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Drought and happiness in rural Iran

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The place of positive emotions such as happiness and its relationship with natural disasters like drought is ambiguous; therefore, the purpose of this research was to explore the impact of drought on happiness in rural Iran using a causal-comparative research design. The findings revealed that drought significantly reduced the happiness of rural people, and variables such as; intensity of drought, perceived drought impact, welfare and well-being poverty lead to more reduction of happiness during drought. A typology of happiness was provided to explain the findings of this study. It is concluded that the relatively high level of happiness among respondents is a "tactical happiness" used to cope with drought.

Key words: Happiness, drought, Oxford happiness inventory, Iran.

INTRODUCTION

In recent years, the field of positive psychology has emerged to bring awareness to the role of psychology in making life more fulfilling, enhancing human functioning, and increasing happiness (Seligman, 2002). Happiness might not only be a goal of life but also a means for reaching other goals and for facilitating desirable behaviors and outcomes (Eid and Larsen, 2008). Hence in recent years happiness is considered more and it is an ultimate goal and thus constitutive part of development (Schimmel, 2009). Unlike GNP (Gross National Product), the economic indicator that measures cash flow through an economy, GNH (Gross National Happiness) measures the happiness of the people as an indicator of development and progress (Richard, 2003). The inclusion of a happiness indicator changed UNDP's (United Nations Development Program) perspective from a 'development as freedom' to a 'development as happiness' (Schimmel, 2009). Since then identifying the determinants of happiness has received great attention. As a result, a considerable body of research concerned with identifying the variables associated with happiness has been developed (Argyle, 2001). The findings imply that there is a high complexity in determining the strongest predictors of happiness.

Although researchers disagree about the exact relationship between different variables and happiness, but the

determinants of happiness can be sought at two levels: external conditions and internal processes (Veenhoven, 2000). Also three main conclusions have emerged from investigations. First, outward conditions and other general factors - such as income (Argyle, 1999; Biswas-Diener, 2008; McCullough et al., 2000), education (Argyle, 1999; La Barbara and Gurhan, 1997; McCullough et al., 2000; Oishi and Koo, 2008; Schimmel, 2009), social relations (Argyle, 2001; Diener and Biswas-Diener, 2008), gender (Argyle, 1999, 2001; McCullough et al., 2000), age (Cacioppo et al., 2008; McCullough et al., 2000), and so on - have circumstantial influence but account altogether for no more than 10 to 15% of the variable satisfaction quotient (Argyle, 1999; Diener et al., 1999; Lyubomirsky et al., 2005; Richard, 2003). Second, we seem to have a genetic predisposition to being happy or unhappy (Inglehart and Klingemann, 2000; Schimmack et al., 2002) - about 25% of our potential for happiness appears to be determined by genes (Richard, 2003). Third, we can exert considerable influence on our experience of happiness and unhappiness through the way we live and think, how we perceive life's events, and how we react to them (Richard, 2003). Personality traits (Peterson, 2006; Schimmack et al., 2002) account for a large portion of the variance in individual differences in happiness - as much as 40 to 50% (Diener et al., 1999; Lyubomirsky et al., 2005).

Issues of community and individual well-being under normal circumstances frequently involve competing

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interests and contested interpretations (Oliver-Smith, 2005). Any perception of risk or disaster impact that threatens subjective well-being almost invariably becomes itself an even more contested issue. Despite the fact that major societal events such as natural disasters have generated considerable emotional turmoil among people (Lerner et al., 2003; Västfjäll et al., 2008) there have been few empirical studies of emotional impacts of disaster. Furthermore, these studies have focused on acute, collectively experienced disasters with a sudden onset, ignoring slow-onset disasters, such as drought (Zamani et al., 2006).

Drought, unlike sudden-onset disasters, is a chronic stressor (Kinsey et al., 1998) that can last longer and extend across larger areas than hurricanes, tornadoes, floods, and earthquakes (Coelho, 2000; Smith, 2004; Wilhite and Buchanan-Smith, 2005) and have psychological impacts that is more disastrous (Coelho, 2000; Norris et al., 2002; Smith, 2004; Zamani et al., 2006; Zarafshani et al., 2005). The drought stress symptoms most commonly reported include depression and anxiety (Coelho, 2000; Committee on Disaster Research in the Social Sciences, 2006; Norris et al., 2002), nervousness (Ortega et al., 1994; Committee on Disaster Research in the Social Sciences, 2006), negative attitude (Norris et al., 2002), isolation, and over work (Fetsch, 2003; Norris et al., 2002).

