Do Gender and Age matter in Trading Discipline?

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Abstract

Numerous studies of self-discipline are found in psychological discipline. Scholars are discussing self-discipline relates to human behavior from several aspects such as academic performances, crime, health behavior, etc. From various review, we find that age and gender have been two most popular variables that accompany the research of self-discipline. In finance area, we find only few reviews about discipline relates to trader performance and behaviors. We investigate whether gender and age play an important role in futures trading discipline. The results find age plays role of trader's discipline behavior while gender doesn't. Man and woman have no much different in their discipline level and the higher the traders' ages are, the lower the discipline is.

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Keywords: discipline, gender, age

I.   Introduction

Self-discipline is a popular topic in psychology studies nowadays. Many aspects of psychology such as academic performance, crime, health behavior, etc, are relating their study to self-discipline. It is explained as the ability to control one's feeling and overcome one's weakness (Oxford Dictionary) and the ability to make yourself do the things you know you ought to do, without someone making you do them (Longman Dictionary). This term is usually understood to be synonymous with self-control and self-regulation (Duckworth and Seligman, 2006). In this study, we use these three phrases interchangeably by following Duckworth and Seligman (2006) studies that defining those phrases as the ability to suppress proponent responses in the service of a higher goal and further specifying that such a choice is not automatic but rather requires conscious effort.

More specific components of self-control was studied by Baumeister et al. (1994) who identified four major domains of self-control—controlling thoughts, emotions, impulses, and performance—which would be important to include in an overall index of self-control. Gottefredson and Hirschi's (1990) self-control theory assumes that humans are rational beings and that when they are the products of poor or ineffective parenting, they may have low self-control.

Interesting invention from psychology self-discipline has been our start point to investigate discipline in finance. Locke and Mann (2005) define discipline as adhering either to preset exit prices or to predetermine offset intervals, by using two measurements: the relative speed at which traders open-close positions and exposure—determined by the magnitude of paper losses per contract on trades held for a long time.

Some studies deem the traders' discipline as "to avoid losses with unrealized holding positions". Such as Silber (1984) mentioned the more disciplined trader will quickly to open-to-close the positions and similarly Locke and Mann (2005) use transaction speed and trading exposure to measure trader discipline. The empirical results show that the faster the speed of transactions and the more easily investor closed out the trading position, the more likely to have a good performance. Investors who tend to hold more unrealized investment losses, their performance is worse.

The legendary William O'Neil states "you need definite rules and a profit-and-loss plan that always cut short and limit every single loss by limiting the loss smaller and the rule on profits is let it larger". That means if investor has wrong prediction twice and right prediction once, they still can survive. Based on this idea, an appropriate approach to measuring the level of a trader's discipline should involve comparing the trader's realized gains to losses. This study proposes some discipline measures by tracking trader's trading losses and gains' level to examine whether traders cut losses short and let profits run.

Many psychological studies were discussing self-discipline issue related to gender differences (Bembenutty & Karabenick, 1998; Cole, P. M., 1986; Davis, 1995; Meece & Painter, 2008; Sarni, 1984; etc) and age differences (Ball et al., 1984; Wilson & Herrnstein, 1985; Zuckerman et al., 1978; etc). The results about self-discipline related to gender and age differences are various.

More studies find girls are more self-disciplined than boys and few studies find no gender difference. However, no studies find boys are more self-disciplined. For age differences, not many scholars certainly write down which range of age is practicing higher self-discipline. Two main categories of result are: first, self-control is readily apparent

early in life and tends to be stable across the life span. Second, self-discipline is found higher in older adult than adolescent because of the decrease of impulsivity when people grow mature and old.

Although there are studies that investigate trader's discipline, we find that till now no scholar has investigated self-discipline related to gender and age in finance area. This study hopes to fill the gap about whether the differences gender and age affect the behavior of investor's self-discipline and explore whether the financial behavior walks in the same path with psychology behavior.

We find several differences implementations of discipline in psychology and finance. Our empirical results find age plays role of trader's discipline behavior while gender doesn't. Man and woman have not much different in their discipline level and the higher the traders' ages are, the lower the discipline is.

II.   Literature Review

2.1 Studies of Discipline

Some research about self-discipline below has interesting findings in several aspects, such as academic performance, crime, health behavior, etc. Duckworth and Seligman (2005) find that major reason for students falling short of their intellectual potential is their failure to exercise self-discipline. Tangney et al. (2004) find that self-discipline is correlated positively with self-reported grades, as well as a broad array of personal and interpersonal strengths, such as better adjustment (higher self esteem), better relationships and interpersonal skills, secure attachment, and more optimal emotional responses. Zimmerman (2008) argues that to be successful, learners need to engage in self-regulation. Wolfe and Johnson (1995) find self-discipline to be the only one among 32 measured

personality variables that predicted college grade point average (GPA) more robustly than Scholastic Aptitude Test (SAT) scores do.

Self-discipline is also explored health behavior; Taylor et al. (2001) find that theory of self-regulation is found to serve as a useful framework in understanding the role of goal-setting and goal-striving in the management of chronic conditions.

Self-control is also studied in the crime and society behavior. In 1990, Gottefredson and Hirschi present their self-control theory, contend that people lacking in self-control are predisposed toward criminal behaviors and acts analogously to crime—imprudent behaviors. They posited that "people who lack self-control will tend to be impulsive, insensitive, physical (as opposed to mental), risk taking, short sighted, and nonverbal, and they will tend therefore to engage in criminal and analogous acts" (Gottefredson and Hirschi, 1990). In contrast, "people with higher self-control are less likely under all circumstances throughout life to commit crime".

