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**The psychological and economic factors that influence energy consumption habits of  
Low-income earners.**

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## Introduction

Social marketers and governments have often targeted hard to reach or vulnerable groups (Gordon et al., 2006) such as young adults and low income earners. Past research has shown that low-income earners are often at risk of poor health outcomes and diminished lifestyle (Hampson et al., 2009; Scott et al., 2012). Young adults (aged 18 to 35) are in a transition phase of their life where lifestyle preferences are still being formed and are thus a useful target for long-term sustainable change. An area of focus for all levels of government is the use of energy with an aim to reduce consumption. There is little research to date that combines both of these groups and in particular in the context of household energy usage. Research into financially disadvantaged consumers is challenging the notion that low income consumer purchasing and usage of products and services is based upon economic status (Sharma et al., 2012). Prior research shows higher income earners view items such as televisions and computers as necessities rather than non-essential (Karlsson et al., 2004). Consistent with this is growing evidence that low income earners purchase non-essential, energy intensive electronic appliances such as multiple big screen TV sets and additional refrigerators. With this in mind, there is a need for knowledge about how psychological and economic factors influence the energy consumption habits (e.g. appliances on standby power, leaving appliances turned on, running multiple devices at one time) of low income earners. Thus, our study sought to address the research question of: *What are the factors that influence young adult low-income earners energy habits?*

## Method

The sample consisted of young adults (18-35 years) with low-income (below \$45,000 individually) who were currently renting. Renters were selected because they are face with the unique 'Split Incentive' barrier to improving energy behaviour where the owner of the household controls major household fixtures (age and quality) such as hot water systems, air conditioning units, whilst the tenant pays for the running costs of these fixtures through electricity bills. This is also a target group that has been identified by the Commonwealth Government and Brisbane City Council's sustainability agency, CitySmart as most at risk as energy costs increase. Thus the selection criteria was low income (<\$45,000 – cut-off of bottom two quintiles in income) and renting in Brisbane. The research question were addressed by both a qualitative study of 4 focus groups (n=32) and a web-based survey (n=505). Purposive sampling was used for both the focus groups and the web-based survey (Coyne, 1997). The qualitative sample consisted of males and females aged 18-35 (split into two age groups based on decades 18-24 and 25-35) living in Brisbane with individual incomes <\$45,000 and renting. In the quantitative sample 19.4% were male and 80.6% were female, with 41.4% within the age bracket of 18-24 years and 58.6% within the 25-35 year age bracket (gender was consequently used as a moderator and differences in mean scores was tested). The median for the most recent electricity bill was \$301-\$400. The comparative cost of the respondent's bill relative to income of the sample represents 3.5% of their gross income compared to the average for Queenslanders who use 1.7% of their gross income<sup>2</sup>. Measures for the survey were derived from existing scales using a 7-point likert scale (see Appendix A).

## Results

The qualitative study demonstrated that young adult low income earners own appliances that are typically associated with higher incomes due to their aspiration to be 'middle class'. The focus

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<sup>2</sup> Income for low income earner based on \$45,000 gross per year, average income for Queenslanders is \$68,775 gross per year (ABS, 2012). Bills are multiplied by four to represent quarterly billing. Average

groups indicated that the acquisition of digital devices such as mobiles or laptops for the internet, social media or entertainment were based on perceived social norms and were devices to which they felt entitled. Further, respondents believed that their energy usage was no different to those in higher income groups. This was confirmed in the survey with high ownership of multiple energy consumption devices, particularly in the entertainment area; big screen televisions (median of 2), gaming consoles (2), laptop computers (2) and 64.8% of properties occupied had an air-conditioner (with half of these owning more than 1). These results are consistent with aspiration theory which states that people with lower income levels feel frustrated with their ability to satisfy their materialistic desired compared to similar people with higher levels of income (La Barbera et al., 1997). There were six key factors identified that influenced energy consumption behaviours; self-efficacy, control, knowledge, comfort, social norms and price concern. Energy consumption behaviours appeared to be low effort and routine and were thus classified as habits. Multiple regression analysis revealed that in combination with all factors, only self-efficacy, comfort and social norms have a significant relationship with energy consumption habits (see Table 1).

**Table 1. Multiple Regression Results on Habits**

Variable	Mean (/7), SD	95% CI	Standardized $\beta$	Sig.
<b>Self-Efficacy</b>	4.43, 1.04	<b>.174, .485</b>	<b>.26</b>	<b>.000*</b>
Control	4.04, 1.10	-.087, .152	.03	.592
Knowledge	4.90, 0.90	-.200, .159	-.01	.822
<b>Comfort</b>	3.91, 1.05	<b>-.365, -.080</b>	<b>-.18</b>	<b>.002*</b>
<b>Social Norms</b>	4.27, 1.34	<b>.050, .261</b>	<b>.16</b>	<b>.004*</b>
Price Concern	4.99, 1.17	-.054, 1.95	-.06	.267

Note: \*  $p < 0.05$

Due to the gender skew in the sample, t-tests were conducted to identify gender differences in the variables. It was found that men only had significantly higher scores for control (Male  $M=4.24$ , Female  $M=3.99$ )  $t(503)=1.98$ ,  $p < .05$ . Gender was also tested as a moderator on the relationships between the factors and habits with no significant impact. Independent t-tests were conducted to identify differences based on age group (18-24 years and 25-34 years). There was only significant differences in social norms with 25-35 year olds ( $M=4.30$ ) reporting high levels than 18-24 year olds ( $M=4.21$ ),  $t(503)=-0.60$ ,  $p < .05$ .

