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**Social Comparison, Aspirations and Priming:  
When Fiction is as Powerful as Fact**

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# Social Comparison, Aspirations and Priming: When Fiction is as Powerful as Fact

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## Abstract

This study uses a novel application of priming to provide experimental evidence that aspirations and social comparisons may be influenced by non factual sources. A textual narrative eliciting social comparison is shown to dramatically alter material aspirations. This is despite the narrative not presenting any new information, relying instead on participants' existing knowledge. However the effect of the priming rapidly dissipates when attention is redirected to unrelated tasks. These findings build on literature examining the influence of media, social comparison and aspirations on well-being. The findings build support for the claim that media exposure may distort perceptions of status with implications for satisfaction, education attainment and risk preferences. It also demonstrates that at least in the short run, preferences in general and aspirations in particular are highly suggestible.

## 1 Introduction

There is a large body of work demonstrating that social comparison and the gap between one's aspirations and income substantially influence subjective well-being (SWB) (Clark, 1996; Karlsson, Dellgran, Kilingander, and Garling, 2004; McBride, 2010; Mentzakis and Moro, 2008; Stutzer, 2004)<sup>1</sup>. Studies have also emerged demonstrating mass media is able to influence SWB such as by changing aspirations (Bruni and Stanca, 2006; Buijzen and Valkenburg, 2003; Yang and Oliver, 2010) or by increasing materialism (Burroughs and Rindfleisch, 2002; Shrum, Burroughs, and Rindfleisch, 2005). These studies predominantly rely on survey data however and thus are unable to elaborate on the mechanism by which media exposure and SWB are related. We hypothesise that one important way media presentations influence SWB is by distorting the reference group one compares oneself to and thereby augmenting aspirations.

We used a controlled laboratory experiment to test whether a change in reference group can change aspirations. We also examined whether one's reference group is highly suggestible. This was done by measuring the effect of a subtle change in priming on

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<sup>1</sup>In addition to these Easterlin (1974) and Easterlin, McVey, Switek, Sawangfa, and Zweig (2010) found SWB is influenced by national wealth when comparing between nations but not by economic development over a long time frame. Luttmer (2005) and Shields, Wheatley Price, and Wooden (2009) compared data between neighbourhoods and revealed one's income potentially imposing a negative externality on neighbours. Rayo and Becker (2007) and Robson (2001) construct an evolutionary framework that offers an appealing explanation for why social comparison would be critically important to one's SWB

aspirations. Participants read a paragraph of a fictional character describing how she is quite satisfied with her life. Half of the participants read the fictional character lives in the Western suburbs of Sydney (generally low income) and the other half read the fictional character lives in the Eastern suburbs of Sydney (generally upper income). Then participants were asked to report their aspiration in terms of income. Half were asked immediately, the other half were asked after completing a real effort task and a risk elicitation task. Participants with the Eastern priming reported approximately 30% higher aspiration than participants with the Western priming when asked immediately. The effect disappeared when participants were asked after completing the tasks. This provides strong support for one's reference group influencing aspirations while being highly suggestible.

This study seeks to narrow the gap in the literature by providing experimental evidence of aspirations and social comparisons being influenced by fictional sources<sup>2</sup>. This study indirectly measures whether a fictional source is effective in changing reference groups as such a direct measure may reveal the intent of the study to participants and potentially introduce demand effects<sup>3</sup>. Also this study does not examine whether media presentations are able to influence SWB as it focuses on the underlying mechanism between media, aspirations and SWB<sup>4</sup>.

In addition to providing support for fictionalised sources inducing social comparisons this study contributes to the literature more broadly in two other ways. It reveals that aspirations are highly suggestible with their being shown to be dramatically affected by a simple narrative that presents no new information. While there have been prior studies examining the effects of augmenting aspirations none have been uncovered that focuses on measuring how readily aspirations are changed<sup>5</sup>.

Also this study introduces narrative priming as a mechanism for changing goals and preferences to an economic context. Psychology and health studies are already familiar with them, with narrative primes having been applied to tests of cognitive ability and medical decision making (see Appel, 2011; Friedman-Wheeler, Rizzo-Busack, McIntosh, Ahrens, and Haaga, 2010; Winterbottom, Bekker, Conner, and Mooney, 2008). However no prior economics studies incorporating them have been identified. It is hoped the successful application of narrative priming in this study will embolden experimental economists to adopt their use more frequently and expand the scope of inquiry, given the very broad range of applications psychology and health has found for them.

While this study largely falls into the already expansive body of well-being research, its focus on changing aspirations extends it to be relevant to a number of other fields. This is due to aspirations having been shown to play a pivotal role for job satisfaction (Poggi, 2010), attainment of tertiary education (Kiyama, 2010; Leung, Chen, and Lam, 2010), willingness to accept risk (Sokolowska, 2006), motivation to overcome poverty (Ray, 2006) and desire for empowerment and autonomy (van Kempen, 2009). The finding that a

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<sup>2</sup>Factual sources and direct observation of neighbours have already been demonstrated to influence aspirations and SWB (see Luttmer, 2005; McBride, 2010; Stutzer, 2004)

<sup>3</sup>See Zizzo (2010) for details regarding demand effects and methods for overcoming or avoiding them

<sup>4</sup>The Satisfaction measure included in the experiment is introduced at the start of the experiment and is not a dependent variable. Instead it is used to test whether differences in life satisfaction influences how suggestible one's aspirations are

<sup>5</sup>Duncan, Haller, and Portes (1968) and Festinger (1942) construct theoretical models of how social comparison influences aspirations. Gibson and Lawrence (2010) and Leung, Chen, and Lam (2010) examined how occupational and educational aspirations are influenced by peers. Koo and Fishbach (2010) demonstrated aspirations are influenced by whether one considers the goals already accomplished or the goals still left to achieve Sokolowska (2006) augmented aspirations in an experimental setting and examined whether this influenced risk preferences

fictional narrative is able to change material aspirations raises the possibility that media messages may also be effective in changing behaviours such as reducing risk taking or encouraging higher academic achievement.

The article is structured as follows. Section 2 details the experimental design and procedure of this study. Section 3 presents the results and section 4 reports on robustness tests. Section 5 analyses the implications of the findings, considers the limitations of the study and poses questions for further research. The bulk of the experiment instructions as well as data analysis results are reported in the Appendix.

## 2 Method

### Design

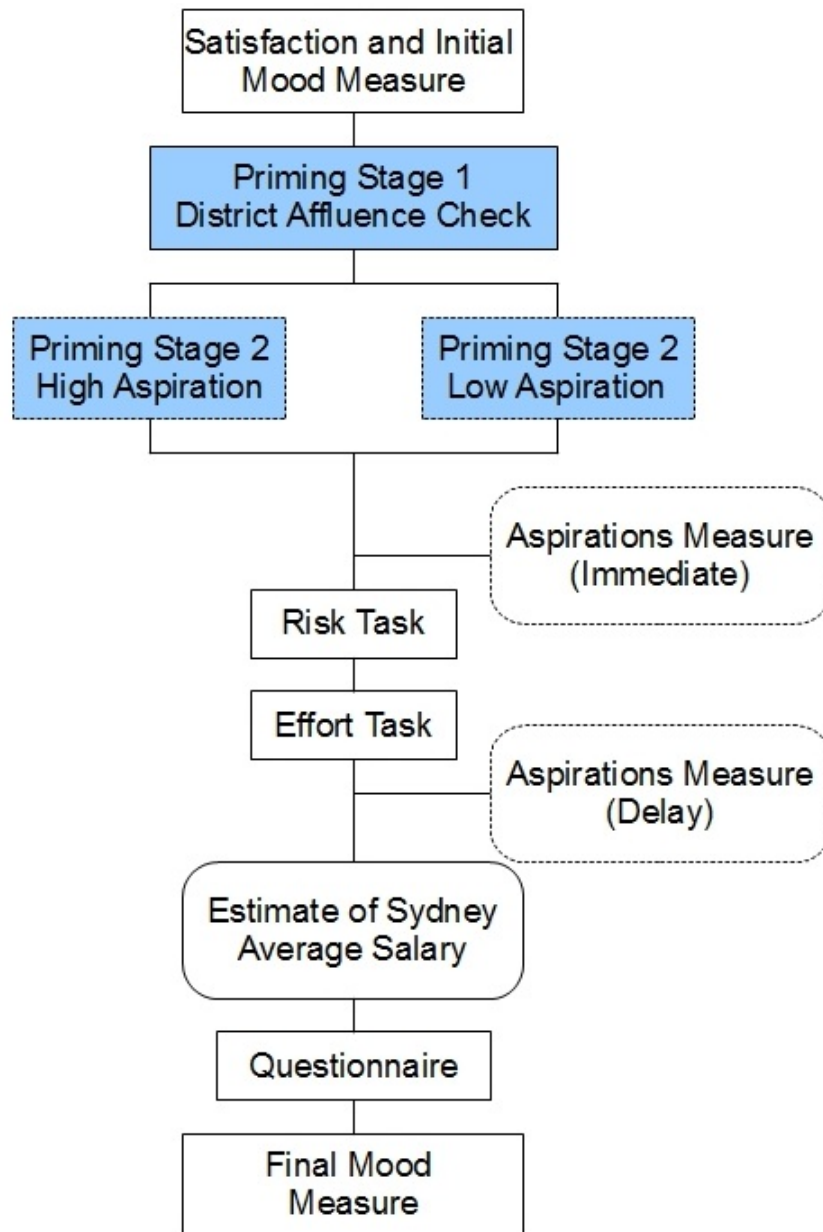
The experiment consists of six components: a priming item, a risk task similar to that of Eckel and Grossman (2008) albeit markedly simplified, an effort task similar to that of Segal (2008) and Cason, Gangadharan, and Nikiforakis (2011), a measure of aspirations, life satisfaction measures and a questionnaire. There are four treatment groups in a two by two design along dimensions of whether the participants have been presented with a priming mechanism designed to elicit higher aspirations or lower aspirations and whether the aspiration measure is obtained immediately following the priming or after a delay of several minutes where attention is drawn to tasks that require some consideration (see Table 1).

Table 1: Treatment Groups

	Aspiration Measured Before Risk & RE tasks	Aspiration Measured After Risk & RE tasks
Eastern Priming	High Immediate	High Delay
Western Priming	Low Immediate	Low Delay

Figure 1 shows the arrangement of the elements. The ordering of each task takes into consideration concerns of participants inadvertently having their focus drawn to issues that may result in their providing different responses in later stages (Kahneman, Krueger, Schkade, Schwarz, and Stone, 2006).

