

# The gold of one's ring is not far more precious than the gold of one's heart: Reported happiness among married and cohabitating South African adults\*

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## Abstract

This paper tests for differences in reported happiness between married and cohabiting persons, i.e. the cohabitation gap, and in particular whether selection factors can explain the cohabitation gap. The paper also explores whether age at marriage and at start of cohabitation as well as the duration of relationship type matters for subjective well-being. Based on statistical and regression analysis of the 2008 National Income Dynamics Survey, married and cohabiting persons exhibit some differences in their respective determinants of happiness. While the age at relationship commencement has no relationship with well-being, there is evidence to suggest that married people become happier at a later stage of their relationship, while cohabitants are happier initially. A significant cohabitation gap exists (0.251), but after controlling for various selection factors, the cohabitation gap virtually disappears (0.042) and becomes insignificant, which suggests that marriage and cohabitation are very similar in South Africa. Relative income, absolute income, and education explain the largest part of the cohabitation gap. Against the global backdrop of an increasing trend towards cohabitation and declining marriage rates, the overall results of this paper suggest that, since a cohabitation gap no longer exists after controlling for selection factors, South Africans may as well not go the "official route" of entering into marriage, as cohabitation provides similar benefits in terms of its contribution to individual well-being.

**Keywords:** Happiness, Marriage, Cohabitation, Subjective Well-Being, South Africa

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\* The title is an adaptation of a Chinese proverb: "The gold of one's heart is far more precious than the gold of one's purse."

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## **1. INTRODUCTION**

Empirical research on the association between happiness and marriage are well established, with married individuals consistently being reported as happier than other marital status groups. The rise in the prevalence of cohabitation over the past three decades has also sparked debate on the differences between marriage and cohabitation, as well as the association of the latter with individual happiness levels. Previous studies on the relationship between marital status and happiness have mainly focused on developed countries, where marital status has been found to be a major determinant of happiness. With respect to developing countries such as South Africa, research on marital status, specifically with regard to marriage and cohabitation, and happiness are less common (Powdthavee, 2003; Hinks&Gruen, 2007). In addition, South African studies have also reported ambiguous results with respect to the relationship between happiness and marital status. Soons and Kalmijn (2009) also recently explored the differences in happiness between married and cohabitant individuals, which they term the “cohabitation gap”, as well as the explanations for the cohabitation gap. Soons and Kalmijn (2009) provide valuable insight into the differences between those in marriage and cohabitation. Similar work it seems, as far as it could be determined, has not been conducted for developing countries such as South Africa.

This paper has two objectives. The first is to examine the determinants of happiness among married and cohabiting individuals. In particular, several covariates identified in the literature are explored as possible determinants, while age at relationship commencement and relationship duration are also taken into account. The second aim is to test for the existence of a cohabitation gap and explore whether selection factors can explain this difference.

This paper will contribute to research on the relationship between marriage, cohabitation, and happiness in developing countries and specifically South Africa. To the best of our knowledge, moreover, the effects of age at relationship commencement as well as relationship duration on happiness has not been explored for South African data. Finally, this paper also contributes to the South African literature by testing for the existence of a cohabitation gap and whether selection factors explain this gap; an issue that has remained unexplored in previous South African studies.

## **2. LITERATURE REVIEW**

Previously confined largely to the fields of sociology and psychology, the study of happiness has become very popular in Economics since the first influential contribution by Easterlin (1974). As Frey (2008:5) states, “...who really wants to be unhappy in life?” Hence, it would be safe to assume that most (if not all) people strive towards attaining personal happiness. Empirical studies have found happiness to be associated with various factors, including absolute and

relative income (Easterlin, 1995, 2001; Gerdtham&Johannesson, 2001; Frey &Stutzer, 2002; Ferrer-i-Carbonell, 2005; Luttmer, 2005; Hinks&Gruen, 2007), religious activities (Ferriss, 2002; Rule, 2006; Mochon *et al.*, 2008), social trust (Helliwell, 2003), physical exercise (Ross & Hayes, 1988; Mochon *et al.*, 2008), employment (Clark & Oswald, 1994; Oswald, 1997; Winkelmann&Winkelmann, 1998; Gerdtham&Johannesson, 2001; Frey &Stutzer, 2002), and health (Gerdtham&Johannesson, 2001; Perneger *et al.*, 2004; Van Praag&Ferrer-i-Carbonell, 2004; Peiró, 2006). Another important determinant of happiness is marital status, of which ample evidence exists for developed countries and, to a much lesser extent, for developing countries.

The finding that married people report higher levels of happiness than those who are divorced, single, widowed and who cohabit is well established (see Glenn, 1975; Gove *et al.*, 1983; Zollar& Williamson, 1987; Coombs, 1991; Oswald, 1997; Stack &Eshleman, 1998; Frey &Stutzer, 2000a; Peiró, 2006; Dolan *et al.*, 2008; Frey, 2008; Stanca, 2009). The fact that marriage may provide a happiness increment over other relationship types is not surprising, given that marriage provides several advantages and incentives, such as healthy behaviour, lower mortality risk, sharing in common household goods, and the possibility of combined accumulation of assets and wealth (Waite, 1995). Stutzer and Frey (2006) argue that marriage is positively associated with happiness since marriage provides an additional source of self-esteem. In addition, married people are less likely to be lonely and have the opportunity of gaining from a supportive relationship (Stutzer& Frey, 2006).

Stack and Eshleman (1998) studied the effect of marital status on happiness in seventeen developed countries using panel data for three years. The relationship between marital status and happiness was significant in sixteen of the seventeen countries, with the results of the association between marriage and happiness being consistent across various countries. The authors reported that marriage is associated with higher levels of financial satisfaction and health, which contributes to higher happiness. In addition, they found evidence in favour of the social causation hypothesis. Married people were also found to be happier than cohabitants were. Stack and Eshleman (1998), however, found no evidence of gender differences in the association between marriage and happiness. The fact that only developed countries are analysed is one of the drawbacks of their analysis, since it provides no clear evidence on potential differences between richer and poorer countries regarding the relationship between marital status and happiness.

In contrast to international research on marital status and happiness in developed countries, evidence for developing countries and South Africa are limited and mixed. From the World Values Survey conducted between 1990 and 1993, Diener *et al.* (2000) also studied the effect of

marital status and happiness in South Africa and reported that married people were happier than cohabitants. Using data from the 1993 South African Integrated Household Survey, Powdthavee (2003) found inconclusive evidence of a relationship between marital status and happiness. Hinks and Gruen (2007) employed the Quality of Life/Needs Assessment Survey conducted in the city of Durban and found no statistically significant relationship between marital status and happiness, even when controlling for the different types of marriage in South Africa.

Happiness differences among formally married and cohabiting individuals alone have also received attention in recent literature (Soons&Kalmijn, 2009), although research in this specific strand remains scant. This interest stems primarily from the decline in marriage rates, rising age at marriage, and rising prevalence of cohabitation since the early 1970s (Thornton, 1988; Rindfuss& Van den Heuvel, 1990; Mastekaasa, 1994; Brown &Booth, 1996; Kravdal, 1999; Berrington& Diamond, 2000; Hamplova, 2002; Nordblom, 2004; Guzzo, 2006; Kalmijn, 2007; Stevenson &Wolfers, 2007). Furthermore, cohabitation is viewed either as a substitute for marriage<sup>2</sup> or as the period (“stepping stone”) leading up to marriage (Rindfuss& Van den Heuvel, 1990; Stevenson &Wolfers, 2007). Marriage and cohabitation are similar in many aspects. For example, both imply a time-intensive and intimate relationship (Thornton *et al.*, 1995), sexual intimacy, and a shared dwelling unit (Rindfuss& Van den Heuvel, 1990). As such, research on marriage cannot be conducted without taking cohabitation into account (Thornton, 1988; Bumpass & Sweet, 1989; Mastekaasa, 1994; Thornton *et al.*, 1995; Guzzo, 2006).

Soons and Kalmijn (2009) investigated differences in happiness between married persons and cohabitants in 30 European countries using data from the European Social Survey. The authors firstly tested for the existence of a cohabitation gap in these countries, and it was found that there are indeed differences in reported happiness between married and cohabiting individuals. They found that married individuals are happier than cohabitants, but that people benefit only marginally more from marriage than from cohabitation. Soons and Kalmijn (2009) then went on to determine whether selection factors (income, education, religion, previous union dissolution, employment status, and parenthood), and institutionalisation (the degree to which cohabitation is common and more accepted in countries) could explain the cohabitation gap. Selection factors were found to explain roughly one third of the cohabitation gap, with

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<sup>2</sup> Stevenson and Wolfers (2007) present several arguments for the rise in and preference for cohabitation. Cohabitation has become more socially acceptable in many areas of the world, while the availability of abortion and the birth control pill has decreased the risks of unwanted pregnancy. The birth control pill has also reduced the cost of delaying marriage by allowing sex outside of marriage and so too reduced the subsequent risk of unwillingly falling pregnant (the emergence of HIV/AIDS has, however, increased the risk of sex, despite the ability of the birth control pill to prevent unwanted pregnancy). Furthermore, the rise in cohabitation may reflect one of two societal trends: cohabitation may represent a lower (initial) commitment to a relationship. In turn, the decision to cohabit may also reflect a decision to attach a lower value to the institution of marriage rather than necessarily being less committed to the cohabiting relationship.

employment status and religion being responsible for most of the difference in happiness between married and cohabitant individuals. The role of education and income in explaining the cohabitation gap was less clear. In addition, the cohabitation gap, as expected, was smaller in countries where cohabitation was more institutionalised.