Recent global warming effects and climate change are one of the major reasons of drought and scientists have not actually provided clear answers to this nature's debilitating calamity (Hosseini et al., 2009). Contrasted to sudden-onset natural disasters, the damage brought by drought is usually non-structural but spread over larger geographical areas. Its effect accumulates slowly over a considerable period of time and lingers on for years. Drought therefore is known as creeping phenomenon that is a normal part of climate for virtually all regions of the world; it results in serious economic, social, and environmental impacts that is complex to understand (Wilhite, 2000b). The specific nature of drought and the lack of common and comprehensive understanding of this event make studies about different aspects of drought especially its impact on happiness, essential. However, much remains unknown about the relationship between drought and happiness, particularly when droughts are widespread and prolonged. May be the dominancy of this common sense that drought makes people unhappy, has lead to no focused study on happiness under drought condition.

Though drought as a slow onset disaster spreads over large geographical areas and many urban and rural people suffer serious consequences of drought, it is obvious that rural residents whose livelihood depends on climatic pattern (Fetsch, 2003) bear much more difficulty during drought. Therefore, it is reasonable to assume that the happiness levels of rural residents could suffer more from drought than urban residents. One limitation is that extant Iranian

studies are confined to collegiate and urban samples and there is no study on happiness in rural areas even though they constitute more than 30% of the population. Even in other societies, few researches have focused on studying happiness under drought. Therefore considering the increasing importance of happiness as an indicator in development studies (Schimmel, 2009), particularly among less prosperous segment of a society who live in risk prone rural area, happiness impact assessment (HIA) of drought is crucial. Lack of recognition of far reaching impacts of drought on happiness has been an impediment to obtaining adequate knowledge to make recovery more efficient and be particularly amenable to the benefits of mitigation. Therefore, the aim of this article is to increase our understanding of how drought may affect happiness in rural Iran. In this regard within the theoretical framework presented in the next section, the following hypotheses were investigated:

H₁: There is an association between happiness and drought intensity. It is expected that residents of disastrous drought areas to experience lower levels of happiness than respondents from moderate drought areas.

H₂: Demographic variables (e.g., age and gender) are main predictors of happiness under drought condition. It is hypothesized that happiness of middle-age to older adults to be more damaged by drought and males and females have significantly different happiness under drought.

H₃: There is a difference in respondent's happiness with regard to their perceived level of drought impact. Whereas crises can be expected to deplete people's physical and psychological resources, it is hypothesized that people who perceived drought to be more destructive show fewer symptoms of happiness.

H₄: There is a difference in respondent's happiness before and during drought. It is expected that residents of drought affected areas to be less happy than before.

DROUGHT AND HAPPINESS: THE THEORETICAL FRAMEWORK

Current literature was used to develop the theoretical framework of this study. A schematic representation of the theoretical framework of this study is shown in Figure 1. Based on this theoretical framework, the relation between drought and happiness can be explained as follows:

Happiness before drought: In each social system, there is certain level of happiness at normal times. In this framework, we consider the agricultural years with long time average precipitation as normal times. It is clear that the happiness at these times depends on many cultural, natural, individual and societal factors (Argyle, 2001;