Figure 1: Experiment Structure



### Satisfaction and Mood Measures

Satisfaction is measured at the beginning of the experiment to introduce it as a control and to ensure that it is not compromised by any element within the experiment. The satisfaction measure from one to ten is identical to question 22 of the World Values Survey 2005-2006. The question asks:

*All things considered, how satisfied are you with your life as a whole these days?*

In the same panel participants are asked to rate their mood at the moment. The scale ranges from one to seven and is labelled from “Very Negative/Unhappy” to “Very Positive/Happy”. This is to ensure participants separate considerations of their long run satisfaction from life considerations with how they are feeling in that moment. Also the difference in scale of measurement somewhat inhibits the participants from simply choosing the same rating for both without considering them independently.

Mood is measured again at the conclusion of the experiment to check whether any notable change in mood has arisen as a consequence of the priming or participating in the experiment otherwise.

The mood at the conclusion of the experiment is also measured on a scale from one to seven to ensure the result is clearly comparable to the initial mood measure.

### Priming Mechanism

The narrative priming embodies the central element common to all media stimuli: the communication of a story. It is not perfectly representative of all media items however as it is presented in a textual format and elicits social comparison along material dimensions only. It is both too narrow and too simplistic to interpret a positive result of this experiment to be a proof that media presentations are influencing SWB. Nevertheless the use of a simple textual prime does allow powerful inferences to be drawn as the simplicity of the priming offers a tremendous degree of control<sup>6</sup>. Also as the simple priming is representative of the underlying message of media presentations it allows the findings of this study to be applied to the message being conveyed as opposed to some specific visual or audial element.

The priming mechanism is in two stages and operates by activating pre-existing stereotypes of wealth associated with residents of two districts of Sydney. The Eastern Suburbs is the district selected for the high aspiration prime as it is widely regarded as an affluent district while the Western Suburbs is selected for the low aspirations prime as it is perceived widely as a working class district.

The first stage of the priming mechanism asks the participants to rate on a five point scale how costly it is in general to live in each of the Northern, Southern, Eastern and Western Suburbs of Sydney<sup>7</sup> (see Figure 2). Only responses from participants who rate living in the Eastern Suburbs to be more costly than the Western Suburbs are accepted as the priming mechanism would be ineffective for anyone not holding this perception.

The first stage reminding participants of their preconceived beliefs of affluence of each district also serves to make these concerns salient for the second stage of the priming that involves a short fictional narrative being presented. The narrative for the High Aspiration treatments is as follows<sup>8</sup>:

Samantha (not her real name) is a former graduate of the University of Sydney having studied Economics. She has lived in the Eastern Suburbs for the past eleven years. She has a mortgage and a daughter of primary school age.

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<sup>6</sup>Where a textual narrative can change the reference group from being an affluent class to working class by altering one word, a television program or print advertisement would necessarily enact a substantially greater number of changes and thus introduce confounding variables

<sup>7</sup>This confirms the appropriateness of the district selections with 96% of participating domestic students and 81% of participating international students identifying the average cost of living in the Eastern Suburbs as being strictly greater than the Western Suburbs

<sup>8</sup>The Low Aspiration groups had “Eastern Suburbs” replaced by “Western Suburbs”

Figure 2: District Affluence Check

How costly in general do you think it is to live in each of the following districts compared to the average for Sydney?

Northern Suburbs	Well Below Average	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Well Above Average
Eastern Suburbs	Well Below Average	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Well Above Average
Western Suburbs	Well Below Average	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Well Above Average
Southern Suburbs	Well Below Average	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Well Above Average

I notice a sense of community here in the Eastern Suburbs with the neighbours all being fairly friendly. There's plenty to get out and do to keep the kids entertained and there's a few nice restaurants and cafes in walking distance.

We live near a big train hub so getting about isn't too hard. That's fairly important as my husband and I both work a little way from home but the commute's quite tolerable.

Another really important thing for me is decent schools. I'm quite happy with the local primary school my daughter goes to. You just get a sense that it's a safe, friendly environment and you can tell the teachers just love what they do.

As it is crucial that any measured difference in aspirations be resulting from pre-existing notions of affluence, care is taken to ensure the priming mechanism does not include any explicit suggestions of wealth or affluence. Similarly no numbers were shown in the priming (with the exception of the stage countdown timer), nor were any material or consumption considerations raised. This maximises the likelihood any difference in the aspiration measure between treatments is due to a genuine change in aspirations along a material dimension.

Although attempting to reflect a plausible account of an individual's perceptions of their lifestyle participants should nonetheless find the narrative contrived. All participants are also informed the narrative is 'stylised' prior to viewing the item. This is to ensure the participants are aware the narrative is fictional. Nevertheless the exploitation of pre-existing notions of affluence in the priming is typical of many forms of advertising, especially luxury and fashion goods.

The requirement that the priming does not introduce any new information is adhered to by the narrative reporting the personal opinion of a fictional character. Regardless of participants' notions of lifestyles in the Eastern and Western Suburbs, the account of one woman pleased with her neighbourhood's sense of community, accessibility of transport and quality of schools cannot impart anything they do not already know<sup>9</sup>.

<sup>9</sup>Even those with a particularly negative opinion of working class districts must be aware they must never-

To ensure the participants read the narrative it is displayed for one minute, more than twice the time necessary for a native English speaker to read the material.

### Aspiration Measure

An aspirational income is obtained by asking participants to envision themselves in a future scenario where they have completed their studies and are living on their own. The question posed is as follows:

*Suppose that you have finished your studies and have been working as a professional in the field of your choice for a few years. Also suppose that you are living on your own in Sydney.*

*Please indicate what gross (before tax) annual salary you feel would be necessary for you to maintain a reasonably comfortable standard of living.*

*Ignore inflation and answer in today's dollar values.*

This measure is used as opposed to directly asking one's goal income level as doing so may result in the aim of this study being sufficiently transparent that demand effects would become a concern<sup>10</sup>. Long and complicated measures of aspirations such as that utilised in Koo and Fishbach (2010) are avoided for this reason. A minimum income for a future stage of life measure is comparable to that used in Stutzer (2004) and is considered a reasonable proxy for income aspiration levels while being sufficiently opaque that demand effects do not need to be considered.

The majority of participants of the study are undergraduate university students. Consequently a substantial variation in what participants believe to be the costs of independent living in one's post study phase of life is anticipated. To account for this the participants are also asked:

*What do you think is the current average gross salary for Sydney residents?*

The ultimate aspiration measure is the ratio of the aspirational income to the average salary estimate. The average salary estimate for all treatment groups is placed after the risk and effort task to ensure perceptions of average salaries do not influence one's willingness to accept risk or effort contribution decisions.

### Risk and Effort Tasks and Questionnaire

The risk task is a simplification of that used in Eckel and Grossman (2008) with participants presented with a panel asking them their preference between six options (see Appendix A). The first option entails no risk while each following option has increasing expected payouts but also increasing distribution of potential payments. Of the options involving chance the probabilities of each outcome is 50% to ensure participants are able to clearly observe expected payout increases with each riskier option. All treatment groups are presented with the same risk task.

In the effort task participants are asked to match words with numbers provided in a key displayed in a panel above the questions (see Appendix A). This is very similar in design to Segal (2008) although that study measured respondents' time and accuracy to complete the task while this study allows participants the option to skip the task at

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theless have some residents happy with their quality of life

<sup>10</sup>As truthful reporting of aspirational incomes cannot be incentivised with monetary payments demand effects would not be preventable



any time. Participants are offered a very large monetary incentive to match as many words as possible in four minutes which is intended to be moderately restrictive. Effort will be measured by the number of words correctly matched in the time provided. The hefty monetary incentive for each correct response (\$2 for a potential payout of \$60) is to encourage all participants to at least attempt to match a few words and avoid a clustering of responses with no attempt made. As Segal (2008) found that performance in a coding speed test of this nature is not strongly predicted by ability but rather motivation to perform, any significant differences in performance between High Aspiration and Low Aspiration treatment groups is likely to be based on aspirations influencing one's motivation to perform.

The questionnaire is presented following the average salary estimate and includes questions of parental education levels, region of birth and field of study (see Appendix A).

## Procedure

The sessions were conducted on computer terminals using zTree, a program designed for carrying out economics experiments (Fischbacher, 2007).

Participants were invited through the University of Sydney's online pool of registered participants. The potential pool of participants are all recruited on campus and are predominantly undergraduate students at the University of Sydney. The majority are within the Business faculty or Economics School but almost all fields of study are represented to some extent.

As the experiment did not involve participants interacting with one another the experiment was conducted on a revolving door basis throughout the day. Care was taken to ensure participants who had completed the experiment did not communicate with those not yet undertaking the experiment but as there is no strategy element to the paid component of the experiment there would be little useful information participants would have been able to pass on.

The experiment was conducted over two days with participants informed that only one in ten will be paid for their responses prior to accepting an invitation. Payment was determined by a randomly determined number being matched to a unique identifying code all participants were presented with when arriving at the lab. For details of how payment was determined see Appendix B. Payment was made on a separate day once the experiment was concluded.

## 3 Results

222 observations were obtained. Of these 27 participants failed to identify higher living costs in the Eastern Suburbs of Sydney as compared to the Western Suburbs. As the priming mechanism requires that participants be aware of the relative affluence of these districts, these observations were discarded.

Only 4 participants indicated being born in Middle East/North Africa, 6 indicated Europe and 8 indicated Americas. To reduce potential for spurious results due to small sample size those categories were dropped and all such observations were grouped into 'Other'. Similarly only 4 participants indicated their parent language as an Indian dialect and 7 indicated a European language, hence these categories were dropped and the observations grouped into 'Other'. 2 participants indicating their chosen major as econometrics

were merged with economics in an ‘Econ/metrics’ category<sup>11</sup>.

A summary of key dependent variables is shown in Table 2. The table reveals the presence of outliers which is confirmed by plotting aspirational income against average income estimates (see Figure 3).