Soons and Kalmijn (2009) provide four explanations for why the degree of institutionalisation may affect individual happiness. Firstly, a lower degree of institutionalisation is associated with disapproval by community members. Disapproval reduces social support, which may have a negative effect on happiness. Secondly, less institutionalisation may cause uncertainty regarding the future of the cohabitation, which leads to lower relationship quality and lower levels of happiness. Thirdly, selection will be stronger in cases where cohabitation is not generally accepted. Fourthly, a greater acceptance of cohabitation is likely to coincide with a greater amount of legal rights granted to cohabitants, which may increase cohabiting couples' happiness. Marriage and cohabitation may then become more similar, which is likely to make differences in happiness observed for married and cohabiting persons less substantial and even nonexistent.

The exact degree of institutionalisation in South Africa is unfortunately not all that clear, mainly due to a substantial lack of research and statistics in this regard. Although not exact, roughly 1.5 million people currently live in a cohabiting relationship in South Africa, and this number is steadily increasing. A main reason for cohabitation in South Africa is that, due to the number of (mainly Black) migrant workers, men marry in rural areas, while simultaneously cohabiting in urban areas (Clark, 2002; Goldblatt, 2003). Legally, cohabitation has no status in South Africa, and many cohabitants (especially women) have displayed substantial dissatisfaction with the lack of legal protection available to them (Goldblatt, 2003). While South African law, as in its history, still does not provide sufficient legal rights to South African cohabiting couples<sup>3</sup>, steps have been taken to provide legal regulation and protection to these partnerships, which may serve as an indication of increasing institutionalisation in South Africa.<sup>4</sup>

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<sup>3</sup> There are many instances where cohabitants have had (and still don't have) no legal protection in South Africa. For example, a cohabiting partner may terminate the relationship without any real risk of liability; cohabitants do not have a reciprocal duty to support each other either during or following termination of the relationship; a surviving partner has no right to institute a claim for loss of support against a third party who has wrongfully and culpably killed her or his life partner; cohabitants cannot inherit intestate from each other; a partner is not obliged to share his or her property with the opposite partner; and unless a home is registered in the names of both partners, the partner who was not the owner nor the lessee technically has no right to live in the home (Smith, 2009).

<sup>4</sup> The Domestic Partnerships Bill of 2008 has been drafted with the aim of providing a framework in which cohabiting couples may have the same rights in future as those in marriage. At the time of this writing, the Domestic Partnerships Bill is still in draft and has not yet been ratified by parliament. Since the data used in this paper is a single cross-section, with observations pre-dating the ratification of the Domestic Partnerships Bill, we can, however, not determine with these data how changes in the law may have impacted on the prevalence of cohabitation and resultant happiness differentials.

The study of Soons and Kalmijn (2009) showed that married and cohabiting individuals exhibit different levels of happiness and that these differences are to be found in selection factors, as well as the degree to which cohabitation is socially accepted within nations. As such, some scope exists for further research into factors that may explain differentials in happiness between the married and cohabitants in developed countries, including South Africa.

### **3. DATA AND METHOD**

The data used in the analysis originates from the first wave of the National Income Dynamics Survey (NIDS), conducted by the South African Labour and Development Research Unit (SALDRU) based at the University of Cape Town (NIDS, 2008). The first wave of fieldwork started in February 2008 and the data was officially released in July 2009. The aim of NIDS is to collect data every two years, enabling the construction of a nationally representative panel of individuals, documenting outcomes such as income, expenditure, remittances, health, education, well-being, employment, and access to services over time. The baseline survey aimed to gather information on all resident members, where these members present the base sample that will remain in future NIDS samples. NIDS includes four different questionnaires; household, adult, child and proxy questionnaires.

This paper uses data based on responses to the adult questionnaire, which includes questions on happiness. The adult questionnaire was completed for resident respondents from fourteen years of age and older. To assess happiness, adult respondents were asked the following question: "Using a scale of 1 to 10 where 1 means 'very dissatisfied' and 10 means 'very satisfied', how do you feel about your life as a whole right now?" Respondents were also asked about their marital status, where the categories include single, divorced/separated, widow/widower, cohabitants, and married people. For this paper, however, we only include married and cohabiting adults. In addition, respondents were asked to report the number of years they have been married or living together with their current partner. From these results, the age at which respondents got married or started to cohabit was calculated by subtracting the reported number of years in the relationship from the respondent's age.

For ease of comparison in the descriptive analysis presented in descriptive tables of this paper, the 10-point happiness scale was re-coded as follows: 1 to 2 were coded as "very unhappy", 3 to 4 as "unhappy", 5 as "neutral", 6 to 7 as "happy", and 8 to 10 as "very happy". While the collapsed variable is used in the descriptive tables, the 10-point linear variable is used in the figures. In each case, an appropriate inferential statistic is employed to determine whether reported happiness differences across the sub-groups of marital status are statistically significant. As such, this paper conducts analysis of variance (ANOVA) to test whether the mean is

significantly different between groups, while a median test is used to compare the equality of median happiness across groups. In addition, Spearman correlation coefficients are computed to test whether the relationship between two variables, ordinal and linear, is statistically significant. Graphical analysis is conducted using bar charts and box plots. Bar charts and box plots illustrate the mean and median happiness across different groups, respectively.

Given the discontinuity and ordinal nature of happiness, an ordered probit model is appropriate to assess correlates of subjective well-being. These models have been widely used in the happiness literature and are most appropriate for subjective well-being analysis (see, for example: Frey & Stutzer, 2000a, 2000b; Gerdtham & Johannesson, 2001; Peiró, 2006; Stutzer & Frey, 2006; Hinks & Gruen, 2007; Frey, 2008). This paper employs an ordered probit model, where an underlying happiness score is estimated as a linear function of the independent variables and a set of cut-off points or threshold parameters. The probability of observing outcome  $i$  corresponds to the probability that the estimated linear function, plus random error, is within the range of the cut-off points estimated for the outcome. Thus:

$$\Pr(\text{happy} = 10) = \Pr(\alpha_{i-1} < \sum_j \beta_j x_j + u \leq \alpha_i) = \Phi(\alpha_i - \sum_j x_j \beta_j) - \Phi(\alpha_{i-1} - \sum_j x_j \beta_j) \quad (1)$$

where  $\Phi(\cdot)$  is the standard normal distribution and  $u_j$  is assumed to be normally distributed. The coefficients  $\beta_1, \beta_2, \dots, \beta_k$  are estimated together with the cut-off points  $\alpha_1, \alpha_2, \dots, \alpha_{i-1}$ , where  $i$  is the number of possible outcomes. The model is specified as follows:

$$y_i^* = X_i \beta + \varepsilon_i \quad (2)$$

where  $y_i^*$  is a variable measuring subjective well-being of the  $i$ -th scale;  $X_i$  is a  $(k \times 1)$  vector of explanatory variables;  $\beta$  is a  $(k \times 1)$  vector of unknown parameters; and  $\varepsilon_i$  is a normally distributed error term with  $(0, \sigma^2)$ . The ordering of alternatives increase as  $y^*$  crosses a series of increasing thresholds. For an  $m$ -alternative ordered model,  $y_i = j$  if  $\alpha_{j-1} < y_i^* \leq \alpha_j$ , where  $\alpha_0 = -\infty$  and  $\alpha_m = \infty$  (Cameron & Trivedi, 2005).

In accordance with Waite (1995), Gerdtham and Johannesson (2001), and Soons and Kalmijn (2009), respondents younger than eighteen were dropped from the analysis since people older than eighteen are more likely to get married or live with a partner. In addition, observations were coded as missing where respondents refused to answer any particular question or answered "don't know", or where the answer was not applicable to the specific respondent. As such, all missing observations are excluded from the relevant analysis.

The explanatory variables used in the analysis, which were informed by the relevant literature, are age (Frey & Stutzer, 2000a; Powdthavee, 2003; Frijters & Beaton, 2008), gender

(Clark & Oswald, 1994; Oswald, 1997), race (Ball & Robbins, 1986; Powdthavee, 2003; Dolan *et al.*, 2008), education (Oswald, 1997; Peiró, 2006; Frey, 2008), absolute income (Easterlin, 2001; Ferrer-i-Carbonell, 2005, Frey, 2008) relative income (Powdthavee, 2003; Oswald, 1997; Clark *et al.*, 2008), health status, (Gerdtham&Johannesson, 2001; Van Praag&Ferrer-i-Carbonell, 2004), children (Frey &Stutzer, 2000a; Brereton *et al.*, 2008; Soons&Kalmijn, 2009), religion (Ferriss, 2002; Ambert, 2005; Rule, 2006; Mochonet *et al.*, 2008), decision making power (Manser& Brown, 1980; Kravdal, 1999; Lundberg &Pollak, 1993, 1994, 1996; Van Willigen&Drentea, 2001; Quisumbing&Maluccio, 2003), age at marriage and start of cohabitation (Rindfuss& Van den Heuvel, 1990; Berrington& Diamond, 2000; Tucker & O'Grady, 2001; Kalmijn, 2007; Stevenson &Wolfers, 2007), and the number of years in marriage or cohabitation (Zimmerman &Easterlin, 2006).

