Chapter 17
Is There Enough Psychology in Behavioural Economics? Personality Types and Human Propensities

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Abstract An attempt to add a psychological background into an analysis of human behaviour is made in the chapter. Behaviours are viewed in the context of human propensities. Problems connected with dependencies between personality types and chosen propensities are discussed. The main focus is put on differences in propensities with respect to personality orientations. To identify personality types, Rotter's locus of control concept as well as Fromm's personality theory is applied. Some methodological issues related to propensities are presented. In an empirical example the differences in propensity to risk, consume, invest and save with respect to personality features are analysed. The results obtained in the research are compared with the observations of Barber and Odean.

Keywords Rotter's locus of control • Fromm's personality theory • Personality types • Human propensities • Propensity to risk • Propensity to consume • Propensity to invest • Propensity to save • Overconfidence

17.1 Introduction

Nowadays there is a lot of research confirming the importance of psychological features' impact on decision making processes, see for example (Rabin 1996; Doszyń 2012). Most of these outcomes come from behavioural economics, in which psychological factors are treated as being decisive. In this chapter it is stated that personality type is an important factor determining human decisions and

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actions. In economics, but also in behavioural economics, those kinds of factors are rarely taken into account. Instead of personality features, other proxy variables are added into decision making models. According to the presented hypothesis, more psychology should be put into behavioural economics, by adding into an analysis more psychological variables, such as, for instance, personality features. On the other hand, taking into account psychological factors should not be done without the recognition of conditions of the appearance of these factors. If it were true, it would become in contradiction with the theory that personality is shaped by the environment of life (Fromm 1941). Such variables as being male, age and marital status have a very strong impact on individual reactions on a stimulus (Barber and Odean 2001).

To sum up, the main hypothesis of this chapter is that personality types determine human propensities. To identify personality type, Rotter's locus of control concept and Fromm's character orientation theory are used. These psychological features are analysed in context of such propensities as the propensity to risk, consume, invest and save.

17.2 Personality Types

In psychology there are many theories of personality (Eysenck 2013). In this chapter two concepts are discussed:

1. Rotter's locus of control theory,
2. Fromm's theory of character orientations.

Locus of control refers to an individual's perception about the underlying causes of events in life. According to Rotter, individuals hold beliefs about what causes life occurrences. These beliefs, in turn, affect attitudes and behaviours. It could be stated that locus of control orientation is a belief about whether the results of our actions depend on what we do (internal control orientation) or on factors outside our personal control (external control orientation). Locus of control could be understood as a continuum, ranging from external to internal. Individuals with external locus of control believe that their life is guided by fate, luck or other external circumstances. On the other hand, individuals with an internal locus of control believe that life is guided by their personal decisions and efforts. The question is whether locus of control determines such human propensities as the propensity to risk, consume, invest or save.

According to Fromm, personality could be described as a set of innate and acquired psychical properties that characterise a given person (Fromm 1990; Doszyń 2013). Temper is constituted by innate properties but character—by acquired features. Fromm stated that character could be shaped (to some degree). He also thought that character influences not only behaviour, but also feelings and thoughts.

Table 17.1 Positive and negative aspects of characterological orientations according to Fromm (Fromm 1990; Doszyń 2013)

Positive aspects	Negative aspects
Receptive orientation	
Acceptable, sensitive, sacrificing, modest, engaging, elastic, adapted, idealistic, polite, optimistic, trustful	Passive, without opinion, subordinate, without pride, parasitical, without rules, servile, unrealistic, cowardly, wishful, naive
Exploitative orientation	
Active, able to be initiative, demanding, proud, impulsive, self-confident, winsome	Exploitative, aggressive, egocentric, conceited, impetuous, arrogant, seductive
Hoarding orientation	
Practical, economical, cautious, with reserve, patient, careful, conservative, calm, not stressful, systematic, loyal	Without imagination, stingy, suspicious, cold, lethargic, anxious, stubborn, pedantic, obsessive, greedy
Marketing orientation	
Purposeful, changeable, youthful, thinking about future, open minded, sociable, experimenter, not dogmatic, effective, curious, intelligent, adaptive, tolerant, brilliant, generous	Opportunistic, inconsequent, infantile, without a past and a future, without values, without goals, relativistic, too active, tactless, indifferent, stupid, wasteful