Table 2: Summary Statistics

	Obs	Mean	Std. Dev.	Min	Max
<b>High Immediate</b>					
Aspirational Income	51	67088.24	20315.93	30000	150000
Average Salary Estimate	51	52362.75	13831.51	20000	95000
Aspiration-Average Ratio	51	1.305689	.3065522	.7142857	2.111111
<b>Low Immediate</b>					
Aspirational Income	50	52320	15602.77	25000	100000
Average Salary Estimate	50	55100	16667.52	24000	110000
Aspiration-Average Ratio	50	.9794683	.2400336	.4285714	1.538462
<b>High Delayed</b>					
Aspirational Income	49	100857.1	147889.2	5000	900000
Average Salary Estimate	49	52683.67	25435.52	2500	200000
Aspiration-Average Ratio	49	2.123284	2.712889	.025	14
<b>Low Delayed</b>					
Aspirational Income	45	69533.33	72355.37	4000	500000
Average Salary Estimate	45	55755.56	76932.42	4000	550000
Aspiration-Average Ratio	45	1.3439043	.5219176	.3	2.857143

The five extreme observations are accounted for by identifying them as such in an ‘Outlier’ dummy variable. A sixth observation is also identified as an Outlier as it boasted an aspirational to average income ratio of 14 due to an average annual salary estimate of only AU\$2500. The resulting distribution of aspirational income to average income estimates according to treatment group does not reveal any immediately apparent differences between treatments (see Figure 6, p.27).

Dummy variables are created for each response of the categorical variables of parent language, birth region and area of study.

Risk is coded to integer values between 0 (for the certain choice) and 5 (highest gamble between \$80 and \$0). Similarly parental education is coded to integer values between 1 and 5 with responses of ‘unknown’ recoded as missing. 8 observations were excluded from some estimates due to unknown parental education attainment.

Dummy variables for whether the treatment was High or Low and also whether they were Immediate or Delayed along with interaction terms are created<sup>12</sup>.

Estimating the effect of the priming without any control variables yields a significant result along all dimensions (Table 3, column 1). Including all available control variables the priming is found to have a statistically significant effect only for the treatment groups where the aspirational income and average salary estimates were measured immediately following the priming (excerpt shown in Table 3, column 2; complete estimate shown in

<sup>11</sup>Estimates using the original categorisation of data were also conducted but arrived at the same outcomes for the treatment variables and thus not reported

<sup>12</sup>See page 23 for description of variables

Figure 3: Aspirational Income against Average Salary Estimate

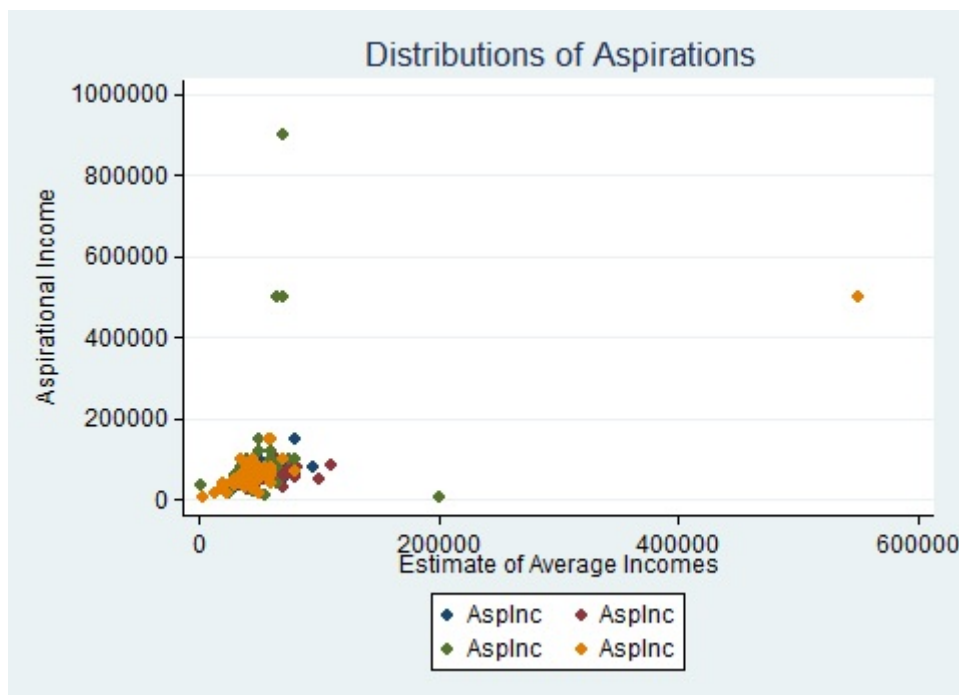


Table 7, p.24). This result is still observed when a more restrictive criteria for whether the control variables are relevant is used and several control variables are dropped from the estimation<sup>13</sup> (Table 3, column 3).

The 27 discarded observations are checked to see whether the priming had a reverse effect on those who indicated the Western Suburbs as being more costly. Only 7 participants indicated the Western Suburbs being strictly more costly on average than the Eastern. There are too few observations in each treatment to ascertain whether the priming had the reverse effect for these participants. No results are reported for these observations.

The relative effect of priming on aspirational income ratio is shown in Table 8 (p.26). This reveals the priming is still significant to the 1% confidence level for the immediate treatment groups. However the relative estimation also indicates a significant change in aspirations between the Low Immediate and Low Delayed treatment groups as well as the outliers no longer being significant while gender now appears to be. No clear explanation can be provided for these divergent results.

The effect of priming on risk is estimated using ordered probit regression. Table 4 column 1 estimates risk against the treatment dummies only and finds no statistically significant difference across treatment groups. This is also suggested by Figure 7 (p.29) showing histograms of risk preferences across treatment groups. When control variables are included in the estimation however a significant difference is observed between the High and Low Delayed treatments. Table 4 column 2 shows an excerpt of the risk estimated against the treatment dummies as well as all available control variables (complete estimate shown in Table 9, p.28).

The effect of priming on real effort is estimated using tobit regression due to a large

<sup>13</sup>Satisfaction, final mood, parental education, area of study, year of study and whether the participant registered as an outlier retained

Table 3: Effect of Priming on Aspirational to Average Income Ratio

Aspirational to Average Income ratio	Regression Series		
	(1)	(2)	(3)
Low to High Immediate	<b>0.33***</b> (0.05)	<b>0.39***</b> (0.12)	<b>0.38***</b> (0.11)
Low to High Delayed	<b>0.78**</b> (0.40)	0.53 (0.35)	0.43 (0.31)
High Immediate to Delayed	<b>0.82**</b> (0.39)	0.32 (0.22)	0.24 (0.20)
Low Immediate to Delayed	<b>0.36***</b> (0.08)	0.18 (0.20)	0.19 (0.19)

Notes:

\*\* Significant at 5% level

\*\*\* Significant at 1% level

Series (1) includes only treatment dummies as independent variables

Series (2) includes all control variables

Series (3) includes some control variables

Table 4: Effect of Priming on Risk

Risk	Regression Series		
	(1)	(2)	(3)
Low to High Immediate	0.04 (0.20)	-0.1 (0.22)	0.06 (0.22)
Low to High Delayed	-0.34 (0.23)	<b>-0.59**</b> (0.25)	<b>-0.46*</b> (0.25)
High Immediate to Delayed	-0.19 (0.21)	-0.32 (0.23)	-0.17 (0.23)
Low Immediate to Delayed	0.19 (0.22)	0.16 (0.24)	0.23 (0.23)

Notes:

\* Significant at 10% level

\*\* Significant at 5% level

Estimates obtained by ordered probit regression

Series (1) includes only treatment dummies as independent variables

Series (2) includes all control variables

Series (3) includes some control variables

clustering of results at the maximum real effort outcome. Priming is not found to have an effect on real effort in these estimates.

An ordered probit estimation is conducted with satisfaction against the control variables in addition to risk, real effort and aspirational income ratio. The treatment group dummies were not included as satisfaction was measured prior to exposure to priming and participants were allocated to treatment groups randomly. Table 11 (p.31) indicates initial and final mood are related with satisfaction.

Mood change is estimated using ordered probit estimation against the treatment dummies and all control variables. It is not found to differ between treatments but is influenced by one's aspirational income ratio, one's initial mood and one's parents' language (see Table 12, p.32).

## 4 Robustness Tests

As the experiment implemented a between subjects design it is perhaps also necessary that participants in the High aspiration treatment groups consider the Eastern Suburbs to be strictly above average in costliness and those in the Low aspirations groups consider the Western Suburbs to be average or below average. The data is re-analysed by applying a requirement that participants of the High aspiration treatments identify the average costliness of living in the Eastern Suburbs as being 4 or 5 while those in the Low aspiration treatments identify the costliness of the Western Suburbs being 3 or lower<sup>14</sup>. Table 13 p.34 shows some additional observations are discarded from the High aspiration treatments but the data largely is unaltered. The analysis with this set of observations provides the same findings as those already reported and are thus not included.

Squared terms for the control variables of risk, real effort, father and mother education and year of study are included in estimates of the effect of the priming (excerpt of estimate shown in Table 14, p.34). The squared and linear terms are not significant at the 5% level and the conclusions regarding the priming and the other control variables are unchanged. As inclusion of the squared terms do not meaningfully contribute to the interpretation they are not included in the main analysis.

The estimate of satisfaction and mood change revealed the potential for multicollinearity problems arising from initial and final mood and satisfaction being highly correlated. A pairwise correlation matrix is obtained (see Table 15, p.36). This reveals potential multicollinearity issues between area of birth and parental language, area of birth and international student, mother's education, father's education and satisfaction and mood.

The variance inflation factor is obtained for each of the estimates of the effect of priming on aspiration income ratio (Tables 17 and 18, p.35). As none of the VIF values exceed 5 multicollinearity is not considered a concern.

The results may be distorted if a significant proportion of participants merely guessed the Eastern Suburbs are more affluent than the Western Suburbs. Domestic students are expected to overwhelmingly be aware of the wealth divide in Sydney which is confirmed by the observation of 109 of 113 (96%) domestic students indicating living costs in the Eastern Suburbs are strictly greater on average compared to the Western Suburbs. Analysis using only domestic students is conducted and results indicated in Table 19 (p.38). This reduces the number of observations to 101 (some observations lost due to missing values for parental education) and results in the Low to High Immediate treatments no longer being statistically significant at the 5% confidence level if all control variables are included.

<sup>14</sup>recall the scale has 5 points with 1 labelled "Well Below Average" and 5 labelled "Well Above Average"

However the priming coefficient is statistically significant when the restrictive criteria for inclusion of control variables is applied. As there is no reason to believe international students were likely to guess correctly the relative affluence of each district, this is deemed not to be a concern.