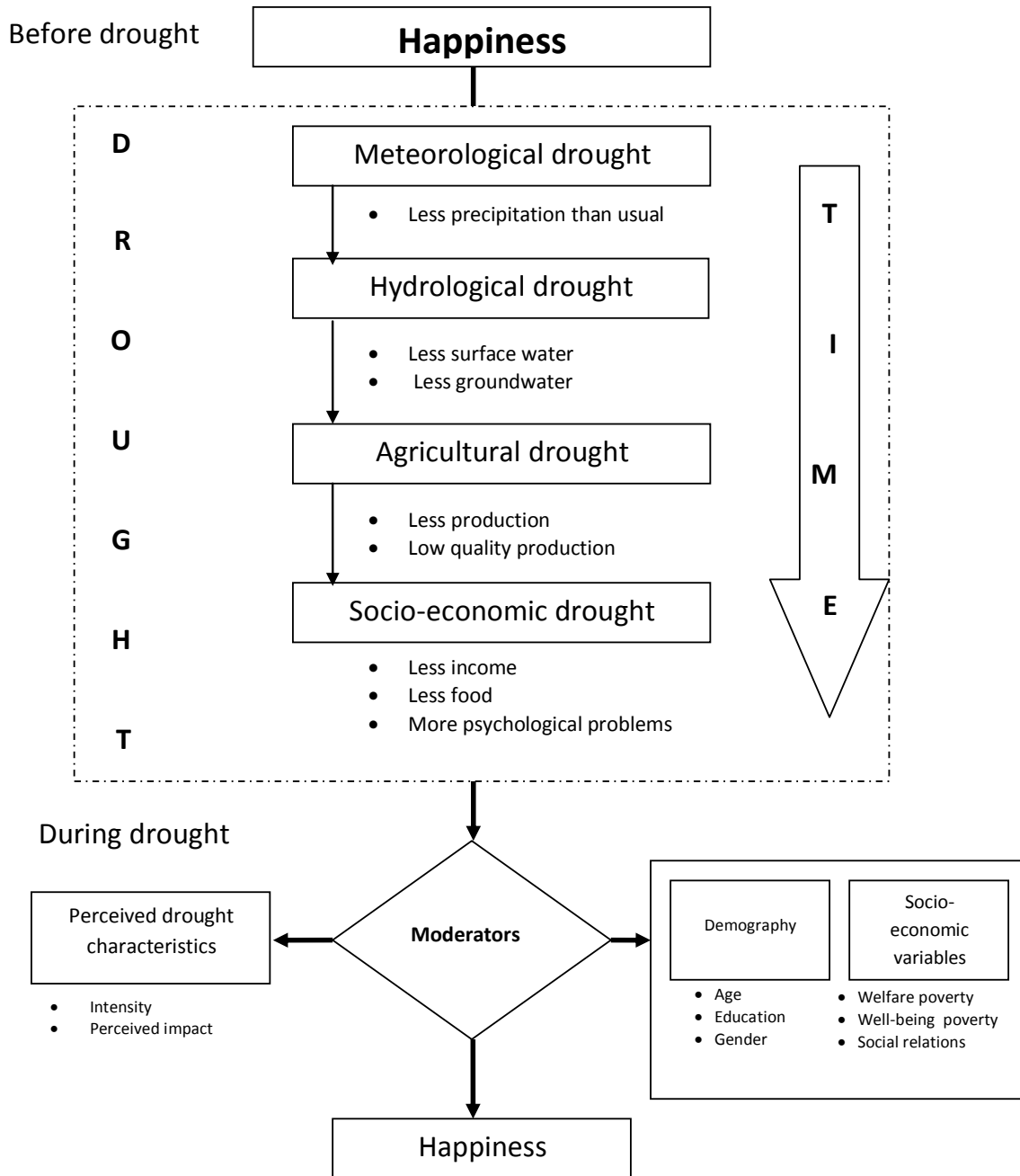


Figure 1. The theoretical framework of drought impact on happiness.

Biswas-Diener, 2008; Diener et al., 1999; Lyubomirsky et al., 2005; Richard, 2003; Schimmack et al., 2002). However, in this framework the researchers are not concerned about the determinants of happiness before drought. It was just tried to use it as benchmark to study the impact of drought.

Drought impact: Drought is considered by many to be the most complex but least understood of all natural hazards, affecting more people than any other disasters

(Hagman, 1984; Wilhite, 2000a). The most commonly used drought definitions are based on meteorological, hydrological, agricultural, and socioeconomic effects (Wilhite and Glantz, 1985). This is more or less happens in the afore sequence (Figure 1). A brief definition of the four types is presented in the foregoing. Meteorological drought is the amount of dryness and the duration of the dry period (Lindesay, 2003). It is usually defined by the measure of the departure of precipitation from the normal and the duration of the dry period (Boken, 2005).

Hydrological drought is associated with the effects of periods of precipitation shortfalls on surface or subsurface water supply (that is, streamflow, reservoir and lake levels, ground water) (Lindesay, 2003; Rodda, 2002). Agricultural drought associates various characteristics of meteorological and hydrological drought with agricultural impacts (Botterill and Fisher, 2003), focusing on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced ground water or reservoir levels, and so forth (Lindesay, 2003). Agricultural drought mainly effects food production and farming (Smith, 2004). Deficient topsoil moisture at planting may hinder germination, leading to low plant populations per hectare and a reduction of final yield (NDMC, 2006). Drought should not be viewed as merely a physical phenomenon or natural event. Its impacts on society result from the interplay between a natural event (less precipitation than expected resulting from natural climatic variability) and the demand people place on water supply (Slootweg et al., 2001). Socioeconomic drought differs markedly from the other types because it associates human activity with elements of meteorological, agricultural, and hydrological drought. This may result from factors affecting the supply of or demand for some commodity or economic good (e.g., water, grazing, hydroelectric power) that is dependent on precipitation. It may also result from the differential impact of drought on different groups within the population, depending on their access or entitlement to particular resources, such as land, and/or their access or entitlement to relief resources. Drought may fuel conflict between different groups as they compete for limited resources (Wilhite and Buchanan-Smith, 2005). Through afore processes a natural disaster becomes a stressor.

Happiness during drought: Based on our theoretical framework (Figure 1) which shows that drought materializes itself as a stressor through time, it is expected that the happiness level of villagers who are suffering from drought is reduced. Of course, the impact of drought on happiness of each individual is moderated by some factors. These moderators are demographic, socioeconomic and perceived drought characteristics. The moderators can have a positive or negative impact on individual's happiness.

