

How to escape poverty? Based on the Perspective of Poverty Psychology

Hongwei Pang*

Central University of Finance and Economics
Beijing, 100081

Yanhong Gong, Xueli Sun & Shuangshuang Ma

Tibet University
Lhasa, 850000

Abstract

Poverty is a major problem in the world. However, the internal mechanism of the occurrence and continuation of poverty has not been well explained. This paper tests the hypothesis of poverty trap based on the existing literature: poverty will cause the poor to have special psychological activities, which will affect their economic behavior, and ultimately lead to poor people can not escape poverty. Existing literature studies have shown that poverty can lead to tension and negative emotional state. At the same time, due to the limitation of attention and habitual behavior, people will make short-sighted and risk-averse decision-making. Therefore, there is a feedback cycle between poverty, negative psychology and economic decision-making, which makes the poor more poor and eventually develops into persistent poverty. Finally, this paper analyzes the mechanism of poverty transmission. Put forward the corresponding suggestion to the precision poverty alleviation.

Keyword: Poverty trap, Poverty psychology, Poverty behavior

1. The Introduction

By the end of 2015, the number of urban minimum living standards nationwide was 17.011 million, rural minimum guarantee target 49.036 million, rural strands personnel 5.167 million people, across the country impoverished population total of about 71.213 million people (see China civil administration statistical yearbook, 2016). How to solve the problem of poverty in China is a difficult problem facing the government and scholars. This paper tries to solve the problem of how poverty alleviates poverty in psychology, and tries to answer how poverty affects people's emotional state and economic choice.

Analyzed in this paper recent research found that poverty leads to negative emotions and stress, the effect may change people's behavior, in particular, poverty will reduce risk-taking willingness and give up the current willingness to earn a higher income in the future, such as the desire that adopting new technology relatively low, investment willingness in education and health also relatively low, it could reduce its future income, so poverty lead to poor choice of economic behavior made it hard to out of poverty. The transmission mechanism of poverty self-enhancement is shown in figure 1.

* Author introduction: Hongwei Pang, male, Central University of Finance and Economics, doctoral student, Tibet University lecturer, E-mail: 237305671@qq.com; Yanhong Gong (Corresponding Author), Tibet University, PhD, master tutor, E-mail: 184764901@qq.com.

Fund project: Thanks for the national natural science foundation "Research on the development of inclusive finance in Tibetan region under the influence of religious cultural factors (71763025)"

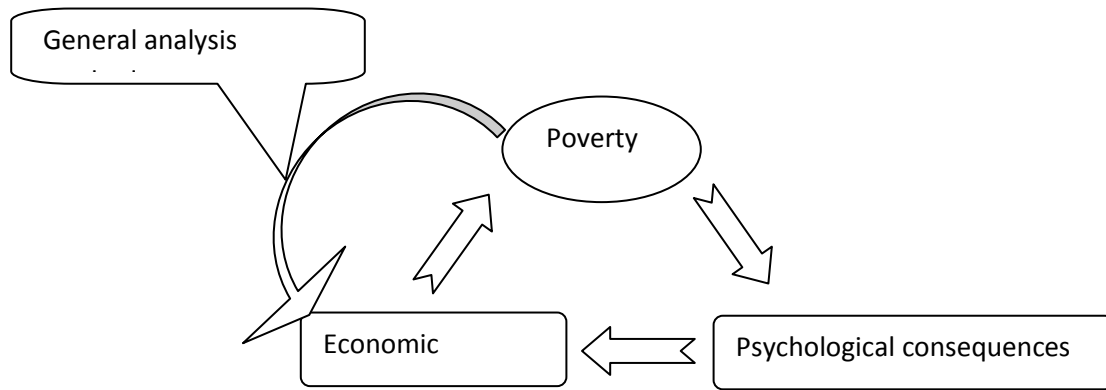


Figure 1. The transmission mechanism of poverty self-enhancement.

2. Review of economic behavior of the poor.

(1) the relationship between poverty and risk aversion and time preference.

People living in poverty, especially in developing countries, are more risk-averse and discount for future rewards than rich ones. The poor families of future returns the discount rate is significantly higher than the well-off family (E.C.Lawranc,1991), household to Ethiopia (M.Yesuf, R.Bluffstone, 2008), south India's household (J.L.P ender, 1996), the researchers also found that family wealth, the less compensation for the future and the higher the discount rate. In addition, studies have shown that the risk aversion of wealthy families or high-income families is low (L.Guiso, M.Paiella,2008 ; T.Dohmen, A.Falk, D.Huffman, U.Sunde, J.Schupp, G.G.Wagner, 2011) .