## 5 Discussion and Conclusion

The summary results without outliers (Table 6, p.24) hint at the priming significantly influencing aspirations but only when they are immediately preceding the aspiration measure<sup>15</sup>. This result appears borne out of the priming changing perceptions of the minimum income necessary for a reasonable quality of life rather than a change in the mean income estimates.

OLS estimation confirms the priming influences aspirations if they are measured immediately following the priming (Table 7, p.24). This holds whether all control variables are included or only a subset. With the exception of outliers no other variable is significant in influencing aspirations. The magnitude of the effect is noteworthy with a log-linear estimate revealing approximately a 30% decrease in expected aspirational income ratio if the Eastern Suburbs priming is replaced with the Western Suburbs priming (Table 8, p.26).

The results suggest the High priming did not influence aspirations while those in the Low priming had their aspirations reduced momentarily<sup>16</sup>. This would be consistent with Dickson (1982) finding greater weight being placed on a negative narrative.

Columns 5 and 6 of Table 7 (p. 24) show no significant difference in aspirations between the High Delayed and Low Delayed treatments. Thus the effect of the priming is largely lost after one completes a risk and real effort task. It is unclear however whether the effect being dissipated is a result of a short period of time having elapsed, one needing to focus attention on an unrelated matter or whether the risk and real effort tasks introduced a new reference point (effectively functioning as priming mechanisms themselves) and consequently diluted the effect of the priming.

The ephemeral nature of the priming is also supported by risk attitudes being influenced by the priming only if one completed the risk choice immediately following viewing the priming item<sup>17</sup> (see Table 9 and Figure 7, p.28). The risk measure not being significantly influenced by aspirational income ratio indicates one's ex ante aspiration level did not have an effect on risk preferences. This suggests ex ante aspiration is not applied to the risk task performed in the context of a laboratory experiment but the change in aspirations induced within the experiment did influence risk preferences.

Of significant interest is the result being in the opposite direction than anticipated. Participants exposed to the higher aspiration priming had a stronger preference for less risky choices. Some caution must be taken as ordered probit estimation is not significant at the 5% level of confidence if using the more restrictive criteria for what control variables to include in the estimation. Nevertheless the direction of the result is clear and contradicts the model proposed by March (1988) and experimental evidence obtained in Sokolowska (2006) which suggested those with a larger gap between their actual wealth and their goal wealth would be more inclined to accept riskier choices.

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<sup>15</sup>The difference between High Delayed and Low Delayed is not significant at the 5% confidence level

<sup>16</sup>Perhaps a narrative describing someone living in an affluent district being pleased with her life failed to move people but the narrative of someone living in a working class district but quite content left a stronger impression

<sup>17</sup>Recall the Delayed groups completed the risk task immediately following the priming

A potential explanation is offered by Diecidue and van de Ven (2008) which augments von Neumann and Morgenstern Expected Utility theory by incorporating an additional utility gain derived from attaining one's aspiration level. This results in participants being more risk tolerant if the only options that offer a chance of achieving their aspiration levels are more risky while they may be risk averse should the safer options assure them of achieving their aspiration level. This is most clearly illustrated with an example.

Consider an experiment where participants are implicitly primed with an aspiration level similar to the method of Sokolowska (2006). They are offered two gambles as shown in Table 5 and asked to report which they prefer. Here gamble A is riskier with a greater variation but also higher expected return. Assume an equal number of participants would prefer each gamble if participants are first explicitly primed with an aspiration level of \$20. If however the aspiration level was \$40, Diecidue and van de Ven (2008) and intuition would suggest a higher proportion of participants would choose gamble B. Hence an increase in aspiration level from \$20 to \$40 would be expected to decrease the observed risk tolerance. The same intuition and model would suggest however that an increase in aspiration from \$40 to \$80 should induce more participants to prefer gamble A than B given gamble A is the only option with any possibility of achieving the aspiration level. Hence this demonstrates risk preferences may exhibit a U shape with respect to aspirations, initially decreasing as aspirations increase from a very low starting point but eventually increasing as aspirations continue to rise.

Table 5: Hypothetical Gamble Choices

	50% Chance	50% Chance
<b>Gamble A</b>	\$100	\$20
<b>Gamble B</b>	\$60	\$40

Recalling that participants were not primed with an explicit aspiration level in this study it is impossible to translate the aspiration level reported by the aspirational income ratio into benchmarks for the risk task. Further research would be necessary to examine whether there is a U-shaped relation between risk preferences and aspirations.

Effort is not found to be related to treatment group nor to the aspirational income ratio (see Table 10, p.30). As international students were observed to perform worse it is likely confidence with English impacted on the results. The majority of domestic participants are found to have achieved full scores on the effort task. Regrettably this clustering results in the task not being able to inform whether the priming was able to influence motivation and willingness to contribute effort. It is suggested any future studies utilising such procedures should make the time more restrictive, include more options to lengthen the task or reduce the attractiveness of the extrinsic reward<sup>18</sup>.

Satisfaction was not found to be significant with any of the measured control variables with the exception of mood (see Table 11 p.31). Mood change is more intriguing with the observation that the aspirational income ratio is a significant and negative predictor (Table 12 p.32). This may be due to those with higher ex ante aspiration levels also having higher expectations prior to starting the experiment and are thus more likely to be disappointed.

<sup>18</sup>The payment may have been large enough it crowded out any potential intrinsic motivations, see Pokorny (2008) for details regarding incentive crowding out

Whether the susceptibility to being primed was influenced by various characteristics such as gender and risk preferences was examined. None of the control variables clearly demonstrated any influence on one's susceptibility to the narrative changing their aspirations.

As the priming mechanism does not explicitly set an aspirational goal it is necessary to consider whether the results actually reflect a change in aspirations<sup>19</sup>. Although the narrative prime allows considerations other than material aspirations to be introduced, such as personal opinions regarding public transport and education, the aspiration measure specifically asks the minimum income one feels necessary for a reasonable standard of living. Provided that this is an acceptable representation of material aspirations, a significant difference across the High Immediate and Low Immediate treatments reveals the priming has succeeded in changing aspirations.

However this design cannot prove it is the social comparison dimension that specifically caused the change in aspirations. For example participants may have an unidentified tendency to associate the word "Eastern" with higher cost of living than "Western" that is unrelated to perceptions of affluence of those districts. There is no reason to believe this has occurred however. As the only difference between the High and Low treatments was the reference to "Eastern" or "Western" Suburbs, any alternative explanation must plausibly suggest how swapping these two words could have produced the change in aspirations without considerations of the affluence of each district being involved. No alternative explanation is forthcoming. The priming operating by eliciting social comparison considerations is thus by far the most likely explanation.

Even if one accepts that a fictional source can influence aspirations by eliciting social comparison considerations this study is unable to demonstrate this mechanism is the only one influencing aspirations or SWB. For example it is likely that some fictional presentation eliciting social comparison would be able to affect SWB without influencing aspirations. What other mechanisms may operate to influence SWB and aspirations are beyond the scope of this study however and would require further investigation.

Also more research is necessary to identify whether there are cumulative effects to exposure and whether more vivid stimuli (such as an engrossing film) can impart a stronger or more enduring influence. There is also scope to investigate whether narratives communicating dimensions other than peer comparison, such as perceptions of fate control and self efficacy, would similarly influence aspirations<sup>20</sup>.

Further research is necessary to continue strengthening the link between media exposure and SWB as this study is not generalisable to real world media presentations. Rather it establishes evidence that fictional presentations are able to elicit aspiration change that has been demonstrated to influence SWB. Empirical or experimental studies incorporating real world media items or stimuli more closely resembling them are required for further insights on how media exposure influences SWB.

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<sup>19</sup>See Koo and Fishbach (2010) and Sokolowska (2006) for examples of explicitly setting aspirations

<sup>20</sup>See Leung, Chen, and Lam (2010) for details of how fate control and self efficacy influences educational aspirations



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# Appendices

## A Experiment Design

### Risk Item

The following is the risk question all participants were presented with. Please indicate which option you prefer among the following gambles:

- 100% chance of earning \$30
- 50% chance of earning \$24 and 50% chance of earning \$40
- 50% chance of earning \$18 and 50% chance of earning \$50
- 50% chance of earning \$12 and 50% chance of earning \$60
- 50% chance of earning \$6 and 50% chance of earning \$70
- 50% chance of earning \$6 and 50% chance of earning \$70
- 50% chance of earning \$0 and 50% chance of earning \$80

## Effort Task

The following is a screenshot of the coding speed that constituted the real effort task.

Figure 4: Coding Speet Test

Period
1 of 1
Remaining time [sec]: 297

	bargain...8385	music...1117	jacket...4781	flower...7432	ferry...8956	hill...1489
	game...6456	sunshine...7489	office...2217	forest...4692	mushroom...1195	train...2535
	knife...7150	point...4703	watch...9142	movie...6369	wine...5821	song...7163
	chin...8930	owner...6227	kitten...3552	diary...2136	stone...4128	conductor...5936
	house...2859	sofa...9645	memory...3841	newspaper...7740	bike...9493	antlers...3376
game	C 6456*	C 1369*	C 4933*	C 9493*	C 3621*	C 3125*
	C 5821*	C 9636*	C 8524*	C 8227*	C 1749*	C 9645*
	C 2535*	C 7740*	C 8521*	C 7485*	C 8594*	C 5821*
	C 7740*	C 7093*	C 4128*	C 1221*	C 7163*	C 9493*
jacket	C 4781*	C 3841*	C 7150*	C 3552*	C 6102*	C 8825*
	C 4128*	C 3914*	C 9636*	C 9696*	C 9674*	C 8930*
	C 2233*	C 6632*	C 7432*	C 3755*	C 8369*	C 5936*
	C 4396*	C 4785*	C 7415*	C 1628*	C 3455*	C 1469*
point	C 7496*	C 1296*	C 1117*	C 2396*	C 7415*	C 1450*
	C 4703*	C 2859*	C 9541*	C 8096*	C 7489*	C 4652*
	C 4367*	C 9493*	C 3376*	C 4695*	C 1521*	C 7432*
	C 7403*	C 2274*	C 2585*	C 2535*	C 2136*	C 5821*
diary	C 7475*	C 3145*	C 4659*	C 9369*	C 7150*	C 7563*
	C 2963*	C 6511*	C 1463*	C 7321*	C 7740*	C 4963*
	C 7414*	C 1195*	C 8756*	C 2527*	C 1852*	C 1196*
		C 7736*	C 5936*	C 9493*	C 7415*	C 1469*
antlers	C 1689*	C 4210*	C 2217*	C 9142*	C 7415*	C 3412*
	C 7331*	C 7415*	C 7427*	C 9322*	C 8385*	C 9636*
	C 6932*	C 4692*	C 2296*	C 3247*	C 9961*	C 8956*
	C 3376*	C 2015*	C 3765*	C 4152*	C 5699*	C 9585*

Continue

# Questionnaire

The following is a screenshot of the questionnaire.

