Implicit Attitudes to Work and Leisure Among North American and Irish Individuals: A Preliminary Study

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Abstract

The current article reports the findings from two preliminary experiments investigating the Implicit Association Test (IAT) and the Implicit Relational Association Procedure (IRAP) as measures of implicit attitudes in the domain of work and leisure among North American and Irish individuals. The IAT and IRAP tasks involved responding under time pressure on a computerized task, with response latency as the dependent variable. The IAT required participants to categorize positively or negatively valenced words with stimuli associated with either *Work* or *Holidays*. The IRAP required that participants confirm or deny that *Work* and *Holidays* are similar or opposite to positively and negatively valenced words. Participants also completed an explicit measure consisting of a Likert-based questionnaire. In both Experiments, citizens of the United States of America produced performances on the IAT and IRAP that indicated more negative attitudes to work and more positive attitudes to holidays than both Canadian and Irish citizens. Responses on the explicit measures did not accord with this overall pattern of group differences. The results support the use of the IRAP as a measure of implicit attitudes and furthermore the findings appear to be generally consistent with a recent large-scale survey of attitudes to work across 23 countries.

Key words: Implicit Relational Assessment Procedure, Implicit Association Test, work, leisure.

Resumen

Este artículo informa de los hallazgos de dos experimentos preliminares que investigan el Test de Asociación Implícita (IAT) y el Procedimiento de Asociación Relacional Implícita (IRAP), como medidas de las actitudes implícitas en las áreas ocupacional y de ocio, entre individuos norteamericanos e irlandeses. Las tareas del IAT y del IRAP implican responder a una tarea en ordenador bajo presión del tiempo empleando la latencia de respuesta como variable dependiente.El IAT requirió que los participantes categorizasen palabras como valoradas positiva o negativamente con estímulos asociados con *Trabajo* o *Vacaciones*. El IRAP requirió que los participantes confirmaran o negaran que *Trabajo* y *Vacaciones* son similares u opuestos a palabras valoradas positiva o negativamente. Los participantes completaron también una medida explícita consistente en un cuestionario con preguntas tipo Likert. En ambos experimentos los norteamericanos estadounidenses mostraron ejecuciones en IAT e IRAP que indicaron más actitudes negativas hacia el trabajo y más actitudes positivas hacia las vacaciones que los participantes canadienses e irlandeses. Las respuestas al cuestionario no concordaron con este patrón global de diferencias entre los grupos. Los resultados de este estudio apoyan el uso del IRAP como medida de las actitudes implícitas, y los hallazgos parecen generalmente consistentes con una reciente encuesta masiva sobre las actitudes ante el trabajo realizada en 23 países.

Palabras clave: IRAP, IAT, trabajo, ocio.

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The most common method in the social sciences for obtaining information about what people think and believe involves asking participants to fill out relevant questionnaires and/or to conduct an interview or focus group. Such methods require that participants reflect on what they think and then report accordingly. Although clearly useful, questionnaires and the like may fail to pick up on so-called implicit cognitions, which are thoughts, feelings, and beliefs that participants may attempt to conceal, or of which they are not consciously aware, such as racial or sexual stereotypes (see Greenwald & Banaji, 1995, for a detailed discussion).

The most well established measure of what have been called implicit attitudes is the implicit association test or IAT (Greenwald, McGhee, & Schwartz, 1998). The central postulate underlying the method is that individuals should respond quickly when asked to emit the same response for two concepts that are closely associated in memory, but should respond more slowly when the two concepts are not associated. The seminal IAT study by Greenwald *et al.* (1998) involved asking participants to categorize the names of flowers with positive words and the names of insects with negative words, and in another task these categorizations were reversed (flowers-negative and insects-positive). Results yielded the predicted IAT effect between the two tasks. That is, because flowers are positive and insects are negative for most people, the participants responded faster on flower-positive and insect-negative trials than on the reversed counterparts. Subsequent studies have demonstrated predicted IAT effects across a wide range of domains (see Nosek, Greenwald, & Banaji, 2007, for a recent review), and most controversially the effect has been obtained repeatedly in socially sensitive areas such as racism (e.g., Dasgupta, Greenwald, & Banaji, 2003).

Although the IAT has become the most widely used test of implicit cognition, one of its main weaknesses is that it provides a measure of relative associative strength, which can obfuscate the exact nature of the attitudes under study. If an IAT effect indicates that participants respond more quickly when flower is paired with positive and insect with negative than vice versa, this result could reflect a range of different attitudes. For example, it could indicate that flowers and insects are both liked, but flowers are liked more than insects, or it could indicate that both flowers and insects are disliked but insects are disliked more than flowers. In order to identify attitudes to individual objects a different type of test to the IAT is required, and researchers have attempted to develop such tests, including, for example, the Extrinsic Affective Simon Test (EAST; De Houwer, 2003) and the Go/No-Go IAT (GNAT; Nosek & Banaji, 2001).

Another non-relativistic measure that has been proposed is the Implicit Relational Assessment Procedure (IRAP; Barnes-Holmes, Barnes-Holmes, Power, Hayden, Milne, & Stewart, 2006; Barnes-Holmes, Hayden, Barnes-Holmes, & Stewart, in press; McKenna, Barnes-Holmes, Barnes-Holmes, & Stewart, 2007). The IRAP involves presenting words, statements, or pictures on each trial, and participants are required to respond to these stimuli in ways that either agree or disagree with their pre-experimentally determined verbal relations. For example, in the recent study by Barnes-Holmes *et al.* (in press) participants were presented with one of two attribute stimuli ("Pleasant" or "Unpleasant"), a positive (e.g., "Love") or negative (e.g., "Murder") target stimulus, and two relational

terms, "Similar" and "Opposite," as response options. Participants were required to respond as quickly and accurately as possible across blocks of trials, with half of the blocks requiring responses that were deemed consistent (e.g., Pleasant–Love–Similar), and the other half inconsistent (e.g., Pleasant–Love–Opposite), with natural verbal relations. As predicted, response latencies were faster for consistent than for inconsistent trials (e.g., participants responded more quickly to Pleasant–Love–Similar than to Pleasant–Love–Opposite). These results have since been replicated across a small number of other studies (e.g., Barnes-Holmes *et al.*, 2006; McKenna *et al.*, 2007). The current research employed the IAT (Experiment 1) and the IRAP (Experiment 2) as measures of implicit attitudes to work and leisure among North American and Irish participants.

