experiment 1, with the exception that only a single feeling thermometer and a single semantic differential were used (each were labelled "Smoking"). Self-esteem was measured using the Rosenberg Self-Esteem Scale (Rosenberg, 1979) and a feeling thermometer measure (labelled "Yourself").

Implicit measures. Subjects completed three IATs that assessed attitudes toward smoking, identification with smoking, and implicit self-esteem. In the attitude and identification IATs, the target concepts were smoking versus nonsmoking. Eight pairs of pictures were used to represent these concepts. Smoking versus nonsmoking pictures varied only in the presence versus absence of a cigarette and ashtray. The settings were common domestic situations in which one might smoke (e.g., reading the newspaper at a table; see Appendix). The

[5] Examination of the practice block distinguishing smoking and nonsmoking pictures indicated that smokers and nonsmokers performed equally well (both in terms of latency and errors) at this discrimination. Additionally, all analyses reported in the results section were repeated with these subjects included, and showed no change in the pattern of results presented herein.

attitude IAT paired these pictures with words that were pleasant or unpleasant in meaning. The identification IAT paired these pictures with self versus other words. The self-esteem IAT used the same self versus other words, paired with the pleasant and unpleasant words used in the attitude IAT (see Appendix).

The procedure was identical to that of Experiment 2 with three exceptions. First, the IATs were administered using a software program that allows both pictures and words to be used as stimuli.[6] Second, subjects performed three IATs (IAT order was counterbalanced). Third, the IAT practice blocks that familiarised subjects with the stimuli differed from Experiment 2. Rather than do single categorisation practice blocks at the start of each IAT task, subjects did five initial blocks to practice the following discriminations (in the order listed): (1) smoking/nonsmoking pictures from pleasant/unpleasant words; (2) pleasant/unpleasant words from self/other words; (3) pleasant from unpleasant words; (4) self from other words; and (5) smoking from nonsmoking pictures. Subjects then completed the mixed categorisation tasks (e.g., smoking + unpleasant/nonsmoking + pleasant) for the three IATs as in Experiment 2 (one practice block and one critical block per task).

Results and discussion

Subject's attitude and self-concept IAT effects were calculated as in Experiment 2. In each case, positive scores indicate more favourable attitudes toward, and identification with, smoking compared to nonsmoking. The self-esteem IAT was scored such that more positive scores indicate more favourable than unfavourable attitudes toward the self. No differences due to procedural variables were found; therefore, the analyses reported below do not include them.

Smoking vs. nonsmoking measures. Table 3 shows the results of Experiment 3's implicit and explicit measures. As can be seen, smokers' implicit attitudes revealed a preference for nonsmoking over smoking ($M = -69$ ms), even though they identified with smoking more than nonsmoking ($M = 125$ ms). In contrast, nonsmokers' implicit attitudes showed a strong preference for nonsmoking over smoking ($M = -245$ ms), and they identified with nonsmoking more than smoking ($M = -20$ ms). Consistent with Experiment 2, this pattern shows more inconsistent implicit cognitions for smokers than nonsmokers that is due to smokers having attitudes inconsistent with their behaviour and their self-concept. Table 3 also reveals that smokers' implicit self-esteem ($M = 322$ ms) was as positive as nonsmokers' implicit self-esteem ($M = 330$ ms). Thus, smokers did not achieve consistency among their behaviour-relevant cognitions via low self-esteem.

[6] The program was *Inquisit*, written by Sean Draine (Draine, 1998).