Figure 5: Questionnaire

Period
1 of 1

What language do your parents speak to you in?

- English
- A Chinese dialect eg. Mandarin
- An Indian dialect eg. Hindi
- A European language eg. French
- Arabic
- Other

What is your region of birth?

- Australia / New Zealand
- Europe (including Russia)
- East Asia
- Asian Subcontinent
- Middle East / North Africa
- North America / South America
- Other

What major do you intend to undertake? (Indicate your main interest if you are undertaking multiple Majors)

- Economics
- Econometrics
- Accounting
- Finance
- Other Business Major
- Other

What year of study are you currently completing?

- Not Studying
- First Year
- Second Year
- Third Year
- Forth Year or above (including Postgraduate)

What is your gender?

- Female
- Male

What was your father's highest educational attainment?

- Did not Complete Secondary School
- Completed Secondary School
- Diploma or other Tertiary Training
- Undergraduate Degree (including Honours)
- Postgraduate Degree (Masters, PhD)
- Unknown

What was your mother's highest educational attainment?

- Did not Complete Secondary School
- Completed Secondary School
- Diploma or other Tertiary Training
- Undergraduate Degree (including Honours)
- Postgraduate Degree (Masters, PhD)
- Unknown

Are you a domestic or international student?

- Domestic
- International

## B Payment Mechanism

Participants were informed only one in ten would be paid on the basis of their responses in the email inviting them to sessions for the experiment, in the Participant Information Statement provided with the email and also prior to beginning the experiment when they arrived at the laboratory.

The mechanism for determining who was paid was described as follows:

One in ten participants will be randomly chosen to receive payment. In Week 2 you will be sent an email indicating the winning number which is the unit value of the S&P/ASX 200 at its close on Tuesday 2nd August. If the unit value of your Individual ID (as indicated on the card you received at the start of the experiment) matches this number you will be paid for your responses in the experiment.

For example:

You have Group ID number 3 and Individual ID number 38. On Tuesday 2nd August the closing value of the S&P/ASX 200 is 4468.1. The winning number is therefore 8. As your Individual ID ends in 8 you will be paid based on your responses.

The email in week 2 will include details of how to collect payment. **You will need to bring your card with you when collecting payment so please retain your card.**

## C Additional Results

### Description of Variables

<b>Aspiration Ratio</b> Ratio of minimum income for reasonable standard of living to average salary estimate	<b>Year of Study</b> Indicator from 1 - 4 with 4 representing 4th year or above
<b>Low</b> Treatment group dummy variable	<b>Initial Mood</b> Ascending mood indicator from 1 - 7 measured at start of experiment
<b>High</b> Treatment group dummy variable	<b>Final Mood</b> Ascending mood indicator from 1 - 7 measured at end of experiment
<b>Delayed</b> Treatment group dummy variable	<b>outlier</b> Dummy variable indicating whether observation identified as outlier
<b>Immediate</b> Treatment group dummy variable	<b>Risk</b> Indicator of risk choice from 0 (certain outcome) to 5 (most risky option)
<b>InteractionLD</b> Treatment group dummy variable	<b>Real Effort</b> Score obtained on effort task (possible score from 0 - 30)
<b>InteractionHD</b> Treatment group dummy variable	<b>Male Dummy</b> Gender dummy variable, female comparison category
<b>Satisfaction</b> Ascending indicator of life satisfaction from 1 - 10	<b>International Student</b> Domestic/international student dummy variable, domestic comparison category
<b>Father Edu</b> five point parental education scale, 1 - no secondary, 2 - completed secondary, 3 - diploma, 4 - undergraduate, 5 - postgraduate	<b>Parent Lang...</b> Parent language dummy variables, English comparison category
<b>Mother Edu</b> five point parental education scale, 1 - no secondary, 2 - completed secondary, 3 - diploma, 4 - undergraduate, 5 - postgraduate	<b>Born...</b> Region of birth dummy variables, Aus/NZ comparison category
<b>Study...</b> Field of study dummy variables, Economics/econometrics comparison category	



## Tables and Figures

Table 6: Summary Statistics without Outliers

	Obs	Mean	Std. Dev.	Min	Max
<b>HighImmediate</b>					
Aspirational Income	51	67088.24	20315.93	30000	150000
Average Salary Estimate	51	52362.75	13831.51	20000	95000
Aspiration-Average Ratio	51	1.305689	.3065522	.7142857	2.111111
<b>LowImmediate</b>					
Aspirational Income	50	52320	15602.77	25000	100000
Average Salary Estimate	50	55100	16667.52	24000	110000
Aspiration-Average Ratio	50	.9794683	.2400336	.4285714	1.538462
<b>HighDelayed</b>					
Aspirational Income	44	68227.27	27358.82	10000	150000
Average Salary Estimate	44	49409.09	11422.78	2500	80000
Aspiration-Average Ratio	44	1.416446	.5786999	.1818182	3
<b>LowDelayed</b>					
Aspirational Income	44	59750	30818.39	4000	150000
Average Salary Estimate	44	44522.73	15692.52	4000	80000
Aspiration-Average Ratio	44	1.353786	.5236756	.3	2.857143

Table 7: Effect of Priming on Aspirational to Average Income Ratio

Aspirational to Average Income ratio	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
Low	<b>-0.33***</b> (0.05)	<b>-0.39***</b> (0.12)	<b>-0.38***</b> (0.11)			
Delayed	<b>0.82**</b> (0.39)	0.32 (0.22)	0.24 (0.20)			
InteractionLD	-0.45 (0.40)	-0.13 (0.39)	-0.05 (0.36)			
High				<b>0.78**</b> (0.40)	0.53 (0.35)	0.43 (0.31)
Immediate				<b>-0.36***</b> (0.08)	-0.18 (0.20)	-0.19 (0.19)
InteractionHI				-0.45 (0.40)	-0.13 (0.39)	-0.05 (0.36)
Satisfaction		0.06 (0.07)	0.06 (0.05)		0.06 (0.07)	0.06 (0.05)
Father Edu		0.05 (0.09)	0.05 (0.09)		0.05 (0.09)	0.05 (0.09)
Mother Edu		-0.13	-0.11		-0.13	-0.11

Continued on Next Page...

Aspirational to Average Income ratio	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
		(0.11)	(0.11)		(0.11)	(0.11)
Study Accounting		0.48	0.45		0.48	0.45
		(0.32)	(0.30)		(0.32)	(0.30)
Study Finance		-0.06	-0.02		-0.06	-0.02
		(0.20)	(0.18)		(0.20)	(0.18)
Study other business		0.18	0.20		0.18	0.20
		(0.19)	(0.18)		(0.19)	(0.18)
Study other		-0.08	-0.07		-0.08	-0.07
		(0.13)	(0.12)		(0.13)	(0.12)
Year of Study		0.02	0.04		0.02	0.04
		(0.08)	(0.09)		(0.08)	(0.09)
Final Mood		-0.16	-0.17		-0.16	-0.17
		(0.11)	(0.11)		(0.11)	(0.11)
outlier		<b>5.41**</b>	<b>5.47***</b>		<b>5.41**</b>	<b>5.47***</b>
		(2.17)	(2.10)		(2.17)	(2.10)
Initial Mood		0.02			0.02	
		(0.11)			(0.11)	
Risk		0.06			0.06	
		(0.06)			(0.06)	
Real Effort		-0.02			-0.02	
		(0.02)			(0.02)	
Male Dummy		-0.17			-0.17	
		(0.15)			(0.15)	
International Student		-0.17			-0.17	
		(0.14)			(0.14)	
Parent Lang Chinese		0.01			0.01	
		(0.29)			(0.29)	
Parent Lang Other		0.04			0.04	
		(0.20)			(0.20)	
Born East Asia		0.09			0.09	
		(0.32)			(0.32)	
Born Asia Sub cont		0.02			0.02	
		(0.20)			(0.20)	
Born Other		0.28			0.28	
		(0.20)			(0.20)	
_cons	<b>1.31***</b>	<b>2.23**</b>	<b>1.87**</b>	<b>1.34***</b>	<b>2.02*</b>	<b>1.68**</b>
	(0.04)	(0.98)	(0.79)	(0.08)	(1.03)	(0.83)

**High Immediate** is comparison treatment in columns 1 - 3

**Low Delayed** is comparison treatment in columns 4 - 6

Comparison Categories of Dummy Variables:

Parent Lang English, Born Aus/NZ, Study Economics/Econometrics

Table 8: Relative Effect of Priming on Aspirational Income Ratio

Log of Aspirational to Average Income ratio	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
Low	<b>-0.29***</b> (0.05)	<b>-0.32***</b> (0.07)	<b>-0.31***</b> (0.07)			
Delayed	0.10 (0.14)	0.06 (0.11)	0.03 (0.10)			
InteractionLD	0.17 (0.16)	0.19 (0.15)	0.21 (0.15)			
High				0.12 (0.15)	0.13 (0.12)	0.10 (0.12)
Immediate				<b>-0.27***</b> (0.07)	<b>-0.25***</b> (0.09)	<b>-0.24***</b> (0.09)
InteractionHI				0.17 (0.16)	0.19 (0.15)	0.21 (0.15)
Satisfaction		0.01 (0.03)	0.01 (0.02)		0.01 (0.03)	0.01 (0.02)
Father Edu		0.04 (0.04)	0.04 (0.04)		0.04 (0.04)	0.04 (0.04)
Mother Edu		-0.09 (0.06)	-0.09 (0.06)		-0.09 (0.06)	-0.09 (0.06)
Study Accounting		0.04 (0.15)	0.04 (0.14)		0.04 (0.15)	0.04 (0.14)
Study Finance		-0.02 (0.13)	-0.01 (0.12)		-0.02 (0.13)	-0.01 (0.12)
Study other business		0.13 (0.11)	0.18 (0.12)		0.13 (0.11)	0.18 (0.12)
Study other		-0.05 (0.08)	-0.02 (0.07)		-0.05 (0.08)	-0.02 (0.07)
Year of Study		-0.02 (0.04)	-0.02 (0.04)		-0.02 (0.04)	-0.02 (0.04)
Final Mood		-0.05 (0.06)	-0.06 (0.05)		-0.05 (0.06)	-0.06 (0.05)
outlier		0.57 (0.90)	0.60 (0.91)		0.57 (0.90)	0.60 (0.91)
Initial Mood		0.00 (0.05)			0.00 (0.05)	
Risk		0.00 (0.03)			0.00 (0.03)	
Real Effort		-0.02 (0.01)			-0.02 (0.01)	
Male Dummy		<b>-0.16**</b> (0.08)			<b>-0.16**</b> (0.08)	
International Student		-0.08 (0.12)			-0.08 (0.12)	
Parent Lang Chinese		0.07 (0.14)			0.07 (0.14)	