In a worldwide study of attitudes to work and work-life balance by FDS International (2006), research was presented on both United Kingdom (UK) and international workers' attitudes to relevant issues in the work place in modern society (http://www.munroglobal.net/). The study aimed to provide a platform for discussion of important issues behind worker satisfaction across domains, on a global and international level. There were four broad themes presented in the research: 1) employee satisfaction, 2) employee morale, 3) attitudes to work-life balance, and 4) workers' problems around the globe (p. 3). For the purposes of the current research, we will focus on the results obtained for workers residing in Ireland, the USA, and Canada (the reason for focusing on these three groups will be explained below).

Employee satisfaction was determined using six factors: country, advancement, interesting job, recognition, salary, and work-life balance. Overall, the predictors of job satisfaction showed that the North American group rated all six factors as more important than the Irish group. The second theme investigated overall employee morale, which showed that Irish workers were the more satisfied (62 points) group compared to their North American counterparts (USA= 46; Canada= 45). Similarly, in terms of job satisfaction, the Irish scored 15 points higher than the North America group (both Canada and the USA scored 44 points). Furthermore, when asked to define the term 'work-life balance', the third theme, the Irish placed a greater emphasis on achieving a quality of life (70%) in contrast to the North Americans (USA= 54%; Canada= 59%) who placed greater importance on balancing home and work issues (USA= 79%; Canada= 71%; Ireland= 67%). Finally, in terms of current problems for workers in the workplace, Ireland ranked well below the global average for the nine factors measured including hours worked, not enough holidays, dissatisfaction with pay and the like. The North American group had greater variation in their results with the highest percentage of dissatisfaction in the areas of not enough holidays (USA= 26%; Canada= 29%; Ireland= 13%) and pay related issues (USA= 38%; Canada= 35%; Ireland= 15%).

Examining Irish and North American attitudes to work (and leisure) was deemed important in the context of the current research because there appears to be an apparent overlap between North American and Irish cultures, but different emphases are apparently placed on work versus leisure. Consequently, this appeared to allow for a comparison of work-leisure attitudes across three different Western nations, in the context of a range of broadly similar historical, cultural, and economic variables, to which we now turn.

In many ways, for example, Canada and the United States (US) share a similar culture, which can be defined as 'North American'. Dean and Dehejia (2006) reported the US had the largest bilateral trading relationship and were the largest foreign investors in Canada. Furthermore, Canadians have access to a broad range of American culture, including music, food and television (Kearns, 2005). While it can be argued that Canada and the US are separate countries, each with their own distinctive and unique cultural elements, they also co-exist and share a certain level of commonalities that collectively make them North American.

Similarly, Ireland and North America have also solidified a dynamic relationship to one another since the early 19th century, firstly because of economic opportunities beyond Europe and in the 'New World' and in large part because of the emigration and immigration patterns resulting from the Great Famine in Ireland (Brimelow, 1992). It is estimated that during the 1840's, the worst years of the famine in Ireland, nearly 700,000 Irish immigrants entered North America, through the US and Canada. An additional three to four million Irish people continued to immigrate and eventually settle in North America between 1850 and 1914 (Barone & Fonte, 2000).

Contemporary Ireland is a progressive and modern society with an extensive and well-developed infrastructure deeply rooted in North American influence (Kenny, 2005, p.2). The recent economic boom in modern Ireland, christened the 'Celtic Tiger', has opened Irish markets abroad and acted as a gateway to Europe for North American business and trade (Kenny, 2005), a mutually beneficial relationship for both nations. Nevertheless, there is still a perception that North America is intensely work-oriented, whereas Ireland is still seen as a holiday destination with a population that is very much oriented towards leisure, relaxation, social interaction and, according to the stereotype, excessive consumption of alcohol (Stivers, 1978).

In North America, it has been argued that success in work is generally predicated on achievement and many of life's rewards and opportunities are realized in such a manner. Storti (2004), for example, refers to the North American workers' constant need to achieve, which is stronger than the desire for material possessions and luxuries such as holidays. This is then contrasted with their European counterparts who see holidays as a "birthright" and appear "apathetic" towards hard work.

A frequent statistic reported by the Families and Work Institute in New York (2001), that is used to support the apparent divergence in attitudes to work between North American's and Europeans, is that North American workers average about 10 days of holiday a year, in contrast to Britain (25), and Germany (30). Furthermore, 26% of North Americans take no holidays at all and will typically work twelve weeks more a year in total hours than Europeans. Of course, it could be argued that perhaps North Americans are generally unhappy about working these additional hours and thus their attitudes do not, in fact, differ from Europeans. Interestingly, however, research has shown that larger numbers of North American workers report wanting more working hours than they currently have when compared to their Swedish counterparts (Reynolds, 2004). This finding thus supports the conclusion that not only do North Americans work more, but also they *want* to work more.

In drawing any conclusions concerning cross-cultural differences in attitudes to work and leisure, it is important to acknowledge that virtually all of the published research has been conducted using various explicit measures. It remains to be determined, therefore, if cross-cultural differences in such attitudes will be observed using implicit measures. To initiate this research, the two experiments reported in the current article sought to determine if the reported difference in attitudes to work and leisure between North American and Ireland holds true at an implicit level. The first experiment used the Implicit Association Test (IAT) and compared attitudes to work and leisure between North American (Canadian and US citizens combined) and Irish individuals. The results showed no difference between the two groups for either the implicit or explicit measures. Both groups produced similarly strong *Pro-Work* attitudes in the explicit measure and *Pro-Holiday/Anti-Work* attitudes on the implicit measure. The classical separation between implicit and explicit measures was thus observed. Post-hoc analyses of the IAT data revealed an interesting effect, however. Specifically, the IAT effects for the two US citizens were considerably higher than the overall means for both the Canadian and Irish groups. In other words, the two US individuals showed a stronger implicit Pro-Holiday/Anti-Work bias than the other two groups. As a result, in Experiment 2, three groups (Irish, US, and Canadian) were examined, using the IRAP instead of the IAT, to determine if this effect was replicated using a larger sample of US citizens. The effect was indeed replicated, which serves to challenge the common perception that the US is extremely or even excessively work-oriented.