MATERIALS AND METHODS

Study area

This study was conducted in a drought-affected rural area of Fars province in Southwest Iran. Fars has experienced several severe droughts between 2003 and 2010. In 2010, when the data of this study were collected, villagers were suffering hardship from the ongoing consequences of drought. The multiple climatological, meteorological, hydrological and agricultural indices were used to select the study area. At the first stage, the raw data provided by Fars Meteorological Organization was used to draw climatological map of Fars. It indicated six distinct climatic regions: 1) cold and

arid; 2) hot and arid; 3) moderate and arid; 4) cold and humid; 5) cold and semi arid; 6) moderate and semi arid. Since about half of counties of Fars province, have moderate and arid climate (13 out of 27 counties), this kind of climatic region was selected for the study. Within this region, three indices were used to classify the counties of this climate. These indices were: 1) mean yearly precipitation change index, 2) ground water depletion during 7 years period, and 3) reduction in wheat cultivation area (The raw data was provided by Fars Meteorological Organization, Fars Water Organization and, Fars Organization of Jihad-e-Agriculture, respectively). Finally based on the afore indices Zarindasht county was selected as the study area. Zarindasht county experienced severe drought condition, more than 3.4 m deplete of ground water, and with highest reduction of wheat cultivation area (52%). Furthermore, Zarindasht is one of the most productive agricultural regions of Fars province.

In order to study the impact of different drought intensities on happiness in Zarindasht county, two villages with similar agricultural, economical, cultural and societal condition that had experienced different levels of drought intensity were selected. Field observation and in-depth interviews with agricultural experts and insurance agents of Zarindasht county were used to select a disastrous and a moderate drought intensity villages.

Research design

A causal-comparative research method (Borge and Gall, 1989) was used for conducting this research. To create the matched groups, first drought intensity criterion was set. As it was earlier mentioned, two villages with disastrous and a moderate drought intensity were selected. Then, each of these sampling frames was ordered on the matching variables (age and gender). Because it is expected that, various age categories be influenced by drought differently and middle-age to older adults be more vulnerable (Cacioppo et al., 2008) by negative impacts of severe drought, three age groups (less than 20, 20 to 39, and over 39 years old) were considered. Furthermore, most disaster studies have shown that gender is a critical variable during natural disasters. It is expected that women experience both positive and negative affect with greater intensity than men (Argyle, 2001; Hwang, 2001). Therefore, two gender categories (men, and women) were set. Combination of two drought intensity categories, three age groups and two gender categories resulted into twelve sub-population groups. From each of the twelve grouping levels, 15 respondents were randomly selected. The final sample consisted of 180 people.

Variables and measures

Participants completed a questionnaire consisting of a set of variables. The important variables used in this study are described as follows:

Happiness (before-during drought incidence)

The Farsi version of the Oxford happiness inventory (Alipour and Nourbala, 1999) was used to measure happiness. This scale consists of 29 sets of statements. Within each set there are six statements that range from strongly disagree to strongly agree. This measure has an internal reliability of 0.93 and a test-retest reliability of 0.79 (Alipour and Nourbala, 1999).

Retrospective technique (Sapsford and Jupp, 2006) was used for assessing the level of happiness before drought. Under the retrospective method, respondents were asked to think back over the past years when there was no drought and remember how happy they were.

Table 1. Happiness rating.

Item	Rural Iran		Urban Iran [†] (Mean)	Rural-urban Iran difference	T	Sig.
	Mean	S.D				
Happiness during drought	89.34	26.52	76.74	12.59	6.36	0.00

[†]: Based on six different studies held in Iran (Abedi et al., 2006; Alipour and Agah Heris, 2007; Alipour and Nouri, 2006; Goodarzi and Hemayat Talab, 2007; Neshat-Doost et al., 2008; Soleimanian et al., 2009).

Table 2. Two-way ANOVA testing for differences in happiness of participants at different drought intensities and drought incidence situations.

Source	DF	SS	MS	F	Sig.
Happiness before-during drought	1	79267.63	79267.63	233.02	0.00
Drought intensity	1	61.52	61.52	0.09	0.76
Interaction	1	1954.09	1954.02	5.74	0.02
Error	125	42521.17	340.17		

SS; Sum of square, MS; mean square.

Perceived drought impact

Participants were asked to appraise the impact of drought in their life using a Likert 4-point scale that ranged from low to very high.

Subjective well-being poverty

Well-being poverty, which is tantamount to a lack of well-being or life satisfaction (Carbonell and Vanpraag, 2001) is originally derived by Cantril (1965). The Cantril's question is: "How satisfied are you with your life as a whole?" It is obvious that subjective well-being (SWB) will be determined by many more variables than income.