### Discussion and Conclusion

This study investigated the factors that influence young adult low-income earners energy habits. The study found control, knowledge and price concerns did not determine energy habits. This finding is consistent with past research which has shown that knowledge of a sustainable behaviour does not necessarily lead to a reduction in consumption (Csutora, 2012). The significant relationship of self-efficacy, comfort and social norms have a significant impact on energy habits. These results are consistent with the qualitative study that showed price not to be a driving force for energy consumption habits. The results suggest that social marketers seeking to change energy consumption habits of young adult low-income earners must develop interventions that take into account comfort requirements, increasing self-efficacy and altering social norms about energy use. Additional findings related to the perception of low-income

earners about the essential nature of what would normally be considered as luxury or non-essential products (big screen television, multiple computers, laptops, consoles and additional fridges). Consumers in Australian, even with lower levels of income, are capable of attaining materialistic goods, and may do so to maintain a self-image of middle class. They do this through social comparisons with higher income groups (Stutzer, 2004) and may make electronic good purchase decisions based upon this comparison. This is also consistent with other studies that found that households spend heavily to 'improve' their low-status position in society (Van Kempen, 2007). Thus social marketers should take into consideration that low-income earners do not always see themselves or behave in a way that is reflective of their income.

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## Appendix A Descriptive, Reliability and Validity Results

Self-efficacy (Adapted from Bosscher et al. (1998))	Item-to-total Correlation	Factor Loading
It's too hard to be more energy efficient around the home	.488	.862
I don't have the time to think about how we can use less electricity	.488	.862
Cronbach Alpha	.655	
Mean, SD and median	3.51, 1.15, 3.50	
<b>Control of energy appliances (Adapted from Seligman et al. (1978))</b>		
Hot water usage	.555	.632
Cooking (For example: ovens, microwaves)	.584	.813
Refrigeration (fridges and freezers)	.496	.894
Cooling my house (air conditioners, fans)	.474	.762
Lighting (including inside and outdoor lighting)	.496	.861
Entertainment (For example: TVs, computers, game consoles, stereos)	.492	.626
Cronbach's Alpha	.803	
Mean, SD and median	4.04, 1.11, 4.00	
<b>Knowledge of energy consumption behaviours (Adapted from Becker et al. (1981))</b>		
I don't worry how much electricity we use around the house (R)	.413	.464
I already know the ways in which I can save electricity around the house	.359	.531
Long term financial savings are worth the initial cost outlay for energy efficient appliances	.437	.616
The little things that I can do around the house can have a big impact on reducing electricity use	.506	.684
I don't like wasting electricity	.654	.793
I look in detail at my electricity bill when I receive it	.509	.675
I think it is important to know how to read my electricity meter	.498	.667
Cronbach's Alpha	.747	
Mean, SD and median	4.99, 1.18, 4.00	
<b>Comfort (Adapted from Becker et al. (1981))</b>		
It's too hard to change the amount of electricity my household uses	.442	.630
If I had to choose between comfort and being energy efficient, I would choose comfort	.607	.791
Being cool in summer is more important than trying to save energy	.584	.778
I would not sacrifice my electronic entertainment to save electricity	.433	.629
Being energy efficient conflicts with everyday life and is difficult to do	.529	.712
Cronbach's Alpha	.752	
Mean, SD and median	3.91, 1.05, 4.00	
<b>Social Norms (Adapted from Tonglet et al. (2004))</b>		
My family / the people I live with would think I was silly if I went around turning lights off all the time	.629	.806
My family / the people I live with would think I was a bit annoying if I started telling them to try and be more energy efficient	.691	.861
My family / the people I live with would think I was crazy if I didn't use the air conditioner when needed	.476	.669
The others in the house are not interested in saving electricity	.615	.805
Cronbach's Alpha	.789	
Mean, SD and median	3.98, 1.18, 4.00	
<b>Price Concerns (Items adapted from Seligman et al. (1979))</b>		
I monitor my electricity bill when it comes in to see if my household's consumption has gone up or down	.375	.708
I am concerned about my ability to pay the electricity bill	.388	.721
I am really concerned about the increasing cost of electricity	.603	.866
Cronbach's Alpha	.637	
Mean, SD and median	4.99, 1.17, 5.00	
<b>Habits Items adapted from Barr et al. (2005)</b>		
I find I often turn the TV on without thinking, even when I am not going to be in the room	.532	.666
I often leave devices (such as laptops, phones, cameras) charging, even when they are fully charged	.599	.729
My TV is always on standby power	.498	.628
My stereo system is always on standby power	.517	.643
I rarely turn my kitchen appliances off at the wall	.581	.710
I often have lights on in the house even when no one is in the room	.549	.683
I just turn my air conditioner on to a temperature that is comfortable without thinking about what the recommended temperature should be	.442	.575

I like having the TV or stereo on in the background	.446	.583
Cronbach's Alpha	.807	
Mean, SD and median	3.63, 1.31, 3.75	