*Age* denotes the respondent's age in years and, in order to test for non-linearity in the relationship between age and happiness, the square of age is also included; *gender* is a dummy variable taking on a value of 0 if the respondent is male (base group) and 1 otherwise; *race* consists of four groups, namely Blacks (base group), Indians, Coloureds and Whites; *health* denotes subjective assessment of current health and consists of five variables, which includes "poor" (base group), "fair", "good", "very good", and "excellent"; *religion* refers to the importance of religious activities to the respondent, with the answers consisting of "not at all important" (base group), "unimportant", "important" and "very important"; *education* refers to the level of education of the respondent, including no education (base group), primary-, secondary, and post secondary education; *income* is the log of net income received per month; *relative income* is a categorical variable which consists of "much below average income" (base group), "below average income", "average income", above average income", and "much above average income", where relative income reflects the perception of the respondent regarding his or her own income relative to households living in the same neighbourhood; and *children* refers to the number of children an individual has.

Because decision making is an integral part of everyday life, especially for those in relationships, a *decision making power index* was also included as an explanatory variable.<sup>5</sup> Decision making can be viewed as the bargaining power of individuals in a relationship, and we would expect people with more decision making power to be happier than those with less decision making power. The measure of bargaining power was constructed from a question which asked

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<sup>5</sup>Nordblom (2004) argues that decisions among cohabitants are likely to be made non-cooperatively and by two separate decision makers. The fact that cohabitants have actively chosen not to marry is, according to Nordblom(2004), why cohabiting couples do not act as a single unit with respect to decision making. The decision to not get married may, however, have been made jointly or non-cooperatively, while other subsequent decisions are made non-cooperatively.



respondents to indicate the main household decision-maker and also, if applicable, the joint decision-maker with respect to five main areas of decision making. The five areas covered refer to decisions about everyday household expenditures (groceries, etc.), large household purchases (furniture, vehicles, etc.), where children go to school, where the household lives, and who is allowed to live in the household. For each of these types of decisions, main decision-makers were assigned a number of 2 and joint decision-makers a number of 1. These were then summed to obtain a value out of 10, where a higher value indicates that the individual has more decision making or bargaining power.

Finally, *years in relationship* denotes the number of years a respondent has been married or cohabiting, while *age at marriage* and *age at start of cohabitation* refers to how old individuals were when they entered into their current marriage or cohabitation. For the purpose of comparison in the descriptive analysis, age at marriage and cohabitation were collapsed into the following categories: 18-25, 26-30, 31-35, 36-40, 41-45, 46-50, and 51 years and higher, while the number of years in a relationship was collapsed into the following categories: 1-5, 6-10, 11-15, 16-20, 21-25, 26-30, 31-35, 36-40, and more than 40 years. Note, however, that the variables denoting the years in relationship and age at the start of the relationship enter into distinct, additional specifications of the regression analysis as continuous variables. Furthermore, the squared and unsquared forms of these variables are included as separate covariates in distinct specifications of the regression model. This is done in order to detect whether the association of relationship duration and age at commencement of the relationship with happiness is non-linear. In addition, the former explanatory variables are included in separate regressions as these variables are highly correlated.

Ordered probit regressions are estimated separately for the cohabitation and marriage subsamples with the purpose of examining the determinants of happiness for married and cohabiting individuals, as well as the effect of relationship duration and age at the start of the relationship on reported happiness in each sub-group. In line with Soons and Kalmijn (2009), moreover, we test whether there is in fact a cohabitation gap, i.e. difference in happiness between married and cohabiting individuals based on the 10-point scale. This is done by including the cohabitation gap together with age, race and gender as control variables in the first model. Finally, the determinants of the cohabitation gap are examined by adding the selection factors in order to determine whether these selection factors can explain the difference in reported happiness between married and cohabiting adults.

Testing for the existence of a significant cohabitation gap requires the inclusion of selection factors. If the cohabitation gap remains significant even after controlling for selection variables,

it provides evidence that marriage and cohabitation are not entirely similar in terms of the benefits each may add to individual happiness. In this regard, three types of selection factors were included in subsequent estimations of the same basic ordered probit regression model aimed at testing whether a cohabitation gap indeed exists, namely material resources, socio-cultural factors, and life course factors. What follows in the discussion below is a justification for the inclusion of the relevant selection factors, given their respective relationships with selection into marriage or cohabitation and happiness.

Under material resources, the variables included are absolute income, relative income, and the level of education. Income is positively associated with happiness (Easterlin, 2001; Frey & Stutzer, 2002; Ferrer-i-Carbonell, 2005; Frey, 2008), while people with higher income are more likely to marry than cohabit (Kravdal, 1999; Guzzo, 2006; Kalmijn, 2007). Relative income is positively associated with happiness (Oswald, 1997; Clark *et al.*, 2008). Married individuals, as opposed to cohabitants, may also be more concerned with their relative position in society (Berrington & Diamond, 2000; Kalmijn, 2007). Thus, relative income is expected to explain part of the cohabitation gap, not as part of material resources *per se*, but rather as the amount of perceived or positional material resources.

A higher level of education is generally associated with greater happiness (Oswald, 1997; Frey & Stutzer, 2000). Higher education is also associated with higher income (Soons & Kalmijn, 2009), which additionally serves to raise happiness levels. Whereas people with a high level of completed education are more likely to marry than cohabit (Thornton *et al.*, 1995; Brown & Booth, 1996; Berrington & Diamond, 2000; Zimmermann & Easterlin, 2006), people who are currently enrolled in education are more likely to cohabit since the lifestyle of a student is more suited for cohabitation than marriage (Rindfuss & Van den Heuvel, 1990; Berrington & Diamond, 2000; Kalmijn, 2007).

Socio-cultural factors include religious importance and decision making power. As one of the most well-known differences between marriage and cohabitation, religion plays an important role. Religious people are more likely to marry than to cohabit (Thornton *et al.*, 1992; Berrington & Diamond, 2000; Zimmermann & Easterlin, 2006; Kalmijn, 2007; Soons & Kalmijn, 2009). In addition, religiosity is also positively related to happiness (Ferriss, 2002; Rule, 2006). Because married individuals are more religious, they are also happier than cohabitants, which points to a possible selection effect of religion. Another factor that may be embedded in a socio-cultural context is the decision making power of each person in a relationship. Unlike married individuals, cohabitants are more likely to be engaged in a non-cooperative and inefficient framework of decision making since the latter generally possess weaker social norms and fewer

legal restrictions (Nordblom, 2004). Within a non-cooperative framework, cohabitants act in self-interest rather than altruism towards the other partner (Nordblom, 2004; Bhorat&Naidoo, 2005). Decision making may therefore well have a positive relationship with the happiness of married individuals (and the opposite relationship for cohabitants). A selection effect of decision making is thus likely.

Finally, health and parenthood are included as life course variables. Parenthood is a dummy variable taking the value of one if the respondent has at least one child, and zero otherwise. Married people are more likely than cohabitants to have children (Rindfuss& Van den Heuvel, 1990; Thornton *et al.*, 1992; Thornton *et al.*, 1995; Soons&Kalmijn, 2009), but a declining importance of children in marriage has also been documented (Stevenson &Wolfers, 2007). Although the effect of children on happiness is somewhat mixed (Dolan *et al.*, 2008), the presence of children may explain part of the cohabitation gap (Soons&Kalmijn, 2009). With respect to health, marriage reduces unhealthy behaviour such as smoking and heavy drinking, while marriage may also provide additional nurturing effects which enhance physiological and hence self-reported physical health and personal happiness (Stack &Eshleman, 1998; Robles &Kiecolt-Glaser, 2003; Stevenson &Wolfers, 2007). In addition, people with poor health may be less attractive as a future relationship partner, and therefore be more likely to enter cohabitation since the latter requires less commitment from another partner. Individuals with poor health may therefore select into cohabitation rather than marriage (Brown *et al.*, 2004). As already noted, health and happiness are generally positively related (Gerdtam&Johannesson, 2001).

Finally, with respect to regression diagnostics, the Pseudo  $R^2$  is reported for each regression model to indicate the percentage of variation in happiness explained by the particular set of independent variables. To test for the overall significance of the explanatory variables in explaining the variation in happiness, the Wald  $\chi^2$  statistic is employed: a p-value of less than 0.10 indicates that the explanatory variables jointly explain reported happiness at a 90% or greater level of confidence.

#### **4. RESULTS**

This section seeks to investigate the determinants of happiness for married and cohabiting adults, as well as the association between relationship duration and age at the start of the relationship on reported happiness. In addition, we test empirically whether a cohabitation gap exists among South African adults, and to what extent selection factors may explain this cohabitation gap.

*(a) Determinants of happiness among married and cohabiting adults*

The percentage of married and cohabiting respondents by happiness are presented in Table 1. The Pearson chi-square test indicates that the relationship between happiness and marital status is statistically significant ( $\chi^2 = 93.1, p < 0.001$ ). Overall, most respondents are happy (27.1%), while 21.4% and 10.2% are unhappy and very unhappy, respectively. Married individuals are happier overall compared to cohabiters, with 22.5% being very happy and 28.5% happy. In comparison, about 14.7% and 22.9% of cohabiting adults are very happy and happy, respectively. Only 9.0% of married respondents reported that they were very unhappy relative to 14.2% of those in cohabitation. Mean happiness is 5.67 for the overall sample, while it is 5.83 and 5.15 (a difference of 0.68 points) for married and cohabiting adults, respectively. The ANOVA results suggest that this difference in average levels of happiness between married and cohabiting adults is significantly significant ( $F = 76.32, p < 0.001$ ). Moreover, the medians of the respective marital status groups are significantly different from each other as indicated by the median test ( $\chi^2 = 143.45, p < 0.001$ ). Thus, married individuals are, at least based on the descriptive analysis, slightly happier on average compared to their cohabiting counterparts. This difference therefore points to the first possibility of a statistically significant cohabitation gap.