Objective welfare poverty

Degree of economic welfare was measured through total annual income of a household from different sources and was classified to three categories; poor, medium and well-off.

Social relationships

Participants' social relationships were measured with 2 items (relationships with their friends, and their neighbors and relatives) using a Likert 6-point scale ranged from no relation to very good relationship.

RESULTS

Happiness and drought

Table 1 shows the mean and standard deviation of the happiness during drought. The happiness rate could be ranged from 0 to 145, and the overall mean score of happiness was 89.34 (S.D= 26.52).

In order to compare the rural residents' happiness score with urban residents of Iran, those studies that have used the Oxford happiness inventory were investigated.

Thus, we used the result of only six studies that matched the afore criteria and transferred their mean scores of happiness to make it comparable to our scale.

The statistical comparison (One sample t-test) of the mean ratings (Table 1), showed that the happiness of rural people despite their hardship during drought conditions was significantly (T=6.36, Sig.=0.00) higher than urban Iranian residents. This result is inconsistent with the finding of Davey et al. (2009) for urban and rural China that the rural residents' subjective well-being scores were similar to urban residents.

Happiness and drought intensity

A 2x2 mixed between-within-subject analysis of variance was performed (Table 2). The results revealed that respondents' happiness was significantly higher (F=233.02, Sig.=0.001) before drought (\bar{X} =126.50, S.D=17.08) when compare to during drought happiness (\bar{X} =89.34, S.D=26.52). However, the degree of drought intensity (moderate and disastrous) did not have an impact on happiness (F=0.09, Sig.=0.76). Furthermore, it seems appropriate to investigate the nature of the relationships between happiness and drought intensity. The findings revealed a significant interaction (F= 5.74, Sig.=0.02) between occurrence of drought (before-during) and drought intensity on respondents' happiness (Table 2). The graphical representation of means (Figure 2) revealed a significant disordinal interaction that is before drought the happiness of respondents in the village with disastrous drought were higher than happiness of respondents from village with medium drought intensity. After occurrence of drought, not only the level of happiness of both group dropped significantly but also the reduction in happiness was more severe for respondents of village with disastrous drought.

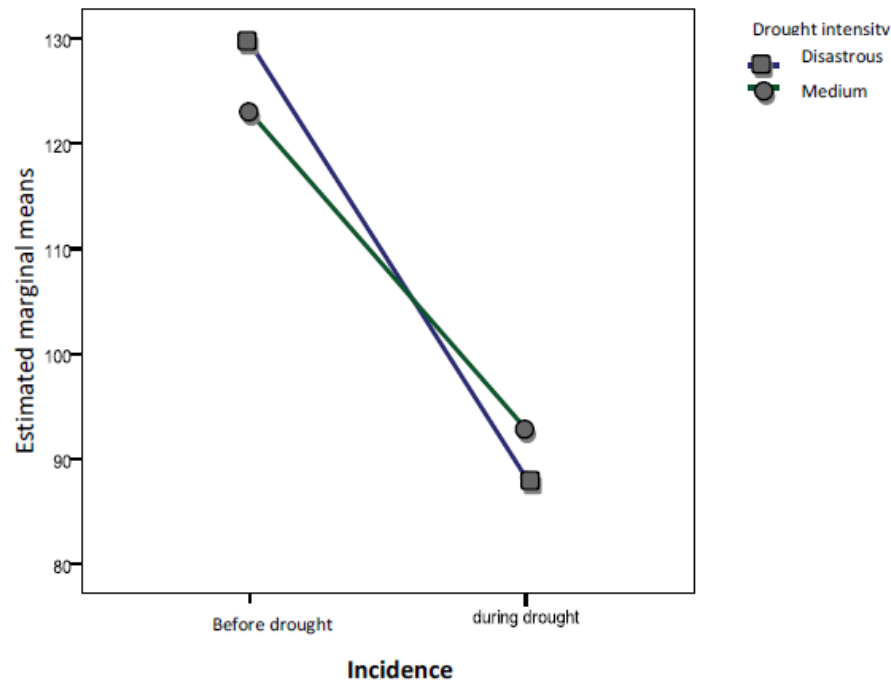


Figure 2. Graphic representation of interaction between drought intensity and incidence on happiness.

Table 3. Two-way ANOVA testing for differences in happiness of participants at different perceived drought impacts and drought incidence situations.

Source	DF	SS	MS	F	Sig.
Happiness before-during drought	1	36322.79	36322.79	119.52	0.00
Perceived drought impacts	2	4078.40	2039.20	3.10	0.05
Interaction	2	6791.17	3392.59	11.17	0.00
Error	124	37684.09	303.90		

Happiness and perceived drought impact

As shown in Table 3, the initial two-way ANOVA revealed that there is a significant difference ($F= 3.10$, $Sig.=0.05$) in respondents' happiness concerning to levels of their perceived drought impact (Low, Medium and High). Also, the findings revealed a significant interaction ($F= 11.17$, $Sig.=0.001$) between drought incidence (before-during) and levels of perceived impact of drought (Table 3).

