

Delay of Gratification: Predictors and Measurement Issues

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Abstract

It is common to see people behaving in a way which will negatively affect their future goal for the sake of attaining immediate pleasure. Such need for instant gratification besiege people and make them to chase flimsy immediate gratification by abandoning awesome benefits awaiting them in long term. Studies indicated that such needs are among predictors of health and financial problems. Drug addiction, eating disorder, financial crisis and compulsive buying are the frequently sited problems associated with inability to delay gratification. Ability of delaying gratification on the other hand is among predictors of important life outcomes including good health, academic achievement and success. Nevertheless, people are different in their level of resisting temptation of attaining immediate goal. Thus, in this review an attempt is made to get deeper understanding on the possible predictor variables of impulsivity and measurement methods associated with it. Apart from what is frequently studied predictors, in this review, an attempt was made to see the role of external and contextual variables like parenting style, birth order and religiosity on delay of gratification. In line to this, I tried to address the consequences of chasing immediate gratification and some methodological issues regarding studies conducted in addressing gratification.

Keywords: Impulsivity; Instant gratification; Delayed gratification; Delay discounting

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Introduction

Life force people regularly to choose between actions which have different outcomes. There is a recurrent struggle within a person between the urge of living the moment *versus* living for the future. People are different in the choice they made in this regard. Some prefer to secure what they want in a here and now fashion regardless of the outcome, while some other favors behaving in a way which is good for their future. A common example that can show this difference would be the way people spend their money. Spending significant amount of money on buying things especially electronic materials like laptop, smart phones, and expensive luxury equipment are a habitual act to some people. Often, such people are impatient even to wait the release of a new model of smart phone or fashionable dresses. However, such impulsive act is not limited only on things related with buying. Eating fatty foods knowing they are notified by their physician to use diet, engaging in substance use regardless of knowing its long-term health consequences, and pathological

gambling, are also among the usual acts observed among people with high instant gratification [1]. Instant gratification refers to a desire to get pleasure or fulfillment without delay [2]. High instant gratification indicates strong need for immediate gratification. As it is described above, people with such need prefer small but immediate pleasure regardless of its outcome in the future. Researches indicates that such need is an important barrier to humans' ability to maximize their resources and achieve their goals [3].

On contrary to this, there are also people who prefer to scarify present gratification for the sake of achieving better goal in the future. Such ability, as various studies attests, is predictor of positive outcomes in life [4,5]. Success in education, health, work, coping strategies and greater social responsibility are among benefits of delaying gratification [4-6]. It has been long since Psychologists and Economists recognized the importance of delaying gratification and various studies are conducted to identify the determinant factors [7]. Even though the contribution of Economists is undeniable, this review only address studies

conducted in the field of Psychology. Therefore, in this paper, various studies conducted on the concept of delay of gratification starting with definition of basic terms and its predictors are reviewed. Together with this, brief description of methodologies used in previous studies to measure delaying gratification among human participants is presented. Finally, some recommendations and possible suggestions for future studies are forwarded.

Definition of Basic Terms

Impulsivity and delay of gratification

As it is true for many psychological variables, impulsivity has also got different definitions [8]. In normal conversation, even though not always, impulsivity often refers to negative behavior [7]. The usual use of the word impulsivity refers to persons who act rapidly without thinking, easily get angry and frustrate, the one who repeatedly spend money without considering the future consequences. Madden & Johnson indicated that the common usage of impulsivity in daily conversation implies a tendency to act in a way which disregard better long-term benefit. Generally, experts use of the word impulsivity can be grouped in to three perspectives; characterological, cognitive and behavioral perspective [9]. As Arce & Santisteban indicated ordinary people use of impulsivity is similar with the characterological perspective of Eysenck. For Eysenck, impulsivity implies taking actions without planning, risk taking and tendency of quickly making decision [9]. Behavioral and cognitive perspective on the other hand try to see impulsivity simply as the opposite of self-control. According to these perspectives impulsivity is inability of delaying gratification [10]. Hence, in this sense, a more synonymous term for impulsivity can be instant gratification. As Patel indicated instant gratification is a desire to get pleasure or fulfillment without any delay. Furthermore, Madden & Johnson indicated that impulsivity, beside to choosing smaller immediate goal over a larger delayed one, also involves in preferring delayed larger aversive outcome over a smaller immediate one.