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Log of Aspirational to Average Income ratio	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
Parent Lang Other		0.02 (0.10)			0.02 (0.10)	
Born East Asia		-0.11 (0.18)			-0.11 (0.18)	
Born Asia Sub cont		-0.01 (0.12)			-0.01 (0.12)	
Born Other		0.17 (0.13)			0.17 (0.13)	
_cons	<b>0.24***</b> (0.03)	<b>1.20*</b> (0.63)	0.62 (0.43)	<b>0.22***</b> (0.06)	<b>1.14*</b> (0.64)	0.54 (0.43)

**High Immediate** is comparison treatment in columns 1 - 3

**Low Delayed** is comparison treatment in columns 4 - 6

Comparison Categories of Dummy Variables:

Parent Lang English, Born Aus/NZ, Study Economics/Econometrics

Figure 6: Aspirational against Average Income without outliers

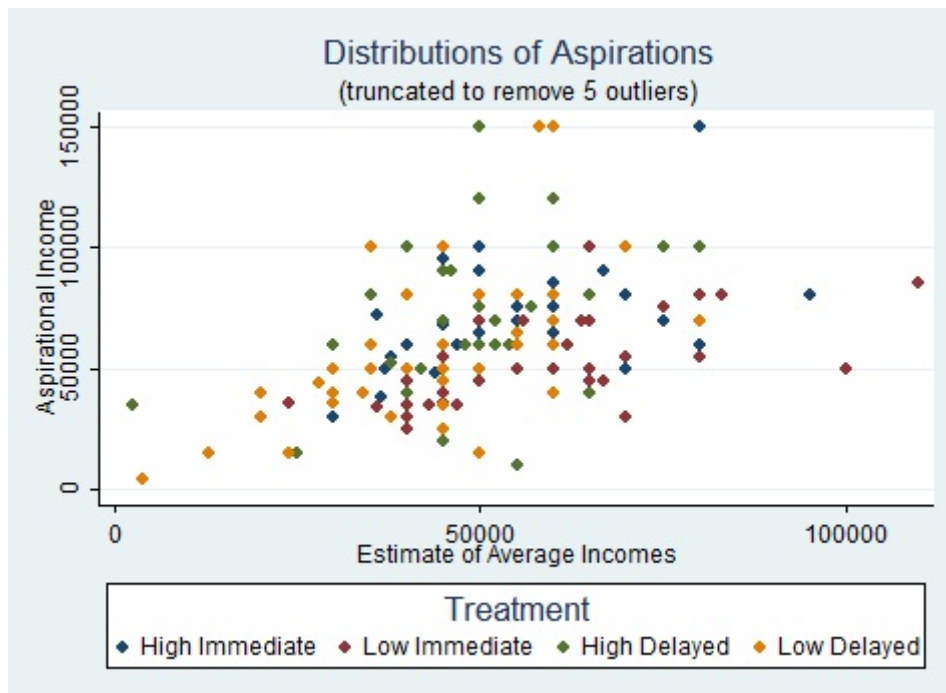


Table 9: Ordered Probit Estimate of Influences on Risk

Risk	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
Low	-0.04 (0.20)	0.1 (0.22)	-0.06 (0.22)			
Delayed	-0.19 (0.21)	-0.32 (0.23)	-0.17 (0.23)			
InteractionLD	0.38 (0.31)	0.49 (0.33)	0.40 (0.32)			
High				-0.34 (0.23)	<b>-0.59**</b> (0.25)	<b>-0.46*</b> (0.25)
Immediate				-0.19 (0.22)	-0.16 (0.24)	-0.23 (0.23)
InteractionHI				0.38 (0.31)	0.49 (0.33)	0.40 (0.32)
Aspiration Ratio		0.08 (0.07)	0.05 (0.07)		0.08 (0.07)	0.05 (0.07)
Satisfaction		-0.04 (0.07)	-0.05 (0.06)		-0.04 (0.07)	-0.05 (0.06)
Father Edu		-0.09 (0.08)	-0.08 (0.08)		-0.09 (0.08)	-0.08 (0.08)
Mother Edu		<b>0.19**</b> (0.09)	<b>0.17*</b> (0.09)		<b>0.19**</b> (0.09)	<b>0.17*</b> (0.09)
Study Accounting		-0.35 (0.29)	-0.30 (0.29)		-0.35 (0.29)	-0.30 (0.29)
Study Finance		0.30 (0.31)	0.29 (0.30)		0.30 (0.31)	0.29 (0.30)
Study other business		-0.40 (0.34)	-0.42 (0.35)		-0.40 (0.34)	-0.42 (0.35)
Study other		-0.30 (0.25)	-0.31 (0.25)		-0.30 (0.25)	-0.31 (0.25)
Year of Study		-0.03 (0.09)	-0.05 (0.08)		-0.03 (0.09)	-0.05 (0.08)
Final Mood		0.01 (0.11)	-0.02 (0.10)		0.01 (0.11)	-0.02 (0.10)
outlier		-0.20 (0.32)	-0.25 (0.34)		-0.20 (0.32)	-0.25 (0.34)
Initial Mood		-0.10 (0.12)			-0.10 (0.12)	
Real Effort		<b>0.04*</b> (0.02)			<b>0.04*</b> (0.02)	
Male Dummy		<b>0.32*</b> (0.17)			<b>0.32*</b> (0.17)	
International Student		0.19 (0.24)			0.19 (0.24)	
Parent Lang Chinese		0.09 (0.24)			0.09 (0.24)	

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Risk	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
Parent Lang Other		-0.15 (0.28)			-0.15 (0.28)	
Born East Asia		-0.19 (0.30)			-0.19 (0.30)	
Born Asia Sub cont		0.19 (0.31)			0.19 (0.31)	
Born Other		-0.09 (0.39)			-0.09 (0.39)	

**High Immediate** is comparison treatment in columns 1 - 3

**Low Delayed** is comparison treatment in columns 4 - 6

Comparison Categories of Dummy Variables:

