## *Abstract*

**Background:** Mass media campaigns are part of a comprehensive, population based approach to communicate physical activity behaviour change. Campaign awareness is the most frequently reported, short term comparable measure of campaign effectiveness. Mostly mass media campaigns report those who were aware with those who are unaware of campaigns. Few follow awareness in the same respondent, over time, during a mass media campaign whereby, different patterns of awareness or 'awareness profiles' - 'never', 'early' 'late', or 'always' may emerge. Using 'awareness profiles', we address: (1) any differences between groups on demographics; and (2) assess changes in physical activity. **Methods:** Find Thirty every day® was a population-wide mass media campaign delivered in Western Australia. The cohort comprised 405 participants, who completed periodic telephone interviews over two years. **Results:** Almost one third (30.4%) were 'never aware' of the campaign. Over one third recalled the campaign at one or more time points that is, 'early aware'. Ten per cent became aware at Time 2 and stayed aware campaign across the remaining time. Examining within and across the 'awareness profile's only gender was significant. **Conclusions:** This paper provides an approach to profiling awareness, whereby people cycle 'in and out' and few people are 'always aware' over a two year period. It presents possible implications and considerations for future campaign planners interested in establishing and maintaining campaign awareness with adult populations.

*Background*

Regular moderate intensity physical activity substantially reduces the risk of a range of chronic lifestyle diseases (AE Bauman, 2004; WJ. Brown, Burton, & Rowan, 2007; Jeon, Lokken, Hu, & van Dam, 2007; Kruk, 2007; Warburton, Nicol, & Bredin, 2006). Public health mass media campaigns have been used in the last four decades to communicate health messages, including recommendations on physical activity, to the community. Despite the strong scientific evidence of the positive effects of regular physical activity, participation rates remain low in many countries and physical inactivity remains a priority area for public health (Bassuk & Manson, 2005; AE Bauman, 2004; Bull, Bellew, Schoppe, & Bauman, 2004; Sharpe et al., 2010).

Mass media campaigns are an important part of a comprehensive, population based approach to communicate physical activity behaviour change (A. Bauman & Chau, 2009; A Bauman, Smith, Maibach, & Reger-Nash, 2006; Cavill & Bauman, 2004; Finlay & Faulkner, 2005; Wakefield, Loken, & Hornik, 2010). Campaign awareness is the most frequently reported outcome and most comparable short term measure of mass media campaign effectiveness (A. Bauman & Chau, 2009; Cavill & Bauman, 2004; JE. Leavy, Bull, Rosenberg, & Bauman, 2011). By and large the literature compares those aware of mass media campaigns with those who were unaware. Very few published physical activity studies have followed awareness in the same respondents, over time, during a mass media campaign to assess patterns of campaign awareness (Cavill & Bauman, 2004; JE. Leavy et al., 2011). Furthermore, of the campaigns that did follow the same respondents, over time, awareness was presented as a static measure at each time point and not as a pattern or profile (Huhman et al., 2010; Reger-Nash et al., 2005). These different awareness profiles present a challenge firstly to engage,

and then to sustain awareness of physical activity messages and campaigns within target groups over the course of campaigns.

## *Find Thirty every day® mass media campaign*

Find Thirty every day® was a population-wide mass media campaign delivered in Western Australia between May 2008 and March 2010. It aimed to increase physical activity and reduce chronic disease in Western Australian adults aged 20-54 years. The independent evaluation included a cohort study, following the same individuals over four time points from 2008 through 2010.

The aim of this paper is to report the individual level effects of the Find Thirty every day® campaign on awareness, walking and total physical activity over time. Using the concept of 'awareness profiles', we describe four different patterns of campaign awareness over time to address two objectives: (1) to identify any differences between groups on demographic characteristics; and (2) to assess change in behaviour (walking and total physical activity) by demographic characteristics and awareness profiles of the Find Thirty every day® campaign.

## Methods

### *Campaign characteristics*

Find Thirty every day® comprised formative research and message pre-testing, campaign development, and seven waves of media. The mass media component of the campaign has been described elsewhere (JE Leavy et al., In press). Multiple communication channels were used including: television, radio, print media and billboards. The television commercials (TVCs) consisted of three 30-second advertisements and four 15-second advertisements and were shown on metropolitan and regional commercial stations. The three 30-second

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advertisements featured a montage of incidental and everyday physical activities, including parents playing with children, adults walking for recreation and transport, dancing or cycling, and active domestic tasks such as raking leaves. Target Audience Rating Points (TARPS) are a measure of the number of times a person in the target audience will have seen a TV programme containing the advert, and are indicative of the reach of advertising to community members (Cavill & Bauman, 2004), in addition, they can be used to target advertising at gender and age groups. Over the seven media waves Find Thirty every day® TVCs were scheduled and purchased in commercial television programs that rated higher with the 25-54 year old age group. The television campaign was also supported by: radio and print advertising; billboards; website and online resources. The billboards were specifically erected in high traffic areas in metropolitan Perth.

