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Paper ID 947: Are households feeding habits and waste management practices determinant in order to swing over food waste behaviours? The case of Barcelona Metropolitan Area

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Introduction

- Since 2008 food crisis, food waste gained great international relevance being considered in 2011 by the Agriculture and Rural Development –European Commission as important as energy efficiency (EU Res. 2011/2175(INI)).
- Food waste started to be considered as an environmental, economic, social and food security problem (Kosseva, 2013; Stuart, 2009). FAO's report in 2011 exposed that one-third of all food produced for human consumption is lost or wasted every year (Gustavsson et al., 2011).
- The study focuses on the metropolitan area of Barcelona which is one of the most populated areas of Europe located along the Mediterranean coast, with a growing population accounting for more than 3.2 million of people for 2012.
- At the Catalan level, food waste was quantified in 2010. Results show that about 262.471 tonnes of food are wasted every year in Catalonia, 35 kg per person/year.(mostly in households) (ARC; UAB, 2012)

Objective

The aim of the present work is to define the factors that influence citizens' food waste decisions. This is the first attempt to develop a conceptual decision making model that considers factors such as waste prevention and recycling, food habits, environmental awareness and materialistic values together to understand individual's domestic food waste behaviour.

Theoretical framework : food waste behaviour hypotheses

Our contribution to the literature will be to bring together the published evidence in order to design a behavioural framework towards household food waste decision making structure.

- H1: Consumers that reveal a higher concern about their diet (food choice) are expected to reveal less amount of food wasted.
- H2: Consumers that reveal a more organised purchasing behaviour are expected to reveal less food waste generated.
- H3: Individuals who show high materialistic values are expected to reveal little organized purchasing behaviour. This hypothesis was not considered in any study to date and therefore represents one of our contributions to the literature.
- H4: Consumers that reveal more positive prevention behaviour are expected to reveal lower food waste generation.
- H5: Consumers that reveal a more positive recycling behaviour are expected to reveal lower food waste generation.
- H6: Consumers who reveal a high environmental awareness (environmentalism) are expected to reveal more positive waste prevention behaviour.
- H7: Consumers who reveal high environmental awareness (environmentalism) are expected to reveal a positive recycling behaviour.
- H8: Individuals' materialistic values do have a negative influence on individuals' environmental awareness.

Results

- Figure 1 shows the self-declared food waste behaviour, as it is shown, participants claim not to generate food waste.
- The measurement scale has been performed a Confirmatory Factorial Analysis for all constructs separately. The main parameters to test for robustness of the constructs, following Hair et al., (1998); and Kline, (2011) appear to show acceptable results. (See Table 1).
- The structural model fit is good. The proposed model is considered valid since has a potential explanatory power of 25% ($R^2=0.25$), which is similar to prior studies analysing waste prevention behaviour (Barr 2007). Figure 2 shows the coefficients and significance of the structural model paths.

Hypothesis	Path	Result
H1	Diet choice → (-) Food waste	SUPPORTED
H2	Purchasing behaviour → (-) Food waste	SUPPORTED
H3	Materialism → (-)Purchasing behaviour	SUPPORTED
H4	Waste prevention → (-)Food waste	SUPPORTED
H5	Waste recycling → (-)Food waste	NOT SUPPORTED
H6	Environmentalism → (+)Waste prevention	SUPPORTED
H7	Environmentalism → (+)Waste recycling	SUPPORTED
H8	Materialism → (-) Environmentalism	SUPPORTED