TABLE 3
Summary statistics for implicit and explicit measures (Experiment 3)

Measure		Smokers ($n=35$)		Nonsmokers ($n=41$)		Difference	
		M	*(SD)*	*M*	*(SD)*	Cohen's *d*[a]	*p*[b]
Implicit measures							
Smoking + Pleasant	IAT[c]	−69.4	(244.9)	−245.3	(257.8)	.70	.008
Smoking + Me	IAT[d]	125.3	(228.5)	−20.1	(192.1)	.71	.002
Me + Pleasant	IAT[e]	322.2	(175.9)	329.5	(143.2)	−.04	.371
Explicit measures							
Smoking thermometer[f]		45.3	(23.7)	16.9	(17.9)	1.36	10^{-7}
Smoking semantic differential[g]		−7.7	(5.6)	−13.5	(3.3)	1.33	10^{-7}
Self thermometer[h]		82.7	(13.1)	84.2	(13.4)	−.08	.630
Rosenberg Self-Esteem Scale[i]		23.5	(5.6)	24.2	(4.7)	−.14	.610

[a] The effect size measure, *d* was computed by dividing mean differences by their pooled SDs. Conventional small, medium, and large effects for *d* are .2, .5, and .8, respectively.

[b] *p*-values correspond to *t*-tests of the differences between smokers and nonsmokers.

[c] Higher scores reflect more favourable attitudes toward smoking vs. nonsmoking.

[d] Higher scores reflect stronger association between self and smoking than self and nonsmoking.

[e] Higher scores reflect more favourable attitudes toward self vs. other.

[f] Higher scores reflect more favourable attitudes toward smoking. Scale ranges from 0 to 100 with 50 being neutral.

[g] Higher scores reflect more favourable attitudes toward smoking. Scale ranges from −18 to 18 with 0 being neutral.

[h] Higher scores reflect higher self-esteem. Scale ranges from 0 to 100 with 50 being neutral.

[i] Higher scores reflect higher self-esteem. Scale ranges from 0 to 30 with 15 being neutral.

Table 3 also shows that using picture stimuli to operationalise a contrast between smoking and nonsmoking enhanced the ability of the attitude IAT to discriminate between smokers and nonsmokers, $t(74) = 2.73$, $p = .008$. The effect size for this difference was moderately large ($d = .70$). This finding suggests that nonsmoking may be the most appropriate contrast to use when assessing implicit attitudes toward smoking, compared to contrasts that are positive for both groups (e.g., exercise) or negative for both groups (e.g., stealing). Consistent with Experiment 2, the identification IAT continued to discriminate between these groups, despite the substitution of picture stimuli for words, $t(74) = -3.17$, $p = .002$. The effect size for this difference was comparable to that shown in Experiment 2 ($d = .71$). Thus, the change in stimulus mode appears to have improved attitude assessment without diminishing self-concept assessment.

The thermometer and semantic differential measures continued to discriminate between smokers and nonsmokers, as in Experiments 1 and 2 (see Table 3). Nonetheless, when a single attitude object was used ("smoking"), smokers' attitudes were, on average, neutral to somewhat unfavourable, albeit

more positive than nonsmokers. These findings are consistent with prior research (Chassin et al., 1991; Stacy et al., 1994) and suggest that smokers may bolster their behaviour by viewing their habit somewhat favourably, compared with nonsmokers. Finally, smokers' and nonsmokers' explicit self-esteem were comparable, as assessed by a self (feeling) thermometer and the Rosenberg Self-Esteem Scale (see Table 3), again showing that smokers did not achieve consistency by lowering their self-esteem.

Table 4 shows the relationships among Experiment 3's dependent measures, for smokers and nonsmokers combined (lower matrix) and for smokers only (upper matrix). Replicating Experiment 2, the lower matrix shows covariation between the attitude and self-concept IATs, and implicit self-concept was positively correlated with the explicit attitude measures and self-reported behaviour (number of cigarettes smoked per day). As in Experiment 2, the explicit attitude measures also covaried and were each related to self-reported behaviour. In addition, the attitude IAT was positively related to each explicit attitude measure. However, the upper matrix shows that for smokers alone, the relations between implicit measures were attenuated. As can be seen, only the two explicit attitude measures and two explicit self-esteem measures reliably covaried. Finally, the implicit and explicit self-esteem measures were negligibly related to any of Experiment 3's primary dependent measures (attitudes, self-concept, and self-reported behaviour). The lack of relationship between the implicit and explicit self-esteem measures is consistent with past research showing that the two constructs are independent (Farnham et al., 1999).