### *Study design, survey methods, instrument and items*

This study used a population-based cohort design with four data collection points (T1 – T4) was used to assess the individual level impact of the campaign. Participants were initially randomly selected from the 2006 Western Australian electronic telephone directory of residential phone numbers. At the completion of the first survey respondents were invited to participate in the cohort survey (T2-T4), of those who agreed their first name was recorded and specifically requested at follow up T2-T4. Inclusion criteria were English speaking, aged between 20 and 54 years of age, and those who did not suffer from a disease or disability that would prevent them from doing moderate physical activity. Data were derived from self-reported responses to a random-sample Computer Assisted Telephone Interview (CATI). The survey comprised 66 items collecting data on physical activity behaviour, cognitive impact, campaign diagnostics, demographics and included items from previous evaluations of earlier "Find thirty. It's not a big exercise®" campaigns (TNS Social Research, 2005). Full

details of the survey are available elsewhere (Leavy et al., 2012 Under review) therefore, only key measures for this paper are reported below. This study was approved by the Human Ethics Research Review Panel at the University of Western Australia.

Campaign awareness ('total awareness') of the campaign was assessed by a combination of 'prompted recall' whereby participants were asked "In the last 3 months. Do you remember seeing any TV ads about physical activity or exercise?" plus, 'prompted recognition' whereby participants were asked "Have you seen the following TV ads?" and a description of the advertisements was read out (AE Bauman, Bellew, Owen, & Vita, 2001; Berry et al., 2009; Craig, Bauman, Gauvin, Robertson, & Murumets, 2009). *Prompted recall* is recorded as an open ended verbatim response that is coded as 'yes' for recalling Find Thirty every day® TV advertisements or 'no' for recall unrelated to the advertisement. *Prompted recognition* is asked as a closed ended question and respondents indicate 'yes' or 'no' if they recognised the campaign advertisement based upon the read descriptions of the advertisements.

For this paper, awareness categories were collapsed into four 'awareness profiles' using the binary awareness variable: 'aware' = 1 and 'not aware' = 0, by three time points (T2-T4). The four 'awareness profiles' were defined as: NA – 'Never aware' of the campaign at any time point; EA- 'Early Aware' of the campaign at T2 and/or T3 and not sustained at T4; LA – 'Late aware' remained aware of the campaign at T4; and AA – 'Always Aware' of the campaign at all times points (see Table 1).

Physical activity was assessed using the Active Australia questions that have been validated and used in national and state-based surveys (Australian Institute of Health and Welfare,

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2003; WJ Brown, Trost, Bauman, Mummery, & Owen, 2004) and other mass media campaign evaluation (WJ Brown, Mummery, Eakin, & Schofield, 2006). These questions measure the frequency and duration of walking and vigorous intensity physical activities. For these analyses, physical activity was calculated in the following ways: (1) total minutes of walking; (2) total minutes of physical activity; and (3) categorised into two physical activity groups (i) inactive/ insufficient (some activity but insufficient to reach the levels required for 'sufficient' and/or no walking, moderate-intensity or vigorous-intensity physical activity in the previous week); and (ii) sufficient levels of physical activity (achieves ≥150 minutes of moderate-intensity physical activity over five or more sessions or ≥60 minutes of vigorous-intensity activity in the previous week). Usual scoring rules were applied to responses and outlier values (Australian Institute of Health and Welfare, 2003; Milligan, McCormack, & Rosenberg, 2007). Individuals were categorised as inactive/insufficient physical activity (=0) or sufficient physical activity (=1) at each time point and a summary score was created over the four time-points (minimum possible value of 0 and a maximum value of 4). A new collapsed variable representative of patterns of physical activity over the 4 time-points was created as follows: total score of 0-2=inactive/not maintained physical activity; total score of 3-4=active- maintainer of physical activity.

Demographic variables included gender, age, location (by postcode), education, income, height and weight. The Western Australian census population SEIFA (Socio-economic Index for Areas) disadvantage scores were used to group respondents into low, medium and high Socio Economic Status (SES) groups. Body Mass Index (BMI) was calculated using self-report height and weight and the cut offs used were: underweight <18.5; normal 18.5-24.9; overweight 25-29.9; and obese >30. Due to small numbers in the underweight category (n=11) it was combined with the normal category to form one category and overweight and

obese were combined to form the other BMI category reported in the analyses as either: 'Underweight/normal' or 'Overweight/obese'.

*Data handling and statistical analysis*

Data collected from the four waves (T1-T4) were merged by unique respondent identification code and checked for data entry errors and changes in personal measurements. The final cohort comprised 405 participants with complete data at T1, T2, T3 and T4, with an overall response-rate of 54% and follow-up completion rates of approximately 80% for T2, T3 and T4, respectively.

Cross tabulations and Chi square tests were conducted to compare those respondents who completed all four interviews (cohort group) with those respondents who did not (dropouts) on demographic characteristics and level of physical activity. The demographic characteristics of the cohort and all those that dropped out across any time-point were similar except for some differences on age. The cohort had a significantly higher proportion of adults aged 20-34 years (19.0% vs 30.1%, respectively) and 45-54 years (41.2% vs 29.8%, respectively) compared with the drop outs (Table 2).