Reviewing the definition of self-discipline generally, we also look specifically into discipline in Finance. Few references discuss the traders' discipline which is defined as "to avoid losses with unrealized holding positions". The same as Silber (1984) mentioned more disciplined trader will quickly to open-to-close the positions. Locke and Mann (2005) interpret trader discipline as the outcome of rational decisions to exit trades once informational advantages dissipate, using the metric of time instead of price change as the predetermined constraint. Disciplined traders presumably resist holding onto large potential losses that they hope will turn around, so that disciplined traders will be less likely to sit on large paper loss.

Locke and Mann (2005) propose that usually professional investors use "discipline" as the strategy to control of behavior by the minimum of the potential impact. They use Chicago Board of Trade futures dealer transactions data in 1995 to study the investment

behavior of professional investors' discipline and disposition effect. Researchers divided into two periods to investigate trader's behavior change and discipline through two methods of measurement tests: transaction speed and trading exposure. Transaction speed is the speed of close position and trading exposure is paper loss value after investor trades for a period of time. The empirical results show that the faster the speed of transactions and the more easily investor closed out the trading position, the more likely to have a good performance. Investors who tend to hold more unrealized investment losses will have worse performance.

From definition of self-discipline generally and in finance area explain above, we can conclude that self-discipline is about how to control individual behavior doing by herself/himself, so that the consequences by doing so hopefully can produce a better performance (more profit/advantages and less loss/disadvantages).

2.2. Self-Discipline and Gender

When further to explore some characters in discipline behavior, some researchers examine if gender difference is related to self-discipline. Meece and Painter (2008) studying gender differences related to self-regulation of learning have found across different academic subject and academic tasks. Bembenutty (2007) investigate gender differences among college students with regard to their use of self-regulation and academic performance. He finds gender differences shown in final course grade, self-efficacy, rehearsal, organization, and effort regulation. Bembenutty and Karabenick (1998) assess whether there are gender differences in use of self-regulatory learning strategies and found girls perform better than boys. However, Bembenutty (1999) finds that there was not a significant main effect for gender on GPA. These findings have been inconsistent

The role of gender in Gottfredson and Hirchi (1990) self-control theory is also examined by several researchers. Higgins (2004) has examined self-control theory by using a nonrandom sample of college students for showing that the measures of parental management, self-control, and deviance have different distributions for males and females Furthermore, Burton et al. (1998), LaGrange and Silverman (1999), and Tittle et al. (2003) have shown that low self-control explains the gender gap in males' and females' criminal and delinquent behavior

Most of studies find girls are more self-discipline than boys, even some studies find no difference gender matter with self-discipline. The finding in Duckman and Seligman (2006) shows girls to be more self-disciplined than boys, and this advantage is more relevant to report card grades than to achievement or aptitude tests. Cole, P. M. (1986), Davis (1995), and Sarni (1984) find preschool and school-age girls to be better at regulating emotional expression than boys. Humphrey (1982) finds that according to both teacher- and self-report questionnaires, fourth-grade girls were more self-controlled than boys. Kendall and Wilcox (1979) find that elementary school teachers rated their female students as more self-controlled than their male students. Eysenck et al. (1984) find girls aged 7 to 15 years to be slightly more self-disciplined than boys, but this difference failed to achieve significance. Logue, Forzano, and Ackerman (1996) find no gender differences in self-control with young children. Mischel, Shoda, and Peake (1988) never report gender as a significant predictor variable of self-control. Concur with Silverman (2003) that inadequate sample sizes and imprecise measures (particularly a problem when a single self-discipline measure is used) may explain the failure of some studies to detect gender differences.

Self-control theory by Gottfredson and Hirchi 1990 also assumes that females are less likely to commit crime than males because females have higher levels of self-control. This occurs because parents apply different tasks to form self-discipline behavior for males and females. Gottfredson and Hirchi's (1990) assumption has been tested and supported by several researchers such as Burton et al. (1998), Higgins (2004) and Higgins and Tewksbury (2006).

2.3. Self-Discipline: Persistency and Impulsivity

Several questions that would be beard in mind after the finding of gender differences in self-discipline is whether self-discipline persists over the age? What about impulsivity? Is it related to self-discipline?

Duckworth and Seligman (2006) find that it is not clear whether gender differences in self-discipline persist into adulthood. Feingold (1994) and Tangney et al. (2004) have reported no gender differences in self-discipline for adult, but Kirby and Marakovic (1996) and Silverman (2003) have found that women are slightly better at self-control than men. Duckworth and Seligman (2006) find that certainly the most obvious gender differences in self-discipline among adults are mainly related to the domains from which self-discipline problems emerge. For example, more women than men suffer from binge eating, whereas more men than women are alcohol or drug abusers (Nolen-Hoeksema and Corte, 2004). Baumeister and Vohs (2004) have pointed out that in adulthood, this pattern may arise from gender differences in impulse strength rather than in trait self-discipline.