In addition to the analysis of the relationship between income, wealth and behavioral preference, there is also literature on the causal effect of poverty on risk taking and time discounting. Guiso and Paiella study found that income has a significant negative effect on risk aversion, in order to solve the low risk aversion may lead to high income and wealth of reverse causality problem, this paper use windfall as instrumental variables of income, the instrumental variable rationality lies in windfall and positively related to household income, wealth, and only through the channels of family income and wealth influence risk preference (L.Guiso, M.Paiella,2008). Tanaka experimentally confirmed Vietnam subjects such as remuneration for the future of the discount rate is negatively related with the income, that is, relative to the delay, large monetary reward, poor families tend to eyes, a small monetary reward (T.Tanaka, C.F.Camerer, Q.Nguyen, 2010). In this paper, the author uses unexpected income as the tool variable of income to deal with the potential reverse causality problem -- low discount rate may lead to high income. The effectiveness of this tool variable is the significant positive correlation between unexpected income and household income, and the discounting of future income is only influenced by family income. The regression of instrumental variables confirms that there is a negative relationship between the discount rate and the income of future compensation, indicating that poverty may be the cause of time discounting. It also confirms that poor people are more risk-averse than others.

Negative income shocks are a common feature of people living in poverty, and they are often vulnerable to negative income shocks due to the threshold of credit markets (A.Banerjee, 2003 ; A.Banerjee, E.duflo, 2008). In the randomized controlled trial, after the first stage of the effort to obtain income, the subjects were randomly assigned to the income impact. The author compared the experimental group (experienced negative impact) and control group (no experience negative income shocks) subjects pay discount level for the future, and select the appropriate initial endowment to ensure that the two groups of subjects in discount tasks have the same absolute income. The reverse causality between income level and time discount can be controlled by setting income level in stochastic control experiment. After controlling absolute income, the subjects who were subject to negative income shocks showed stronger current preference for economic behavior than those who did not, but from the positive income shocks in subjects found no obvious preferences change. Therefore, it can be concluded that negative income shocks (the universal characteristics of poverty) raise the time discounted level of the poor.

In a similar study, subjects were randomly assigned to a tighter (simulated poverty) or loose (simulation rich) budget constraints, asking them to make a series of purchase decisions (D. Spears, 2011). It is clear that those with tighter budgets face more difficult buying decisions because they can only afford a small amount of goods. Purchase decisions under difficult trading as a rare cognitive resource consumption, in the subsequent need to control the will, execution of test tasks, tighter budget subjects this ability are assumed to be damaged, because consumption decision-making behavior under a tight budget constraint, will power control, such as with test extrusion armrest and continues to be in stroop task performance, etc. (M. Muraven, 2011). So poverty seems to influence decisions by consuming the willpower and control of the poor. Because willpower and control are important factors in people's ability to delay gratification, it also affects time discounting.

(2) reasons for the impact of poverty on risk taking and time discounting.

The economic and social environment in which the poor live may affect their discount rate and risk-taking behaviour, even if the poor and the rich do not have a fundamentally different preference for time and risk. For example, the poor are often unable to access the formal credit market and are forced to borrow money through informal channels such as usury, friends and businessmen (A. Banerjee, 2003; A. V. Banerjee, E. Duflo, 2008). Poor people tend to borrow at higher rates and have limited lending, which means that the poor are more vulnerable to liquidity constraints. (A. Banerjee, 2003; A. V. Banerjee, E. Duflo, 2008) This choice of the poor is not due to its preference for current income, but due to the inadequacy of the informal financial market.

(L. Carvalho, S. Meier, S. W. Wang, 2014) supported this idea. The author measured the time preference behavior of American households in a relatively short time after the salary. The survey found that 22% of families were cash-strapped before and after the wage day. And spending more than 20 percent less than after the wage day, that family will be restricted by the liquidity constraints before payday. The study further shows that households prefer the current money income prior to their pay day, and that there is no significant difference in their preference for non-monetary income.

Expectations of future liquidity constraints also make it more likely that participants will prefer safe income and exclude risky income (C. Gollier, 2001). The risk and time preference of the subjects is not because their risk aversion is fundamentally different, but because the safe and stable income reduces the restriction of liquidity constraints. In addition, the poor are often exposed to potentially uninsured, non-dispersed risks, such as reduced crop yields, in order to avoid risks they showed lower risk-taking behavior, but they risk appetite and potential risk small crowd may not have the essential difference between (J. W. Pratt, R. Zeckhauser, 1987). In fact, the higher the potential risk, the higher the risk aversion (L. Guiso, M. Paiella, 2008).

The above economic theories and empirical evidence shows that poor families show two low wishes: the one is taking risks, the other one is giving up current income for a higher income in the future, is caused by liquidity constraints, the potential risk, etc, it is not necessary to require that the time and risk preferences of poor and wealthy families are fundamentally different. The contribution of this paper is to analyze the mechanism of poverty affecting time and risk preference, and firstly analyze the relationship between poverty and negative emotion and pressure. Secondly, this paper confirms that negative emotions and stress affect risk taking and time discounting. And finally, using random control of the subjects' liquidity constraints, potential background risks affect economic behavior channels, it is found that the time discounting and risk-taking preferences of the poor have an influence on the economic decisions, at the same time, it is confirmed that the poverty of self-reinforcing cycle.

3. Progress of research on poverty psychology.

(1) the relationship between poverty and emotion and stress.