For the purpose of this paper, any reported recall/recognition of previous campaign messages from the original "Find thirty. It's not a big exercise[®]" were excluded from the analyses. Bivariate analyses were used to explore differences between the four awareness profiles and Pearson chi square scores are reported as significant if $p<0.05$.

Multinomial logistic regression was used to identify the significance of participant characteristics (age, gender, SES, education, BMI and physical activity level) on each of the

campaign awareness profiles. From these multinomial logistic regressions, odds ratios (OR) and 95% confidence intervals (CIs) were computed comparing the probability of being either 'Early aware', 'Late aware' or 'Always aware' to 'Never aware' of the campaign.

Repeated-measures analyses using mixed-model analysis were conducted to accommodate the continuous variables 'walking' and 'total physical activity' over the four time-points (T1 to T4). First, univariate analyses were conducted for participant characteristics (age, gender, SES, education, BMI, and 'awareness profile'). Then, multivariate analyses, adjusting for the same respondent characteristics were conducted for both 'walking' and 'total physical activity'. Significance levels are reported if p<0.05.

Analyses were completed using SPSS version 18 (SPSS inc., Chicago). Analysis of the data occurred in 2011-12.

*Results*

*Campaign Awareness*

Table 1 shows the eight permutations of campaign awareness over time. Four key awareness profiles are identified. Almost one third of respondents (30.4%) did not report any awareness at any time-point, and they were 'never aware' of the campaign. Just over one third of respondents (38.0%) recalled the campaign at one or more time points but this was not sustained across the entire campaign to T4, in essence these participants may be described as 'forgetting' the campaign by T4, that is 'early aware'. Just over one fifth of respondents (21.9%) remained aware of the campaign at T4, they were 'late aware'. Results show that 10

per cent of respondents became aware at Time 2 (T2) and stayed aware of the 'Find Thirty every day®' campaign across the remaining time points that is, 'always aware'.

Table 3 presents the demographics and physical activity behaviour for the four key awareness profiles. Over the two years of the campaign within the 'never aware' profile they were more likely to be male, older (35 - 44 years and 45 - 54 years), mid-SES, achieved a high school certificate/diploma and mostly already sufficiently active. Respondents who were 'early aware' and 'late aware' were similar demographically, more likely to be female, the older age groups (35 - 44 years and 45 - 54 years), high-SES, achieved a high school certificate/diploma and those were mostly already sufficiently active. In contrast, people 'always aware' were split between males and females (51.3% and 48.7% respectively) but more likely to be the older age group, high-SES and University educated. All profiles had more than half of the respondents classified as overweight/obese. Examining within and across the awareness profiles and demographics only gender is significant (Table 3). Within gender there is an interesting pattern of distribution across the profiles with almost 40% of all males 'never aware' of the campaign, in contrast, within females less than one quarter (23.6%) were 'never aware' of the campaign.

Table 4 presents the results of multinomial regression used to identify the association between demographics, physical activity and awareness. The table provides the odds ratios of being in either of the following awareness profiles categories; 'early aware', 'late aware' or 'always aware', compared with 'never aware' profile (referent). Significant differences were associated with BMI in one profile 'early aware' (OR 1.69, 95% CI 1.01-2.83) and also with age and education in one profile, 'always aware'. Significant differences were associated with gender in two profiles 'early aware' (OR 2.38, 95% CI 1.44-3.94) and 'late aware' (OR 2.05,

95% CI 1.15-3.63). Physical activity was not associated with awareness after adjusting for demographics.

### *Self-reported walking and total physical activity*

Table 5 reports the results of repeated measures analyses, T1 to T4 for 'total walking' and 'total physical activity'. Overall, mean minutes of 'total walking' was seen to increase by 19 minutes between T1 and T3, but this was not sustained at T4 (185 minutes, 204 minutes and 173 minutes respectively). For walking, a significant effect was detected only for education ($p<0.001$). When adjusted for participant demographics a significant trend for increased walking was detected in the 45-54 year old age group, achieving 34 mean minutes walking per week more than their youngest counterparts across T1-T4. However, those with a university education and those categorised as overweight/obese had a significant decrease in walking. There were no significant effects across the 'awareness profiles' for walking.

For 'total physical activity' a significant effect was seen for time ($p=0.04$) and gender ($p<0.001$). Overall, total physical activity increased by 11 minutes between T1 (baseline) and T3, however, this was not sustained at T4 (330 minutes, 341 minutes and 300 minutes respectively). After adjustment significant effects for time, females, and those categorised as overweight/obese were seen. There were no significant effects across the 'awareness profiles' for total physical activity.

### *Discussion*

This population based cohort study examined awareness of a two year mass media physical activity campaign by describing four profiles; 'never aware', 'early aware', 'late aware' and, 'always aware' of the campaign. Over two years, we found just over 30% were 'never aware'

of the Find Thirty every day® campaign and comprised predominantly males and mostly sufficiently physically active participants. More than one third of respondents profiled as 'early aware', that is, they were aware of the campaign by the second measurement had subsequently forgotten (lost awareness) by the end of the campaign. Conversely, more than one fifth of respondents became aware at the end of two years, and were profiled as 'late aware'. These two aware profiles were similar demographically being predominantly female, and at least mid-aged. We found at each follow-up measure, over the two year life of the campaign that 10% of respondents remained 'always aware' of the campaign. By examining awareness profiles this study suggests the same campaign message delivered over two years resulted in fluctuating rather than sustained awareness. This study adds to the literature on media campaign awareness, as it is not a static phenomenon, and people may cycle 'in and out' of awareness over the duration of a multi-year campaign.