In psychological research, impulsivity of decision making can be used to investigate

self-control. Ball et al. (1984), Wilson and Herrnstein (1985) and Zuckerman et al. (1978) indicate that impulsive behavior are more likely to occur in the earlier parts of the live span, even when such behaviors are associated with considerable risks. Young adults are less likely to take long-term consequences of their behavior into account. Older adults appear to be less impulsive and might therefore be expected to weight long-term interests more heavily. Impulsive and risk-taking tendencies in particular tend to decrease rapidly from high levels in late adolescence and young adulthood to much lower levels by around age 30 and then they decrease slightly or remain relatively stable when they are getting older. (Green et al., 1996)

2.4. Self-Discipline and Age

Individual differences in self control are readily apparent early in life and tend to be fairly stable across the life span (Wulfret et al., 2002). Gottfredson and Hirschi (1990) contend that self-control once established in age eight to ten, remains relatively stable over the life-course. They make clear that self-control differences between individuals are static but that self-control within individuals is dynamic, Gottfredson and Hirschi states "the low self-control group continues over time to exhibit low self-control. . . its size, however, declines." This statement leads to the expectation that with age, the population of individuals in the low self-control group should decrease, but for those remaining in the low self-control group, their delinquency should always be higher than those in the normal/high self-control group.

Turner and Piquero (2002) examined the stability of self-control of Gottfredson and Hirschi' General Theory of Crime. Turner and Piquero (2002) find that trend for both sexes

is to incur higher self-control with age, but they also find that there is at least partial evidence that offender's and non-offender's levels of self-control are in a 'state of flux' in childhood and relatively fixed thereafter, which supports Gottfredson and Hirschi's stability hypothesis.

III. Data and Methodology

3.1 Data

The data used in this study is from the complete transaction records of Taiwan Stock Exchange Capitalization Weighted Stock Index (TAIEX) Futures contracts (hereafter, TX, the tick symbol) from the Taiwan Futures Exchange (TAIFEX) maturing between January 1, 2006 and December 31, 2006. We divide one year into two periods and choose the trader that trades actively more than 90 days in each period. Traders should trades actively in both periods. We filter the data and use only individual traders for several reasons; first, we need specific demographic data such as gender and ages which only can be found in individual traders. Second, individual traders trade for themselves; therefore their trades are not complicated by agency relationships or hedging motives. They are driven purely by the motivation to accumulate their wealth, so that we can appropriately investigate their behavior. Third, since many institutions employ more than one trader who trade in rotating shifts, trades rendered by institutions reflects the behaviors of more than a single individual.

After screening some lack information data, total 273 most active trader's data are left as our observations. They have the complete transaction history and trade more than 90 days in each period. One trading day is counted if traders do trade in this day. The oldest trader is 76 years old while the youngest trader is 22 years old. We have 191 men (70%) and 82 women (30%) in our sample. Trader trades for 5,577 contracts averagely on the

observation period.

3.2. Methodology

This study's discipline measures is based on legendary William O'Neil who states "you need definite rules and a profit-and-loss plan" that "always cut short and limit every single loss" by limiting the loss to 7% or 8% of the purchase price. On the other hand, his rule on profits is to "take 20% profits when you have them." By implying these rules, the realized gains will be more than twice greater than the realized losses. It means if investor has wrong prediction twice and right prediction once, they still can survive. From this base, they see that to measure the level of a trader's discipline, an appropriate approach involves comparing the trader's realized gains to losses.

First of all, we should measures the level of a trader's discipline. We propose a discipline measurement to measure the extent of discipline (undiscipline), use average gain (loss) realized over specific sample period to be a benchmark of such gain (loss), and then compare each loss or gain to this benchmark to decide whether that loss or gain is a disciplined loss (undisciplined gain) or not. A 'gain' is called disciplined gain if this realized gain per contract is greater than average realized loss per contract over the sample period. A 'loss' is called undisciplined loss if this realized loss is greater than average realized gain per contract over the sample period. In this paper, we present two sets of measurements: undiscipline to gauge the level of the lack of discipline and discipline to determine whether traders let profits run.

$$Undiscipline\ 1\ (UD1) = \frac{\sum RL_i^{UN} \times Q_i}{\sum RG_j \times Q_j} \quad \text{(eq.1)}$$

$$Undiscipline\ 2\ (UD2) = \frac{\sum RL_i^{UN} \times Q_i}{\sum RL_j \times Q_j} \quad \text{(eq.2)}$$

$$\text{Discipline 1 (D1)} = \frac{\sum RG_i^D \times Q_i}{\sum RL_j \times Q_j}$$

<div align="right">(eq.3)</div>

$$\text{Discipline 2 (D2)} = \frac{\sum RG_i^D \times Q_i}{\sum RG_j \times Q_j}$$

<div align="right">(eq.4)</div>

Where,

- RL_i^{UN} is the per-contract realized loss of trade i due to lack of discipline if trade i has a realized loss per contract greater than the average realized gain per contract over the sample period,

- RG_i^D is the per-contract realized gain of trade i due to being disciplined if trade i has a realized gain per contract greater than the average realized loss per contract over the sample period,

- Q_i is the number of contracts liquidated in trade i, and,

- RG_j (RL_j) is the realized gain (loss) per contract in trade j, for all trades over the sample period.

These four measures are calculated over various sample periods for each trader following the four-step procedure:

1. At first, we identity each offset's result whether it was a gain or loss, then calculate the realized gains per contract (RG) and average realized gain (ARG) for this trader's all gains' offset, or realized loss per contract (RL) and average realized loss (ARL) for this trader's all losses' offset.