Over the past few decades, the most popular view of the relationship between income and psychological welfare is the Easterlin paradox, income and self-sense happiness, life satisfaction is related to domestic scope, but not transnational, after meet the basic needs income also has nothing to do with happiness and life satisfaction, that is to say higher no significant relationship between income and happiness and satisfaction.

However, more updated data confirmed that the scope of international and domestic high income and high sense of happiness and life satisfaction are related, although the marginal incremental decline of happiness with the increase of income, but there is no saturation point, countries richer happiness is also higher (D.W.Sacks, B.Stevenson, J.Wolfers,2012;B.Stevenson, J.Wolfers,2008) .

In addition to studying poverty and happiness and life satisfaction, the literature also focused on poverty and mental health. According to the 2003 world health report, the stress and anxiety levels of the poorest fifth of the rich world are between 1.5 and 2 times higher than the richest fifth of the population. (C.Lund, A.Breen, A.J.Flisher, R.Kakuma,J.Corrigall, J.A.Joska, L.Swartz, V.Patel, 2010) ummarized 115 studies on poverty and mental health in low-income countries, and 79% of the literature showed that poverty was negatively correlated with good mental health. And income status and socioeconomic status are correlated with levels of the stress hormone cortisol. Lower income and education level (S.Cohen, J.E.Schwartz, E.Epel, C.Kirschbaum, S.sidney, T.Seeman, 2006) lower professional economic status (L.Li,C.Power, S.Kelly, C.Kirschbaum, C.Hertzman,2007;N.S.Saridjan, A.C.Huizink, J.A.Koetsier, V.W.Jaddoe, J.P.Mackenbach, A.Hofman, 2010) all raised their cortisol levels. Similar conclusions can be drawn from infants and children groups (G.W.Evans, K.English,2002; S.J.Lupien, S.King, M.J.Meaney, B.S.McEwen, 2000; E.Chen, S.Cohen, G.E.Miller,2010)

Studies have shown that poverty is associated with unhappiness, depression, anxiety and cortisol levels, but is poverty the cause?

(2) the causal effect of poverty on emotion and stress.

Research on the impact of poverty reduction on emotion and stress is generally conducted in random field experiments or natural experiments. One of the studies (J.Haushofer, J.Shapiro, 2013) measured the impact of unconditional cash transfer payments on Kenyan psychological well-being. Trials households were randomly given 0, 400, or \$1500 unconditional transfer payments, the measurement method of psychological welfare from the world values survey, stress and depression of depression scale, Cohen perceived stress scale, the stress hormone cortisol levels in saliva, etc to analysis method of happiness and life satisfaction. The study found a significant improvement in the psychological welfare variables when households received positive transfer payments, but the stress hormone cortisol levels declined only when households received more transfer payments. Similar studies (S.Baird, J.de Hoop,2013; F.M.Ssewamala, T.B.Neilands,J.Waldfoegel, L.Ismayilova, 2012; F.M.Ssewamala, C.-K.Han, T.B.Neilands, 2009;L.C.H.Fernald, R.Hamad, D.Karlan, E.J.Ozer, J.Zinman, 2008; E.J.Ozer, L.C.Fernald, A.Weber, E.P.Flynn, T.J.VanderWeele, 2011) demonstrated that cash transfer payments reduced the level of stress and depression of the tested subjects using random control experiments.

Other studies with a natural experiment way, such as introducing guaranteed income, lottery tickets, spending, get a pension plan, etc., related studies have found that increased revenue reduces hospitalization rate for patients with mental health problems (E.J.Costello, S.N.Compton, G.Keeler, A.Angold, 2003) , reduces the consumption of valerian (D.Cesarini,E.Lindqvist, R.Ostling, B.Wallace, 2013) , to improve the mental health level of the self report (A.Case, 2004; J.Gardner, A.J.Oswald, 2007;B.H.Apouey, A.Clark, 2009) . Some literatures by randomised controlled trial evaluating the effect of poverty alleviation projects, when subjects were randomly assigned to give health insurance (A.Finkelstein, S.Taubman, B.Wright, M.Bernstin, J.Gruber, J.P.Newhouse, H.Allen, K.Baicker, 2012) , improve living conditions (J.Ludwig, 2013), and give reliable water (F.Devoto, E.Duflo, P.Dupas, W.Pariante, V.Pons, 2011) ,improvement of the psychological welfare level of the subjects.

As for the impact of increased poverty on psychological welfare, such as the bad weather for farmers in a period of time. A study examined whether random negative income shocks caused Kenyan farmers cortisol levels increase (M.Chemin, J.deLaat, J.Haushofer, 2013) , research shows that when the drought could lead to crop reductions, farmers cortisol levels and self-induction stress level is higher. This relationship does not apply to non-agricultural workers, and the relationship is more pronounced in families with agricultural income than other sources of income. Another study (B.B.Arnetta, S.O.Brenner, L.Levi, R.Hjelm, 1991) measured cortisol levels in 354 Swedish blue-collar workers before and after they lost their jobs, and found that workers' cortisol levels

rose significantly after they lost their jobs. But the workers' job losses were caused by factory closures, not by higher levels of cortisol. And the test subjects were all in a factory, and the friction between subjects during the experiment inevitably weakened the research conclusion. Further studies (S.Mendolia, 2013) analyzed the effects of unemployment on family mental health by using declining enterprises as external causes of unemployment.