Interestingly, the current study found no patterns in the demographic differences between the four awareness profiles. For example, males were over represented in the 'never aware' profile and then equally represented in 'always aware'. In fact, we found the largest proportion of people cycled 'in and out' of awareness, whilst unexpectedly the smallest proportion were those who were 'always aware' of the campaign. Usually, physical activity mass media campaigns report only on two groups those "aware", and those "not aware" of the campaign (Huhman et al., 2010; Reger-Nash et al., 2005). In addition, cross-sectional studies report median post-campaign awareness rates of 70% (Cavill & Bauman, 2004), partly suggesting an increase in post-campaign awareness is an indicator of campaign effectiveness (Craig et al., 2009).

In Western Australia, "Find Thirty" is a brand that has been in existence for over seven years and promotes physical activity to the adult community. With brand familiarity, comes the potential for 'wear-out' of mass media messages over the longer term (Campbell & Keller, 2003). By exploring the profiles within a cohort, we suggest there are other internal and external campaign factors that may explain the fluctuating differences in awareness and this requires consideration in planning and evaluating physical activity campaigns.

In this study, there are a number of possible explanations as to why the mass media campaign may have appealed to one profile more than another. These include: 1) campaign execution; 2) scheduling and the already crowded general media environment; 3) a changing media landscape; 4) methodological related issues; and 5) lack of on-the-ground campaign activities. First, the execution was informed by formative research and ad-testing (JE Leavy et al., In press; Shilton & Maitland, 2009). The TVCs aimed to increase awareness around low cost, accessible physical activities, and the montage of advertisements featured women in six of the TVCs. Research suggests males respond to ads that are self-focused, exciting and competitive; whilst females tend to be attracted to messages that feature walking (Graham & Graham, 2008; Plotnikoff, Todosijczuk, Johnson, & Karunamuni, 2011). Perhaps this explains the mostly male, 'never aware' profile, and why they appealed to the 'early' and 'late' profiles that were mostly female. Second, scheduling was during high rating, popular commercial television including soap operas and reality television, thus the scheduling may have facilitated the TVCs appearing in shows with greater female audiences. Consideration should also be given to scheduling during sports programs and current affairs (Oliver, Weaver, & Sargent, 2000), as this may have had better reach for certain profiles. Furthermore, the media environment is crowded with messages from competing and related health issues, and commercial health messages (Maibach, 2007; Randolph & Viswanath,

2004; Snyder, 2007). The Find Thirty every day® campaign was scheduled to avoid overlap of health messages, although an increase in state and national based lifestyle campaigns during 2008- 2010 (e.g. 'Draw the Line', and 'Measure up' campaigns) and people may have become de-sensitised to specific 'Find Thirty' message. The changing media landscape is a third possibility, as there was an increase from 5 to 11 free-to-air television stations during this time. Other possible explanations of the findings exists, such as during data collection where specific items on media consumption were lacking including; the media consumed, and media preferences. In addition, the questions regarding campaign awareness may have been problematic with respondents becoming sensitised to the same sequence of questions over two years. Finally, this study invested most of the resources into mass media, with few additional strategies to reinforce the campaign message. In contrast, the Canadian campaign, ParticipACTION ran for 30 years (Edwards, 2004) and showed awareness rates of 80% and higher between 1971 and 2000 (A Bauman, Madill, Craig, & Salmon, 2004). An important difference being ParticipACTION used elements of social marketing including a diverse audience segments in different years, partnerships and innovative community mobilisation (A Bauman et al., 2004; Costas-Bradstreet, 2004; Edwards, 2004). Other physical activity campaigns in the US, Australia and Europe also described a combination of community initiatives, environmental supports and advocacy to amplify their mass media efforts (WJ Brown et al., 2006; De Cocker, De Bourdeaudhuij, Brown, & Cardon, 2007; Reger-Nash et al., 2005). We suggest that using an integrated approach that encompasses elements of social marketing, community wide and environmental supports is all part of the mix to raise and sustain awareness.

Noteworthy for health campaign planners, is the repetition effects theory described in the commercial advertising literature, based on 'wear-in' and 'wear-out' phases (Campbell &

Keller, 2003). The literature indicates there is a point where increased frequency and exposure, results in wear-out and diminished message awareness due to boredom, less opportunity to learn, and a reaction against the repeated message (Campbell & Keller, 2003; Malaviya, 2007; Riebe & Dawes, 2006). Furthermore, commercial brands are developed to indicate a benefit and/or a use e.g. Weight Watchers, Post-It notes (Donovan & Henley, 2010). Accordingly, the "Find Thirty" brand follows the same principle and describes what we want people to do. Therefore, people may respond differently to a repeated TVC message depending on whether it is a familiar brand or an unfamiliar brand (Campbell & Keller, 2003). In commercial advertising the complementary TVCs for a familiar brand are constantly refreshed with new executions and/or jingles to prevent wear-out and boredom with a repeated message. As most health related mass media campaigns are delivered by the not-for profit sector, the cost of constantly refreshing TVCs is prohibitive, hence wear-out, and in turn forgetting the TVC is a real possibility over a two year period.