Figure 1 Food waste behaviour

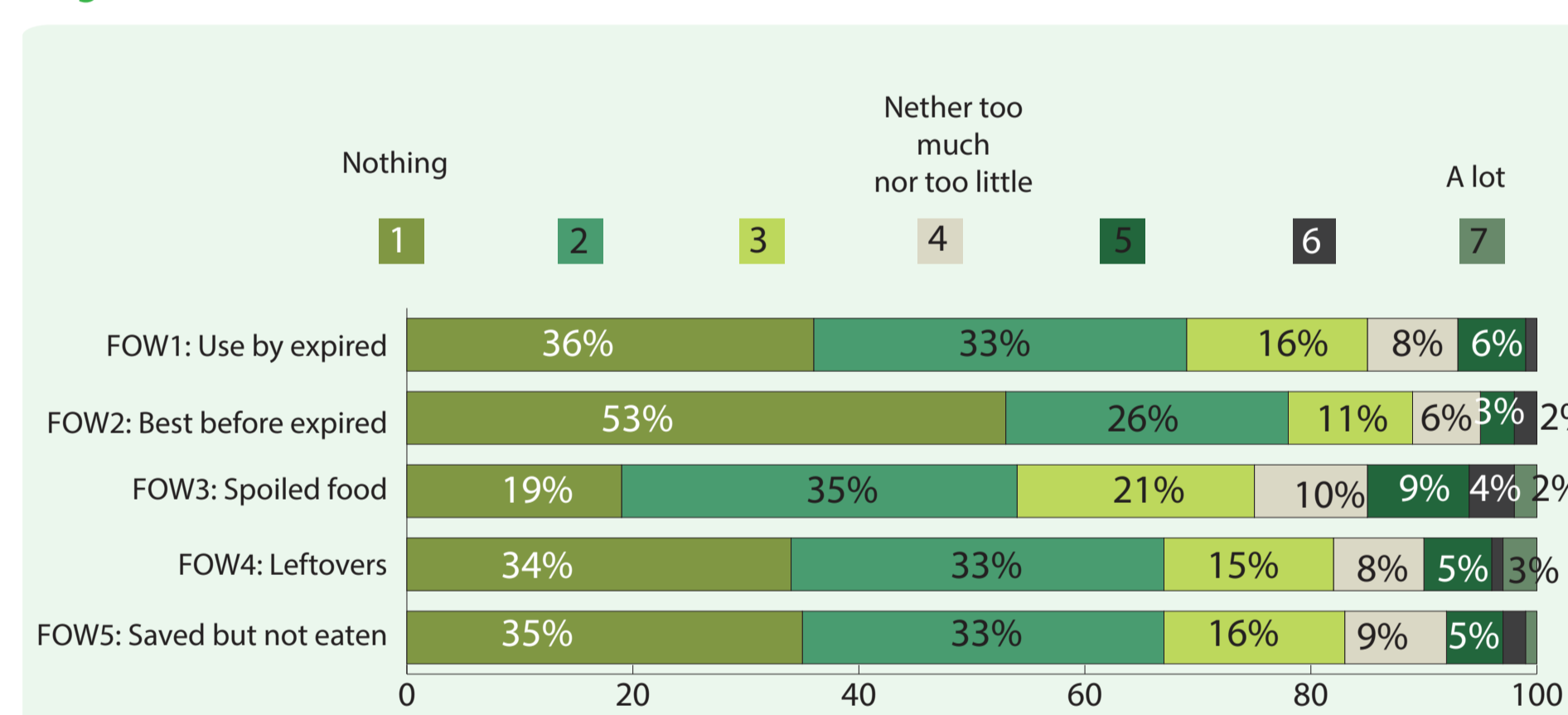


Figure 2 Structural equation model

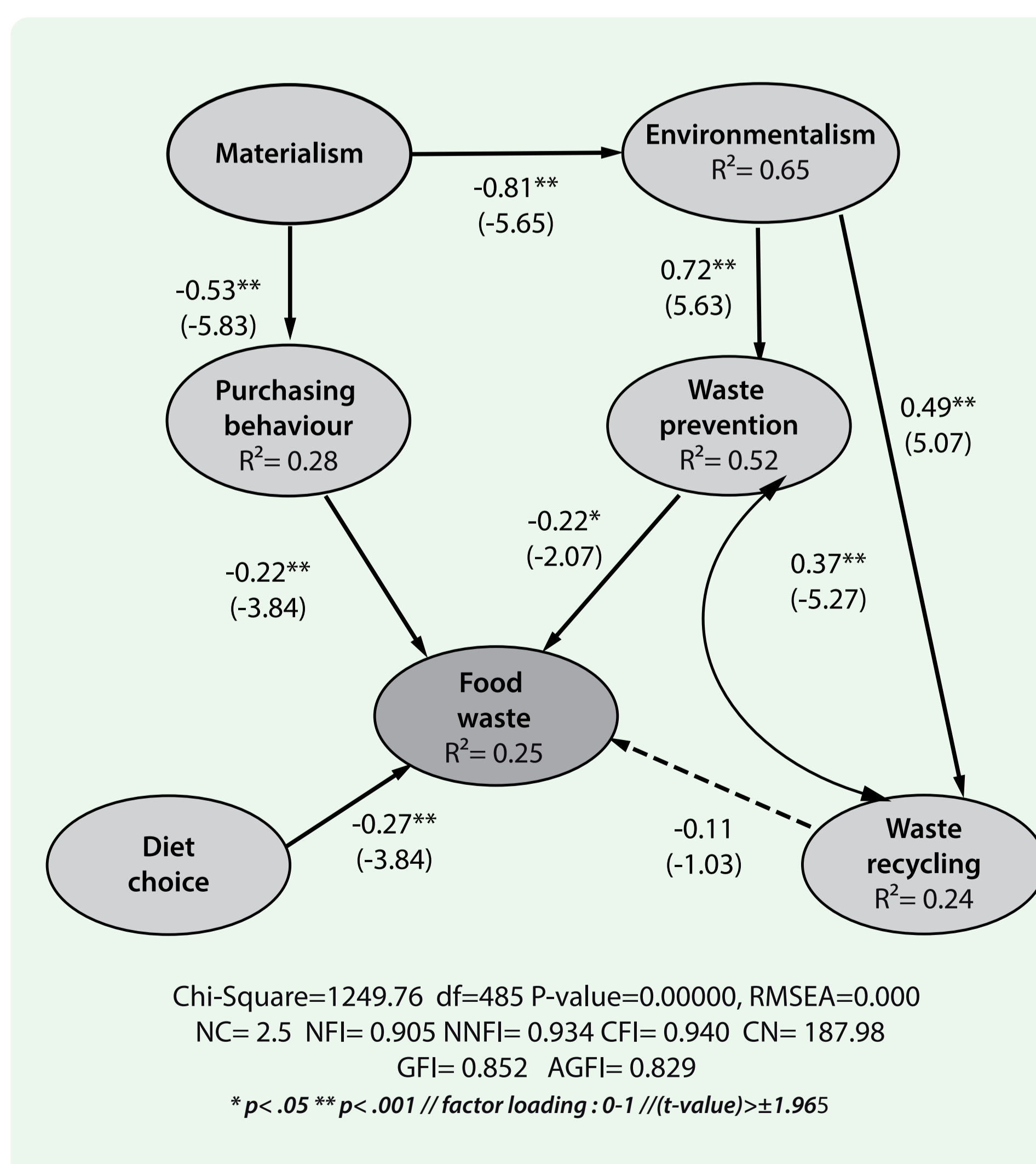


Table 1 Survey statement used to measure each model construct and validation of the confirmatory factor analysis measurement model