Generally, however, it is possible to say the above discussed different views of impulsivity mainly address impulsivity from three core aspects namely, Lack of planed action, neglecting long term negative outcome and/or less sensitivity to negative consequences of an action [8,9]. Franken, van Strien, Nijs, Muris, [11] also forward similar view of impulsivity. They identified three main factors to understand impulsivity. The first is cognitive impulsivity which refers to making one's mind quickly or discounting delayed reward. The second was motor-impulsivity implies giving rapid response or acting before thinking and the last one was planning related impulsiveness which is displayed by poor consideration or disregarding the future [11].

Delay of gratification on the other hand can be seen as the inverse of impulsivity. In most literatures delay of gratification is considered as the ability to sacrifice immediate rewards and preserve goal oriented behavior for the sake of long term better reward [12]. From choice perspective, delay of gratification seen as a cognitive process associated to the preference of a more distant reward at the expense of an immediate reward. Some experts also tried to see delay of gratification similar to ego control [13], self-regulation and self-control [12]. Therefore,

unlike to impulsivity which is characterized by hasty decision, delay of gratification is characterized by planned, future oriented and goal-directed behavior. Various researches revealed that, individuals difference in the ability to delay gratification results in difference in their over-all functioning. In the below section, some of frequently studied problems associated with failure to delay gratification is presented.

Problems and disorders associated with inability to delay gratification

Inability to delay gratification has been known to predict failures and negative outcomes in various area of functioning [14]. Myriad of studies, on the other hand, indicate the positive role of delaying gratification in different aspect of life including, educational achievement, health, work and greater social responsibility [4-6]. Furthermore, experts in the field of psychology and psychiatry classified a number of disorders as inability of impulse control. These include attention-deficit/hyperactivity disorder (ADHD), substance abuse, pathological gambling, eating disorders, kleptomania, and trichotillomania [7]. In addition, Whiteside & Lynam [15] further stated that, impulsivity plays a prominent role in understanding and diagnosis of psychiatric disorders including ADHD (attention deficit hypersensitivity disorder), mania, bulimia nervosa, substance use disorder, and paraphilia. Bruce, Black, Bruce, Daldalian, Martin & Davis [16] also indicate the association between impulsivity and obesity. They stated that obese participants are more likely not to delay gratification than general participants. In fact, as Lynam & Miller [17] stated following subjective distress, impulsivity is the most common diagnostic criteria in the DSM-IV (fourth version of the Diagnostic and Statistical Manual) for Mental Disorders.

Apart from psychopathologies, inability to delay gratification also affect the day to day normal functioning of an individual. Individuals with high instant gratification are prone to financial crises due to frequent spending of their capitals without thinking its consequence. Shopping behavior is one of the most studied topic which differentiate impulsive individuals from other. Impulsivity related to buying behavior (buying mania) refers to a sudden strong urge and compulsion to buy something which is more than he/she can afford or compulsive buying of things which are beyond their needs [18]. As O'Guinn & Faber [19] stated large debt is reported from various studies among compulsive buyers than general buyers. Such behavior is increasing with the advancement of technologies. Gohary & Hanzae [18] indicated that with the rise of e-commerce and other television shopping channels, the tendency to impulsive shopping is increasing. The same source also indicated that in United States alone, above 4 billion in annual sales volume was generated by impulse buying.