In this study, we found less than ten per cent of the cohort sustained awareness, which may be perceived as a rather disappointing result. Of interest, 'Wheeling Walks', (US) mass media campaign followed the same respondents over 12 months, but only reported overall awareness at time points 1, 2 and 4 (Reger-Nash et al., 2005). Similarly, VERB™ *it's what you do*. promoted physical activity in US youth, followed a cohort of tweens (girls and boys aged 9-13 years) over 4 years, and they too only presented data on those who were aware of the campaign (Huhman et al., 2010) and no other profiles. The reporting of sustained levels of awareness over an extended time frame is scarce in the mass media literature. By using profiles of awareness from a cohort we demonstrated very little build in awareness over time, and observed fluctuations in awareness, and more importantly almost a third were never aware of the campaign. Accordingly, using profiles may give greater acuity for future

campaign planners and we suggest important implications for planners include : (1) execution - crafting physical activity advertisements that appeal to preferences of the profile eg gender (Graham & Graham, 2008); (2) establishing a brand is important however, refreshing TVCs and/or new executions in media bursts may prevent boredom and unsustained awareness (Snyder, 2007); (3) careful scheduling – to capture specific profiles; (4) campaign evaluation methodology, including longitudinal designs for tracking; and 5) coordinated on-the-ground activities, environmental strategies and advocacy to support mass media campaign efforts e.g. a social marketing approach (Cavill & Bauman, 2004; Gordon, McDermott, Stead, & Angus, 2006; Kahn et al., 2002; Wakefield et al., 2010).

### *Campaign effects*

The goal of mass media campaigns is to encourage and sustain positive behaviour change. In the short term, awareness is an important proximal campaign effect, however, in our study the awareness profiles were not significantly related to self-reported walking or total physical activity. However, across and within the profiles gender was significant and we found females participating less in total physical activity than men, which is reflected in other research findings (Ainsworth, Sternfeld, Richardson, & Jackson, 2000). Perhaps, the weak relationship between the awareness profiles and physical activity is partly explained by walking being the most common type of physical activity in adults (Hallal et al., 2012; Sharpe et al., 2010; Simpson et al., 2003) as it is cheap and accessible, has low risk for injury, and is effective for weight loss (Atalay & Cavlak; Ekkekakis, Backhouse, Gray, & Lind, 2008; Rippe, Ward, Porcari, & Freedson, 1988). We can also posit that the motivators for physical activity are complex and multi-factorial (Kwan & Bryan, 2010) so using one proximal measure, awareness, has limitations. Furthermore, perhaps the profiles we described and used for analyses were a 'poor fit' to identify any patterns in physical activity.

Alternatively the people within the profiles may have been influenced by other factors such as seasonality (Badland, Christian, Giles-Corti, & Knuiman, 2011) and daylight saving (Rosenberg & Wood, 2010) which may have diluted any relationships. The importance of medium to long term investment in mass media campaigns is reinforced as it takes time to affect behavioural change in population groups (Cavill & Bauman, 2004; Faulkner, Kwan, MacNeill, & Brownrigg, 2011) with fluctuating awareness, and highlights the limitations of short term mass media efforts to bring about sustained change in habitual lifestyle behaviours (Cavill & Bauman, 2004; Hillsdon, Cavill, Nanchahal, Diamond, & White, 2001; Wakefield et al., 2010).

*Limitations and strengths*

Our study had a number of limitations. First, data were self-reported and were subject to recall-bias. Self-reported mean minutes of walking and total physical activity were not normally distributed so repeated analyses using time as the fixed term were used. Methodologically the categorisation of physical activity measures was also a limitation. Second, we had small numbers in the 'always aware 'category (n=39). In addition, attrition among the study cohorts could lead to biased survey estimates although this is dependent on the extent to which the cohort participants differ to the drop outs and in this study the difference was minor. The strengths of the mass media campaign align with published optimal evaluation criteria (A Bauman et al., 2006; JE. Leavy et al., 2011) and specifically include; four data collection points on the same cohort of respondents, formative research and behavioural theory underpinned the campaign development, delivery and evaluation; the campaign was two years in duration; and the campaign had dedicated evaluation resources.

*Conclusion*

Traditionally, the mass media literature has reported only on those who were aware and not aware of a campaign (Cavill & Bauman, 2004; JE. Leavy et al., 2011). In addition, there are few published cohort, serial mass media physical activity campaigns. This is perhaps the first time in the physical activity literature that 'awareness profiles' of a campaign message have been explored in a cohort in some detail over a longer period. Therefore, this paper provides an approach to profiling awareness over a two year period of a mass media physical activity campaign in Western Australian adults. By defining and then examining the differences in awareness between the profiles and sub group analyses this study has presented possible implications and considerations for future campaign planners interested in establishing and maintaining campaign awareness with adult populations and in turn, potentially increase physical activity.