It is important to note that the purpose of the current research was exploratory in nature and was not intended to provide a direct comparison between the IAT and the IRAP as such. Rather the aim was to determine if significant differences would emerge when assessing implicit attitudes towards work and leisure, using a well established implicit measure and a promising new experimental procedure. At the time of the study, there was no previous research specifically investigating attitudes towards work and leisure using the IAT or IRAP, and in particular across cultural groups.

Methods

Experiment 1

Participants

A total of 76 North American (4 male and 27 female) and Irish (5 males and 27 females) participants were recruited for Experiment 1. Data from thirteen of the participants were removed (Canadian=1; US= 10; Irish= 2) from the analyses because the percentage of correct responses on the IAT fell below 80%. The North American group were primarily residing and working in Vancouver, British Columbia or Toronto, Ontario, Canada, with the exception of the two US participants, who were living in Ireland at the time of data collection. The Irish group were either living or working in county Dublin or Cork, Ireland. The participants' age ranged from 24 to 65, with a mean of 35 years for North Americans and 28 years for the Irish group. Most of the participants

had acquired a minimum of 3rd level education and were employed in academia, education, psychology, retail, business and finance. All participants had fluent spoken and written English skills and normal vision or vision that was corrected to normal. No financial or other incentive was provided for participation in the study.

Apparatus/Materials

Prior to the commencement of the IAT, participants were briefed on the broad aims of the study. They were informed that participation was voluntary and would include a computer based task and a short questionnaire pertaining to their attitudes towards work, adapted from a work survey available on-line (see Table 1). The questions pertaining to work were presented as statements, such as "Work is interesting and rewarding" or "Work is something I dread" and participants responded on a 5-point Likert scale ranging from 1 (Strongly Agree) to 5 (Strongly Disagree). The questionnaire did not include items directly related to leisure. The maximum score attainable was 95, and the higher the score the more positive the attitude towards work. The research was conducted in one of three settings: a) an office at the University College Cork main campus, b) at a table or seating area inside the experimenter's residence, and c) at a table area inside the participant's residence. The IAT software was used to present instructions, stimuli, and record responses. The stimuli employed with the IAT task consisted of two sets of four words that were deemed to be associated with either Work (job, promotion, salary, colleague) or Leisure (seaside, beach, relax, summer) and a further two sets of four words that were classified as positively (cake, heaven, rainbow, wealth) or negatively (vomit, cancer, murder, failure) valenced.

Procedure

The experiment consisted of two phases. First, participants were asked to complete the rating scale questionnaire regarding their attitudes towards work. Phase 2 consisted of exposure to the IAT. Each participant was randomly assigned to either a consistent-first or inconsistent-first sequence, described subsequently.

A detailed description of the generic IAT procedure (available for download from Tony Greenwald's personal webpage, http://faculty.washington.edu/agg/iat_materials.htm has been provided elsewhere (O'Toole, Barnes-Holmes, & Smyth, 2007), and thus a less detailed description will be presented here. The IAT consisted of seven blocks of trials, five of which are practice blocks and two of which are test blocks. The order in which blocks were presented depended upon the condition to which participants were assigned (Consistent- or Inconsistent-First). Each of the practice blocks consisted of twenty-four trials, whereas each test block had forty-eight trials. Four categories were represented in the current study: a) target concepts (*Work* and *Holiday*) and b) attributes (*Unpleasant* and *Pleasant*). Consistent blocks contained trials that required participants to categorize *Work* and *Unpleasant* together, and *Holiday* and *Pleasant* together. Inconsistent blocks reversed the categorization (i.e., *Work-Pleasant* and *Holiday-Unpleasant*) and these sequences were counterbalanced across participants.

Block 1: *Unpleasant-Pleasant discrimination.* When a participant pressed the space bar to begin the task, the first stimulus was presented in the centre of the screen. The stimulus remained on screen until the participant pressed a key on the keyboard. If the participant pressed the correct key, 'd' for Unpleasant target words (vomit, cancer, murder, failure) or 'k' for Pleasant target words (cake, heaven, rainbow, wealth), the target was immediately removed from the screen and the next target word was presented following a 400ms delay.

If the participant pressed the incorrect or an invalid key, a red 'X' appeared immediately underneath the target word and remained on the screen until the participant made the correct response. Upon pressing the correct key, both the target word and the red 'X' immediately disappeared and following 400ms, the next target was presented on the screen. Each of eight target words was presented at random, four 'unpleasant' and four 'pleasant'. The targets were presented in blocks of eight trials, without replacement, for a total of 24 trials (i.e. each target word was presented three times).

Following the 24th trial, the screen cleared and statistical performance feedback was presented to the participant. The feedback specified the median response latency in milliseconds and the percentage correct calculated across the entire block. Response latency for each trial was defined as the duration in milliseconds from the presentation of the target word to the first correct response (i.e., median latency included trials on which errors occurred). Following the statistical feedback screen, the participant was presented with the instructions for the next series of categorization trials.

Block 2: *Work-Holiday discrimination*. The second block was similar to the first block with the following differences. First, the instructions that appeared at the top-left and top-right of the computer screen read "Press 'd' For *Work*" and "Press 'k' For *Holiday*". Second, the target words were presented in blue font as opposed to green. Finally, the target categories were changed to *Work* related terms (job, colleague, salary, promotion) and *Holiday* related terms (beach, summer, relax, seaside).