α=0.60	Environmentalism	ST	t-value
ENV1	We are approaching the limit of the number of people the earth can support. [NEP 1]	0.58	9.45
ENV2	Humans are severely abusing the environment. [NEP 5]	0.70	9.91
ENV3R	The balance of nature is strong enough to cope with the impacts of modern industrial nations. (R) [NEP 8]	0.49	7.51
ENV4	If things continue on their present course, we will soon experience a major ecological catastrophe. [NEP 15]	0.65	11.58
ENV5R	Humans have the right to modify the natural environment to suit their needs. (R) [NEP 2]	0.44	6.92
α=0.66	Materialism	ST	t-value
MAT1	I admire people who own expensive homes, cars, and clothes	0.78	13.59
MAT2	Some of the most important achievements in life include acquiring possessions	0.48	7.51
MAT3R	I don't place much emphasis on the amount of material objects people own as a sign of success (R)	0.53	6.86
MAT4	I'd be happier if I could afford to buy more things	0.74	11.78
α=0.68	Diet choice	ST	t-value
DIET1	For me product information is very important during purchasing food	0.68	12.35
DIET2	Eating food rich in vitamins food is important to me	0.67	11.93
DIET3	Eating low fat food is important to me	0.58	10.22
DIET4	Eating food free of potential hazardous ingredients such as dioxins, pesticides, waste is important to me	0.68	12.05
α=0.51	Purchasing behaviour	ST	t-value
PUR1	I usually buy only what I need	0.65	8.88
PUR2	I always compare products prices during the shopping	0.61	9.75
PUR3	I always buy food products on offer	0.30	4.05
α=0.90	Recycling of waste	ST	t-value
REC1	Recycle glass	0.97	53.12
REC2	Recycle paper	0.92	45.36
REC3	Recycle domestic packaging	0.97	69.12
REC4	Recycle organic waste	0.74	20.93
α=0.77	Prevention of waste	ST	t-value
RED1	Buy produce with as little packaging as possible	0.52	10.73
RED2	Use my own bag when going shopping, rather than one provided by the shop	0.54	11.13
RED3	Buy fruit and vegetables loose, not packaged	0.40	7.01
RED4	Buy products that can be used again, rather than disposable items	0.67	16.43
REU1	Try to repair things before buying new items	0.56	17.25
REU2	Reuse paper	0.71	11.37
REU3	Reuse glass bottles and jars	0.68	19.10
REU4	Wash and reuse dishcloths rather than buying them new	0.51	8.9
α=0.83	Food waste	ST	t-value
FWO1	The amount of food I have thrown that have expired in recent weeks is	0.69	14.19
FWO2	The [...] because it has passed the best before date is...	0.81	17.84
FWO3	The [...] because it has been damaged plants such as stale bread, etc. is ... (stored in the fridge or cupboards)	0.72	17.88
FWO4	The [...]because I left over the plate and I have not tapped for another meal is ...	0.81	19.19
FWO5	The [...]because I bought something that I don't need or I have too much of is ...	0.70	13.78

Conclusions

This paper is the first attempt to develop a conceptual decision making model that considers factors such as waste prevention and recycling, food habits, environmental awareness and materialistic values together to understand individual's domestic food waste behaviour. Despite the little information available to date about the predicted causes of food waste, a behavioural model has been elaborated. It has been based on a literature review and it has been validated statistically in the case of Barcelona metropolitan area.

We can conclude that on the one hand food waste is directly and equally influenced by purchasing habits as diet selection and purchasing behaviour, as well as waste prevention behaviour. Furthermore, food waste is indirectly influenced by materialistic and environmental values. On the other hand, we cannot assure that recycling behaviour have an influence on food waste behaviour. In other words, those consumers more concerned about their diet, as well as on the food price less prone are to waste food. In addition, those consumers that own materialistic values tend to care less on food price and food ingredient and more on what the products they buy socially represents. Therefore, both food and waste policies must consider food waste reduction.

Material and methods

The sample

To test the hypotheses mentioned above, we conducted a survey in the metropolitan area of Barcelona (Spain) during the period between September and October 2013. Cross-sectional data were collected through the distribution of 418 (sample error ±4.8% (95%)) questionnaires to individuals responsible of cooking or food purchase in their household.

Measures

All behavioural intention questions were measured by means of a seven-point Likert scale (see Table 2). Questions related to food waste were at the end of the questionnaire in order to not influence the answers.

Analytical procedures

Structural Equation Modelling approach has been used in the study in order to assess the food waste behaviour model while testing the causal links specified in the theoretical model. Lisrel 9.1. software has been used. This latter enables the multivariate modelling of key consumer behaviour determinants which cannot be measured directly, like attitudes, social pressure and lifestyles.

Acknowledgements

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