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**Table 1: Awareness variations from Baseline (T1) – T4, n =405**

| n = 405 % (n) | Baseline % | n | T2 % | n | T3 % | n | T4 % | (n) | Profile[1] | Profile (n) |
|---|---|---|---|---|---|---|---|---|---|---|
| Never aware | 100.0 | (405) | 54.3 | (220) | 40.5 | (164) | 30.4 | (123) | NA | (123) |
| Aware T2, forgot T3 & T4 | - | - | - | - | - | - | 21.7 | (88) | EA | |
| Aware T2 &T3, forget T4 | - | - | - | - | - | - | 8.9 | (36) | EA | (154) |
| Not aware T2, aware T3, forgot T4 | - | - | - | - | - | - | 7.4 | (30) | EA | |
| Aware T2, forgot T3, aware T4 | - | - | - | - | - | - | 5.4 | (22) | LA | |
| Not aware T2, new aware T3, still aware T4 | - | - | - | - | - | - | 6.4 | (26) | LA | (89) |
| Not aware T2 & T3, new aware T4 | - | - | - | - | - | - | 10.1 | (41) | LA | |
| Aware/always aware | 0.0 | (0) | 45.7 | (185) | 30.6 | (124) | 9.6 | (39) | AA | (39) |

[1] NA= Never aware; EA= Early Aware; LA=Late aware; and AA = Always aware.

**Table 2: Demographics and physical activity characteristics for all cohort (T1-T4) respondents and respondents dropping out after one or more repeated interviews**

| Demographic & physical activity characteristics: % (n) | Completed all T1-T4 interviews n=405 % (n) | Drop outs at T1 or T2 or T3 interview n=352 % (n) |
|---|---|---|
| **Gender** | | |
| Male | 48.6 (197) | 49.7 (175) |
| Female | 51.4 (208) | 50.3 (177) |
| **Age group*** | | |
| 20-34 years | 19.0 (77) | 30.1 (106) |
| 35-44 years | 39.8 (161) | 40.1 (141) |
| 45-54 years | 41.2 (167) | 29.8 (105) |
| **Location** | | |
| Metropolitan | 73.6 (298) | 77.0 (278) |
| Rural | 26.4 (107) | 23.0 (81) |
| **SES (area based)** | | |
| Low | 21.5 (87) | 21.9 (77) |
| Medium | 37.8 (153) | 36.4 (128) |
| High | 40.7 (165) | 41.8 (147) |
| **Education** | | |
| Less than TEE | 26.7 (108) | 26.4 (93) |
| TEE/Diploma | 39.8 (161) | 39.5 (139) |
| University | 33.6 (136) | 34.1 (120) |
| **Income** | | |
| Less than 50 000 | 21.5 (87) | 21.6 (76) |
| 50 000 – 100 000 | 38.8 (157) | 40.6 (143) |
| 100 001 + | 32.1 (130) | 29.3 (103) |
| Refused | 7.7 (31) | 8.5 (30) |
| **BMI[1]** | | |
| Underweight & normal | 42.7 (173) | 45.7 (161) |
| Overweight & obese | 57.3 (232) | 54.3 (191) |
| **Physical activity** | | |
| Insufficient/inactive | 37.5 (152) | 42.3 (149) |
| Sufficient | 62.5 (253) | 57.7 (203) |

*Bivariate contingency Pearson chi-square test p value <0.05
[1] Due to small numbers in underweight category this has been collapsed to category 'Normal and underweight'.

**Table 3: Demographic and physical activity patterns of four key 'Awareness profiles' of the Find Thirty every day® campaign**