The graphical representation of means (Figure 3) indicated that participants pernicious with high level of perceived drought impacts showed more reduction in happiness. While, respondents with low level of perceived drought impact had the least reduction in happiness during drought.

Happiness, drought and demographic variables

Based on theoretical model (Figure 1) it is hypothesized

that demographic variables have moderator effects on happiness under drought condition. The demographic variables studied in this research include gender, age and education. Table 4 shows respondents' happiness score with regard to gender. The results indicated that there was no significant difference ($T= -1.39$, $Sig.=0.17$) in happiness of male and female rural respondents during drought period. This finding is consistent with the previous findings of Alipour and Nourbala (1999), Alipour and Agah (2007) and Abedi et al. (2006) for urban Iran. However, it is inconsistent with the finding from Alipour and Nouri (2006) for urban Iran that men were significantly happier than women.

As shown in Table 4 respondents' happiness rating with regard to age. The highest mean score was reported by the age group over 39 ($\bar{X} = 91.03$), while the lowest mean score was reported by the age group 20 to 39 ($\bar{x} = 85.12$). Nevertheless, there was no significant difference in the happiness score ($F=0.862$, $Sig.=0.42$) across age

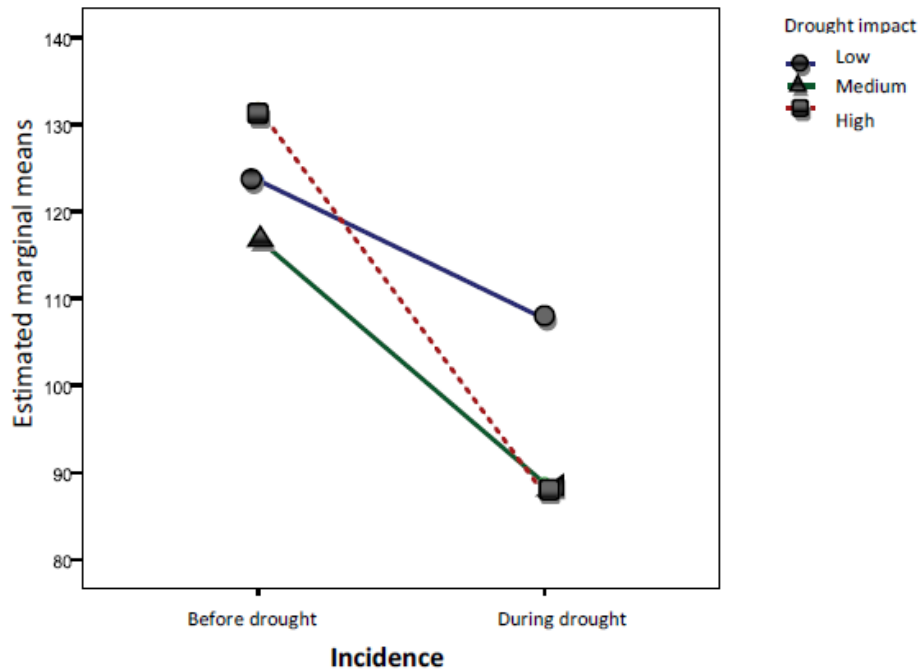


Figure 3. Graphic representation of interaction between perceived drought impact and incidence on happiness.

groups. This finding is consistent with the finding of Neshat-Doost et al. (2008) for urban Iran.

Although, there were no significant age differences in the happiness score during drought, the findings indicated that age had a significant influence on happiness of respondents before drought ($F= 10.87$, $Sig.=0.00$) (Table 5). The group comparison showed that those aged over 39 ($\bar{X} = 133.53$) were significantly happier than those aged below 39. It provided some partial support for this view that drought make older adults more vulnerable than others.

Table 4 shows rural residents' happiness score with regard to education. The highest level of happiness was reported by less educated people who have lower than 6 years formal education ($\bar{X} = 91.18$), while the lowest level of happiness was reported by people who have more than 11 years formal education ($\bar{X} = 84.84$). However, the findings revealed that there were no significant differences ($F=0.95$, $Sig.=0.39$) in happiness under drought condition across education groups (Table 4). This finding is consistent with the finding of Neshat-Doost et al. (2008) for urban Iran.

Happiness, drought and socio-economic variables

Based on theoretical model (Figure 1) it is hypothesized that socio-economic variables have moderator effects on

happiness under drought condition. The socio-economic variables studied in this research include welfare poverty, wellbeing poverty and social relations.