These studies show a causal relationship between poverty, psychological well-being and stress levels. We summarized 25 studies on the impact of poverty reduction and poverty reduction on psychological well-being, including randomized controlled trials and natural experiments. 18 studies show that poverty reduction has a positive effect on psychological well-being and psychological pressure, studies show that poverty is only the 5 to involve the welfare and the stress of some psychological variables (such as certain mental disorder), the 2 had no effect on study. Overall, scholars study conclusion inconsistent, and there is a measure of the problem, the heterogeneity of intervention trial or change poverty impact on specific psychological structure of heterogeneity.

Based on the above research findings, it is not difficult to find that poverty reduction often leads to negative emotions or stress, and poverty reduction has the opposite effect. The following is a question about whether negative emotions and stress affect risk taking and time discounting? Is it the channel through which poverty affects economic behaviour ?

4. Research progress on the influence of poverty psychology on economic behavior.

Poor people are more vulnerable to income and health because of tighter credit constraints and the potential risk of not being insured, which means poor people are powerless in their living environment. This will lead to stress and negative emotional states, such as unhappiness and anxiety, and then this article answers whether this state has an independent impact on decision-making.

(I) the effect of poverty psychological consequences on risk preference.

In a recent study (A.Cohn, J.Engelmann, E.Fehr, M.A.Marechal,2013) , in a risk-bearing test subjects were randomly given a strong or weak hands electric shocks, unpredictable impact is caused by fear, psychological pressure of a reliable method (A.Schmitz, C.Grillon, 2012) , The study found that the participants were more at risk aversion (stimulated by a strong current) than in a low threat environment (buoyed by low current). In another study, by making the subject to watch horror films make their fear (L.Guiso, P.Sapienza, L.Zingales, 2013) , a young man in the film suffered inhuman torture, this fear cause subjects who degree of risk aversion is higher than the control group subjects. Other studies have also shown that fear leads to risk aversion (R.Raghunathan, M.T.Pharm, 1999; T.Kugler, T.Connolly, L.D.Ordonez, 2012) , and other literature suggests that the choice can be through cognitive evaluation of risk aversion (cognitive assessment can weaken the fear that fear effects of film) to reduce (R.M.Heilman, L.G.Crisan, D.Houser, M.Miclea, A.C.Miu, 2010). As a result, the risk aversion of the subjects was increased by fear and reduced risk aversion by reducing fear.

Although most studies have confirmed that fear and anxiety have a significant positive effect on risk aversion, one study noted that this effect does not exist (A.Conte, M.V.Levati, C.Nardi, 2013). However, the study did not elaborate on the process of fear-inducing, and asked the subjects to answer 100 different questions after the fear guide. If emotional guidance cannot be sustained through proper guidance, the emotional impact will remain relatively short. The problem with this study may be that the fear of being tested is weakened in the process of answering 100 questions.

Risk aversion can also be controlled with the drug hydrocortisone, because it increases the level of cortisol, just as psychological stress affects the nervous system. In placebo-controlled trials (N.Kandasamy, B.Hardy, L.Page, M.Schaffner, J.Graggaber, 2014) , half of the volunteers eight-day injection of hydrocortisone, drugs can be analyzed and the experiment of short-term (1 day) injection and long-term continuous injection (8 days). The study found that hydrocortisone did not affect the risk appetite in the short term, but the long-term injection of hydrocortisone increased the risk aversion level.

Injection of placebo subjects and short-term control group subjects, in risk bearing testing tasks 50% of subjects

to choose risky alternative choice, long-term injection of hydrocortisone subjects only 20% choose to have the risk of alternative choice. Other studies (M.Mather, M.A.Gorlick, N.R.Lighthall, 2009; A.J.Porcelli, M.R.Delgado, 2009; L.Cingl, J.Cahlikova, 2013; N.R.Lighthall, M.Mather, M.A.Gorlick, 2009) , with a well-known behavioral inducement (cold compression experiment or trier social pressure testing) confirmed the stress induced risk aversion to choose, but after the test subjects to obtain benefit is only considered risk aversion behavior, without considering the economic behavior of the person being tested (A.J.Porcelli, M.R.Delgado, 2009), and is limited to women (N.R.Lighthall, M.Mather, M.A.Gorlick, 2009). The stress-induced test did not work for men, because the male cortisol levels did not change significantly before and after stress induction. In general, the risk aversion of subjects who were induced by fear and stress was higher in the experiment.

(2) the impact of poverty psychological consequences on time discounting.