| n=408<br>Demographics<br>& PA level (n) | Never aware (NA)<br>n=123 | | Early aware (EA)<br>n=154 | | Late Aware (LA)<br>n=89 | | Always Aware (AA)<br>n=39 | |
|---|---|---|---|---|---|---|---|---|
| | Row % | Column% (n) | Row % | Column% (n) | Row % | Column % (n) | Row % | Column % (n) |
| **Gender *** | | | | | | | | |
| Male (198) | 37.6 | 60.2 (74) | 32.5 | 41.6 (64) | 19.8 | 43.8 (39) | 10.2 | 51.3 (20) |
| Female (210) | 23.6 | 39.8 (49) | 43.3 | 58.4 (90) | 24.0 | 56.2 (50) | 9.1 | 48.7 (19) |
| **Age group** | | | | | | | | |
| 20-34 years (78) | 27.3 | 17.1 (21) | 36.4 | 18.2 (28) | 20.8 | 18.0 (16) | 15.6 | 30.8 (12) |
| 35-44 years (162) | 31.5 | 41.1 (51) | 42.2 | 44.2 (68) | 21.1 | 38.2 (34) | 5.0 | 20.5 (8) |
| 45-54 years (168) | 30.5 | 41.5 (51) | 34.7 | 37.7 (58) | 23.4 | 43.8 (39) | 11.4 | 48.7 (19) |
| **SES (area based)** | | | | | | | | |
| Low (87) | 32.2 | 22.8 (28) | 39.1 | 21.9 (34) | 18.4 | 18.0 (16) | 10.3 | 23.1 (9) |
| Medium (154) | 34.0 | 42.3 (52) | 37.3 | 37.0 (57) | 20.9 | 36.0 (32) | 7.8 | 30.8 (12) |
| High (167) | 26.1 | 35.0 (43) | 38.2 | 40.9 (63) | 24.8 | 46.1 (41) | 10.9 | 46.2 (18) |
| **Education** | | | | | | | | |
| Less than TEE (109) | 25.0 | 22.0 (27) | 39.8 | 27.9 (43) | 23.1 | 28.1 (25) | 12.0 | 33.3 (13) |
| TEE/Diploma (161) | 32.9 | 43.1 (53) | 37.9 | 39.6 (61) | 22.4 | 40.4 (36) | 6.8 | 28.2 (11) |
| University (138) | 31.6 | 35.0 (43) | 36.8 | 32.5 (50) | 20.6 | 31.5 (28) | 11.0 | 38.5 (15) |
| **BMI[1]** | | | | | | | | |
| Underweight & normal | 32.9 | 46.3 (57) | 34.7 | 39.0 (60) | 21.4 | 41.6 (37) | 11.0 | 48.7 (19) |
| Overweight & obese | 28.4 | 53.7 (66) | 40.5 | 61.0 (94) | 22.4 | 58.4 (52) | 8.6 | 51.3 (20) |
| **Physical activity pattern[1]** | | | | | | | | |
| Inactive/not maintained (139) | 29.6 | 36.6 (45) | 36.2 | 35.7 (55) | 23.0 | 39.3 (35) | 11.2 | 43.6 (17) |
| Active maintainer (269) | 30.8 | 63.7 (78) | 39.1 | 64.3 (99) | 21.3 | 60.7 (54) | 8.7 | 56.4 (22) |

*Pearson Chi-square <0.05

[1]Physical activity pattern- was computed by summing T1-T4 total physical activity variable (0=Inactive & 1 =Sufficient) with a minimum of 0 and maximum of 4 (0-2 was recoded Inactive/not maintained; 3-4 Active maintainer).

**Table 4: Regression analysis of 'awareness profiles' and their demographics and physical activity pattern**

| Participant characteristic | Odds compared with 'never aware' of the Find Thirty every day® campaign | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Early Aware | | Late Aware | | Always Aware | |
| | OR (95% CI) | *p-value* | OR (95% CI) | *p-value* | OR (95% CI) | *p-value* |
| **Gender** | | | | | | |
| Male | 1.00 | | 1.00 | | 1.00 | |
| Female | 2.38 (1.44-3.94) | ***0.00*** | 2.05 (1.15-3.63) | ***0.01*** | 1.43 (0.67-3.04) | *0.35* |
| 20-34 years | 1.00 | | 1.00 | | 1.00 | |
| **Age group** | | | | | | |
| 35-44 years | 0.85 (0.41-1.70) | *0.65* | 0.72 (0.33-1.65) | *0.44* | 0.21 (0.07-0.62) | ***0.00*** |
| 45-54 years | 0.72 (0.35-1.45) | *0.36* | 0.78 (0.40-1.95) | *0.56* | 0.55 (0.22-1.37) | *0.18* |
| **SES (area based)** | | | | | | |
| Low | 1.00 | | 1.00 | | 1.00 | |
| Medium | 0.88 (0.42-1.71) | 0.71 | 1.05 (0.48-2.26) | *0.91* | 0.64 (0.23-1.75) | *0.39* |
| High | 1.27 (0.66-2.57) | 0.48 | 1.79 (0.83-3.84) | *0.14* | 1.37 (0.52-3.57) | *0.52* |
| **Education** | | | | | | |
| Less than TEE | 1.00 | | 1.00 | | 1.00 | |
| TEE/Diploma | 0.70 (0.37-1.32) | *0.27* | 0.75 (0.36-1.53) | *0.43* | 0.34 (0.13-0.91) | ***0.03*** |
| University | 0.68 (0.35-1.31) | *0.25* | 0.65 (0.30-1.38) | *0.26* | 0.56 (0.22-1.42) | *0.22* |
| **BMI[1]** | | | | | | |
| U/w & normal | 1.00 | | 1.00 | | 1.00 | |
| O/w & obese | 1.69 (1.01-2.83) | ***0.04*** | 1.41 (0.79-2.53) | *0.24* | 0.99 (0.46-2.13) | *0.98* |
| **Physical activity pattern** | | | | | | |
| Inactive/not maintained | 1.00 | | 1.00 | | 1.00 | |
| Maintained active | 1.45 (0.88-2.40) | *0.15* | 0.98 (0.56-1.74) | *0.96* | 1.01 (0.47-2.15) | *0.98* |