As shown in Table 4, respondents' happiness score with regard to income. The highest income category had the highest mean score of happiness ($\bar{X} = 99.65$), while the lowest income category had the lowest mean score of happiness ($\bar{X} = 65.70$). Also the findings collaborated with current literature (Argyle, 1999; Biswas-Diener, 2008; Day et al., 2005; McCullough et al., 2000) indicated that there were significant differences in reported happiness across income groups ($F=24.42$, $Sig.=0.001$).

Table 4 shows rural residents' happiness score with regard to well-being poverty. Similar to income results, the highest well-being category had the highest mean score of happiness ($\bar{X} = 105.10$), while the lowest well-being category had the lowest mean score of happiness ($\bar{X} = 68.34$). Also, the findings revealed that people with poor well-being had significantly lower level of happiness under drought than the other two groups ($F=30.74$, $Sig.=0.001$).

Table 4 presents respondents' happiness score with regard to social relations. The more sociable category had the highest mean score of happiness ($\bar{x} = 98.68$), while the less sociable category had the lowest mean score of happiness ($\bar{x} = 76.21$). Also, the findings revealed that there were a significant difference between

Table 4. Participants' post drought happiness rating amongst different individual characteristics (n=180).

Variable	Happiness	T/F	Sig.
Gender			
Male	86.06		
Female	91.68	-1.39	0.17
Age (year)			
Less than 20	90.45		
20 to 39	85.12	0.862	0.42
Over 39	91.03		
Education (year)			
Less than 6	91.18		
6 to 11	90.38	0.95	0.39
Over 11	84.84		
Welfare poverty			
Poor	65.70 ^a		
Medium	95.37 ^b	24.42	0.00
Well- off	99.65 ^b		
Well-being poverty			
Low	105.1 ^a		
Medium	84.30 ^b	30.74	0.00
High	68.34 ^c		
Social relationships			
Low	76.21 ^a		
Medium	88.68 ^b	10.06	0.00
High	98.68 ^c		

In each column, means followed by the same letters are not significantly different (LSD at $P>0.05$).

Table 5. Participants' pre-drought happiness rating amongst different age groups (n=127).

Variable	Happiness	T/F	Sig.
Age (year)			
Less than 20	120.19 ^a		
20 to 39	120.35 ^a	10.87	0.00
Over 39	133.53 ^b		

In column, means followed by the same letters are not significantly different (LSD at $P>0.05$).

a degree of social relationships and happiness ($F=10.06$, $Sig.=0.00$). This is consistent with other studies internationally, which suggest that higher levels of social relationships lead to more happiness, especially in conditions of poverty and insecurity (Myers, 1999; Diener and Seligman, 2002).

DISCUSSION

Drought and happiness

Although Iran is known as a developing country, available researches show that in comparison to many other

countries Iranian people report higher levels of happiness. Furthermore, based on the current study the rural residents report higher levels of happiness than urban. This finding seems surprising. In normal conditions- regardless of rural or urban residency-, happiness should be maintained within a high and positive range (Davey et al., 2009) but drought as a threatening stressor can have serious consequences for people's well-being and happiness, especially in rural areas. Farmers and rural residents' livelihood depends on climatic patterns, to a large extent (Fetsch, 2003), therefore it was expected that rural residents have lower levels of happiness. A question comes to mind that: "in what sense drought has impact on happiness of rural people?"

The results indicate that the degree of drought intensity (moderate and disastrous) did not have an impact on happiness. However, the interaction between occurrence of drought and drought intensity on respondents' happiness and relatively happier respondents became relatively less happy during drought. This counter intuitive finding regarding lack of drought intensity impact on happiness requires some explanation. Based on available researches, severity of disaster exposure at both the individual and the community levels seems to be negatively associated with post-disaster psychological well-being (Committee on Disaster Research in the Social Sciences, 2006; Norris et al., 2002). Also some researchers argue that certain types of hazards, are more pernicious in their effects than other disasters (Erikson, 1994; Miller and Helling, 2004) because they persist longer and create more anxiety among potential victims (Erikson, 1994). It is speculated that government and non-government intervention may be a determinant factor in reducing the impact of drought intensities. Usually the drought mitigations are targeted to more severe areas and most vulnerable sector of population.

Drought typically yield benefits for some people and exert costs on others (Millennium Ecosystem Assessment, 2005; Zamani et al., 2006; Zarafshani et al., 2005), who may either lose access to resources or livelihoods or be affected by externalities associated with the change (Millennium Ecosystem Assessment, 2005). Based on research findings, in comparison to others those who perceived drought to have higher negative impacts be less happy. A substantial question rising is whether the happiness status is representative of their real life in drought. For the group of people who perceived drought to have higher negative impacts, drought acts as a threatening stressor. They experienced more economical hardships in drought. The fact is that more than half of these group are those who had lost their material resources during drought. May be it can be assumed that for the group of people who perceived drought to have lower negative impacts, drought acts as a gain and that they can acquire more benefits from it. The findings identified that this assumption is wrong.