Parent Lang English, Born Aus/NZ, Study Economics/Econometrics

Figure 7: Risk Histograms

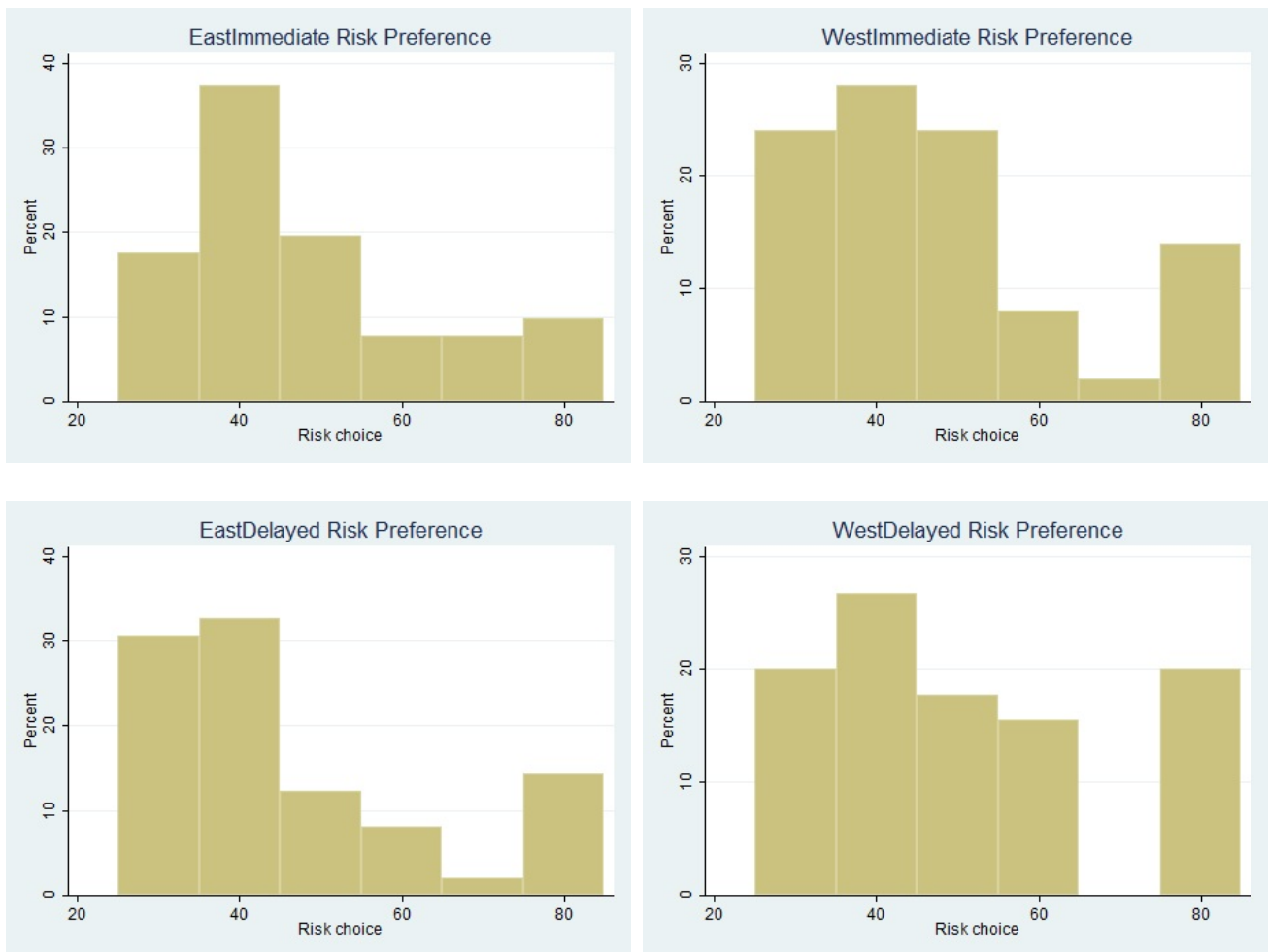


Table 10: Tobit Estimate of Influences on Real Effort

Real Effort	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
Low	0.02 (1.40)	-0.63 (1.41)	-0.30 (1.39)			
Delayed	-0.67 (1.42)	0.50 (1.42)	0.43 (1.46)			
InteractionLD	1.49 (2.07)	-0.13 (2.08)	0.23 (2.09)			
High				-1.51 (1.52)	0.76 (1.53)	0.07 (1.56)
Immediate				-0.82 (1.50)	-0.37 (1.48)	-0.66 (1.43)
InteractionHI				1.49 (2.07)	-0.13 (2.08)	0.23 (2.09)
Aspiration Ratio		-0.67 (0.43)	-0.56 (0.47)		-0.67 (0.43)	-0.56 (0.47)
Satisfaction		0.59 (0.38)	0.55 (0.47)		0.59 (0.38)	0.55 (0.47)
Father Edu		0.39 (0.44)	0.28 (0.45)		0.39 (0.44)	0.28 (0.45)
Mother Edu		-0.81 (0.50)	-0.68 (0.50)		-0.81 (0.50)	-0.68 (0.50)
Study Accounting		-1.08 (2.00)	-0.82 (1.95)		-1.08 (2.00)	-0.82 (1.95)
Study Finance		-2.78 (1.88)	-2.00 (1.89)		-2.78 (1.88)	-2.00 (1.89)
Study other business		1.30 (2.39)	0.88 (2.41)		1.30 (2.39)	0.88 (2.41)
Study other		0.20 (1.58)	-0.21 (1.61)		0.20 (1.58)	-0.21 (1.61)
Year of Study		0.12 (0.46)	0.21 (0.46)		0.12 (0.46)	0.21 (0.46)
Final Mood		0.67 (0.76)	0.65 (0.58)		0.67 (0.76)	0.65 (0.58)
outlier		1.42 (3.88)	0.55 (4.15)		1.42 (3.88)	0.55 (4.15)
International Student		<b>-4.20***</b> (1.31)	<b>-3.03***</b> (1.10)		<b>-4.20***</b> (1.31)	<b>-3.03***</b> (1.10)
Initial Mood		-0.01 (0.78)			-0.01 (0.78)	
Risk		<b>0.69**</b> (0.31)			<b>0.69**</b> (0.31)	
Male Dummy		-0.38 (1.06)			-0.38 (1.06)	
Parent Lang Chinese		0.91 (1.55)			0.91 (1.55)	

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Real Effort	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
Parent Lang Other		-1.01 (1.71)			-1.01 (1.71)	
Born East Asia		1.28 (1.68)			1.28 (1.68)	
Born Asia Sub cont		1.89 (1.93)			1.89 (1.93)	
Born Other		1.55 (1.98)			1.55 (1.98)	
_cons	<b>30.07***</b> (1.04)	<b>24.01***</b> (4.52)	<b>25.67***</b> (3.89)	<b>30.91***</b> (1.17)	<b>23.8***</b> (4.55)	<b>26.04***</b> (3.94)

**High Immediate** is comparison treatment in columns 1 - 3

**Low Delayed** is comparison treatment in columns 4 - 6

Comparison Categories of Dummy Variables:

Parent Lang English, Born Aus/NZ, Study Economics/Econometrics

Table 11: Ordered Probit Estimate of Influences on Satisfaction

Satisfaction	Regression Series	
	(1)	(2)
Aspiration Ratio	0.05 (0.07)	0.06 (0.06)
Father Edu	0.06 (0.07)	0.07 (0.07)
Mother Edu	0.04 (0.08)	0.04 (0.08)
Study Accounting	0.02 (0.35)	-0.12 (0.31)
Study Finance	0.28 (0.33)	0.32 (0.31)
Study other business	-0.12 (0.41)	-0.03 (0.33)
Study other	-0.12 (0.41)	0.03 (0.27)
Year of Study	-0.01 (0.09)	-0.01 (0.08)
Final Mood	<b>0.28**</b> (0.13)	<b>0.72***</b> (0.10)
outlier	-0.27 (0.42)	-0.20 (0.45)
International Student	0.21 -0.26	
Initial Mood	<b>0.62***</b>	

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Satisfaction	Regression Series	
	(1)	(2)
	(0.13)	
Risk	-0.02	(0.05)
Male Dummy	-0.14	(0.15)
Parent Lang Chinese	-0.20	(0.21)
Parent Lang Other	-0.17	(0.30)
Born East Asia	-0.09	(0.29)
Born Asia Sub cont	0.01	(0.38)
Born Other	0.30	(0.36)

Notes:

Ordered probit estimation implemented.

Treatment dummies not included as satisfaction measured prior to priming.

Comparison Categories of Dummy Variables:

Parent Lang English, Born Aus/NZ, Study Economics/Econometrics

Table 12: Ordered Probit Estimate of Influences on Moodchange

Change in Mood	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
Low	-0.05 (0.23)	-0.02 (0.27)	-0.05 (0.26)			
Delayed	-0.15 (0.21)	-0.05 (0.26)	-0.04 (0.24)			
InteractionLD	0.27 (0.32)	0.21 (0.36)	0.22 (0.35)			
High				-0.22 (0.22)	-0.19 (0.26)	-0.17 (0.25)
Immediate				-0.12 (0.24)	-0.16 (0.25)	-0.17 (0.25)
InteractionHI				0.27 (0.32)	0.21 (0.36)	0.22 (0.35)
Aspiration Ratio		<b>-0.12**</b> (0.05)	<b>-0.13**</b> (0.05)		<b>-0.12**</b> (0.05)	<b>-0.13**</b> (0.05)
Satisfaction		<b>0.15*</b> (0.08)	<b>0.14*</b> (0.07)		<b>0.15*</b> (0.08)	<b>0.14*</b> (0.07)
Father Edu		0.05 (0.08)	0.05 (0.08)		0.05 (0.08)	0.05 (0.08)
Mother Edu		-0.03 (0.08)	-0.04 (0.08)		-0.03 (0.08)	-0.04 (0.08)

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Change in Mood	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
		(0.10)	(0.09)		(0.10)	(0.09)
Study Accounting		0.15*	0.03		0.15*	0.03
		(0.33)	(0.31)		(0.33)	(0.31)
Study Finance		-0.19	-0.31		-0.19	-0.31
		(0.31)	(0.30)		(0.31)	(0.30)
Study other business		-0.17	-0.21		-0.17	-0.21
		(0.39)	(0.38)		(0.39)	(0.38)
Study other		-0.19	-0.18		-0.19	-0.18
		(0.27)	(0.24)		(0.27)	(0.24)
Year of Study		0.05	0.04		0.05	0.04
		(0.09)	(0.09)		(0.09)	(0.09)
outlier		<b>0.85**</b>	<b>0.76**</b>		<b>0.85**</b>	<b>0.76**</b>
		(0.37)	(0.33)		(0.37)	(0.33)
Initial Mood		<b>-0.68***</b>	<b>-0.66***</b>		<b>-0.68***</b>	<b>-0.66***</b>
		(0.11)	(0.11)		(0.11)	(0.11)
Risk		-0.01			-0.01	
		(0.05)			(0.05)	
Real Effort		0.03			0.03	
		(0.03)			(0.03)	
Male Dummy		0.13			0.13	
		(0.18)			(0.18)	
International Student		-0.30			-0.30	
		(0.25)			(0.25)	
Parent Lang Chinese		0.18	0.17		0.18	0.17
		(0.24)	(0.19)		(0.24)	(0.19)
Parent Lang Other		<b>0.60**</b>	<b>0.55**</b>		<b>0.60**</b>	<b>0.55**</b>
		(0.29)	(0.26)		(0.29)	(0.26)
Born East Asia		0.11			0.11	
		(0.31)			(0.31)	
Born Asia Sub cont		0.17			0.17	
		(0.34)			(0.34)	
Born Other		-0.02			-0.02	
		(0.34)			(0.34)	

**High Immediate** is comparison treatment in columns 1 - 3

**Low Delayed** is comparison treatment in columns 4 - 6

Comparison Categories of Dummy Variables:

Parent Lang English, Born Aus/NZ, Study Economics/Econometrics

## D Robustness Test Results

Table 13: Summary With Alternate Inclusion Rule and Without Outliers

	Obs	Mean	Std. Dev.	Min	Max
<b>HighImmediate</b>					
Aspirational Income	46	67641.3	20555.25	30000	150000
Average Salary Estimate	46	52836.96	13190.93	30000	95000
Aspiration-Average Ratio	46	1.299654	.3125227	.7142857	2.111111
<b>LowImmediate</b>					
Aspirational Income	50	53220	15586.87	25000	100000
Average Salary Estimate	50	54700	16542.15	24000	110000
Aspiration-Average Ratio	50	1.000897	.2376628	.5	1.538462
<b>HighDelayed</b>					
Aspirational Income	40	68050	28180.69	10000	150000
Average Salary Estimate	40	49175	10805.71	25000	80000
Aspiration-Average Ratio	40	1.415729	.5976884	.1818182	3
<b>LowDelayed</b>					
Aspirational Income	45	62222.22	30454.8	15000	150000
Average Salary Estimate	45	44777.78	15162.59	10000	80000
Aspiration-Average Ratio	45	1.483561	.8639004	.3	6

Table 14: Excerpt of Estimate with Squared Control Terms

<b>Aspirational to Average Income ratio</b>			
Low	<b>-0.33***</b> (0.12)	High	0.49 (0.33)
Delayed	0.37 (0.23)	Immediate	-0.21 (0.19)
InteractionLD	-0.16 (0.38)	InteractionHI	-0.16 (0.38)
Father Edu	<b>-0.06*</b> (0.37)	Father Edu	<b>-0.06*</b> (0.37)
Father Edu <sup>2</sup>	<b>0.11*</b> (0.06)	Father Edu <sup>2</sup>	<b>0.11*</b> (0.06)
Mother Edu	<b>0.71*</b> (0.41)	Mother Edu	<b>0.71*</b> (0.41)
Mother Edu <sup>2</sup>	<b>-0.14*</b> (0.08)	Mother Edu <sup>2</sup>	<b>-0.14*</b> (0.08)
Risk	-0.17 (0.11)	Risk	-0.17 (0.11)
Risk <sup>2</sup>	0.04 (0.03)	Risk <sup>2</sup>	0.04 (0.03)
Real Effort	<b>0.50*</b>	Real Effort	<b>0.50*</b>

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Aspirational to Average Income ratio			
Real Effort <sup>2</sup>	(0.27) <b>-0.01*</b> (0.01)	Real Effort <sup>2</sup>	(0.27) <b>-0.01*</b> (0.01)
outlier	<b>5.46***</b> (2.01)	outlier	<b>5.46***</b> (2.01)

Estimate includes all control variables. Only relevant measures reported.