Some literature points out that negative emotions and stress lead to a higher time discount (J.S.Lerner, Y.Li, E.U.Weber, 2013; J.Ifcher, H.Zarghamee, 2011;S.Cornelisse, 2013) Where (S.Cornelisse, 2013) lets the person who is being tested watch the movie that makes it sad., after get the subject in the current small choice between monetary compensation and delaying earn big money, the mission's goal is to measure time discount, such as measure subjects to delay receive currency devaluation. Those who watched the induced sad films were less inclined to choose large, deferred monetary rewards than those in the control group, meaning that the members of the experimental group had a strong desire to discount future earnings, suggests that sadness has weakened its patience. On the contrary, another study (J.Ifcher, H.Zarghamee, 2011) showed that watching films that elicit positive emotions can improve the patience of those who are tested.

Similar to the risk taking test study, it was also proven to increase the time discount by controlling hydrocortisone to increase the stress hormone cortisol in pharmacology. A study of healthy subjects randomly injected 10mg of hydrocortisone and placebo (S.Cornelisse, 2013),and was then given a time discount task. The results showed that the time discount level of the experimental group was higher than that of the control group, indicating that the test group had a higher valuation than the future value of the currency. Therefore, both negative emotions and higher cortisol levels can increase the time discount level, and positive emotions can have the opposite effects (J.S.Lerner, Y.Li, E.U.Weber, 2013; J.Ifcher, H.Zarghamee, 2011; S.Cornelisse, 2013) . The focus of future research is to explain whether chronic stress caused by poverty is consistent with the behavioral effects of short-term stress in laboratory design.

What is the mechanism by which negative emotions and stress lead to time discounting? One possible explanation is that stress leads to a shift of goal-oriented behavior to habitual behavior (L.Schwabe, O.T.Wolf, 2009). If habitual behavior is immediate consumption, it can be predicted that due to habitual reaction, pressure will increase time discount. Another possible explanation is that stress and negative emotions tend to focus attention on clues. If immediate consumption is more prominent than delaying consumption, it can be predicted that stress and negative emotions can lead to time discounting. With this view is consistent, Shah, points out that the poor people are often irrational about time, money, or other types of scarce resources, it is because of their attention is prominent clues contain (A.K.Shah, S.Mullainathan, E.Shafir, 2012) . Mani et al. found that poor people performed worse on intelligence and cognitive control testing tasks than the rich when they were reminded of their economic status. In similar tests,Farmers perform poorly before the harvest (A.Mani, S.Mullainathan, E.Shafir, 2012) before harvest. It is not hard to see that the lack of material seems to change the distribution of people's attention, which is not conducive to their performance in the test. The impact of poverty on risk-taking and time discounting may be analogous to the mechanism of attention distribution, which directs the poor to live and secure income, but this conjecture has not been confirmed.

5. Summary and discussion

The feedback cycle of poverty is outlined above, which leads to adverse economic behaviour through the psychological impact of poverty, which ultimately exacerbates poverty. This feedback cycle may prolong poverty eradication time for the poor, and if the feedback cycle is strong enough, the poor cannot escape poverty.

The existing literature has the following shortcomings: first, the weakest link between poverty, psychological

consequences and economic decision-making is the effect of stress and negative emotions (psychological consequences) on economic decision-making. The theoretical results are fascinating, but they still do not accurately explain which aspects of stress and which negative emotions affect economic decision-making. In addition, the verification of the current relationship is limited to laboratory studies, and the literature rarely distinguishes between long-term and short-term pressures on economic decisions. Because poverty is often a long-term process, future research should examine the effects of chronic stress changes on economic decision-making in both laboratory and field experiments. Second, there is not enough evidence for the causal effects of different poverty reduction programs on life satisfaction and welfare. We are not sure if some poverty reduction programs work better than others. If cash transfer payments are better than health insurance or crop disaster insurance to reduce poverty. The third; The time dimension has been almost entirely unstudied, such as whether poverty reduction brings about permanence or only temporary psychological welfare levels have not been confirmed. To address this problem, multiple assessments of poverty reduction projects need to be undertaken.

What kind of poverty reduction program or intervention can break this cycle of poverty? There are three ways to disrupt this cycle of improving the welfare of the poor: first, direct transfer to reduce poverty; Secondly, reduce the psychological impact of poverty; Finally, improve the economic decision-making behavior of the poor. These three ideas are not mutually exclusive, but when we consider the effects of poverty reduction, we should individually analyze the poverty reduction role played by each link.

The first destructive cycle possibility---- Direct transfer payments reduce poverty, a series of studies measuring the impact of direct poverty reduction programmes on psychological consequences and economic behavior. Most of the literature examined the effect of the cash transfer payment method for poverty reduction projects, which produced a better welfare effect (C.Blattman, N.Fiala, S.Martinez, 2013; S.de Mel, D.McKenzie, C.Woodruff, 2008; C.Paxson, N.Schady, 2010; F.M.Tseng, D.Petrie, 2012; L.C.H.Fernald, P.J.Gertler, L.M.Neufeld, 2008) .