It is worth noticing that Fromm's concept of character is an evolvement of Freud's theory, according to which character is a system of endeavours that are the basis of human behaviour but are not always identical with it. Fromm accepted Freud's claim that character traits form the basis of behaviour and should be deduced from it. Character qualities could be understood as strong, often unconscious, forces and should be treated not as single traits but as a whole characterological orientation that determines specific personal features (Fromm 1990). E. Fromm defined character as a relatively stable form of energy distribution in processes of assimilation (of things) and socialisation. Fromm identified five types of characterological orientations:

- Receptive,
- Exploitative,
- Hoarding,
- Marketing,
- Productive.

Every individual consists of elements of all the mentioned orientations but usually one of them prevails. The first four orientations are classified as being unproductive. They could have both positive and negative aspects which depend on the level of personal vitality. Typical traits related with these orientations are presented in Table 17.1.

An individual with productive orientation could be described as a mature, independent, conscious, active, creative and spontaneous person. This is an ideal type of character (and personality). Everybody is productive but to a different extent.

17.3 Behavioural Effects and Gender Differences in Economic Literature

The one of most explored effects in behavioural finance is the overconfidence effect. It is a behavioural phenomenon where an investor has excessive confidence in his internal ability to overcome problems. On the stock exchange this effect is closely tied with the belief that investor's experience and his knowledge allow him to defeat the market. This is not so difficult to find many scientific dissertations in the economic literature about the overconfidence effect and its dependence on gender. The first scientific work about this subject was written in 1974 by Deaux and Emswiller and it concludes that overconfidence is a domain of the masculine gender (Barber and Odean 2001). Gender is also connected with personality types. Table 17.2 presents the most important findings on analysed field until the paper of Barber and Odean.

The research of Barber and Odean raised two hypotheses. The first assumes that men trade more than women and the second—men hurt their performance more than women by trading more. A test provided by the authors allows concluding that (Barber and Odean 2001):

- Human deviations from rationality are often systematic,
- Overconfident investors trade too much,
- Overconfident investors overestimate the precision of their information and thereby the expected gains of trading,
- Men trade more than women and thereby reduce their returns more than women—this difference is stronger in the case of single men and women.

According to another work of Barber and Odean (2000) one of the factors which could make differences between investors is the hazard. They describe the existence of the hazard as the need of risk seeking or as entertainment. If the assumption that the stock exchange is dedicated for men is true, therefore the market could be treated as a place of the ensuring investor's needs. Such a market plays the role of the place where the emotional needs could be fulfilled. Needs just like rivalry, overcoming an enemy or fear and succumbing to the temptation of greed are mostly assigned to men. Women investors are better than men in long-time horizons (Barber and Odean 2001) because of such features as: patience, calmness, composure and risk aversion. One of the last Polish research in this matter was provided by Majewski (2013) and his results are generally convergent to the conclusions of Barber and Odean.

17.4 What Is Propensity?

It seems that human behaviour could be described in the context of propensities. Propensity is defined as a "slope of posture" towards something (or somebody) that makes the probability of a certain event higher (Doszyń and Hozer 2004).

Table 17.2 The most important findings in the field of gender and overconfidence (Barber and Odean 2001)

Findings	Author(s)	Work	Year
Differences in confidence are greatest for tasks perceived to be in the masculine domain	K. Deaux T. Emswiller	Explanations of successful performance on sex-linked tasks: what is skill for the male is luck for the female	1974
	E. Lenney	Women's self-confidence in achievement settings	1977
	S. Beyer E.M. Bowden	Gender differences in self-perceptions: Convergent evidence from three measures of accuracy and bias	1997
The perception of differences in the ability to taking different types of tasks is different in group of men and women, but men are strongly overconfident	K. Deaux E. Farris	Attributing causes for one's own performance: the effects of sex, norms, and outcome	1977
Men are generally more overconfident than women	M.A. Lundeberg, P.W. Fox, J. Puncochar	Highly confident but wrong: gender differences and similarities in confidence judgments	1994
Gender differences in overconfidence are highly task dependent			
Men are inclined to feel more competent than women in financial matters	M. Prince	Women, men, and money styles	1993
Investors have the tendency to take too much credit for their success, they become overconfident	S. Gervais, T. Odean	Learning to be overconfident	1998
The self-serving attribution bias is greater for men than for women	K. Deaux, E. Farris	Attributing causes for one's own performance: the effects of sex, norms, and outcome	1977
	A.M. Meehan, W.F. Overton	Gender differences in expectancies for success and performance on Piagetian spatial tasks	1986
	S. Beyer	Gender differences in the accuracy of self-evaluations of performance	1990
Men spend more time and money on security analysis, rely less on their brokers, make more transactions, believe that returns are more highly predictable and anticipate higher possible returns than do women	W.G. Lewellen, R.C. Lease, G.G. Schlarbaum	Patterns of investment strategy and behaviour among individual investors	1977