In sum, Experiment 3 provided additional evidence that smokers' implicit behaviour-relevant cognitions are inconsistent. At the implicit level, smokers had positive self-esteem, identified more with smoking than nonsmoking, but preferred nonsmoking over smoking. By contrast, nonsmokers had positive self-esteem, identified with nonsmoking more than smoking, and preferred nonsmoking over smoking. These data suggest that smokers are more likely to have implicit attitudes that are inconsistent with their behaviour than nonsmokers. Additionally, Experiment 3 suggested that smokers may explicitly bolster their habit by viewing their behaviour more favourably than nonsmokers do (i.e., as somewhat neutral rather than negative).

GENERAL DISCUSSION

As performers of a stigmatised behaviour, smokers have been observed to consciously reconcile their performance of the behaviour with their negative knowledge concerning it (Chassin et al., 1991; Halpern, 1994; Johnson, 1968). However, because smokers regularly and frequently confront laws that restrict their behaviour, disapproval from others, and information campaigns about smoking's adverse effects, it is possible that they may not be able to resolve this inconsistency at the implicit level.

TABLE 4
Correlations among implicit and explicit measures (Experiment 3)

Measure		*Implicit measures*			*Explicit measures*				
		1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Implicit measures									
1. Smoking + Pleasant	IAT	—	.31	.00	.27	.16	−.09	.07	.12
2. Smoking + Me	IAT	*.34*	—	.21	.27	.00	−.13	−.09	.32
3. Me + Pleasant	IAT	−.04	.09	—	.16	.14	.22	.10	.19
Explicit measures									
4. Smoking thermometer		**.32**	**.31**	.01	—	*.56*	.28	.29	−.10
5. Smoking semantic differential		**.26**	**.23**	.01	*.72*	—	.02	−.01	.13
6. Self thermometer		−.05	−.14	.19	−.04	−.04	—	**.46**	−.29
7. Rosenberg Self-Esteem Scale		.01	−.02	.07	−.05	.15	*.45*	—	−.29
8. No. of cigarettes smoked/day		**.29**	*.42*	.02	*.45*	*.52*	−.16	−.14	—

Bold = $p < .05$. *Italics* = $p < .005$. Measures are scored so more positive scores indicate a higher level of the construct being measured. The lower half of the quadrant contains the correlations for all subjects (*N*s range from 70 to 76) and the upper half of the quadrant contains the correlations for smokers only (*N*s range from 33 to 35).

The results of three experiments were consistent with this view. In Experiments 1 and 2, smokers' implicit attitudes towards smoking were similar to those of nonsmokers, and in Experiment 3 smokers showed greater implicit preference for nonsmoking than smoking. Moreover, in Experiments 2 and 3, smokers strongly identified with a behaviour they did not implicitly like, even though they showed high self-esteem. The pattern of implicit inconsistency for smokers can be characterised as "I am good, and I identify with smoking, but smoking is bad". By contrast, the pattern of smokers' explicit cognitions can be described as, "I am good, and I identify with smoking, and smoking is not so bad".

To obtain comparison data for performers of nonstigmatised actions, Experiment 2 assessed behaviour-relevant cognitions for vegetarians and omnivores. The results clearly showed consistent cognitions for vegetarians and omnivores. Each group identified with their diet, and showed positive attitudes toward the foods they ate, at both the implicit and explicit level. These results are consistent with viewing nonstigmatised behaviours as ones that do not create dissonant implicit or explicit structures.

These findings do not oblige concluding that smokers suffer more from cognitive dissonance than do vegetarians, omnivores, or nonsmokers. It is possible that the experience of cognitive discomfort requires conscious awareness of an inconsistency. Therefore, having inconsistent implicit cognitions may not produce discomfort unless they are brought to people's attention. Future research should examine whether apprising smokers of their incongruent implicit cognitions might facilitate their ability to quit smoking, through dissonance arousal and self-regulatory processes (see Devine & Monteith, 1993, for a review of similar research in the prejudice reduction domain, and see Stone et al., 1994, for relevant research concerning nonperformed-but-admired behaviour).