The second possibility of breaking the loop possibility---- reducing the psychological impact of poverty is a key link for poor people to get out of poverty. Although previous randomized controlled experiments suggest that interpersonal psychotherapy help Ugandans daily economic task (P.Bolton, J.Bass, R.Neugebauer, H.Verdeli, K.F.Clougherty, P.Wickramaratne, L.Speelman, L.Ndogoni, M.Weissman, 2003) , but this kind of intervention in the economy behavior research is still in its infancy. Although the study was aimed at depression groups, the study noted that stress and negative emotional distress could also be applied to people who are not clinically depressed. Other literatures show that psychological intervention can bring economic benefits to non-clinical population (M.E.Seligman, T.A.Steen, N.Park, C.Peterson, 2005) .

The third destructive cycle possibility---- taking economic behaviour as a direct goal, some poverty alleviation project aims to improve the poor economy behavior, obtained the enormous benefit, such as to set up a regular savings account needy (N.Ashraf, D.Karlan, W.Yin, 2006; R.H.Thaler, S.Benartzi, 2004) , to provide a saving warning letter to the poor (D.Karlan, M.McConnell, 2010), to provide free metal storage bins for the poor (P.Dupas, J.Robinson, 2013) and other methods to increase saving.

Currently proposed by the Central Committee of the party Precision Poverty alleviationmake the poor completely out of poverty, the current implementation of precision poverty alleviation projects should be integrated into consideration of the psychological cost of poverty and poverty alleviation of psychological benefits, psychological factors as the hand of precision poverty alleviation projects. Only in this way can the poverty cycle be cut off and the poor achieve a real sense of poverty.

References

E. C. Lawrance, J. Polit. Econ. 99, 54–77 (1991)

M. Yesuf, R. Bluffstone, Wealth and Time Preference in Rural Ethiopia, Environment for Development Discussion, 111–113 (2008)

- Pender N. The Periodontal Ligament in Health and Disease, 2nd edition (1995). Barry K. B. Berkowitz, Bernard J. Moxham and Hubert N. Newman. Times International Publishers Ltd, London. Price: £149.50. ISBN: 0-723-41931-0[J]. *European Journal of Orthodontics*, 1996, 18(6):670-671
- L. Guiso, M. Paiella, *J. Eur. Econ. Assoc.* 6, 1109–1150 (2008)
- T. Dohmen, A. Falk, D. Huffman, U. Sunde, J. Schupp, G. G. Wagner, Individual risk attitudes: Measurement, determinants, and behavioral consequences. *J. Eur. Econ. Assoc.* 9, 522–550 (2011)
- T. Tanaka, C. F. Camerer, Q. Nguyen, Risk and time preferences: Linking experimental and household survey data from Vietnam. *Am. Econ. Rev.* 100, 557–571 (2010)
- A. Banerjee, in *Advances in Economics and Econometrics: Theory and Applications*, Eighth World Congress, vol. 3., chap. 1,12-15
- A. Banerjee, E. Duflo, Do firms want to borrow more: Testing credit constraints using a targeted lending program. *Rev. Econ. Stud.* J. Haushofer, D. Schunk, E. Fehr, Negative income shocks increase discount rates. University of Zurich Working Paper,246-251 (2013)
- D. Spears, Economic decision-making in poverty depletes behavioral control. *B.E. J. Econ. Anal. Poli.* 202-213 (2011)
- Muraven M, Baumeister R F, Tice D M. Ego Depletion: A Resource Model of Volition, Self-Regulation, and Cont. [J]. *Social Cognition*, 2011, 18(2):130-150.
- L. Carvalho, S. Meier, S. W. Wang, Poverty and economic decision making: evidence from changes in financial resources at payday. Center for Economic and Social Research Working Paper,12-20 (2014)
- C. Gollier, in *Household Portfolios*, L. Guiso, M. Haliassos, T. Jappelli, Eds. (MIT Press, Cambridge, MA, 2001), chap. 1,34-37
- J. W. Pratt, R. Zeckhauser, *Econometrica* 55, 143–154 (1987). R. Easterlin, Does economic growth improve the human lot? Some empirical evidence, in *Nations and Households in Economic Growth: Essays in Honour of Moses Abramowitz*, P. A. David, M. W. Reder, Eds. (Academic Press, New York and London, 1974), pp. 89–125
- D. W. Sacks, B. Stevenson, J. Wolfers, in *Developmental Challenges in a Postcrisis World*, The World Bank, Ed. (The World Bank, Washington, DC, 2012), pp. 283–315
- B. Stevenson, J. Wolfers, *Brookings Pap. Econ. Act.* 2008, 1–102 (2008)
- C. Lund, A. Breen, A. J. Flisher, R. Kakuma, J. Corrigall, J. A. Joska, L. Swartz, V. Patel, Poverty and common mental disorders in low and middle income countries: A systematic review. *Soc. Sci. Med.* 71, 517–528 (2010)
- S. Cohen, J. E. Schwartz, E. Epel, C. Kirschbaum, S. Sidney, T. Seeman, Socioeconomic status, race, and diurnal cortisol decline in the Coronary Artery Risk Development in Young Adults (CARDIA) Study. *Psychosom. Med.* 68, 41–50 (2006)