CI= Confidence Interval

[1]BMI ⁻ U/w = underweight ; O/w = overweight

**Table 5: Weekly mean minutes of 'walking' and 'total physical activity' using repeated-measures analyses T1 – T4**

| | Univariate analysis Mean (95% CI) | p-value | Multivariate analysis* Mean (95% CI) | p-value |
|---|---|---|---|---|
| **Walking** | | | | |
| **Time** | | .06 | | |
| T1 | 185.0 (165.2-204.8) | | 187.8 (165.7-209.9) | .28 |
| T2 | 183.4 (163.7-203.3) | | 186.3 (164.3-208.4) | .35 |
| T3 | 203.6 (183.9-223.4) | | 206.5 (184.4-228.6) | *.01* |
| T4[1] | 172.5 (152.7-192.3) | | 175.3 (153.3-197.4) | - |
| **Gender** | | .72 | | |
| Male[1] | 188.8 (164.0-203.3) | | 195.6 (173.0-218.2) | - |
| Female | 183.6 (168.7-209.0) | | 182.4 (160.4-204.4) | .37 |
| **Age group** | | .08 | | |
| 20-34 years [1] | 164.6 (182.6-226.2) | | 169.0 (136.2-201.8) | - |
| 35-44 years | 177.5 (155.3-199.7) | | 185.1 (160.4-209.7) | .42 |
| 45-54 years | 204.4 (182.6-226.2) | | 213.0 (189.6-236.2) | *.03* |
| **SES (area based)** | | .86 | | |
| Low [1] | 191.7 (161.3-222.1) | | 196.1 (165.0-228.0) | - |
| Medium | 187.7 (164.8-210.7) | | 183.8 (159.1-208.4) | .52 |
| High | 181.8 (159.7-203.8) | | 187.1 (163.2-211.0) | .64 |
| **Education** | | *.00* | | |
| Less than TEE[1] | 219.3 (192.4-246.1) | | 220.6 (191.4-249.8) | - |
| TEE/Diploma | 190.6 (168.6-212.6) | | 192.8 (168.7-217.0) | .12 |
| University | 154.7 (130.7-178.6) | | 153.5 (127.4-179.7) | *.00* |
| **BMI** | | .12 | | |
| U/w & normal[1] | 199.0 (177.6-221.0) | | 206.4 (150.3-192.8) | - |
| O/w & obese | 176.5 (158.0-195.1) | | 171.6 (150.3-192.8) | *.02* |
| **Awareness profile** | | .80 | | |
| Never aware[1] | 177.7 (152.2-203.2) | | 177.8 (153.5-215.0) | - |
| Early aware | 190.5 (167.7-213.3) | | 194.1 (170.2-218.0) | .35 |
| Late aware | 183.7 (153.6-213.8) | | 184.3 (153.5-215.0) | .75 |
| Always aware | 201.3 (156.0-246.7) | | 199.8 (154.8-244.8) | .41 |
| | | | | |
| **Total Physical Activity** | | | | |
| **Time** | | *.04* | | |
| T1 | 330.2 (300.2-360.1) | | 332.1 (298.6-365.5) | .07 |
| T2 | 303.6 (273.7-333.6) | | 305.5 (272.0-339.0) | .80 |
| T3 | 340.7 (310.8-370.7) | | 342.6 (309.1-376.1) | *.02* |
| T4[1] | 299.5 (269.5-329.4) | | 301.4 (267.9-334.9) | - |
| **Gender** | | | | |
| Male | 359.0 (328.0-390.0) | *.00* | 364.3 (329.2-399.3) | - |
| Female | 280.2 (250.1-310.3) | | 276.5 (242.4-310.6) | *.00* |
| **Age** | | | | |
| 20-34 years[1] | 304.7 (254.7-354.6) | | 302.0 (251.3-352.3) | - |
| 35-44 years | 292.2 (257.7-326.7) | | 299.7 (261.5-337.9) | .94 |
| 45-54 years | 350.2 ( 316.3-384.2) | | 359.4 (323.3-395.5) | .06 |
| **SES (area based)** | | .39 | | |
| Low[1] | 345.3 (298.1-392.5) | | 345.2 (296.5-393.8) | - |
| Medium | 303.8 (268.2-339.4) | | 297.4 (259.3-335.6) | .11 |
| High | 318.0 (283.7-352.3) | | 318.5 (281.5-355.5) | .37 |
| **Education** | | .35 | | |
| Less than TEE[1] | 323.8 (281.4-366.1) | | 333.4 (288.2-378.6) | - |
| TEE/Diploma | 333.7 (299.0-368.4) | | 333.2 (296.0-370.5) | .99 |
| University | 296.4 (258.6-334.1) | | 294.5 (254.1-335.0) | .18 |
| **BMI** | | .20 | | |
| U/w & normal[1] | 335.0 (301.6-368.5) | | 348.1 (311.6-384.6) | - |
| O/w & obese | 306.2 (277.3-355.1) | | 292.6 (259.7-325.5) | *.02* |
| **Awareness profile** | | .99 | | |
| Never aware[1] | 320.3 (264.4-358.1) | | 314.3 (273.1-355.5) | - |
| Early aware | 321.7 (286.1-357.3) | | 336.4 (299.4-373.5) | .41 |
| Late aware | 311.3 (264.4-358.1) | | 319.4 (271.8-355.5) | .87 |
| Always aware | 316.8 (246.0-387.5) | | 311.4 (241.7-381.1) | .94 |

[1] Referent group for multivariate analysis

*Multivariate analysis adjusted for gender, age, SES, education, BMI and awareness profile

CI= Confidence Interval