Propensities impact human decisions and make the probabilities of many events different. There are many kinds of propensities important in economic life. The very important ones are the propensity to risk, consume, save and invest.

It is worth noticing that, in philosophical literature, two groups of propensity theories could be identified. In the first group propensity is understood as *a characteristic of a whole situation*. In this case propensity depends both on objective and subjective factors. *Human (psychological) propensities* are just one of the conditions that determine the *propensity of a whole situation*. These theories are mostly based on Popper's works (Doszyń 2012).

The second group contains theories in which propensity depends on the *internal characteristics of a given object* (for example a human being). Individual propensities depend mainly on the type of personality. In this context, propensity describes the internal (psychological) structure of an individual. That kind of attitude to propensities was presented by C. Peirce (Gillies 2000).

In this chapter propensities are understood as factors describing the psychological aspects of human behaviour that make the probabilities of certain events higher. Propensities are therefore treated as generalised *psychological* causes of events. Generally, propensity could be measured by means of frequency and trigonometric methods (Doszyń 2013). In the frequency method the intensity of a given propensity is obtained as a:

$$s = \frac{m}{n}, \tag{17.1}$$

where s (frequency) measure of propensity, m number of cases in which propensity appears, n number of all possible cases.

Dependency (17.1) is very general. It could be applied in many different cases. For instance, while measuring propensity to save, in the nominator (m) we could have an amount of money that was saved by a given individual in an appropriate period and in the denominator—amount of money that was possible to save (n). The same formulations are true in the case of other propensities such as the propensity to consume or invest. Propensity might also be presented in degrees, by means of a trigonometric measure (Doszyń 2013).

17.5 Empirical Example

The main aim of the undertaken research was to verify if psychological factors are correlated with the chosen economic propensities. The survey was conducted mainly among students, 48 respondents were asked to complete the questionnaire. Most of the participants were female (75 %). The majority of respondents were 21–22 years old but most of the men were at least 23 years old. The structure of the respondents with respect to sex and age is presented in the graph (Fig. 17.1).

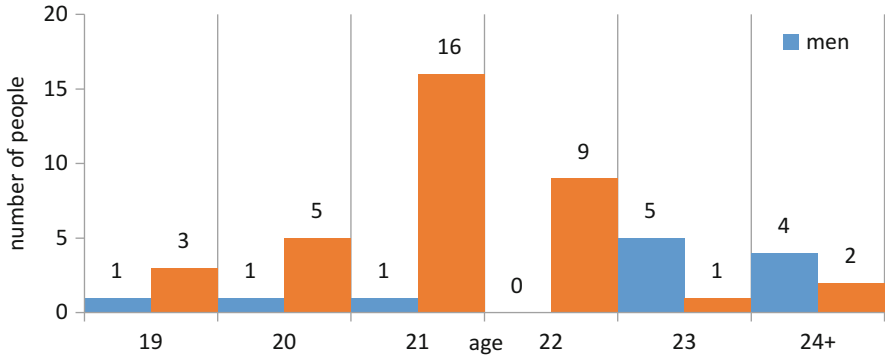

Fig. 17.1 Distribution of respondents according to sex and age (source: own calculations)

Table 17.3 Characteristics of respondents (median) due to age, sex and psychological features (own calculations)

Sex	Women	Men	Total
Age	21.00	23.00	21.00
Locus of control	5.00	6.50	5.00
Receptive orientation	20.00	19.50	20.00
Exploitative orientation	17.00	20.00	18.00
Hoarding orientation	19.00	19.50	19.00
Marketing orientation	20.00	21.50	21.00
Propensity to risk	0.25	0.50	0.25
Propensity to risk (nominal scale)	0.00	0.00	0.00
Propensity to consume	0.50	0.40	0.50
Propensity to invest	0.20	0.50	0.40
Propensity to save	0.50	0.65	0.50