Table 2 contains summary statistics for the marriage and cohabitation samples by the various covariates and selection factors considered in this paper. Except for gender, differences between the two marital status groups and all covariates are statistically significant as the Pearson chi-square test is significant at least at the 10% level. A possible explanation for why gender differences are not significant between those in marriage and cohabitation is the fact that the proportion of men and women in each union type is very similar, with the proportional difference between men and women being less than one percentage point in each case. Mean age levels are substantially higher among married adults, implying that cohabitation is more popular among younger individuals. Of note is that the average income for those in cohabitation is much lower relative to those in marriage. In fact, cohabitants earn on average only about 35.8% of the income that married adults earn, i.e. absolute income is 64.1% lower for those in cohabitation. These financial constraints may therefore compel adults to cohabit rather than marry. Thus, cohabitation is perhaps a necessity rather than a choice. In general, social status and health are quite similar across the marriage and cohabitation groups. Compared to cohabiting adults, married adults are higher educated and possess greater bargaining power in the relationship. An interesting observation is that a great proportion of cohabiters view religion as important in their lives, as opposed to the consistent finding in empirical research that cohabiters are generally not extremely religious.

Models 1 and 2 in Table 3 present the regression results for an ordered probit model in which relevant covariates were regressed on happiness for the marriage and cohabitation sub-samples, respectively, with the aim of assessing the determinants of happiness for the two groups. The explanatory variables jointly explain the variation in happiness for both models ( $p < 0.001$ ), while the  $R^2$ -statistic is 6.75% and 4.51% for married and cohabitant individuals, respectively. These  $R^2$  values are similar to that obtained in previous happiness research such as Powdthavee (2003) and Hinks and Gruen (2007), who obtained  $R^2$  values of 3.45 percent and between 7 and 9 percent, respectively.

There is no evidence of a U-shaped relationship between age and happiness for either the married or cohabitation groups. Gender also has no significant association with happiness for both married and cohabitant individuals. Within the marriage sample, Blacks are the least happy racial group compared to other racial groups. White and Coloured cohabitants are happier compared to their Black counterparts, but the difference between Black and Indian cohabitants is not significant.

A higher level of absolute income makes cohabitants happier, but does not have a significant effect on the happiness of married individuals. In contrast, relative income shows a strong positive association with happiness for both married and cohabitant respondents. Thus, while money matters only for cohabiting couples, social status or class seem to matter for both married and cohabiting individuals. One explanation for the contribution of absolute income to the well-being of those in cohabitation is because cohabiters receive much lower income than married adults do (see Table 2). Therefore, the marginal happiness benefit from an increase in income would be greater for those in cohabitation. There is also evidence to suggest that cohabiting and married people benefit from higher levels of education since education is positively associated with higher levels of individual happiness for married and cohabiting adults. Whereas absolute income was a significant determinant of happiness for cohabitants and not for the married, health is significantly associated with happiness for married individuals, but not for cohabitants. Better health makes married individuals happier. Religion matters for the happiness of both married and cohabiting couples. Married ( $p < 0.01$ ) and cohabiting ( $p < 0.05$ ) people who view religion as very important are significantly happier compared to those who attach no value to religion. The effect of children on happiness is insignificant for those in marriage and cohabitation, which accords with the findings of Zimmermann and Easterlin (2006). Finally, decision making power has no effect on the happiness of either married or cohabiting couples.

In summary regarding the marriage and cohabitation sub-samples, there are some interesting differences and similarities between these two groups. Worth noting is that

cohabitants value absolute income more than married individuals, whereas being healthy matters more for happiness among the married. Finally, while in previous studies religion has not been a significant determinant of happiness for cohabiting adults (see, for example: Thornton *et al.*, 1992; Soons&Kalmijn, 2009), the results of this paper show that religion is in fact positively associated with the reported happiness of cohabiting persons.

*(b) Age at marriage and cohabitation*

This section of the paper examines the happiness dynamics of married and cohabitant persons, with particular emphasis on the role that age at marriage and cohabitation may play in explaining observed differences in overall happiness.

Table 4 shows that the greatest proportion of respondents got married (46.7%) and started to cohabit (41.8%) between the ages of 18 and 25. Roughly 24.6% got married between 26 and 30, while 20.7% started to cohabit between the same ages. Also evident from the results of Table 9 is that, compared to married individuals, a greater proportion of people start to cohabit after 30 years of age. Table 5 disaggregates happiness according to the age category at which a person got married. The Pearson chi-square test indicates that the relationship between happiness and age at marriage is statistically significant ( $\chi^2 = 39.3, p < 0.05$ ). In addition, the Spearman correlation coefficient suggests a negative and very weak relationship between happiness and age at marriage ( $\rho_s = -0.078, p < 0.001$ ). Roughly 16.9% of people who got married at 51 or older are very unhappy, while 25.8% reported being happy. From those who married between the ages of 18 and 25, about 26.3% are very happy and 7.2% are very unhappy.

Figure 1 shows the mean happiness according to the age category at which a person got married. People who married between the ages of 18 and 25 reported the highest mean happiness (6.1), while those who married between 41 and 45 and after 50 reported the lowest level of mean happiness of 5.5 for both groups. The ANOVA indicates that mean happiness across the respective age categories are not equal ( $F = 4.33, p < 0.001$ ). Figure 2 contains the medians of happiness across age at marriage, where the median test shows that the medians are significantly different across the respective age groups ( $\chi^2 = 22.87, p < 0.01$ ).

Table 6 presents reported happiness according to the age at which persons started to cohabit. About 39.5% of people who started to cohabit between the ages of 18 and 25 are very unhappy, while 44.9% are very happy for the same ages. Roughly 6.0% of those who entered cohabitation after 50 years of age reported being very unhappy. The Pearson chi-square ( $\chi^2 = 19.5, p = 0.726$ ) and Spearman correlation coefficient ( $\rho_s = -0.027, p = 0.395$ ), however, indicate that the relationship between happiness and age at the start of cohabitation is not statistically significant.

Figure 3 reports mean happiness according to age at which people started to cohabit. People who entered first cohabitation between the ages of 36 and 40 reported the highest mean happiness (5.5), while those who started to cohabit between 26 and 30 years of age reported the lowest mean happiness (5.0). The ANOVA results, however, suggest that mean happiness across the respective age groups are not significantly different ( $F = 0.82, p = 0.557$ ). Moreover, the median test indicates that median happiness does not differ significantly across the various age groups ( $\chi^2 = 9.32, p = 0.156$ ) (Figure 4). The results therefore suggest that the age at which people get married matters for happiness (adults who married younger are happier than those who married at a later stage in life), whereas a person's age at the start of a cohabitating relationship does not significantly determine their happiness.

Models 3 and 4 in Table 9 contain the regression results that aim to determine whether age at marriage as well as age at the start of cohabitation matter for happiness. The independent variables jointly explain some of the variation in happiness for both married and cohabitant individuals ( $p < 0.001$ ). In addition, the  $R^2$  values for the marriage and cohabitation sub-samples are 6.9% and 4.4%, respectively. The results indicate a non-linear relationship between age at the start of a relationship and reported happiness for married and cohabiting individuals, with the linear variables exhibiting a positive sign and a negative sign for the squared variables. Thus, individuals who enter into marriage or cohabitation at a young age seem to be less happy compared to those who enter marriage or cohabitation at a later stage in life. However, the coefficients are not significant in either regression model, suggesting that, when controlling for other factors, individual happiness is not affected by the age at which a person entered into either marriage or cohabitation.

*(c) Time in a relationship*

Does time in a relationship matter for individual happiness? This section seeks to investigate the dynamics and association between happiness and the number of years a person has been married or living with a partner.

Table 7 shows that 15.8% of respondents have been married for between 6 and 10 years, while 46.6% of respondents have lived with a partner for between 1 and 5 years. Moreover, 23.0% of adults have been married for more than 30 years, compared to only 2.8% of cohabitants. Thus, marriage seems to last longer than cohabitation. In addition, about 70.6% of people have been cohabiting for 10 years or less, suggesting that cohabitation is a relatively new trend and has become quite popular in South Africa in recent years.

Happiness is disaggregated by the number of years married or cohabiting in Table 8. For married persons, the Pearson chi-square ( $\chi^2 = 71.0, p < 0.001$ ) indicates that the relationship

between happiness and number of years married is statistically significant. The Spearman correlation coefficient, however, suggests that the correlation between happiness and years married is not significant ( $\rho_s = -0.007$ ,  $p = 0.662$ ). The relationship between happiness and number of years in a cohabiting relationship is significant ( $\chi^2 = 49.8$ ,  $p < 0.05$ ). The Spearman coefficient also indicates that the correlation between happiness and years in cohabitation is significant, albeit relatively weak, with happiness decreasing as the length of the cohabiting relationship increases ( $\rho_s = -0.093$ ,  $p < 0.01$ ). About 26.5% of people married between 1 and 5 years reported being very happy, while 16.2% of people who have cohabited for the same duration reported being very happy. After five years, however, a greater proportion of cohabitants report being very unhappy when compared to married individuals.