2. For offsets that have a RL greater than the ARG, we label these losses as undisciplined losses, RL^{UN}, as the result of lack of discipline. Calculating RL^{UN} with the number of contracts in the offset, Q, we get the total dollar amount of these loss offsets, $RL^{UN} \times Q$. To take the sum of all $RL^{UN} \times Q$ over the whole period and call it the aggregate undisciplined losses

3. For offsets that have a RG greater than the ARL, we label these gains as disciplined gains, RG^D, as the result of disciplined profit. Calculating RG^D with the number of contracts in this offset, Q, we get the total dollar amount of these gain offsets, $RG^D \times Q$. To take the sum of all $RG^D \times Q$ over the whole period and call it the aggregate disciplined gains

4. Calculate the total realized gain (loss) from all offsets that result in gains (losses), by multiplying each RG_j (RL_j) with the number of contracts in the offset, Q_j, then taking the sum and we will get the result $\sum RG_j \times Q_j$ ($\sum RL_j \times Q_j$)

5. Divide aggregate undisciplined losses by aggregate gains (losses) to arrive at Undiscipline1 (Undiscipline2) and aggregate disciplined gains by aggregate losses (gains) to arrive at Discipline1 (Discipline2).

   According to our measurement, an undisciplined trader is regarded as keeping loss positions and will incur higher risk with the quantity. A disciplined trader will limit his/her undisciplined losses so that the losses will not wipe out the gains. A disciplined trader will make sure his/her gains are high enough to cover losses so the D1 will be higher.

   From the explanation above, we may make conclusion that the higher Undiscipline1 and Undiscipline2, the lower the level of discipline the trader has, because Undiscipline1 measures how much undisciplined losses erode total realized gains, while Undiscipline2 measures how much undisciplined losses are responsible for total realized loss. Separately, Discipline1 measures how traders' total disciplined realized gains are able to cover total realized losses, while Discipline2 measures how much disciplined gains contribute to total realized gains. Obviously, a larger value both Discipline1 and Discipline2 have, the more disciplined the traders are.

IV. Empirical Result

   As previously stated, we divide our data into two half year periods for each to see if

there is any behavior change in the later period. "$D1_{t-1}$" and "$D2_{t-1}$" represent discipline level for the first period and "$D1_t$" & "$D2_t$" represent discipline level for the later period. "$UD1_{t-1}$" & "$UD2_{t-1}$" represent undisciplined level for the first period and "$UD1_t$" & "$UD2_t$" represent undisciplined level for the second period. Qty_{t-1} and Qty_t represent how many contracts a trader trades in the first period and the second period. NP_{t-1} and NP_t represent aggregate total profits by ticks for the first and second period of trade. One tick represents Taiwan Dollars 200, about US$6.25 in exchange rate 32.

Table 1 Pearson's Correlation between Variables

	Age	Gender	D1t-1	UD1t-1	D2t-1	UD2t-1	D1t	UD1t	D2t	UD2t	Qtyt-1	NPt-1	Qtyt	NPt
Age	1													
Gender	0.002	1												
D1t-1	-0.037	0.056	1											
UD1t-1	0.158**	-0.015	-0.272**	1										
D2t-1	0.086	-0.024	0.739**	0.07	1									
UD2t-1	0.170**	0.009	0.021	0.751**	0.337**	1								
D1t	0.002	-0.055	0.249**	0.112	0.316**	0.199**	1							
UD1t	0.179**	-0.014	-0.101	0.551**	0.198**	0.630**	-0.171**	1						
D2t	0.067	-0.029	0.497**	0.271**	0.808**	0.450**	0.512**	0.157**	1					
UD2t	0.153*	0.017	0.054	0.657**	0.349**	0.885**	0.013	0.804**	0.379**	1				
Qtyt-1	-0.172**	0.08	-0.039	-0.281**	-0.319**	-0.382**	-0.073	-0.336**	-0.357**	-0.403**	1			
NPt-1	0.005	0.024	0.216**	-0.312**	0.089	-0.061	0.045	-0.067	0.044	-0.045	-0.173**	1		
Qtyt	-0.204**	0.075	-0.033	-0.258**	-0.293**	-0.358**	-0.058	-0.330**	-0.334**	-0.393**	0.957**	-0.141*	1	
NPt	0.051	-0.081	0.029	0.016	0.012	-0.046	0.117	-0120*	0.035	-0.066	-0.225**	0.313**	-0.154*	1

*p<0.05, **p<0.01
Table 1 shows us the correlation between main variables that we observe in this study. D1 defines Discipline1, UD1 defines Undiscipline1, D2 defines Discipline2, UD2 defines Undiscipline2, Qty defines Quantity of trade, NP defines Net Profit, (t-1) defines first period and (t) defines second period.

Age is measured by years. Gender equals to 0 if trader is male; 1 otherwise. Age and Gender shows relative slight and insignificant correlation in table 1. Age shows inconsistent correlation with discipline and positive correlation with undisciplined, it

means the older the trader is the higher undisciplined level a trader has. Age has significant negative correlation with quantity; it means the older the trader is, the smaller the quantity he/she trades. For gender variable, there is insignificant, inconstant and small correlation with disciplined and undisciplined level, quantity or net profit. This result may make us find difficulties to conclude the correlation between gender and other variables in general.

Consistent pattern is also found between undisciplined level with quantity in each period and cross section. The relationship of undisciplined level and quantity are negatively correlated and significantly. From this pattern, it seems that traders are rational. When traders have high undisciplined level, they reduce the contracts they trade. For the quantity itself, it has negative direction with net profit, which persists over observation period: Qty_{t-1} and NP_{t-1}, Qty_{t-1} and NP_t, Qty_t and NP_{t-1}, Qty_t and NP_t. It means that the larger the amount of contracts trade by traders, the smaller the profit it will be generated. However it needs deep analysis if variation exist different types of traders.