In the first part of the questionnaire respondents were analysed for the locus of control (see Appendix). The higher the number of points, the higher the intensity of internal locus of control (maximal value in this part was 10). In the next part, character orientation was identified. In the case of all orientations the maximum number of points was 30 (minimum was equal to 10). In the last section of the questionnaire, propensities were measured, such as propensity to risk, consume, invest and save. Propensity measures belong to the interval from zero to one (the higher the propensity, the higher the value). If propensity was the lowest, measure of propensity was equal to zero. If propensity was at its maximum, propensity was equal to one. There was one exception. Propensity to risk was estimated also on the nominal scale. In this case propensity was equal to one if there was a propensity to risk and zero otherwise. The used questionnaire is presented in Appendix.

In the first stage differences in psychological types with respect to sex were analysed (see Table 17.3). To verify the intensity of the analysed psychological

features median values were calculated. The reason was that beyond age, all variables are qualitative so an ordinal (and nominal) scale was used.

The first finding is that men have a stronger internal locus of control. In case of men the median value of the internal locus of control was equal to 6.5 (in the case of women it was 5). The maximal possible value was 10. This means that men are more prone to think that occurring events, achievements, successes and failures depend mostly on their actions.

It also seems that men are more exploitative. Also hoarding and marketing orientation was more intense amongst men. Women were more receptive which is sometimes emphasised (Doszyń 2013). The differences between men and women were clearly visible for exploitative and marketing orientation.

Men have also a higher propensity to risk, invest and save. Only the propensity to consume has higher intensity in the case of women. This could mean that women are to a higher extent consumers and men investors with a more intense propensity to risk and save.

In the next stage of the survey dependencies between psychological traits as well as propensities were analysed (see Table 17.4). As it was mentioned, ordinal scale was mostly used, so Spearman's rank correlation coefficient was applied (R). All statistically significant coefficients were bolded. Because of the rather low number of respondents, the significance level was set to 0.2. As many as 11 of Spearman's rank correlation coefficients turned out to be statistically significant (Table 17.4).

As we can see, the propensity to risk was positively correlated with the internal locus of control ($R = 0.438$). This means that people who think that their actions have a strong impact on their lives are more inclined to risk. That kind of individual probably thinks that it will be possible for them to achieve positive results by taking risky actions.

Receptive orientation was negatively correlated with exploitative orientation ($R = -0.388$) which is reasonable, because each of these orientations consists of different and often excluding traits. Receptive orientation was also negatively correlated with the propensity to risk ($R = -0.233$). Individuals with this orientation often rely on others. They have difficulties with making independent decisions, so the propensity to risk of such people is rather low.

Exploitative orientation turned out to be positively correlated with marketing orientation ($R = 0.433$). This seems to be justified because psychological traits for these orientations are to a high degree consistent.

Hoarding orientation was positively correlated with the propensity to save ($R = 0.222$) and propensity to risk ($R = 0.205$). The propensity to save is a very specific trait of hoarding orientation so this result is meaningful. Hoarding orientation is also connected with some other economic traits so this could be the reason why the propensity to risk was also important for those kinds of individuals.

The propensities to risk and invest were positively correlated with marketing orientation which is consistent with those traits that form this type of personality.

As it was mentioned, the propensity to risk was measured in two ways. In the first case the propensity to risk belongs to the interval from zero to one. The propensity to risk was also measured on a nominal scale. As we can see, these

Table 17.4 Spearman's correlation coefficient between the psychological traits of respondents

	Locus of control	Receptive orientation	Exploitative orientation	Hoarding orientation	Marketing orientation	Propensity to risk	Propensity to risk (nominal scale)	Propensity to consume	Propensity to invest	Propensity to save
Locus of control	1									
Receptive orientation	−0.093	1								
Exploitative orientation	0.014	**−0.388**	1							
Hoarding orientation	0.025	−0.025	0.023	1						
Marketing orientation	0.027	−0.044	**0.433**	−0.081	1					
Propensity to risk	**0.438**	**−0.233**	0.109	**0.205**	**0.234**	1				
Propensity to risk (nominal scale)	−0.088	−0.005	−0.122	0.154	0.135	**0.220**	1			
Propensity to consume	−0.089	−0.132	0.088	0.027	0.085	0.122	**−0.216**	1		
Propensity to invest	−0.006	−0.122	0.156	−0.040	**0.374**	**0.314**	0.156	0.050	1	
Propensity to save	0.179	−0.052	0.009	**0.222**	−0.165	0.059	0. 28	0.001	−0.126	1