Table 17: VIF of Aspirational Income Estimate

	VIF
Born E Asia	3.22
InteractionLD	3.18
Initial Mood	3.15
Study other	2.59
Final Mood	2.58
International	2.36
Delayed	2.28
PL Chinese	2.28
Born Asia SC	2.26
Accounting	2.23
Low	2.15
Satisfaction	2.04
Finance	1.91
Born Other	1.86
Other business	1.64
PL other	1.59
Mother Edu	1.59
Father Edu	1.45
Real Effort	1.18
Male	1.15
Yr of Study	1.15
outlier	1.14
Risk	1.13

**Mean VIF 2.00**

**High Immediate** is comparison treatment in this estimate

Table 18: VIF of Aspirational Income Estimate (continued)

	VIF
InteractionHI	3.58
Born E Asia	3.22
Initial Mood	3.15
Study other	2.59
Final Mood	2.58
High	2.53
International	2.36
Immediate	2.30
PL Chinese	2.28
Born Asia SC	2.26
Accounting	2.23
Satisfaction	2.04
Finance	1.91
Born Other	1.86
Other business	1.64
PL other	1.59
Mother Edu	1.59
Father Edu	1.45
Real Effort	1.18
Male	1.15
Yr of Study	1.15
outlier	1.14
Risk	1.13

**Mean VIF 2.04**

**Low Delayed** is comparison treatment in this estimate

Table 15: Pairwise Correlation of Independent Variables

	High	Immediate	InteractionHI	Satisfaction	Initial Mood	Risk	Real Effort	Male	Father Edu
High	1.0000								
Immediate	-0.0163	1.0000							
InteractionHI	0.5801*	0.5741*	1.0000						
Satisfaction	-0.0384	-0.1105	-0.0536	1.0000					
Initial Mood	-0.0137	-0.0821	-0.054	0.6827*	1.0000				
Risk	-0.0656	-0.0147	-0.0041	-0.0652	-0.0751	1.0000			
Real Effort	-0.0476	0.0097	0.0001	0.1624*	0.1679*	0.0986	1.0000		
Male	0.1097	-0.1879*	-0.0421	-0.0198	0.0191	0.0986	-0.0481	1.0000	
Father Edu	0.0104	0.0630	0.1036	0.1057	0.0883	-0.0299	-0.0185	0.0213	1.0000
Mother Edu	0.1398	-0.0017	0.1427*	0.0274	0.0156	0.0516	-0.0382	0.0166	0.4896*
International	0.0392	-0.0732	-0.0351	0.1145	0.0934	0.0118	-0.2079*	0.0386	0.0115
Yr of Study	-0.0641	0.0305	0.0501	-0.0259	-0.0473	0.0056	0.0087	-0.1128	-0.1005
Final Mood	-0.0423	-0.0845	-0.0499	0.5816*	0.7665*	-0.0607	0.1887*	0.0363	0.1049
outlier	0.1143	-0.1847*	-0.106	0.0064	0.0436	-0.0341	-0.0935	0.0119	0.0108
PL Chinese	-0.0430	-0.0934	-0.0935	0.0188	0.0637	0.0158	0.0079	-0.1079	-0.0651
PL other	0.0459	0.0700	0.1343	-0.0195	-0.0236	-0.0557	-0.0383	0.0570	0.0670
Born E Asia	-0.0618	0.0168	-0.0192	-0.0726	-0.0761	-0.0160	-0.0886	0.0273	-0.0012
Born Asia SC	0.1650*	-0.044	0.0225	0.0956	0.1177	0.0281	-0.0042	-0.0899	0.0249
Born Other	-0.0416	-0.0128	0.0460	0.1024	0.0483	-0.0191	-0.0109	-0.0087	0.0350
Accounting	-0.0962	-0.0722	-0.1244	-0.0195	-0.062	-0.0299	-0.1156	-0.0285	0.0259
Finance	0.0773	0.0438	0.0558	0.0776	0.0256	0.1613*	-0.0956	0.0274	-0.0474
Other business	0.0466	-0.0657	0.0643	-0.0167	0.0047	-0.0205	0.0033	-0.0340	0.0711
Study other	-0.0859	-0.0134	-0.0949	-0.0477	-0.003	-0.1061	0.1211	0.0014	-0.0608

Note: \* significant at 5% confidence level

Table 16: Pairwise Correlation of Independent Variables (continued)

	Mother Edu	International	Yr of Study	Final Mood	outlier	PL Chinese	PL other	Born E Asia
Mother Edu	1.0000							
International	-0.082	1.0000						
Yr of Study	-0.0715	0.0679	1.0000					
Final Mood	0.0116	0.0533	-0.0156	1.0000				
outlier	-0.0584	0.0810	0.0371	0.0264	1.0000			
PL Chinese	-0.1877*	0.2910*	-0.0757	0.0503	0.0249	1.0000		
PL other	0.0575	0.0793	0.0285	0.0765	-0.076	-0.3709*	1.0000	
Born E Asia	-0.0788	0.4120*	0.0434	-0.0444	0.0566	0.4935*	-0.1331	1.0000
Born Asia SC	0.0210	0.2548*	0.0235	0.1159	-0.073	0.0868	0.1902*	-0.2996*
Born Other	-0.0334	0.1729*	0.1481*	0.0374	0.0303	-0.2775*	0.2972*	-0.2609*
Accounting	0.0413	0.3083*	-0.0776	0.0093	0.0886	0.3179*	-0.0242	0.2547*
Finance	-0.2055*	0.1959*	0.0235	-0.0086	0.0117	0.1458*	-0.0935	0.1300
Other business	0.0779	0.0550	0.0791	0.0027	0.0502	-0.0119	0.1705*	-0.0354
Study other	0.1224	-0.3429*	-0.0886	-0.0448	-0.0494	-0.3035*	-0.0329	-0.2604*
	Born Asia SC	Born Other	Accounting	Finance	Other business	Study other		
Born Asia SC	1.0000							
Born Other	-0.1460*	1.0000						
Accounting	0.1091	-0.1071	1.0000					
Finance	0.0408	0.0389	-0.1746*	1.0000				
Other business	-0.0229	0.1196	-0.1318	-0.1265	1.0000			
Study other	-0.1233	0.0526	-0.4030*	-0.3870*	-0.2921*	1.0000		

Table 19: Effect of Priming on Domestic Students Only

Aspirational to Average Income ratio	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
Low	<b>-0.36***</b> (0.07)	<b>-0.25*</b> (0.13)	<b>-0.26**</b> (0.12)			
Delayed	0.33 (0.30)	0.34 (0.23)	0.32 (0.23)			
InteractionLD	0.05 (0.31)	-0.12 (0.31)	-0.18 (0.34)			
High				0.30 (0.30)	0.37 (0.26)	0.44 (0.28)
Immediate				<b>-0.38***</b> (0.09)	-0.22 (0.16)	-0.14 (0.16)
InteractionHI				0.05 (0.31)	-0.12 (0.31)	-0.18 (0.34)
Satisfaction		-0.05 (0.05)	-0.03 (0.04)		-0.05 (0.05)	-0.03 (0.04)
Father Edu		0.03 (0.06)	0.02 (0.05)		0.03 (0.06)	0.02 (0.05)
Mother Edu		0.04 (0.06)	0.04 (0.06)		0.04 (0.06)	0.04 (0.06)
Study Accounting		0.14 (0.24)	0.10 (0.24)		0.14 (0.24)	0.10 (0.24)
Study Finance		0.07 (0.29)	0.08 (0.30)		0.07 (0.29)	0.08 (0.30)
Study other business		<b>0.58*</b> (0.33)	0.54 (0.34)		<b>0.58*</b> (0.33)	0.54 (0.34)
Study other		-0.16 (0.15)	-0.05 (0.14)		-0.16 (0.15)	-0.05 (0.14)
Year of Study		0.07 (0.08)	0.08 (0.08)		0.07 (0.08)	0.08 (0.08)
Final Mood		-0.02 (0.07)	-0.02 (0.05)		-0.02 (0.07)	-0.02 (0.05)
outlier		2.37 (1.77)	2.67 (1.96)		2.37 (1.77)	2.67 (1.96)
Initial Mood		0.09 (0.11)			0.09 (0.11)	
Risk		-0.05 (0.04)			-0.05 (0.04)	
Real Effort		<b>-0.05*</b> (0.02)			<b>-0.05*</b> (0.02)	
Male Dummy		-0.16 (0.11)			-0.16 (0.11)	
Parent Lang Chinese		-0.22 (0.20)			-0.22 (0.20)	
Parent Lang Other		-0.05 (0.19)			-0.05 (0.19)	

Continued on Next Page...

Aspirational to Average Income ratio	Regression Series					
	(1)	(2)	(3)	(4)	(5)	(6)
Born East Asia		0.18 (0.19)			0.18 (0.19)	
Born Asia Sub cont		0.08 (0.26)			0.08 (0.26)	
Born Other		0.57 (0.33)			0.57 (0.33)	
_cons	<b>1.34***</b> (0.06)	<b>2.42***</b> (0.68)	<b>1.22***</b> (0.46)	<b>1.37***</b> (0.08)	<b>2.39***</b> (0.66)	<b>1.10**</b> (0.45)

**High Immediate** is comparison treatment in columns 1 - 3

**Low Delayed** is comparison treatment in columns 4 - 6

Comparison Categories of Dummy Variables:

Parent Lang English, Born Aus/NZ, Study Economics/Econometrics