Block 3: *Consistent categories practice*. Block 3 was similar to the previous two blocks with the following exceptions. First, the instructions presented in the upper left and right of the screen read "Press 'd' For *Work or Unpleasant*" and "Press 'k' For" *Holiday or Pleasant*." All 16 target words, four *Work* related, four *Holiday* related, four pleasant and four unpleasant, were presented quasi-randomly across 24 trials, with the constraint that each word was presented once or twice (the same word was never presented on consecutive trials).

Block 4: *Consistent category test*. The fourth block was the same as Block 3 with two exceptions. First, the participants were instructed that the following block would be a test and that speed and accuracy were encouraged. Also, a total of 48, rather than 24 trials were presented. Each of the 16 target words were presented three times in a quasi-random order with the constraint that each word appeared once within each successive block of 16 trials.

Block 5: *Pleasant-Unpleasant discrimination*. This block was similar to Block 1 with the exception that the top left and right corner instructions were reversed. Participants were now asked to "Press 'd' For *Pleasant*" and to "Press 'k' For *Unpleasant*".

Block 6: *Inconsistent category practice*. Block 6 was similar to Block 3 with the exception that the instructions appearing in the top left and right corners asked participants to "Press 'd' For Work or Pleasant" and to "Press 'k' For Holiday or Unpleasant".

Block 7: Inconsistent test category. The final block was similar to Block 4, except that the categorization instructions from Block 6 were used. In addition, upon completion of the 48 trials, the screen cleared and participants were thanked and told to report to the experimenter. The procedure for the Inconsistent-first condition was similar to the Consistent-first condition, except that the positions of Blocks 1, 3, and 4 were substituted with 5, 6, and 7 respectively.

RESULTS

The IAT effect is derived from response latency, which is measured on each trial from the point of target onset to the first *correct* response emitted by the participant. Response latencies were transformed into D-scores, using an algorithm described by Greenwald, Nosek, Banaji (2003), which controls for individual variations in speed of responding that may act as a possible confound when analyzing between group differences. The version of the D-algorithm employed for the current study was computed as follows: (i) latencies above 10,000 ms were eliminated; (ii) all data for a participant were removed if he or she produced more than 10% of trials with latencies less than 300 ms; (iii) means for trials in each of the four blocks (3, 4, 6, 7) were computed; (iv) one standard deviation was computed for all trials in blocks 3 and 6, and another for blocks 4 and 7; (v) the difference scores between blocks 3 and 6, and between blocks 4 and 7, were computed, taking the consistent (*Pro-Holiday*/*Anti-Work*) from the inconsistent (*Pro-Work*/*Anti-Holiday*) blocks; (vi) each difference score was divided by its associated standard deviation; and (v) these two scores were added together and divided by two. A positive D-score signifies a preference for *Holiday* over *Work*, whereas a negative score indicates a preference for *Work* over *Holiday*.

As described previously, the current research involved counterbalancing the consistent- and inconsistent-first conditions across participants. IAT researchers have investigated the effects of such counterbalancing systematically, and although IAT effects tend to be slightly larger when a consistent condition precedes an inconsistent condition these differences tend not to be statistically significant (Greenwald *et al.*, 1998). Nevertheless, preliminary statistical analyses conducted on each of the data sets reported in the current experiment always explored any possible order effect and its interaction with the other variables. In each case, however, the effects were non-significant and thus these are not reported here.

Figure 1 presents the overall mean IAT D-scores for the two groups (North American and Irish). Both groups showed similar levels of implicit preferences for *Holiday* over *Work*. A one-way between-groups ANOVA indicated that the difference was indeed non-significant ($p > .6$). Two one-sample t-tests indicated that the IAT effects for both groups differed significantly from zero; North American, $t\ (31) = 5.7$, $p < .0001$ and Irish, $t\ (31) = 6.5$, $p < .0001$.

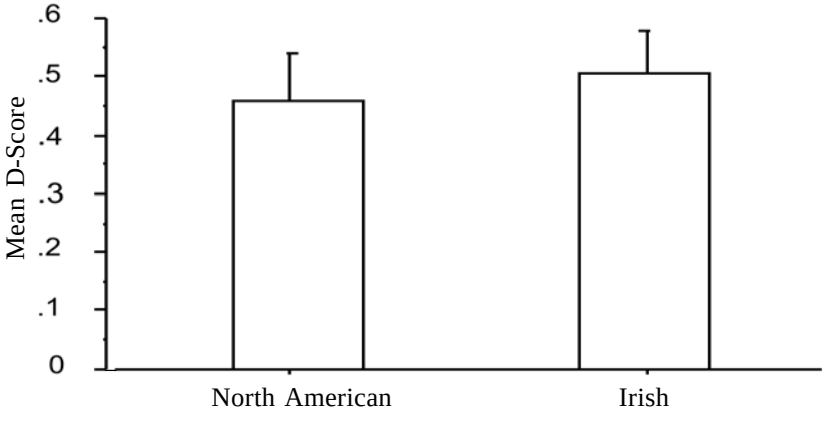

Figure 1. Mean D-scores for North American and Irish groups.

The explicit attitudes to work survey was scored by totalling the nineteen items, each scored on a 5-point Likert scale, to create an index for work, in which higher scores indicated more favourable attitudes (See Table 1). Both groups of participants expressed similar levels of positive attitudes towards work (N. American *M*= 79.8; Irish M= 78.6), and a one-way between-groups ANOVA indicated the small difference was indeed non-significant (*p*= .38).

The IAT D-scores failed to correlate with the ratings from the survey, *r*= .01, *p*= .92, thus suggesting that the generally *Pro-Work* attitudes expressed in the explicit measure did not vary as a function of the preference for *Holidays* over *Work* reflected with the IAT.

Overall, the groups did not differ on either measure, but the classic separation between implicit and explicit measures was observed. Although no significant group differences emerged between the North American and Irish groups on either measure, a further review of the data suggested a possibly interesting effect. Specifically, when the data for the two participants who were US citizens were examined, their IAT scores were considerably higher than the overall means for the Canadians (in the North American

Table 1. Experiment 1, Questionnaire. Noted that only 19 items appeared on survey and negative work items were considered to be pro-holiday.