Then, we further examine whether age and gender have big impact on disciplined level by applying T-test into the different categories of disciplined level, age and gender. Due to interesting finding that the behavior of people with high discipline are significantly different from people with low discipline, so that if we put whole sample into test without separating the disciplined level, we may find biases. To further explore whether there exist any differences with age and gender between traders with higher and lower disciplined level, we compare traders with 30% highest discipline to those with 30% lowest discipline. Therefore, we use dummy variable to represent the categories where '-1' represents the lower discipline category, '1' represents the higher discipline category,

We also may observe whether the discipline measure of different aged categories is significantly different, so we divide ages into two categories: 'young' and 'old'. Traders that lay on 30% youngest age of whole sample between ages 22 to 42 are included into

'young' category; and Traders that lay on 30% oldest age of whole sample between ages 52 to 77, are included into 'old' category. By regressing the first period (t-1) on the second period (t), we would like to know whether trader's disciplined category in the first period (t-1) brings significant difference and impact to the second period's (t) disciplined level. Discipline variables from table 2 until table 11 represent trader's discipline level at the second period.

Table 2 T-test of Different Age Category's Discipline Level under Different Gender and Discipline Category

Discipline Category	Gender Category (Observation)	Discipline variable	Mean		Mean Difference Old-Young	T-value
			Old	Young		
Low	Man (Old = 15, Young = 14)	D1	0.363	0.335	0.028	0.125
		UD1	0.534	0.361	0.173	1.077
		D2	0.293	0.227	0.066	0.843
		UD2	0.412	0.412	0.079	0.792
	Woman (Old = 8, Young = 4)	D1	0.424	0.395	0.029	0.115
		UD1	0.545	0.811	-0.265	-2.298*
		D2	0.336	0.448	-0.112	-0.920
		UD2	0.565	0.670	-0.105	-0.789
High	Man (Old = 16, Young = 22)	D1	0.714	0.744	-0.030	-0.220
		UD1	0.478	0.352	0.126	1.415
		D2	0.589	0.536	0.053	0.866
		UD2	0.498	0.397	0.101	1.387
	Woman (Old = 8, Young = 10)	D1	0.376	0.719	-0.343	-1.437
		UD1	0.396	0.193	0.203	2.402**
		D2	0.518	0.443	0.075	0.667
		UD2	0.498	0.278	0.220	1.989

*p<0.1, **p<0.05, ***p<0.01

Table 2 shows us the comparison of discipline level between different age category under different categories of discipline and gender. D1 means Discipline1; D2, Discipline2; UD1, Undiscipline1, and UD2, Undiscipline2. They are defined in detail as eq.1-eq.4. We use D1 as the benchmark of discipline category. Low discipline category is trader who laying on 30% lowest level of D1. High discipline category is trader who laying on 30% highest level of D1.

Under discipline and gender category, we find that age category (young and old) plays a role only on women. In table 2, no matter high or low the discipline category, there is no significant difference in their discipline level between young and old men. Both young and old women are found statistically significant difference in their UD1 variable no matter in low or high discipline category and in their UD2 variable in high discipline

category, implying that women traders have significantly different undisciplined level between young and old traders.

Table 3 T-test of Different Gender's Discipline Level under Different Age and Discipline Category

Discipline Category	Age Category (Observation)	Discipline variable	Mean		Mean Difference Man – Woman	T-value
			Man	Woman		
Low	Young (Man = 14, Woman =4)	D1	0.335	0.395	-0.060	-0.178
		UD1	0.361	0.811	-0.450	-2.639**
		D2	0.227	0.448	-0.221	-1.883
		UD2	0.333	0.670	-0.338	-2.553**
	Old (Man = 15, Woman =8)	D1	0.363	0.424	-0.061	-0.268
		UD1	0.534	0.545	-0.012	-0.060
		D2	0.293	0.336	-0.043	-0.468
		UD2	0.412	0.565	-0.153	-1.197
High	Young (Man = 22, Woman = 10)	D1	0.744	0.719	0.025	0.157
		UD1	0.352	0.193	0.159	2.107**
		D2	0.536	0.443	0.093	1.134
		UD2	0.397	0.278	0.118	1.340
	Old (Man = 16, Woman = 8)	D1	0.714	0.376	0.337	1.604
		UD1	0.478	0.396	0.083	0.710
		D2	0.589	0.518	0.071	0.885
		UD2	0.498	0.498	-0.000	-0.004

$*p<0.1, **p<0.05, ***p<0.01$
Table 3 shows us the comparison of discipline level between different gender under different categories of discipline and age. D1 means Discipline1; D2, Discipline2; UD1, Undiscipline1, and UD2, Undiscipline2. They are defined in detail as eq.1-eq.4. We use D1 as the benchmark of discipline category. Low discipline category is trader who laying on 30% lowest level of D1. High discipline category is trader who laying on 30% highest level of D1. Trader with age less than 42 is categorized as 'young' and trader with age more than 52 is categorized as 'old'.

Under discipline and age category in table 3, we find that gender only plays a role on young traders. No matter high or low the discipline category, there is no significant difference between old men and old women in their discipline level. Both young men and women are found statistically significant difference in their UD1 variable no matter in low or high discipline category and in their UD2 variable in low discipline category. It means no matter the traders' gender are, and no matter traders are included in which discipline category, there is significantly different undiscipline level between young men and women

traders.

Due to smaller sample resulting from too many categories, it might make us unable to simply find the real differences among discipline level. Next stage, we simply test only different category of age and gender related to discipline level; or only different category of discipline and one of different category of age or gender related to discipline level.