- L. Li, C. Power, S. Kelly, C. Kirschbaum, C. Hertzman, Life-time socio-economic position and cortisol patterns in mid-life. *Psychoneuroendocrinology* 32, 824–833 (2007)
- N. S. Saridjan, A. C. Huizink, J. A. Koetsier, V. W. Jaddoe, J. P. Mackenbach, A. Hofman, C. Kirschbaum, F. C. Verhulst, H. Tiemeier, Do social disadvantage and early family adversity affect the diurnal cortisol rhythm in infants? The Generation R Study. *Horm. Behav.* 57, 247–254 (2010)
- G. W. Evans, K. English, The environment of poverty: Multiple stressor exposure, psychophysiological stress, and socioemotional adjustment. *Child Dev.* 73, 1238–1248 (2002).
- S. J. Lupien, S. King, M. J. Meaney, B. S. McEwen, Child's stress hormone levels correlate with mother's socioeconomic status and depressive state. *Biol. Psychiatry* 48, 976–980 (2000).
- E. Chen, S. Cohen, G. E. Miller, How low socioeconomic status affects 2-year hormonal trajectories in children. *Psychol. Sci.* 21, 31–37 (2010)
- J. Haushofer, J. Shapiro, Household response to income changes: Evidence from an unconditional cash transfer program in Kenya. Massachusetts Institute of Technology Working Paper ,31-50(2013)
- S. Baird, J. de Hoop, B. Özler, Income shocks and adolescent mental health. *J. Hum. Resour.* 48, 370–403 (2013)
- F. M. Ssewamala, T. B. Neilands, J. Waldfogel, L. Ismayilova, The impact of a comprehensive microfinance intervention on depression levels of AIDS-orphaned children in Uganda. *J. Adolesc. Health* 50, 346–352 (2012)
- F. M. Ssewamala, C.-K. Han, T. B. Neilands, Asset ownership and health and mental health functioning among AIDS-orphaned adolescents: findings from a randomized clinical trial in rural Uganda. *Soc. Sci. Med.* 69, 191–198 (2009)
- L. C. H. Fernald, R. Hamad, D. Karlan, E. J. Ozer, J. Zinman, Small individual loans and mental health: A randomized controlled trial among South African adults. *BMC Public Health* 8, 409 (2008).
- E. J. Ozer, L. C. Fernald, A. Weber, E. P. Flynn, T. J. VanderWeele, Does alleviating poverty affect mothers' depressive symptoms? A quasi-experimental investigation of Mexico's Oportunidades programme. *Int. J. Epidemiol.* 40, 1565–1576 (2011).
- E. J. Costello, S. N. Compton, G. Keeler, A. Angold, Relationships between poverty and psychopathology: A natural experiment. *JAMA* 290, 2023–2029 (2003)
- D. Cesarini, E. Lindqvist, R. Östling, B. Wallace, Estimating the causal impact of wealth on health: Evidence from the Swedish lottery players. New York University Working Paper,31-50 (2013)
- A. Case, Does money protect health status? Evidence from South African pensions, in *Perspectives on the Economics of Aging*, D. A. Wise, Ed. (University of Chicago Press, Chicago,24-37 (2004)
- J. Gardner, A. J. Oswald, Money and mental wellbeing: A longitudinal study of mediumsized lottery wins. *J. Health Econ.* 26, 49–60 (2007)

- B. H. Apouey, A. Clark, Winning big but feeling no better? The effect of lottery prizes on physical and mental health. *J. Health Econ.*, 15-26(2009)
- A. Finkelstein, S. Taubman, B. Wright, M. Bernstein, J. Gruber, J. P. Newhouse, H. Allen, K. Baicker; Oregon Health Study Group, The Oregon health insurance experiment: Evidence from the first year. *Q. J. Econ.* 127, 1057–1106 (2012)
- J. Ludwig et al., Long-term neighborhood effects on low-income families: Evidence from Moving to Opportunity. NBER Working Paper No. w18772,31-40 (2013)
- F. Devoto, E. Duflo, P. Dupas, W. Pariente, V. Pons, Happiness on tap: Piped water adoption in urban Morocco. NBER Working Paper No. w16933,21-36 (2011)
- M. Chemin, J. de Laat, J. Haushofer, Poverty and stress: Rainfall shocks increase levels of the stress hormone cortisol. Massachusetts Institute of Technology Working Paper, 21-53(2013)
- B. B. Arnetz, S.-O. Brenner, L. Levi, R. Hjelm, I.-L. Petterson, J. Wasserman, B. Petrini, P. Eneroth, A. Kallner, R. Kvetnansky, M. Vigas, Neuroendocrine and immunologic effects of unemployment and job insecurity. *Psychother. Psychosom.* 55, 76–80 (1991)
- S. Mendolia, The impact of job loss on family mental health. School of Economics University of New South Wales Working Paper ,44-52(2013)
- A. Cohn, J. Engelmann, E. Fehr, M. A. Maréchal, Evidence for countercyclical risk aversion: An experiment with financial professionals. UBS International Center of Economics in Society Working Paper No. 004,31-44 (2013)
- A. Schmitz, C. Grillon, *Nat. Protoc.* 7, 527–532 (2012)
- L. Guiso, P. Sapienza, L. Zingales, Time varying risk aversion. NBER Working Paper No. w19284,41-50 (2013)
- R. Raghunathan, M. T. Pham, *Organ. Behav. Hum. Decis. Process* 79, 56–77 (1999)
- T. Kugler, T. Connolly, L. D. Ordóñez, *J. Behav. Decis. Making* 25, 123–134 (2012)
- R. M. Heilman, L. G. Crişan, D. Houser, M. Miclea, A. C. Miu, *Emotion* 10, 257–265 (2010)
- [46] A. Conte, M. V. Levati, C. Nardi, The role of emotions on risk preferences: An experimental approach. Jena Economic Research Papers No. 2013-046 ,38-43(2013)
- N. Kandasamy, B. Hardy, L. Page, M. Schaffner, J. Graggaber, A. S. Powlson, P. C. Fletcher, M. Gurnell, J. Coates, Cortisol shifts financial risk preferences. *Proc. Natl. Acad. Sci. U.S.A.* 111, 3608–3613 (2014)
- M. Mather, M. A. Gorlick, N. R. Lighthall, To brake or accelerate when the light turns yellow? Stress reduces older adults’ risk taking in a driving game. *Psychol. Sci.* 20, 174–176 (2009)