Work Items (+)	Work Items (-)
I enjoy going to work on most days	I hate my job.
Work is interesting and rewarding	Work is something I dread.
I do not mind the occasional extra hours at work	This job is temporary until something better comes along.
I am committed to this job for at least 6 months	I start and finish my day according to what I'm paid.
This is more than a job, it's a career	My job is too demanding.
I am satisfied with my job	I am bored at my job.
I see myself employed in this field in the future	The people I work for and with are horrible.
I enjoy the people I work with	I work in an environment without intellectual stimulation.
I am challenged intellectually at work	I have no interest in furthering my career in this field.
I often put in more hours than required	

group) and the Irish. Although removing these two participants from the statistical analyses reported above did not change any of the conclusions, it did raise an interesting possibility that US citizens may respond differently to work and leisure on an implicit measure than Irish and Canadian groups. This issue was addressed in the next experiment.

Experiment 2

Experiment 2 was similar to Experiment 1, except that the sample included separate groups of Canadian and US citizens, and the IRAP, instead of the IAT, was used as an implicit measure.

Participants

A total of fifty-five Canadian, US, and Irish participants were recruited for Experiment 2 (Canadian= 17; US= 18; Irish= 20). Data from sixteen of the participants were removed (Canadian= 8; US= 7; Irish= 1) from the analyses because response accuracy on the IRAP fell below 80% correct. All participants were recruited on a voluntary basis, and their ages ranged from 23 to 62, with means of 31 (US), 45 (Canadian), and 37 (Irish). Correlational analyses also indicated that age did not predict performance on the implicit measure and the groups did not differ significantly in age. All participants in the Canadian, US, and Irish groups worked and lived in, and held valid citizenship for, their home country (3 US participants were living in Ireland at the time the data were collected; removing the data for these three participants did not change any of the conclusions arising from the experiment). In all cases, each participant also self-identified appropriately as Canadian, US, or Irish. Most of the participants had acquired a minimum of 3rd level education and were employed in professional roles, in areas such as education, law, and finance. All participants had fluent spoken and written English skills and normal vision or vision that was corrected to normal. No financial or other incentive was provided for participation in the study.

Apparatus/Materials

Before performing the computer-administered IRAP, participants were informed about the general nature of the study, and were asked to complete a 20-item questionnaire (available from the first author upon request) relating to their attitudes towards work and leisure (10 items related to work and 10 to leisure). The questionnaire was adapted from work surveys available on-line (see Table 2). The questions were presented as statements, such as “I am intellectually challenged at work” or “Vacation / Holiday time is very important to me” and participants responded on a 5-point Likert scale ranging from 1 (Strongly Agree) to 5 (Strongly Disagree). The maximum score attainable for each domain was 50, and the higher the score the more positive the attitude towards work or leisure. Similar to the IAT, the IRAP was administered in one of three settings: a) an office at the University College, Cork main campus, b) at a table or seating area inside the experimenter’s apartment, and c) at a table area inside the participant’s

Table 1. Experiment 1, Questionnaire. Noted that only 19 items appeared on survey and negative work items were considered to be pro-holiday.

Work Items (+/-)	Holiday Items (+/-)
I enjoy the people I work with (+)	I would prefer to get a raise than more time off at work (-)
Work is interesting and rewarding (+)	The purpose of holidays/vacation is to recharge a person so that they can do a better job at work (-)
Work is something I dread (-)	I look forward to coming back to work after my holidays (-)
This is more than a job, it's a career (+)	I wish my holidays were longer (+)
This job is temporary until something better comes along (-)	Work is something I enjoy so much, I find it hard to take holiday/vacation time (-)
The people I work for and with are horrible (-)	I use most if not all my vacation days allotted to me per year (+)
I enjoy the work that I do (+)	I am happy with the amount of holiday time I have currently (+)
I am challenged intellectually at work (+)	I would choose to ear more money and have less holidays (-)
I am bored at my job (-)	I would prefer more holidays than more money at work (+)
I have no interest in furthering my career in this field (-)	

residence. The IRAP software controlled all aspects of instructional and stimulus presentation and recorded all participant responses. The stimuli employed the IRAP consisted of two sample words, "Pleasant" and "Unpleasant", two sets of *Work* (duties, work, ambition, employer, responsibilities, office) and *Holiday* (seaside, relax, vacation, leisure, holiday, summer and holiday) target words, and the relational response options, "Similar" and "Opposite."

Procedure

The IRAP computer program controlled all aspects of instructional and stimulus presentation and recorded participant responses. Twelve target words were used in the IRAP procedure. Six were deemed *Work* related and six were deemed *Holiday* related. In selecting the target stimuli it was deemed important to identify terms that were representative and relevant for each category and to minimize cultural bias and extreme or biased terminology (e.g., using "duties" and "ambition" rather than "success" and "wealth").

Included in the IRAP computer program was an introduction to the procedure and standardized instructions that appeared on-screen, which the participants read in their own time. They were also informed that they could move between screens using the space bar to move forward from screen to screen and the letter "d" to move back to a previous screen. On each trial of the IRAP, a single sample stimulus was presented ("Pleasant" or "Unpleasant") with one of the two types of target stimuli ("Work" or "Holiday" related terms). Two relational response options (i.e. "Similar" and "Opposite") were also presented on each trial.

The IRAP consisted of eight blocks, the first two of which were practice blocks and the remaining six were test blocks (described in detail subsequently). Each block had twenty-four trials presented in a quasi-random order with the constraint that each of the two sample stimuli appeared once with each of the 12 target stimuli. The trials presented within the IRAP were divided into four types, as shown in Figure 2. The trial-types were differentiated in terms of the sample-target relations; *Pleasant-Holiday and*

Unpleasant-Work (*Pro-Holiday/Anti-Work*); *Unpleasant-Holiday and Pleasant-Work* (*Pro-Work/Anti-Holiday*).