Interestingly, Table 8 also indicates that happiness declines with the duration of both marriage and cohabitation, especially after five or ten years, although this decline is not as pronounced among the married. These results may therefore capture what Zimmermann and Easterlin (2006) call the "honeymoon effect", i.e. when people experience significantly higher levels of happiness during the year the relationship commenced and a few years after commencement of the relationship. Moreover, the subsequent decline in happiness is generally attributed to habituation. Indicative from Table 8, cohabitants experience the largest decline in happiness after five or more years in the cohabiting relationship. These results may thus imply that cohabiters return to roughly the same level of happiness after about 5 years in a relationship, while married people may experience a slightly higher level of happiness than they experienced just before they got married (Zimmermann & Easterlin, 2006). In this sense, marriage is, relative to cohabitation, associated with a higher probability of sustainable happiness.

Figure 5 presents the mean levels of happiness of married respondents according to the number of years of marriage. Those who have been married for more than 40 years reported the highest mean happiness (6.2). Furthermore, mean happiness appears to decline from the start of the marriage until about 30 years of marriage. Mean happiness is also significantly different among the groups of marriage duration ( $F = 2.84$ ,  $p < 0.01$ ). In addition, the median test shows that the median happiness for the year groups is not equal ( $\chi^2 = 18.49$ ,  $p < 0.05$ ) (Figure 6).

Mean and median happiness, respectively, for the number of years in cohabitation are presented in Figure 7 and Figure 8. Reported mean ( $F = 2.56$ ,  $p < 0.01$ ) and median ( $\chi^2 = 13.49$ ,  $p < 0.10$ ) happiness is significantly different across the various year categories. For all year categories, cohabitants reported a lower mean and median happiness compared to married individuals (see Figures 5 and 6). Cohabitants who have been in a relationship between 6 and 10 years reported the highest mean happiness (5.4), while those who have been in a cohabiting



relationship for between 31 and 35 years reported the lowest mean happiness (4.3). Reported mean happiness declines substantially after 10 years and only rises again after 35 years. Thus, for adults who want to be relatively happy, cohabitation is not a preferred choice in the medium-term.

The regression results for assessing a possible relationship between happiness and the number of years married and cohabiting are presented in Table 9 (Models 5 and 6). For both the marriage and cohabitation sub-samples, the explanatory variables jointly explain the variation in happiness as indicated by the Wald chi-square test ( $p < 0.001$ ), with an  $R^2$ -statistic of 6.9% for married individuals and 4.4% for the cohabitation sub-sample. For the marriage sub-sample, the coefficient for years married is statistically insignificant. However, the squared coefficient of years married is significant and positive ( $p < 0.001$ ), suggesting that, although very small, married individuals who have been married for longer are happier than those married for a shorter period. Although the squared coefficient of relationship duration is not significant for cohabitants, happiness is significantly negatively associated with relationship duration ( $p < 0.10$ ), which is consistent with the finding in the descriptive analysis that cohabiting individuals become less happy after the initial relationship formation.

*(d) The cohabitation gap, its determinants and selection factors*

Table 10 presents the results from testing for the existence of a cohabitation gap and subsequently whether selection factors explain the magnitude of the gap. Model 7 in Table 10 includes only the time-invariant control variables of age, gender, and racial group. In the absence of selection factors, the cohabitation gap (0.251) is statistically significant and implies that married people are significantly happier than cohabitants ( $p < 0.001$ ). The size of the gap is slightly lower than that obtained by Soons and Kalmijn (2009) in the absence of selection factors, which was reported to be 0.28 in their study. Adding all the selection factors (see Model 14), however, substantially reduces the cohabitation gap from 0.251 to about 0.042, and leads to the cohabitation gap no longer being statistically significant. Thus, selection factors explain about 84% of the cohabitation gap, and after controlling for these factors, reported happiness between married and cohabiting individuals are not much different. The contribution of selection factors in explaining the cohabitation gap is more than double that obtained by Soons and Kalmijn (2009), who found selection factors to explain roughly 30% of the cohabitation gap. The cohabitation gap was found to be about 0.19 and highly significant after adjusting for selection, which suggested that marriage adds something more to cohabitation in their sample.

Each selection variable was also added into the regression model separately (Models 8 to 14). These results indicate that all the selection variables explain the declining cohabitation gap

and that this decline cannot be attributed to only one specific selection factor. Relative income by far explains the greatest proportion of the decline in the cohabitation gap (42.3%), followed by absolute income (15.1%) and education (11.6%). In South Africa, material resources are thus the most important explanations for differences in happiness between those in marriage and cohabitation. In contrast to the findings of Soons and Kalmijn (2009), the fact that the cohabitation gap becomes insignificant after inclusion of the selection variables indicates that marriage does not provide additional advantages than cohabitation (Soons&Kalmijn, 2009). These findings therefore suggest that marriage and cohabitation are very similar in South Africa, as well as that people perhaps do not value marriage as much and/or are not as committed to marriage, with cohabitation, other things being equal and allowing for selection, representing a close substitute for marriage.

## **5. DISCUSSION AND CONCLUSION**

Although reported mean and median happiness levels for married individuals are significantly higher compared to that of cohabiting individuals, pointing to the possibility of a significant cohabitation gap, these differences diminish when other factors are taken into account. Married and cohabiting adults display both differences and similarities with respect to their determinants of happiness. For both married and cohabitant individuals, Coloureds and Whites are happier than Blacks, while relative income is important for both those in marriage and cohabitation. Berrington and Diamond (2000) and Soons and Kalmijn (2009) have suggested that social status is important for married people, though not for those in cohabitation. In this study, however, cohabitants do also seem to value their relative position in society. Moreover, for those in cohabitation, absolute income is positively associated with happiness, but the relationship between happiness and absolute income is not significant for married individuals.

Education exhibits a positive relationship with the happiness levels of both married and cohabiting persons. In accordance with Zimmerman and Easterlin (2006), there is evidence of adaptation for those engaged in cohabitation, as happiness diminishes for each extra year in a cohabiting relationship. Health and happiness are positively related for married individuals. For cohabitants, however, health has no significant effect on happiness. A possible explanation for this result is that marriage, as opposed to cohabitation, generally reduces unhealthy behaviour such as smoking and heavy drinking, while marriage may also provide additional nurturing effects which enhance physiological and hence self-reported physical health and happiness (Stack &Eshleman, 1998; Robles &Kiecolt-Glaser, 2003; Stevenson &Wolfers, 2007). In addition, people with poor health may be less attractive as a future relationship partner, and therefore be more likely to enter cohabitation since the latter requires less commitment from another partner.

Individuals in poorer health may therefore select into cohabitation rather than marriage (Brown *et al.*, 2004).

As expected, religiosity is positively associated with happiness for married individuals. Somewhat contrary to what we would expect, however, religiosity is also a positive determinant of happiness for cohabitants. Cohabitants have generally been found to be less religious than their married counterparts since cohabitants, as opposed to married individuals, generally have fewer traditional family values (Berrington & Diamond, 2000; Guzzo, 2006; Zimmerman & Easterlin, 2006). Religiosity is also likely to decrease entry into cohabitation since premarital sex and cohabitation are discouraged by most religious groups. Moreover, cohabitants may have less motivation to attend religious gatherings as their behaviour receives both explicit and implicit negative approval by religious leaders (Thornton *et al.*, 1992). The effect of religion on the decision to marry or cohabit is largely attributed to secularisation, which weakened norms in opposition to cohabitation and reduced the symbolic value of marriage for some individuals, implying that cohabitants have fewer incentives to formalise the cohabiting relationship through marriage (Kalmijn, 2007). While cohabitants on average still view religious activity as less important than married individuals in South Africa, the attachment of greater importance to religion also makes cohabitants more satisfied with their lives overall.

With the exception of individual health status and absolute income, other factors such as education, religion, and relative income seem to exhibit similar relationships with reported happiness of married and cohabiting adults. Thus, although health matters only for the married while absolute income is important only to cohabitants, the overall results suggest that South African individuals in marriage and cohabitation are very similar in terms of what they value as important for enhancing their own personal happiness.

When controlling only for the individual characteristics of age, gender, and race, there exists a significant cohabitation gap, which suggests that married people are happier than cohabiting individuals are. Yet, the cohabitation gap disappeared when considering selection factors. Marriage, therefore, does not seem to add anything more advantageous than cohabitation to happiness. Previous explanations for why marriage may make people happier compared to those in cohabitation are that married people have a higher relationship quality than cohabitants, especially if cohabitants have to plans to marry in future (Brown & Booth, 1996). Research also suggests that cohabiting relationships are more unstable than marriages, and that cohabitants are less committed to the relationship as well as less faithful to their partners (Rindfuss & Van den Heuvel, 1990; Ambert, 2005). Furthermore, it has been found that the quality of marital sex declines with relationship duration (Liu, 2003), which may have a negative effect on happiness,

especially for older individuals. Finally, since “the ideology of cohabitation does not imply permanence” (Rindfuss& Van den Heuvel, 1990:722), the expectation that cohabitation may be of short duration is likely to have a negative impact on happiness. Given the insignificant cohabitation gap in this study after controlling for selection, the aforementioned factors perhaps do not play an important role in South Africa. However, caution is required insofar as these factors are not actually measured in the survey, thus precluding the use of appropriate statistical analysis to determine beyond a shadow of a doubt that they do not in fact contribute to explaining observed differences in happiness between married and cohabiting individuals.

It should be noted that this study has limitations. Since the data used is cross-sectional in nature, this study can only infer associations of marital status and related aspects, such as age at and duration of marriage and cohabitation, with happiness, rather than causality. As such, the social selection and social causation theories cannot be investigated and a study of the extent to which happiness changes over time is not possible. Furthermore, the data does not allow one to distinguish between the different types of marriage in South Africa, namely civil and traditional. These types of marriages are likely to display different associations with happiness (Hinks&Gruen, 2007). Ferrer-i-Carbonell and Frijters (2004) have also shown that allowing for fixed-effects such as personality traits could substantially alter regression results. Instead of viewing happiness as ordinal, responses to questions on happiness may very well depend on each person’s personality. Some people are intrinsically happy, while others are not. Controlling for these traits may cause less bias in estimates of ordered models. The National Income Dynamics Study, however, does not include any information regarding individual personality traits.