Table 4 T-test of Different Gender's Discipline Level under Different Age Category Gender

| Age Category | Discipline Level | Mean | | Mean Difference | T-value |
		Man	Woman	Man – Woman	
Young (Man = 63, Woman = 26)	D1	0.552	0.551	0.001	0.008
	UD1	0.376	0.354	0.021	0.304
	D2	0.419	0.410	0.008	0.155
	UD2	0.393	0.389	0.004	0.065
Old (Man = 58, Woman = 23)	D1	0.564	0.421	0.143	1.091
	UD1	0.544	0.582	-0.038	-0.392
	D2	0.459	0.442	0.017	0.308
	UD2	0.463	0.551	-0.087	-1.456

*p<0.1, **p<0.05, ***p<0.01
Table 4 shows us the comparison of discipline level between different genders under different age category. D1 means Discipline1; D2, Discipline2; UD1, Undiscipline1, and UD2, Undiscipline2. They are defined in detail as eq.1-eq.4. Trader with age less than 42 is categorized as 'young' and trader with age more than 52 is categorized as 'old'.

Table 4 shows that gender does not play any roles in discipline level under age category. There is no significant difference found among discipline variables, it means no matter young or old age, woman and man have no difference in their discipline level.

Table 5 T-test of Different Age Category's Discipline Level under Different Gender

| Gender (Observation) | Discipline Level | Mean | | Mean Difference | T-value |
		Old	Young	Old – Young	
Man (Old = 63, Young = 58)	D1	0.552	0.564	-0.012	-0.132
	UD1	0.376	0.544	-0.168	-2.623**
	D2	0.419	0.459	-0.040	-0.952

		0.393	0.463	-0.071	-1.566
Woman (Old = 26, Young = 23)	D1	0.551	0.421	0.130	1.133
	UD1	0.354	0.582	-0.228	-2.296**
	D2	0.410	0.442	-.0316	-0.516
	UD2	0.389	0.551	-0.162	-2.136**

*p<0.1, **p<0.05, ***p<0.01

Table 5 shows us the comparison of discipline level between different age categories under different gender. D1 means Discipline1; D2, Discipline2; UD1, Undiscipline1, and UD2, Undiscipline2. They are defined in detail as eq.1-eq.4. Trader with age less than 42 is categorized as 'young' and trader with age more than 52 is categorized as 'old'.

Table 5 shows that age plays a role in undiscipline level under gender category. There are significant undisciplined differences between old and young groups for UD1 variables regardless in men or women, and for UD2 variable in women. It means no matter man or woman, different ages of traders have different undiscipline level.

Table 6 T-test of Different Age Category's Discipline Level under Different Discipline Category

Discipline Category (Observation)	Discipline Level	Mean		Mean Difference Old – Young	T-value
		Old	Young		
Low (Old= 19, Young = 27)	D1	0.152	0.106	0.046	0.707
	UD1	0.318	0.696	-0.378	-2.927***
	D2	0.148	0.232	-0.085	-2.488**
	UD2	0.266	0.468	-0.203	-2.470**
High (Old = 30, Young = 23)	D1	0.962	1.115	-0.153	-1.084
	UD1	0.274	0.359	-0.086	-1.650
	D2	0.591	0.698	-0.107	-2.613**
	UD2	0.392	0.473	-0.081	-1.386

*p<0.1, **p<0.05, ***p<0.01

Table 6 shows us the comparison of discipline level between different age categories under different discipline category. D1 means Discipline1; D2, Discipline2; UD1, Undiscipline1, and UD2, Undiscipline2. They are defined in detail as eq.1-eq.4. We use D1 as the benchmark of discipline category. Low discipline category is trader who laying on 30% lowest level of D1. High discipline category is trader who laying on 30% highest level of D1. Trader with age less than 42 is categorized as 'young' and trader with age more than 52 is categorized as 'old'.

We find in table 6 that age plays some roles in undiscipline and discipline level under discipline category. There are significant differences in UD1 and D2 variables no matter the discipline category and in UD2 variables for low discipline. It means no matter high or low discipline category a trader is included, different ages of traders have different

undiscipline level and discipline level. Age matters in trading discipline. Young traders have good discipline level but bad undiscipline level simultaneously.

Table 7 T-test of Different Gender's Discipline Level under Different Discipline Category

Discipline Category (Observation)	Discipline Variable	Mean		Mean Difference Man – Woman	T-value
		Man	Woman		
Low (Man = 56, Woman = 24)	D1	0.125	0.093	0.031	0.762
	UD1	0.470	0.531	-0.061	-0.491
	D2	0.155	0.196	-0.042	-1.500
	UD2	0.316	0.390	-0.073	-1.081
High (Man = 55, Woman = 27)	D1	1.185	0.870	0.315	1.231
	UD1	0.332	0.355	-0.023	-0.487
	D2	0.642	0.607	0.035	0.874
	UD2	0.462	0.453	0.009	0.171

*p<0.1, **p<0.05, ***p<0.01
Table 7 shows us the comparison of discipline level between different genders under different discipline category. D1 means Discipline1; D2, Discipline2; UD1, Undiscipline1, and UD2, Undiscipline2. They are defined in detail as eq.1-eq.4. We use D1 as the benchmark of discipline category. Low discipline category is trader who laying on 30% lowest level of D1. High discipline category is trader who laying on 30% highest level of D1.

Table 7, under discipline category, shows that gender does not play any roles in discipline level. There are no significant differences for discipline variables no matter the discipline category is. It means no matter high or low discipline category a trader is included, different gender of traders have no significant differences for their discipline level.