Pro-holidays-first sequence. The first practice block required participants to emit responses that were deemed relationally consistent based on a *Pro-Holiday/Anti-Work* bias (hereafter referred to as *Pro-Holiday*). For example, given the sample stimulus *Pleasant* and the target category *Holiday* (e.g., 'holiday, relax, etc.), selecting *Similar* was deemed correct (see Figure 2). If, however, *Opposite* was chosen a red 'X' appeared below the target stimulus and the participant had to make the correct response by selecting *Similar*. Throughout the block, selecting the correct relational term removed all stimuli simultaneously for 400 ms before the next trial was presented. An incorrect response produced the red X immediately below the target word, and the participant was required to correct the error by pressing the correct key; doing so cleared the screen and the next trial was presented after the 400ms delay. All other keys, apart from 'd' and 'k', were disabled, but if pressed produced the red X, which could only be removed if the correct key (for that block of trials) was pressed. When the participant had completed all 24 IRAP trials, the screen cleared and feedback for the percentage of correct responses and the median response latency, for that block, were displayed.

The second practice block was similar to Block 1 except that participants were now required to respond in accordance with a *Pro-Work/Anti-Holiday* bias (hereafter referred to as *Pro-Work*). For example, given the sample stimulus *Pleasant* and the target category *Holiday* (e.g., 'holiday, relax, etc.), selecting *Opposite* was deemed

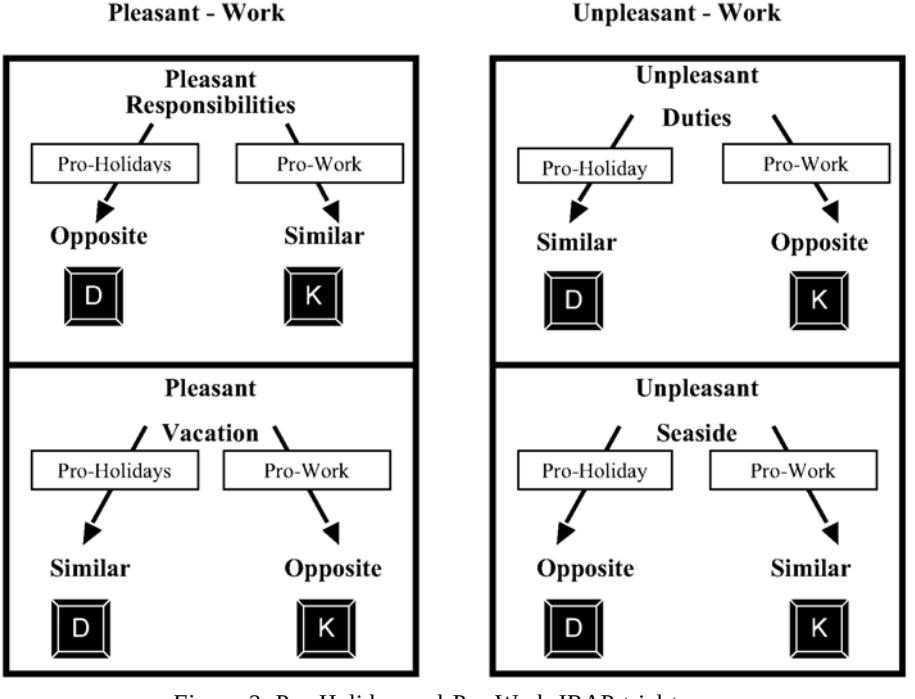

Figure 2. Pro Holiday and Pro-Work IRAP trial-types.

correct whereas selecting 'Similar' was incorrect (see Figure 2). When the second practice block was complete, and the feedback for the block had been presented (median latency and percentage correct), on-screen instructions again prepared the participant for a reversal in the feedback contingencies and also indicated that the next block was a test and responding quickly and accurately was important. The first, third, and fifth test blocks were identical to the first practice block (*Pro-Holiday* response pattern), and the second, fourth and sixth test blocks were identical to the second practice block (*Pro-Work* response pattern). The only difference was the between-block instructions, which reminded participants that the next block was a test and speed and accuracy was important. After completing the sixth and final test block, the screen cleared and a message appeared indicating that part of experiment was over and the participant should report to the experimenter.

Pro-work-first sequence. This IRAP sequence was similar to the pro-holiday-first sequence, except the experiment commenced with a pro-work block and then alternated between pro-holiday and pro-work blocks. Upon completion of all six blocks, participants were informed that the task was complete, thanked and asked to report to the experimenter.

RESULTS

Similar to the results from the IAT reported earlier, the primary datum was response latency defined as the time in milliseconds that elapsed between the onset of the trial and a correct response emitted by a participant. The response latency data for each participant were transformed into *D*-IRAP scores (Barnes-Holmes, Murtagh, Barnes-Holmes, & Stewart, in press; Barnes-Holmes, Waldron, Barnes-Holmes, & Stewart, in press; Cullen & Barnes-Holmes, 2008) using an *adaptation* of the Greenwald *et al.* (2003) *D*-algorithm described previously. The steps involved in calculating the *D*-IRAP scores were as follows: (i) only response latency data from the six test blocks were used; (ii) latencies above 10,000ms were removed from the dataset; (iii) if the data from a participant contained more than 10% of test block trials with latencies less than 300ms, that participant was removed from the analyses; (iv) twelve standard deviations for the four trial-types were calculated (four each from test blocks 1 and 2, 3 and 4, and 5 and 6, respectively); (v) twenty-four mean latencies were calculated for the four trial types in each test block; (vi) difference scores for each of the four trial types were calculated for each pair of test blocks, by subtracting the mean lean latency for the *Pro-Holiday* test block from the mean latency of the corresponding *Pro-Work* test block; (vii) each difference score was then divided by its corresponding standard deviation from step 4, yielding 12 *D*-IRAP scores -one score for each trial type for each pair of test blocks; (viii) four overall trial type *D*-IRAP scores were calculated by averaging the three scores for each trial-type across the three pairs of test blocks; and (ix) two *D*-IRAP scores, one for *Work* and one for *Holiday*, were then calculated by averaging the two *Work* and then the two *Holiday* trial-type scores.