The behaviours of smoking and vegetarianism were selected because they differ in their level of stigmatisation. Stigmatisation, however, reflects a variety of dimensions (e.g., healthiness, normative pressures, potential for addiction)—any one (or more) of which may cause the observed differences in cognitive consistency. Indeed, while the addictive nature of smoking may contribute to its disapproved of status, it also makes it difficult to eliminate dissonance by abstaining from the behaviour. It is well known that smokers find it difficult to quit smoking (Hellman, Cummings, Haughey, Zielezny, & O'Shea, 1991; Rose, Chassin, Presson, & Sherman, 1996). Thus, the addictive element of smoking may be one reason why smokers might accommodate their behaviour rather than quit smoking. However, the addictive nature of smoking, the most common reason given by smokers for smoking, may also serve to alleviate dissonance by providing a consonant cognition (Festinger, 1957). This cognition effectively dictates to the smoker that "It's out of my control", thus removing any free will or intent on the part of the smoker.

Relationship between implicit and explicit measures

The majority of research using implicit measures has focused on assessing stereotypes and prejudice. For the most part, the relationship between implicit and explicit measures of affect and beliefs toward various social groups is weak (Brauer et al., 2000). A suggested interpretation of this partial dissociation is that self-report measures are more subject to contamination from self-presentation concerns and/or that respondents' unconscious cognitions are, by definition, inaccessible (Dovidio & Fazio, 1992; Greenwald & Banaji, 1995). The present research focused on behaviours and attitudes that are stigmatised (in the case of smokers) and nonstigmatised (in the case of vegetarians' and omnivores' diets). The results of Experiments 2 and 3 showed that smokers' implicit and explicit attitudes were weakly related. By contrast, the results of Experiment 2 showed that vegetarians and omnivores' implicit and explicit attitudes were moderately or strongly related. These findings suggest that the relationship between implicit and explicit measures can be moderated—in the present research, by differences in the stigmatisation of the behaviour. The explicit-implicit link may be stronger for dietary attitudes because they are less subject to the need for cognitive accommodation (as is the case for smokers). Future research should continue to search for moderators of implicit and explicit relations, and to identify the processes by which conscious and unconscious attitudes are driven apart or brought into convergence (cf. Rudman et al., 2000).

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APPENDIX

Target concepts and stimuli

Experiment 1

smoking cigarettes, ashtray, tobacco, pipe, smoking, cigars, nicotine, Camels, smokers, Marlboro
exercise jog, run, swim, biking, sports, tennis, diving, gymnastics, workout, aerobics
sweets candy, cookies, cake, pie, pastry, icecream, chocolate, dessert, fudge, sugar

pleasant caress, gold, joy, kindness, peace, success, sunrise, talent, triumph, warmth
unpleasant abuse, assault, brutal, junk, war, failure, filth, bad, slime, vomit

Experiment 2

white meat chicken, turkey, poultry, chicken, turkey, poultry
other protein nuts, grains, tofu, cheese, soybean, yogurt

smoking smoke, cigarette, tobacco, smokers, nicotine, ligher
stealing steal, theft, gun, mugged, robbery, thief

pleasant peace, paradise, joy, love, cuddle, pleasure
unpleasant disaster, divorce, crash, grief, tragedy, agony

self me, mine, self, me, mine, self
other they, them, other, they, them, other

Experiment 3

Scenes used in smoking and nonsmoking pictures: Besides table with lamp and clock-radio, End-table with lamp and book open-faced down, Kitchen table with newspaper spread open and a coffee mug, Two glasses of water at an outdoor table with chairs, Male smoking cigarette on back door-stoop, Bathroom sink, Back doorstoop with BBQ and glass of juice, Computer on desk.

pleasant cuddle, happy, smile, joy, warmth, peace, paradise, love
unpleasant pain, awful, disaster, grief, agony, brutal, tragedy, bad

self me, mine, self, my, me, mine, self, my
other they, them, their, other, they, them, their, other