Does the gender or age affect trader's trading discipline/undiscipline? Although having done the discipline and undiscipline level difference test between different category, we need further examination by regression test. In the meantime we also take the experience into account to control the potential bias due to trading experience. Experience is measured by trader's trading day. One is added into the trading day variable if trader trades on Monday; otherwise, that is, not trade in this day, zero is added. Next the trader trades on Friday. The trading day is accounted as two instead of five. The higher trading day the trader has, the more experienced she/he is. The trader whose trading day is more

than median is defined as '1'; otherwise, as '0'. The result in table 8 shows that gender has negative sign on D1 and D2. It seems female is less disciplined in face of realized gain but insignificantly. Coefficient of control variable experience is not significant no matter on discipline or undiscipline. Age has the significantly positive impact on both undiscipline measures. It means old traders have higher undiscipline level, that is, the older the traders are the higher their undiscipline level are. The old traders let their loss enlarge when realize losses.

Table 8 Regression of Discipline Level to Gender, Age and Experience

Dependent variable:	D1	UD1	D2	UD2
Regressor:				
Gender	-0.089	-0.003	-0.009	0.014
	(-0.93)	(-0.06)	(-0.31)	(0.40)
Age	-0.012	0.084**	0.017	0.048**
	(-0.21)	(2.89)	(0.94)	(2.33)
Experience	0.026	-0.080	-0.053	-0.036
	(0.30)	(-1.73)	(-1.86)	(-1.10)
Obs.	273	273	273	273
Adjusted R^2	-0.008	0.035	0.008	0.016

Note: *$p<0.1$, **$p<0.05$, ***$p<0.01$; intercept is omitted.
Table 8 shows us the relationship by regressing discipline level on gender, age and experience. D1 means Discipline1; D2, Discipline2; UD1, Undiscipline1, and UD2, Undiscipline2. They are defined in detail as eq.1-eq.4. We use dummy variable to define gender, age and experience. For gender, '0' defines man and '1' defines woman. Trader with age less than 42 is defined as '1', age between 42 and 52 is defined as '2' and trader with age more than 52 is defined as '3'. Experience is measured by trading day. One is counted into trading day if trader trades in this day; otherwise, that is, not trade in this day, zero is added. The higher trading day the trader has, the more experienced she/he is. Trader with trading day more that median is defined as '1'; otherwise, '0'.

Table 9 shows that the direction of gender variable related to discipline level is not consistent between discipline and undiscipline; besides, it is not significant, so that we may have difficulty in taking gender into account. Discipline categories are moving along in the same direction with D1 and D2 significantly. Traders who are categorized in high discipline category have high discipline level for sure. The direction of experience variable

related to discipline level is not consistent between discipline and undiscipline, but they are significant for UD1 and D2. Negative sign for both UD1 and D2 related to experience variable make us difficult to describe the relationship between discipline level and experience, we cannot find whether people with more experience practice higher or lower discipline.

Table 9 Regression of Discipline Level to Gender, Discipline Category and Experience

Dependent variable:	D1	UD1	D2	UD2
Regressor:				
Gender	-0.094	-0.002	-0.014	0.013
	(-1.01)	(-0.03)	(-0.51)	(0.37)
Discipline Category	0.183***	-0.030	0.142**	0.028
	(3.29)	(-0.98)	(8.88)	(1.32)
Experience	0.005	-0.093**	-0.074***	-0.049
	(0.06)	(-1.98)	(-3.00)	(-1.49)
Obs.	273	273	273	273
Adjusted R^2	0.031	0.008	0.230	0.003

Note: *p<0.1, **p<0.05, ***p<0.01 ; intercept is omitted.
Table 9 shows us the relationship by regressing discipline level on gender, discipline category and experience. D1 defines Discipline1, D2 defines Discipline2, UD1 defines Undiscipline1, and UD2 defines Undiscipline2. They are defined in detail as eq.1-eq.4. We use dummy variable to define gender, discipline category and experience. For gender, '0' defines man and '1' defines woman. For discipline category, trader who laying on 30% lowest level of D1 is defined as '1', trader who laying on 30% highest level of D1 is defined as '3', otherwise is defined as '2'. Experience is measured by trading day. One is counted into trading day if trader trades in this day; otherwise, that is, not trade in this day, zero is added. The higher trading day the trader has, the more experienced she/he is. Trader with trading day more than median is defined as '1'; otherwise, '0'.

Discipline categories move at the same direction with D1 and D2 in table 10. Traders who are categorized in high discipline category have high discipline level for sure. Age moves positively with all discipline level, but only UD1 and UD2 are highly significant, leading us to conclude that the older the traders are, the higher their undiscipline level is. Experience variable is found highly significant to D2 with negative sign, seems to lead us to conclude that the less experience the traders have, the higher their discipline level is. A short summary in this table result shows the older traders have the higher undiscipline level

than the younger. It seems old traders are unwilling to cut loss when realizes their losses. Higher discipline traders indeed have well-disciplined D1 and D2 in realized gains but not sure for UD1 and UD2 in realized losses.