The mean *D*-IRAP scores for *Work* and *Holiday* (step ix above) for the Canadian, US, and Irish groups are presented in Figure 3 (upper panel). The IRAP effects for all

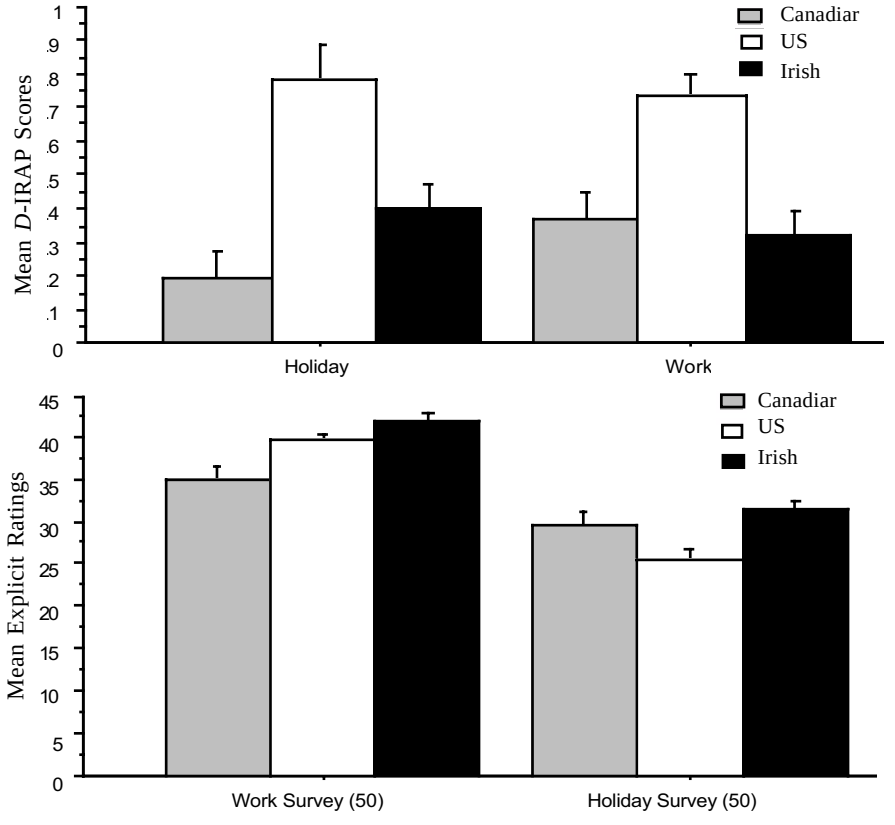

Figure 3. Upper Panel: IRAP D-scores with standard error bars for Canadian, US, and Irish groups for Work and Holiday trial-types. More positive scores for the Holiday trial-type indicated a Pro-Holiday bias, whereas more positive scores for the Work trial-type indicated an Anti-Work bias. *Lower Panel*: Explicit Measure Work and Holiday survey for Irish, US and Canadian groups.

three groups indicated pro-holiday and anti-work biases. In effect, all three groups responded more rapidly with *Similar* (rather than *Opposite*) when presented with *Work-Unpleasant* and *Holiday-Pleasant* trials, and also responded more rapidly with *Opposite* (rather than Similar) when presented with *Work-Pleasant* and *Holiday-Unpleasant* trials. Furthermore, the US group's *D*-IRAP scores for both *Work* and *Holiday* trial-types was much higher than both the Irish and Canadians, who showed similar levels of preference (with some suggestion that the former were more *Pro-Holidays* than the latter).

The *D*-IRAP scores were subjected to a 2x3 mixed repeated measures ANOVA, with IRAP trial-type (*Work* versus *Holiday*) as the within-participant variable and nationality as the between participant variable. The main effect for nationality was significant, F (2,36)= 11.9, p <.0001, η_p^2= .4, but the effect for trial-type was not (p >.8). The interaction between nationality and trial-type approached significance, F (2,36)=

2.7, p= .08, η_p^2= .1. Separate planned comparisons one-way between-participant ANOVAs for each trial-type were both significant: *Work*, F (2,36)= 8.6, p <.001, η_p^2= .3; *Holiday*, F (2,36)= 10.5, p <.001, η_p^2= .36. Fisher PLSD post-hoc tests for each trial-type indicated that the IRAP effects for the US participants were significantly different from the other two groups: *Work*/US-Irish (p <.01); *Work*/US-Canadian (p <.0001); *Holiday*/US-Irish (p <.001); *Holiday*/US-Canadian (p <.01). However, neither trial-type produced a significant difference between the Irish and Canadian groups, although the *Holiday* trial-type approached significance: *Work*/Irish-Canadian (p >.6); *Holiday*/Irish-Canadians (p= .08).

One-sample t-tests were conducted to determine if the D-IRAP scores for each group differed significantly from zero, which they did for each trial-type and for each group (Irish-*Work*, t (18)= 4.9, p <.0001); Irish-*Holiday*, t (18)= 6.2, p <.0001; US-*Work*, t (10)= 10.4, p <.0001; US-*Holiday*, t (10)= 7.3, p <.0001; Canadian-*Work*, t (8)= 4.0, p <.004; Canadian-*Holiday*, t (8)= 2.4, p <.04). Overall, therefore, although all three groups showed significant *Pro-Holiday* IRAP effects, the US group showed significantly stronger effects for both trial-types relative to the other two groups.