*Coefficients with statistical significance are in *bold* (significance level 0.2)

two measures were positively correlated ($R = 0.220$). It is also worth noticing that the propensity to risk was positively correlated with the propensity to invest ($R = 0.314$). These propensities are complementary, so this result seems to be interesting. The propensity to risk (measured on a nominal scale) was negatively correlated with the propensity to consume ($R = -0.216$). It could be due to the fact that the propensity to risk is higher in the case of investors which are not always very prone to consume.

17.6 Concluding Remarks

According to the results obtained by Barber and Odean (2001) some of the differences in the results in the female and male groups in this experiment could be explained by the overconfidence effect. Despite the fact that there were not any significant differences in the characteristics of the respondents due to sex and psychological orientation (Figs. 17.2 and 17.3), there were very interesting differences in the characteristics of the respondents due to sex and economic propensities. Only one type of economic propensity is assigned to women—the propensity to consume but the difference is not so distinct. The most distinct differences between men and women respondents were obtained in the case of the propensities to risk and to invest. As it might be expected, these two cases were practically dominated by men—men indicate a two times higher propensity than women. Taking into account the propensity to save, the difference was not significant but it was the men's domain again. Concluding the main characteristics of the respondents, it is justified to maintain that our experiment confirms the previous results cited in this chapter.

The highest correlation coefficient was obtained for the propensity to risk and internal locus of control ($R = 0.438$). The positive value of the correlation coefficient for these factors might be interpreted as wishful thinking that taking a risky

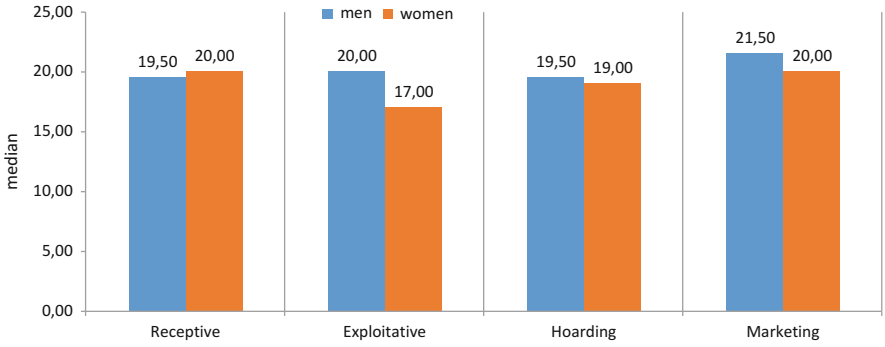

Fig. 17.2 Characteristics of the respondents (median) due to sex and psychological orientation (source: own calculations)

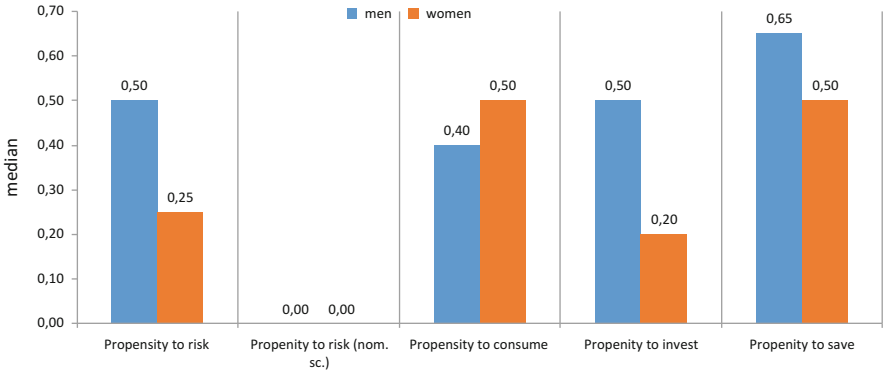

Fig. 17.3 Characteristics of the respondents (median) due to sex and propensity (source: own calculations)

investment gives the highly probable possibility to achieve financial goals. The lack of the possibility of dividing the respondents into two homogenous (depending on the sex—only 25 % of whole sample were men) groups because of their small number, may be a reason for obtaining such a correlation. On the other hand the research conducted on the group of single men and women suggest that in both groups individuals could behave similarly.