Table 10 Regression of Discipline Level to Age, Discipline Category and Experience

Dependent variable:	D1	UD1	D2	UD2
Regressor:				
Age	0.004	0.083***	0.029*	0.050**
	(0.06)	(2.82)	(1.85)	(2.46)
Discipline Category	0.182***	-0.022	0.145***	0.032
	(3.26)	(-0.75)	(9.05)	(1.55)
Experience	-0.001	-0.078*	-0.070***	-0.038
	(-0.02)	(-1.68)	(-2.83)	(-1.19)
Obs.	273	273	273	273
Adjusted R^2	0.028	0.037	0.239	0.024

Note: *p<0.1, **p<0.05, ***p<0.01 ; intercept is omitted.
Table 10 shows us the relationship by regressing discipline level on age, discipline category and experience. D1 defines Discipline1, D2 defines Discipline2, UD1 defines Undiscipline1, and UD2 defines Undiscipline2. They are defined in detail as eq.1-eq.4. We use dummy variable to define age, discipline category and experience. Trader with age less than 42 is defined as '1', age between 42 and 52 is defined as '2' and trader with age more than 52 is defined as '3'. For discipline category, trader who laying on 30% lowest level of D1 is defined as '1', trader who laying on 30% highest level of D1 is defined as '3', otherwise is defined as '2'. Experience is measured by trading day. One is counted into trading day if trader trades in this day; otherwise, that is, not trade in this day, zero is added. The higher trading day the trader has, the more experienced she/he is. Trader with trading day more that median is defined as '1'; otherwise, '0'.

The regression result shown in table 11 reinforces previous findings (table 8 to 10), because similar phenomenon is found. Gender is still insignificant. The explaining power in all of the models seems no huge change. Generally speaking, gender does not matter in trading discipline and undisciplined measure. The others are similar as table 10. The older traders have the higher undiscipline level than the younger. Old traders seems unwilling to cut loss in face of realizes their losses. Higher discipline traders indeed have well-disciplined D1 and D2 in realized gains Experience variable is found significantly negative relationship with to UD1 and D2. That seems experienced traders will lower their

undisciplined behavior in face of their realized losses but cannot behave the consistent

behavior in face of realized gain because negative sign reduce the D1 measure.

Table 11 Regression of Discipline Level to Gender, Age, Discipline Category & Experience.

Dependent variable:	D1	UD1	D2	UD2
Regressor:				
Gender	-0.094	-0.002	-0.014	0.013
	(-1.01)	(-0.04)	(-0.51)	(0.37)
Age	0.004	0.083***	0.029*	0.050**
	(0.07)	(2.81)	(1.85)	(2.46)
Discipline Category	0.183***	-0.022	0.145***	0.032
	(3.27)	(-0.75)	(9.04)	(1.54)
Experience	0.006	-0.078*	-0.069***	-0.039
	(0.07)	(-1.67)	(-2.78)	(-1.21)
Obs.	273	273	273	273
Adjusted R^2	0.028	0.033	0.237	0.021

Note: *p<0.1, **p<0.05, ***p<0.01 ; intercept is omitted.

Table 11 shows us the relationship by regressing discipline level on age, gender discipline category and experience. D1 defines Discipline1, D2 defines Discipline2, UD1 defines Undiscipline1, and UD2 defines Undiscipline2. We use dummy variable to define age, discipline category and experience. For gender, '0' defines man and '1' defines woman. Trader with age less than 42 is defined as '1', age between 42 and 52 is defined as '2' and trader with age more than 52 is defined as '3'. For gender, '0' defines man and '1' defines woman. For discipline category, trader who laying on 30% lowest level of D1 is defined as '1', trader who laying on 30% highest level of D1 is defined as '3', otherwise is defined as '2'. Experience is measured by trading day. One is counted into trading day if trader trades in this day; otherwise, that is, not trade in this day, zero is added. The higher trading day the trader has, the more experienced she/he is. Trader with trading day more that median is defined as '1'; otherwise, '0'.

V.   Conclusion

This study examines the different impact of gender and age on disciplined measure

in face of the realized gains and undisciplined measure in face of realized losses. These

findings in this study show us different ages of traders have significant difference of

undiscipline level, and no matter their ages are, women and men have no significant

difference in their discipline or undiscipline level. In the other words, it reveals that in

futures trading market, age plays a role of trader's discipline behavior while gender doesn't. The higher the traders' ages are, the higher their undiscipline level is, implying that the older the trader is, the lower the discipline is.

Overall, we find that gender is not the key factor to define traders' discipline level. Man and women have no much different in their trading discipline level. Our result supports some previous psychological studies such as Feingold (1994) or Tangney et al. (2004) that reported no gender differences in self-discipline exists for adult.

Previous literature finds impulsivity has negative impact on discipline, because impulsivity actuated or swayed by emotional or involuntary impulses. Young people are found having higher impulsivity than older people, because they are less likely to take long-term consequences into account while older adults appear to value long-term interests more heavily. Impulsivity also has tight relation with risk-taking tendencies.

Although futures market is highly risk, we find that older people have higher undiscipline level, which might result from that older traders value too heavy in their expectation of rebound when they face loss, so that they ride their losses positions overlong. Older traders may suffer emotional unwillingness of cutting losses and tend to be overconfident of their own view about market trend in the future time. This phenomenon supports the finding of previous study that older people tend to value the long term interest more heavily.

In other hand, our findings do not fully support the point of view that impulsivity had close relation with risk taking tendencies. Our empirical result shows older people tend

to deal with high risk because of maintaining higher loss positions, which might result from that older people are less impulsive.

To sum up, we find no significant impact of gender on discipline, but here exists impact of age on discipline, especially for older people since they are less impulsive and would like to ride the loss, which might be fine in equity market, but will be more risky in futures market because futures market is highly leverage. The controlling variable "experience" shows traders have lower undisciplined behavior when they face of the losses but cannot enhance in face of the gains.

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