The explicit attitudes towards *Work* and *Holiday* survey was scored by totaling 10 items per category, each scored on a 5-point Likert scale, to create a 50 point index for *Work* and a 50 point index for *Holiday*, in which higher scores indicated a more favourable attitude (see Figure 3, lower panel). The work survey questions produced the most positive response from the Irish group and the least positive from the Canadians, with US participants slightly lower than the Irish. For the holiday survey questions, the Irish and Canadians produced similarly positive responses, with the US group approximately 10 points lower. A 2x3 mixed repeated measures ANOVA, with question-type (*Work* versus *Holiday* Survey) as the within-participant variable and nationality as the between participant variable, revealed a main effect for nationality, F (2,36)= 17.7, p <.0001, η_p^2= .5, and for question-type F (2,36)= 85.3, p <.0001, η_p^2= .2. The interaction between nationality and trial-type was also significant, F (2,36)= 4.7, p <.02, η_p^2= .2.

Two separate one-way between-groups ANOVAs, one for each trial-type, were both significant: *Work*, F (2,36)= 12.1, p <.0001, η_p^2= .4; *Holiday*, F (2,36)= 6.7, p <.003, η_p^2= .3. Fisher PLSD post-hoc tests indicated that the Canadian explicit rating for work was significantly less positive than ratings obtained from the Irish and US participants: *Work*/Canadian-Irish (p <.0001); *Work*/Canadian-US (p <.006). The US group produced a lower rating for work than the Irish, but this only approached significance (p <.09). The explicit ratings for *Holiday* indicated that the US group was significantly less positive than the other two groups: *Holiday*/US-Irish (p <.0008); *Holiday*/US-Canadian (p <.04). The Canadian-Irish difference was non-significant (p= .28).

A correlation matrix was used to analyse the correlations within and among the explicit and implicit measures (see Table 3). The two IRAP D-scores correlated positively with each other and negatively with the explicit holiday ratings (the Holiday-Holiday correlation was marginal). The explicit ratings did not correlate significantly with each other and the *Work* explicit measure failed to correlate with either IRAP trial-type. The positive correlation between the two D-scores provides some support for the internal consistency of the IRAP. The negative correlations between the D-scores and the explicit-

Table 3. Correlation matrix within and among explicit and implicit measures.

	Work D-IRAP	Holidays Explicit	Work Explicit
Holidays D-IRAP	.65**	-.3#	.14
Work D-IRAP		-.33*	.01
Holidays Explicit			-.11

* $p < .05$; ** $p < .0001$; # no significant difference

holidays measure are consistent with the fact that the US group produced the strongest *Pro-Holiday* effect on the IRAP, but the weakest *Pro-Holiday* effect on the explicit measure.

Consistent with the tentative post-hoc results from Experiment 1, the US participants did show stronger Pro-*Holiday* biases than both the Irish and Canadian groups on the IRAP. Interestingly, the results from the explicit measure revealed a different pattern for the US participants. That is, for the work survey questions, both the Irish and US groups were significantly more positive than the Canadians and for the holiday questions, the US participants were the least positive compared to the Irish and Canadian groups.

General Discussion

Results from Experiment 1 of the current study showed that there was a relatively strong *Pro-Holiday* (and *Anti-Work*) IAT effect for both the North American and Irish participants. In contrast, the explicit measure showed similar levels of positive attitudes towards work, rather than holidays, for both groups. Both Irish and North Americans, therefore, were explicitly pro-work but implicitly pro-holidays. Interestingly, however, the data for two participants who were US citizens indicated that their IAT scores were considerably higher than the overall means for the North American and Irish groups, suggesting that perhaps US citizens differ in their attitudes to work relative to Canadian and Irish people.

In the second Experiment, the US group produced stronger *Pro-Holiday* and *Anti-Work* biases on the IRAP than both the Irish and Canadian groups, who showed broadly similar levels of preference comparable to the data reported in Experiment 1. Once again, the explicit measures showed a pattern of results that diverged from the implicit measure. For the work-survey questions the Irish and US participants were both significantly more positive than the Canadians, and for the holiday-survey the Canadians were significantly less positive than the Irish and US groups. In short, the US participants were strongly *Pro-Holiday* and *Anti-Work* on the IRAP but relatively *Pro-Work* and weakly *Pro-Holiday* on the explicit measures. These diverging patterns were reflected in the negative correlations obtained between the implicit and explicit measures.

The finding that the US group showed a divergence in their explicit and implicit preferences for work and holiday remains to be explained. In this regard, it should be noted that implicit measures are typically used to tap into attitudes that might not be expressed in response to direct questions about the domain of interest. Thus, when

asked directly about the value of work it might be rated as highly important among US citizens, but when asked about how happy they are about work a different pattern of responses might emerge.

Interestingly, in the recent study by FDS International (2006), which was discussed in the Introduction, a rank-ordered list of countries was produced in terms of how demanding or 'whingy' its workers were reported to be. The US was ranked third in the world, Canadians fifth, but with the Irish emerging as the most willing workers in the world, ranking last among twenty-three countries. Demanding workers were defined in terms of levels of complaint relative to actual working conditions. That is, which workers are really hard done by versus those who just feel they are hard done by. In an attempt to compare workers perceptions to global realities, two measures were used: a) % of people who feel their pay is a problem compared with actual levels of income relative to the cost of living, and b) % who feel their working hours are too long, compared with actual working hours. (FDS, 2006, p. 23-25) What was unique about the US group in the survey was that although they indicated a willingness to work long hours, and by far had the highest levels of income relative to the cost of living in the world, four in ten US individuals continued to feel their pay was a problem. Perhaps US society with its "competitive individualism and highly unequal wealth distribution… characterized by consumerist and individualist ideologies" (FDS International, p. 25) can account for this schism between willingness and "demandingness" with regard to work. In this context, therefore, perhaps the divergence between the explicit and implicit tests in the current study is not that surprising. In effect, the explicit measures tapped into the US culture's focus on the importance and value of work, but the implicit measures served to reveal a level of dissatisfaction with work among that group. Of course, this entirely post-hoc interpretation remains highly speculative, and is based on a very small sample in the current research, but the pattern of results obtained in the present study is certainly consistent with the recent FDS International (2006) research. In any case, the IRAP did appear to reveal differences among the three groups in attitudes to work and holidays that were not revealed by the explicit measures, and as such the present findings provide further support for the possible utility of the IRAP as an implicit measure.

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