Brown (2000) argues that more stable cohabiting relationships are associated with happier people, but the stability of relationships cannot be measured with the data used in this study. Also, intra-relationship dynamics may lead to happiness by means of marriage type or dynamics rather than marriage itself. In this regard, Gove *et al.* (1983) investigated the relationship between marriage and happiness and found that a “good marriage” rather than marriage *per se* is important for individual happiness. Unfortunately, NIDS does not provide this information. The possibility of estimation bias can therefore not be excluded. Finally, we could not include a measure of institutionalisation due to the absence of such a measure.

Overall, the results of this paper suggests that, in contrast to findings in developed countries, marriage *per se* does not make people happy and does not seem to provide a nurturing effect on the well-being of individuals in South Africa. The dynamics of happiness within marriage and cohabitation are also very similar, with a cohabitation gap in happiness between married and cohabiting individuals being absent when accounting for individual selection

factors. Therefore, contrary to popular belief, marriage is not a route to greater levels of happiness relative to cohabitation. Possible areas for future research include analysis on the effect of marriage and cohabitation quality on happiness, as well as on the trends of happiness in the years before and after marriage and the start of cohabitation. Given the similar determinants of happiness among married and cohabiting persons, it would also be worthwhile to assess the determinants of entry into marriage and cohabitation. Particularly interesting moreover, should appropriate data become available, would be to determine the association between the levels of happiness among cohabitants and the degree of institutionalisation over time. The panel data generated from future NIDS surveys would facilitate such analysis and would increase the scope of future research to examine changes in the key determinants of happiness for married and cohabiting couples in South Africa.

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*Table 1: Reported happiness, by marriage and cohabitation*

<b>Happiness</b>	<b>Marriage</b>	<b>Cohabitation</b>	<b>Total</b>
Very unhappy	9.0 (n=334)	14.2 (n=167)	10.2 (n=501)
Unhappy	19.2 (n = 716)	28.0 (n=330)	21.4 (n=1046)
Neutral	20.8 (n = 776)	20.2 (n=238)	20.7 (n=1014)
Happy	28.5 (n = 1060)	22.9 (n=269)	27.1 (n=1329)
Very happy	22.5 (n = 837)	14.7 (n=173)	20.6 (n=1010)
Total	100.0 (n = 3723)	100.0 (n=1177)	100.0 (n=4900)
Pearson $\chi^2 = 93.1$ ( $p < 0.001$ )			

*Table 2: Descriptive statistics, by marriage and cohabitation*

<b>Variable</b>	<b>Marriage</b>	<b>Cohabitation</b>	<b>Total</b>
<b>Age</b>			
Mean years of age	48.5	37.6	44.5
Pearson $\chi^2 = 737.8$ ( $p < 0.001$ )			
<b>Race</b>			
Black	66.3	77.1	68.8
Coloured	17.9	20.0	18.4
Indian	3.0	0.2	2.3
White	12.8	2.7	10.5
Total	100.0	100.0	100.0
Pearson $\chi^2 = 153.6$ ( $p < 0.001$ )			
<b>Gender</b>			
Male	43.4	42.8	56.7
Female	56.6	57.2	43.3
Total	100.0	100.0	100.0
Pearson $\chi^2 = 0.1302$ ( $p = 0.718$ )			
<b>Absolute income</b>			
Mean income (in Rand)	4336.2	1554.4	3566.9
Pearson $\chi^2 = 28.8$ ( $p < 0.001$ )			
<b>Relative income</b>			
Much below average income	13.5	25.4	16.3
Below average income	30.3	33.6	31.0
Average income	44.9	34.5	42.5
Above average income	8.6	4.7	7.7
Much above average income	2.7	1.8	2.5
Total	100.0	100.0	100.0
Pearson $\chi^2 = 133.0$ ( $p < 0.001$ )			
<b>Education</b>			
None	17.7	19.2	18.1
Primary	29.3	32.4	30.0
Secondary	27.8	33.6	29.1
Post-secondary	25.2	14.8	22.8
Total	100.0	100.0	100.0
Pearson $\chi^2 = 64.4$ ( $p < 0.001$ )			

<b>Health</b>			
Poor	9.6	8.9	9.5
Fair	16.6	15.5	16.4
Good	26.3	25.3	26.0
Very good	24.6	23.5	24.3
Excellent	22.9	26.8	23.8
Total	100.0	100.0	100.0
Pearson $\chi^2 = 8.7$ ( $p < 0.10$ )			
<b>Religion</b>			
Not at all important	2.9	6.5	3.8
Unimportant	5.0	9.0	6.0
Important	40.6	44.8	41.5
Very important	51.5	39.7	48.7
Total	100.0	100.0	100.0
Pearson $\chi^2 = 96.2$ ( $p < 0.001$ )			
<b>Children</b>			
Mean number of children	0.5	0.3	0.4
Pearson $\chi^2 = 17.0$ ( $p < 0.001$ )			
<b>Decision making power index</b>			
Mean level of decision making	6.6	5.7	5.3
Pearson $\chi^2 = 104.8$ ( $p < 0.001$ )			

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Table 3: Determinants of happiness among married and cohabiting South African adults

Dependent variable: Happiness	Model 1 Marriage	Model 2 Cohabitation
<b>Marital status (comparison group = single)</b>		
Cohabitant		
Widow/widower		
Divorced/separated		
Married		
Age	0.001 [0.008]	-0.014 [0.015]
Age squared	0.000 [0.000]	0.000 [0.000]
<b>Race (comparison group = Black)</b>		
Coloured	0.568*** [0.051]	0.596*** [0.082]
Indian	0.621*** [0.103]	-0.861 [1.107]
White	0.497*** [0.059]	0.646*** [0.185]
<b>Gender (comparison group = Male)</b>		
Female	0.044 [0.042]	-0.038 [0.075]
<b>Absolute income</b>		
Log(income)	0.007 [0.005]	0.024** [0.010]
<b>Relative income (comparison group = much below average income)</b>		
Below average income	0.359*** [0.064]	0.311*** [0.086]
Average income	0.826*** [0.064]	0.665*** [0.094]
Above average income	0.973*** [0.085]	0.972*** [0.134]
Much above average income	1.302*** [0.153]	1.053*** [0.258]
<b>Education (comparison group = none)</b>		
Primary	0.096* [0.057]	0.111 [0.097]
Secondary	0.112* [0.063]	0.215** [0.105]
Post-secondary	0.303*** [0.073]	0.209* [0.125]
<b>Health (comparison group = poor)</b>		
Fair	0.169** [0.074]	-0.052 [0.139]
Good	0.309*** [0.072]	0.037 [0.130]
Very good	0.422*** [0.075]	0.057 [0.133]
Excellent	0.456*** [0.079]	-0.136 [0.138]
<b>Religion (comparison group = not at all important)</b>		
Unimportant	0.196 [0.144]	0.110 [0.174]
Important	0.139 [0.118]	0.194 [0.148]
Very important	0.388***	0.361**

	[0.119]	[0.151]
<b>Children</b>	0.007	0.009
	[0.010]	[0.031]
<b>Decision making power index</b>	0.003	0.003
	[0.006]	[0.010]
<b>Pseudo R<sup>2</sup></b>	0.068	0.045
<b>Observations</b>	3365	1082
<b>Wald <math>\chi^2</math></b>	899.0***	210.8***
<b>Log pseudo likelihood</b>	-6809.9	-2252.28

Note: Results are obtained using the ordered probit regression model. Robust standard errors are shown in parenthesis.  $p < 0.001$  \*\*\*,  $p < 0.05$  \*\*,  $p < 0.10$  \*.

*Table 4: Age at marriage and start of cohabitation (% of respondents)*

<b>age at marriage</b>	<b>(%)</b>	<b>age at start of cohabitation</b>	<b>(%)</b>
18 - 25	46.7	18 - 25	41.8
26 - 30	24.6	26 - 30	20.7
31 - 35	12.7	31 - 35	14.4
36 - 40	7.8	36 - 40	8.6
41 - 45	3.9	41 - 45	6.1
46 - 50	1.9	46 - 50	4.5
51+	2.5	51+	3.9
Total:	100.0	Total:	100.0

*Table 5: Happiness and age at marriage*

<b>Happiness</b>	<b>18-25</b>	<b>26-30</b>	<b>31-35</b>	<b>36-40</b>	<b>41-45</b>	<b>46-50</b>	<b>51+</b>	<b>Total</b>
Very unhappy	7.2	9.4	11.1	9.2	12.2	11.1	16.9	8.9
Unhappy	17.3	18.9	20.4	16.9	21.1	22.2	20.2	18.4
Neutral	20.8	20.9	20.1	21.7	22.8	14.3	13.5	20.6
Happy	28.4	28.0	29.9	32.5	26.8	31.8	25.8	28.7
Very happy	26.3	22.8	18.5	19.7	17.1	20.6	23.6	23.4
Total:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Pearson  $\chi^2 = 39.3$  ( $p < 0.05$ )