There are no significant economic differences between low and medium perceived drought impact groups and these groups had lost economical resources too. Furthermore, the group with low perceived drought impact had high level of happiness both before ($\bar{x} = 123.60$) and during ($\bar{x} = 107.67$) drought. It is important to notice that happiness of group with medium perceived drought impact was at average level both before (116.86) and during drought (88.75). Based on theoretical model, it is hypothesized that some demographic and socio-economic variables have moderator effects on happiness under drought condition. Results indicated that the effects of drought were similar for men and women. A possible reason for this finding is in the case of drought, loss of resources like property, stock, food security and financial security influenced males and females the same extent. Although different age groups reported same levels of happiness during drought, they differ in happiness rate before drought incidence. For older adults happiness dipped significantly because of drought. It seems that declining terms of trade and rising debt levels have eroded their capacity to cope with protracted drought (Day et al., 2005) and these resource depleted drought victims suffered more from negative consequences of drought. Also the results revealed that a higher level of education do not necessarily lead to greater happiness (Schimmel, 2009; Oishi and Koo, 2008). One of the reasons education level did not have a significant impact on a happiness is that the literacy is low in rural Iran. For instance, the mean education years of the case villages were 7.4 (S.D= 4.9) and only twelve respondents had academic education. Moreover, the fact that education has not necessarily guaranteed enhanced job opportunities and has not provided broader perspectives on life (La Barbara and Gurhan, 1997), especially in rural areas of Iran should be considered.

The results showed that economically poor people had significantly lower level of happiness in drought period, but there is no difference between other income groups. It is noteworthy to hint that severe production losses may be tolerated for one year or longer, but when dry conditions persist for several years as they did (Day et al., 2005), in our study from 2003 to 2010, it tends to harm poor people more severely. Poor people often lack access to alternate services and are highly vulnerable to ecosystem changes that result in drought (Millennium Ecosystem Assessment, 2003). Therefore, the notion that income enhances happiness seems to hold true when it enables people to meet their basic needs (Diener and Biswas-Diener, 2008; Veenhoven, 2000). Furthermore, based on findings, not only welfare poverty, which causes a decline in happiness; well-being poverty level also reduced happiness. It means that lower life satisfied people, perceived much misery and lower level of well-being during drought.

Finally, the results showed that people who have lower level of social relations are unhappier. Inversely, happy

people are more blessed with good families, friends and relatives, and supportive relationships than are people with low happiness. Social relationships are therefore a constituent attribute of personhood, as well as the principal mechanism through which people pursue their livelihood strategies (Devine, 2005). Social relationships influence happiness through their being a source of joy, an opportunity for shared activities, and a bolster for self-esteem (Argyle, 2001). Therefore the key to combating drought hardship and pressure is getting people to talk and make close relationship. People feel secure in these types of relationships, and are often able to share intimate aspects of themselves with the others. Importantly, they can count on the other person for help if they need it (Diener and Biswas-Diener, 2008).

Typology of happiness

The researchers developed a typology of happiness that is not only useful in explaining our findings but it has broader application. The title of a recent book by Graham (2010) "Happiness around the World: The Paradox of Happy Peasants and Miserable Millionaires" well illustrate the complicated nature of determinants of happiness. The fact that rural drought stricken Iranian despite the reduction in their happiness due to drought have a relatively high level of happiness and still they can be consider to be happy, need some explanation that we believe our typology can provide some insight. It is believed that there are two type of happiness:

Consequential happiness: This type of happiness is a consequence of individual efforts and standard of living. This type of happiness can materialized among people of any society who have an income to live above poverty line. Needless to say that the actual level of income and goods needed to achieve this happiness is very much cultural-bounded. If there is to be a comparison of nations' happiness, it should be among nations of the same socio-economic levels. Otherwise, the comparison is not valid because under this condition consequential and tactical happiness is being compared which have different nature.

Tactical happiness: This type of happiness is a psychological coping strategy use by people under disaster or adverse economic conditions to cope with their undesirable situation. This is the type of happiness which is observed among poor peasants were western observer may see no reason for happiness. However if you consider it a tactical happiness which people use to cope with their difficult condition then it become well understandable. The rather high level of happiness of rural people even under drought in this study is tactical happiness.

Most recent attempt to compare happiness of developed

and developing nations is misleading because they compare consequential and tactical happiness. One of the negative consequences of this type of comparison is the silent conclusion that developed world is happy with what they have and any development attempt may hamper their happiness.

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