Another important correlation coefficient was obtained for exploitative and marketing orientation ($R = 0.433$). It should be justified because of the psychological traits for these orientations. It also possible to notice that the propensity to risk and invest was positively correlated with marketing orientation. It seems that this may mean that in such a young group of respondents the need of gain plays a very important role.

Concluding, such a small experiment has given a very interesting contribution to conduct deeper research on other groups of potential economic agents (investors, etc.). It seems that personality features are important factors determining behaviours and are also correlated with sex and human propensities. Thanks to these results the direction of further research has been obtained.

Appendix

Age: ....
Sex: .....

A. Next to each question choose an appropriate number expressing your opinion (1—I don't agree, 2—hard to say, 3—I agree)

Only with luck you can be an efficient leader	1–2–3
When I have plans I'm sure that I can realize them	1–2–3
People with high incomes usually have more luck	1–2–3

(continued)

I believe that fortune and luck could matter	1–2–3
Unfortunate events often arise from the fact that people have bad luck	1–2–3
Achieving success is a matter of hard work, not luck	1–2–3
Mainly genes determine an individual's personality	1–2–3
Work is what you make of it	1–2–3
Making money is mostly a matter of luck	1–2–3
I do not believe in fate, what matters are the decisions I make	1–2–3

B. Next to each trait assign an appropriate number of points describing your attitude (1—doesn't apply, 2—moderate, 3—to a large extent)

No.	Trait	Points	Trait	Points	Trait	Points	Trait	Points
1	Accepting		Active		Practical		Purposeful	
2	Passive		Exploitative		Unimaginative		Searching for opportunities	
3	Sensitive		Capable of initiative		Economical		Fond of change	
4	Often without opinion		Aggressive		Rather stingy		Little consistent	
5	Sacrificing		Able to make demands		Careful		Youthful	
6	Like to execute commands		Egocentric		Suspicious		Infantile	
7	Modest		Proud		With reserve		Planning	
8	Does not pay much attention to pride		Rather conceited		Not emotional		Don't care about the past and the future	
9	Winsome		Impulsive		Patient		With an open mind	
10	Relying on others		Short-tempered		Lethargic		Attaching no attention to the rules	

C1. You participate in a lottery in which two results may appear: K or L (Tab. C1). For example, if you choose strategy A you might win 2000 PLN, if you choose strategy B you might win 1800 or 2800 PLN, if you choose strategy C you might win 1600 or 3200 PLN, and so on.

Which option you choose, if you do not know whether K or L will appear (check the appropriate box in Table C1)?

Table C1. Lottery results depending on the selected option (payment in PLN)

	K	L
A	2000	2000
B	1800	2800
C	1600	3200
D	1200	3400
E	400	3600

C2. You can get for sure 950 PLN or take part in a lottery where you can win 1000 PLN with a probability of 90 % and 500 PLN with a probability of 10 %. Would you take part in the lottery?

(a) Yes.
(b) No.
(c) I don't care.

C3. You have an additional 1000 PLN which you can spend as you wish. For consumption you will spend:

(a) Not more than 200–300 PLN,
(b) Not more than 500 PLN,
(c) At most 700–800 PLN,
(d) The whole amount.

C4. Suppose that after meeting your typical needs you have an additional 1000 PLN, which you can spend on savings (bank deposit) and/or investments (purchase of shares). A bank deposit gives a certain profit in the amount of 3 % per year. The acquisition of shares may provide a greater profit, but there is also a risk of losing at least part of the capital. Which of the following options best suits your preferences?

	Savings (bank deposit)	Investments (purchase of shares)
A	0	1000
B	200	800
C	400	600
D	600	400
E	800	200
F	1000	0

C5. If you have an additional 500 PLN usually you save:

(a) Nothing,
(b) Not more than 100–150 zł,
(c) Not more than 250 zł,
(d) Not more than 350–400 zł,
(e) The whole amount.

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