*Table 6: Happiness and age at start of cohabitation*

<b>age at start of cohabitation</b>	<b>very unhappy</b>	<b>unhappy</b>	<b>neutral</b>	<b>happy</b>	<b>very happy</b>	<b>Total</b>
18 - 25	39.5	40.2	45.8	42.4	44.9	42.5
26 - 30	20.9	23.8	20.0	16.5	18.6	20.2
31 - 35	16.4	15.3	13.7	13.4	14.1	14.5
36 - 40	6.0	7.8	5.9	13.0	9.6	8.6
41 - 45	6.7	5.3	7.8	6.5	4.5	6.2
46 - 50	4.5	4.3	4.4	3.9	4.5	4.3
51+	6.0	3.2	2.4	4.3	3.9	3.8
<i>Total:</i>	100.0	100.0	100.0	100.0	100.0	100.0

Pearson  $\chi^2 = 19.5$  ( $p=0.726$ )

*Table 7: Years married and cohabiting (% of respondents)*

<b>years married</b>	<b>(%)</b>	<b>years cohabiting</b>	<b>(%)</b>
1 - 5	14.7	1 - 5	46.6
6 - 10	15.8	6 - 10	24.0
11 - 15	12.7	11 - 15	14.2
16 - 20	11.1	15 - 20	5.3
21 - 25	12.0	21 - 25	4.6
26 - 30	10.8	26 - 30	2.5
31 - 35	6.7	31 - 35	1.4
36 - 40	7.4	36 - 40	1.2
41+	8.9	41+	0.2
<i>Total:</i>	100.0	<i>Total:</i>	100.0

*Table 8: Happiness (%), by years in relationship*

<b>Happiness</b>	<b>1-5</b>	<b>6-10</b>	<b>11-15</b>	<b>16-20</b>	<b>21-25</b>	<b>26-30</b>	<b>31-35</b>	<b>36-40</b>	<b>41+</b>	<b>Total</b>
<b>Marriage</b>										
Very unhappy	8.8	7.4	10.9	11.3	11.0	10.8	5.9	9.9	2.6	8.9
Unhappy	15.9	17.1	19.5	17.8	18.5	21.9	19.5	23.6	19.5	18.8
Neutral	18.0	25.8	16.4	18.8	22.1	21.7	20.8	19.8	22.3	20.7
Happy	30.8	29.6	30.4	32.2	26.7	24.4	26.7	25.4	26.5	28.5
Very happy	26.5	20.1	22.8	19.9	21.7	21.2	27.1	21.3	29.1	23.1
<i>Total</i>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Pearson $\chi^2 = 71.0$ ( $p < 0.001$ )										
<b>Cohabitation</b>										
Very unhappy	11.8	11.6	16.9	15.5	21.1	33.3	13.3	20.0	0.0	13.7
Unhappy	28.0	24.4	31.9	39.6	21.1	20.8	53.3	20.0	66.7	28.2
Neutral	22.0	20.5	15.6	25.9	21.0	8.3	0.0	26.7	0.0	20.3
Happy	22.0	26.0	22.5	13.8	29.8	25.1	26.7	13.3	0.0	22.9
Very happy	16.2	17.5	13.1	5.2	7.0	12.5	6.7	20.0	33.3	14.9
<i>Total</i>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Pearson $\chi^2 = 49.8$ ( $p < 0.05$ )										

Table 9: Ordered probit regression results for marriage and cohabitation samples

Dependent variable: Happiness	Model 3 Marriage	Model 4 Cohabitation	Model 5 Marriage	Model 6 Cohabitation
Age at marriage	-0.009 [0.010]			
Age at marriage squared * 10	0.001 [0.001]			
Age at start of cohabitation		-0.005 [0.020]		
Age at start of cohabitation squared * 10		0.001 [0.003]		
Years married			-0.017 [0.005]	
Years married squared * 10			0.002*** [0.001]	
Years cohabiting				-0.020* [0.011]
Years cohabiting squared *10				0.001 [0.003]
<b>Race (comparison group = Black)</b>				
Coloured	0.583*** [0.053]	0.514*** [0.087]	0.591*** [0.052]	0.579*** [0.083]
Indian	0.619*** [0.110]	-0.910 [1.106]	0.631*** [0.106]	-0.953 [1.106]
White	0.571*** [0.053]	0.645*** [0.087]	0.526*** [0.052]	0.603*** [0.083]
<b>Gender (comparison group = Male)</b>				
Female	-0.002 [0.044]	-0.007 [0.078]	0.017 [0.042]	-0.042 [0.076]
<b>Absolute income</b>				
Log(income)	0.003 [0.005]	0.029*** [0.011]	0.007 [0.005]	0.022** [0.011]
<b>Relative income (comparison group = much below average income)</b>				
Below average income	0.360*** [0.069]	0.358*** [0.093]	0.334*** [0.067]	0.313*** [0.088]
Average income	0.888*** [0.069]	0.705*** [0.102]	0.841*** [0.067]	0.637*** [0.096]
Above average income	1.013*** [0.089]	0.954*** [0.143]	0.974*** [0.870]	0.954*** [0.134]
Much above average income	1.376*** [0.159]	1.082*** [0.261]	1.285*** [0.156]	1.044*** [0.256]
<b>Education (comparison group = none)</b>				
Primary	0.034 [0.062]	0.067 [0.104]	0.056 [0.060]	0.107 [0.101]
Secondary	0.007 [0.066]	0.235** [0.110]	0.072 [0.065]	0.222** [0.105]
Post-secondary	0.193*** [0.075]	0.194 [0.127]	0.244*** [0.075]	0.195 [0.125]
<b>Health (comparison group = poor)</b>				
Fair	0.172** [0.081]	0.032 [0.153]	0.156** [0.077]	-0.021 [0.144]
Good	0.285*** [0.078]	0.051 [0.142]	0.286*** [0.074]	0.083 [0.133]
Very good	0.362*** [0.079]	0.053 [0.143]	0.390*** [0.076]	0.066 [0.135]
Excellent	0.416*** [0.083]	-0.106 [0.147]	0.407*** [0.080]	-0.116 [0.138]
<b>Religion (comparison group = not at all important)</b>				
Unimportant	0.234 [0.153]	0.126 [0.186]	0.165 [0.151]	0.066 [0.180]
Important	0.186	0.222	0.147	0.196



	[0.124]	[0.161]	[0.126]	[0.156]
<b>Very important</b>	0.412***	0.399**	0.374***	0.364**
	[0.125]	[0.164]	[0.126]	[0.158]
<b>Children</b>	0.009	-0.009	0.008	0.007
	[0.012]	[0.035]	[0.011]	[0.031]
<b>Decision making power index</b>	0.004	0.002	0.006	0.004
	[0.007]	[0.011]	[0.007]	[0.010]
<b>Pseudo R<sup>2</sup></b>	0.070	0.044	0.069	0.044
<b>Observations</b>	2998	935	3195	1029
<b>Wald <math>\chi^2</math></b>	823.3***	179.2***	869.7***	200.1***
<b>Log pseudo likelihood</b>	-6053.5	-1951.9	-6453.1	-2143.9

Note: Results are obtained using the ordered probit regression model. Robust standard errors are shown in parenthesis.  $p < 0.001$  \*\*\*,  $p < 0.05$  \*\*,  $p < 0.10$  \*.

Table 10: Determinants of the cohabitation gap

Dependent variable: Happiness	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14
<b>Control variables</b>								
Age	-0.018*** [0.006]	-0.024*** [0.006]	-0.017*** [0.006]	-0.011* [0.006]	-0.006 [0.006]	-0.008 [0.006]	-0.008 [0.007]	-0.009 [0.007]
Age squared	0.000** [0.000]	0.000*** [0.000]	0.000*** [0.000]	0.000** [0.000]	0.000* [0.000]	0.000** [0.000]	0.000** [0.000]	0.000** [0.000]
<b>Gender</b> (comparison group = Male)								
Female	-0.007 [0.029]	0.073** [0.032]	0.041 [0.033]	0.046 [0.033]	0.052 [0.033]	0.029 [0.034]	0.034 [0.036]	0.027 [0.036]
<b>Race</b> (comparison group = Black)								
Coloured	0.650*** [0.038]	0.621*** [0.040]	0.640*** [0.042]	0.631*** [0.042]	0.629*** [0.042]	0.565*** [0.043]	0.568*** [0.043]	0.569*** [0.043]
Indian	0.694*** [0.089]	0.708*** [0.100]	0.658*** [0.102]	0.590*** [0.103]	0.618*** [0.102]	0.580*** [0.101]	0.584*** [0.101]	0.586*** [0.101]
White	0.879*** [0.042]	0.844*** [0.044]	0.691*** [0.046]	0.532*** [0.054]	0.519*** [0.053]	0.514*** [0.054]	0.520*** [0.054]	0.522*** [0.054]
<b>Cohabitation gap</b>	0.251*** [0.038]	0.213*** [0.039]	0.107*** [0.040]	0.077* [0.041]	0.066 [0.041]	0.045 [0.041]	0.042 [0.041]	0.042 [0.041]
<b>Absolute income</b>								
Log(income)		0.035*** [0.004]	0.019*** [0.005]	0.016*** [0.005]	0.014*** [0.005]	0.013*** [0.005]	0.012*** [0.005]	0.012*** [0.005]
<b>Relative income</b> (comparison group = much below average income)								
Below average income			0.352*** [0.050]	0.327*** [0.051]	0.326*** [0.051]	0.345*** [0.051]	0.346*** [0.051]	0.346*** [0.051]
Average income			0.843*** [0.051]	0.791*** [0.052]	0.768*** [0.053]	0.786*** [0.053]	0.785*** [0.053]	0.785*** [0.053]
Above average income			1.037*** [0.070]	0.974*** [0.071]	0.945*** [0.072]	0.953*** [0.071]	0.950*** [0.072]	0.950*** [0.072]
Much above average income			1.336*** [0.130]	1.259*** [0.131]	1.247*** [0.131]	1.262*** [0.132]	1.260*** [0.132]	1.260*** [0.132]
<b>Education</b> (comparison group = none)								
Primary				0.126*** [0.049]	0.122** [0.049]	0.106** [0.049]	0.106** [0.049]	0.107** [0.049]
Secondary				0.196*** [0.054]	0.171*** [0.054]	0.137** [0.054]	0.138** [0.054]	0.141*** [0.054]
Post-secondary				0.354*** [0.062]	0.324*** [0.063]	0.284*** [0.063]	0.283*** [0.063]	0.287*** [0.063]
<b>Health</b> (comparison group = poor)								
Fair					0.130** [0.066]	0.128* [0.066]	0.128* [0.066]	0.129** [0.066]