- A. J. Porcelli, M. R. Delgado, Acute stress modulates risk taking in financial decision making. *Psychol. Sci.* 20, 278–283 (2009)
- L. Cingl, J. Cahlikova, Risk preferences under acute stress. IES Working Paper No. 17/2013,53-62(2013)
- N. R. Lighthall, M. Mather, M. A. Gorlick, Acute stress increases sex differences in risk seeking in the balloon analogue risk task. Working Paper ,78-83 (2009)
- J. S. Lerner, Y. Li, E. U. Weber, The financial costs of sadness. *Psychol. Sci.* 24, 72–79 (2013)
- J. Ifcher, H. Zarghamee, Happiness and time preference: The effect of positive affect in a random-assignment experiment. *Am. Econ. Rev.* 101, 3109–3129 (2011)
- S. Cornelisse et al., Time-dependent effect of hydrocortisone administration on intertemporal choice. SSRN Working Paper Series ,23-25(2013)
- L. Schwabe, O. T. Wolf, Stress prompts habit behavior in humans. *J. Neurosci.* 29, 7191– 7198 (2009)
- A. K. Shah, S. Mullainathan, E. Shafir, Some consequences of having too little. *Science* 338, 682–685 (2012)
- A. Mani, S. Mullainathan, E. Shafir, J. Zhao, Poverty impedes cognitive function. *Science* 341, 976–980 (2013)
- C. Blattman, N. Fiala, S. Martinez, Credit constraints, occupational choice, and the process of development: long run evidence from cash transfers in Uganda. SSRN Scholarly Paper No. ID 2268552,78-83 (2013)
- S. de Mel, D. McKenzie, C. Woodruff, Returns to capital in microenterprises: Evidence from a field experiment. *Q. J. Econ.* 123, 1329–1372 (2008)
- C. Paxson, N. Schady, Does money matter? The effects of cash transfers on child development in rural Ecuador. *Econ. Dev. Cult. Change* 59, 187–229 (2010)
- F. M. Tseng, D. Petrie, Handling the endogeneity of income to health using a field experiment in Taiwan. *Dundee Discussion Papers in Economics* ,28-33 (2012)
- L. C. H. Fernald, P. J. Gertler, L. M. Neufeld, Role of cash in conditional cash transfer programmes for child health, growth, and development: an analysis of Mexico’s Oportunidades. *Lancet* 371, 828–837 (2008)
- N. Ashraf, D. Karlan, W. Yin, Tying Odysseus to the mast: Evidence from a commitment savings product in the Philippines. *Q. J. Econ.* 121, 635–672 (2006)
- R. H. Thaler, S. Benartzi, Save More Tomorrow: Using behavioral economics to increase employee saving. *J. Polit. Econ.* 112, (S1), 164–187 (2004)

- D. Karlan, M. McConnell, S. Mullainathan, J. Zinman, Getting to the top of mind: how reminders increase saving. NBER Working Paper No. w16205 ,78-83(2010)
- P. Dupas, J. Robinson, Why don't the poor save more? Evidence from health savings experiments. *Am. Econ. Rev.* 103, 1138–1171 (2013)
- P. Bolton, J. Bass, R. Neugebauer, H. Verdeli, K. F. Clougherty, P. Wickramaratne, L. Spielman, L. Ndogoni, M. Weissman, Group interpersonal psychotherapy for depression in rural Uganda: A randomized controlled trial. *JAMA* 289, 3117–3124 (2003)
- M. E. Seligman, T. A. Steen, N. Park, C. Peterson, Positive psychology progress: Empirical validation of interventions. *Am. Psychol.* 60, 410–421 (2005)