Good	0.247***	0.247***	0.246***	0.249***				
	[0.063]	[0.063]	[0.063]	[0.063]				
Very good	0.339***	0.339***	0.339***	0.343***				
	[0.065]	[0.065]	[0.065]	[0.065]				
Excellent	0.305***	0.299***	0.302***	0.305***				
	[0.069]	[0.069]	[0.069]	[0.069]				
<b>Religion</b> (comparison group = not at all important)								
Unimportant			0.175	0.173	0.173			
			[0.113]	[0.113]	[0.113]			
Important			0.157*	0.155	0.155			
			[0.095]	[0.095]	[0.095]			
Very important			0.385***	0.381***	0.382***			
			[0.096]	[0.096]	[0.096]			
<b>Decision making power index</b>								
				0.004	0.004			
				[0.005]	[0.005]			
<b>Parenthood</b>								
					0.052			
					[0.065]			
<b>% contribution of added variable to decline in cohabitation gap</b>		15.1%	42.3%	11.6%	4.7%	8.3%	1.3%	0.7%
<b>% cumulative contribution to decline in cohabitation gap</b>		15.1%	57.4%	69.0%	73.7%	82.0%	83.3%	84.0%
Pseudo R <sup>2</sup>	0.029	0.030	0.056	0.058	0.059	0.062	0.062	0.062
Observations	5047	4726	4499	4479	4457	4456	4447	4447
Wald $\chi^2$	692.1***	705.6***	1010.8***	1058.3***	1093.8***	1142.7***	1139.4***	1140.8***
Log pseudo likelihood	-10734.1	-10033.6	-9280.7	-9223.7	-9160.1	-9129.4	-9111.2	-9110.9

Note: Results are obtained using the ordered probit regression model. Robust standard errors are shown in brackets.  $p < 0.001$  \*\*\*,  $p < 0.05$  \*\*,  $p < 0.10$  \*.

Figure 1: Mean happiness and age at marriage

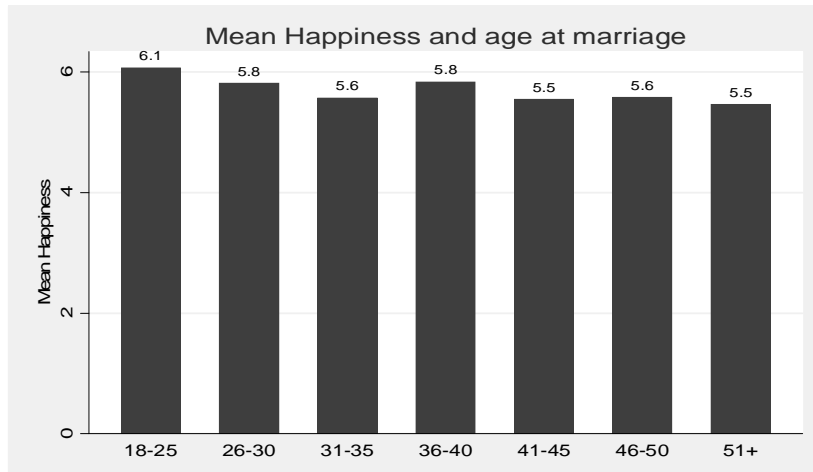


Figure 2: Box plot of median happiness, by age at marriage

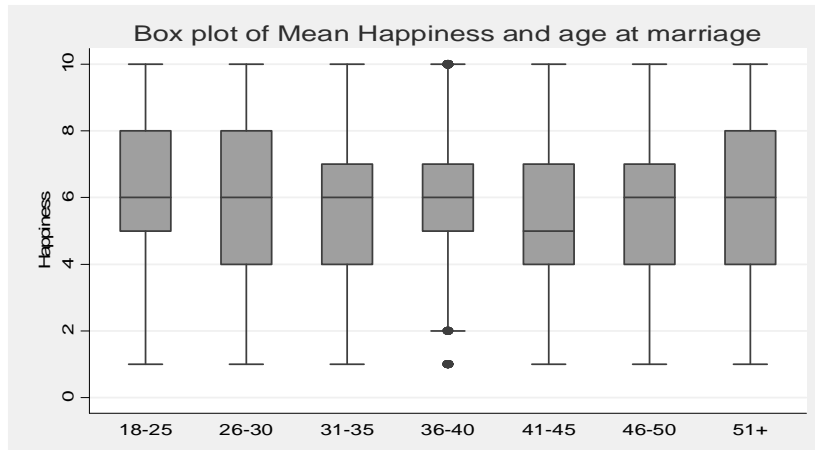


Figure 3: Mean happiness and age at start of cohabitation

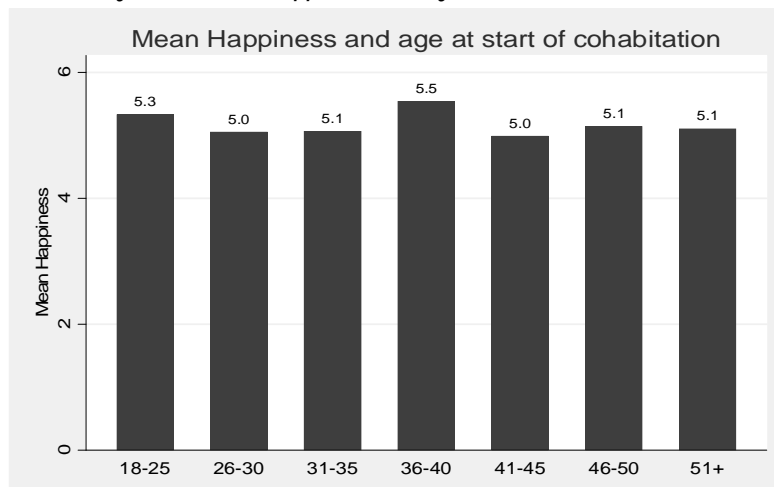


Figure 4: Box plot of median happiness, by age at start of cohabitation

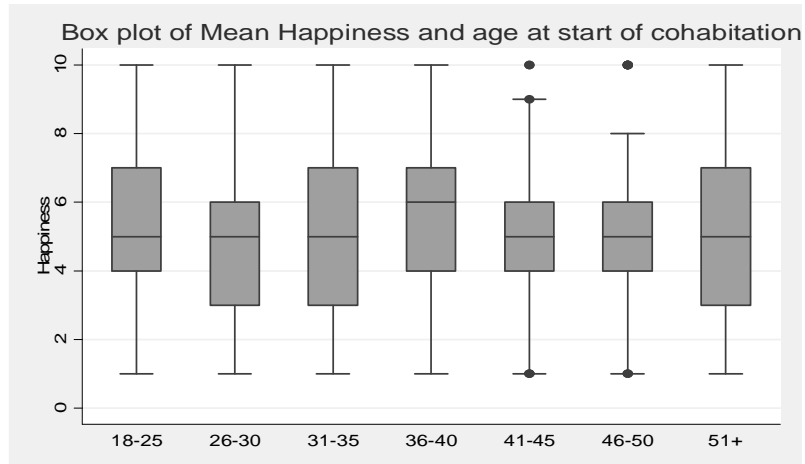


Figure 5: Mean happiness and number of years married



Figure 6: Box plot of median happiness, by number of years married

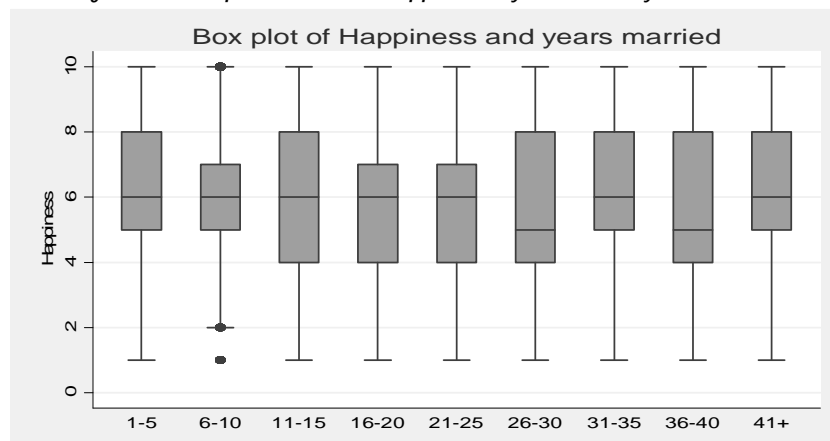


Figure 7: Mean happiness, by number of years in cohabitation



Figure 8: Box plot of median happiness, by number of years in cohabitation