Various studies also showed that, the availability of credit card contribute to the growth in the magnitude of spending which often end up in excessive debt [20]. Due to this, Lo, & Harvey indicated that, debt is a growing challenge and social problem among developed countries. Individuals who cannot delay their gratification are primary victims of compulsive buying. O'Guinn, & Faber [19] in their study on compulsive buying point out that, compulsive buyers more likely to use credit cards and less likely to pay back as compared to general consumers. Studies conducted

in Taiwan by Lo, & Harvey, also support the above finding. The result reveals that, among Taiwan participants, those who were compulsive buyers overspend significantly higher than general shoppers. Over all, inability to delay gratification can lead to less financial planning and compulsive buying which will negatively affect the individual's ability to handle personal and family responsibilities [20]. Furthermore, various studies also show the role of impulsivity in Pathological gambling [21] and substance use [22]. American Psychiatric Association defined pathological gambling as a persistent and frequent maladjusted gambling characterized by failure to control gambling that make an individual not to handle personal, social, and vocational responsibilities [21]. However, it is not still clear which is the cause and which is the effect [23]. For example, in the relation between substance use and impulsivity, it is not certain whether addiction leads to inability to delay gratification or inability to delay gratification leads to substance use. As De Wit [23] indicated, impulsivity is an important determinant of substance use during development, however, substance use may also increase impulsive behavior. To get rid of such debate, some experts suggested the bidirectional relation between impulsivity and substance use [22]. They further recommend the need of longitudinal study to identify whether impulsivity proceeds substance use and other addictions related problems or exaggerated/increased by the use of substance.

Furthermore, different studies indicated the relative stability of delay of gratification over time. Mischel and colleagues [4] for example in their influential studies on children found that delay of gratification measured early in childhood was linked to better achievement, healthy coping strategies and stress management, and greater social competency in adolescence [4,5]. Consistent with these findings, Mischel et al. [12] found that low ability to delay gratification in early years was related to poor regulatory capacities and increased risk for disruptive behavior disorders. Research done on self-control shows that individual difference in self-regulation observed during childhood period is consistent over context and periods [24]. Similarly, longitudinal study by Funder et al. [13] showed that while boys who did not delay their gratification reported to be irritable, aggressive, and impatient, girls who did not delay were reported to be sulky and whiny. Besides, another longitudinal study also showed that inability to delay gratification at age of four was related with low self-control abilities in adulthood [25], lower scholastic performance [26]. Children at the age of four who were unable to delay gratification were more likely to be found obese at the age of eleven [27]. It was also found that obese and overweight children were less able to control impulses and/or delay gratification than healthy weight children [16].

Measuring delay of gratification

Due to the multidimensional nature of impulsivity (delay gratification) experts try to measure impulsivity through various ways of measurements [28,10]. Roughly, however, it is possible to group the various methods employed to measure impulsivity in to two broad categories; self-report method and laboratory (experimental) method [28,10]. Even though there are extensive neural and biological measurement methods of impulsivity which deserve to be discussed, such topics however, are out of the

scope of this review. In additions, due to the wide and diverse nature of measurements in delay of gratification, this review only limited in the most common type of self-report methods and other experimental methods. Among the self-report method, the widely used methods include, the Barratt impulsiveness scale and UPPS impulsive behavior scale [9,29].

The Barratt impulsiveness scale (BIS) is one of the most utilized scale of impulsivity [9,30]. This scale was designed to assess the personality/behavioral construct of impulsiveness [31]. The latest version of this (version 11, BIS-11) scale consist 30 items measure through 4-point Likert scale ranging from rarely/never to always/almost always [29,30]. These 30 items are grouped in to three subcategories measuring three different factors; attention impulsivity (measuring cognitive aspect), motor impulsivity (measuring impetuous act or response) and non-planning (measuring lack of sense of the future) [9,31].

The other commonly cited self-report scale to measure impulsivity is UPPS (Urgency, Premeditation, Perseverance, and Sensation-seeking) impulsive behavior scale. UPPS stands for the four factors analyzed from nine frequently used measure of impulsivity [6]. The scale consists 41 items and four subscales. The first factor is Urgency which refers to propensity to involve in impulsive behavior while second factor, Premeditation, stands for action without thinking the consequence of the act. The third factor, Perseverance, refers to inability to stay focused on tasks which may be difficult and the last factor, Sensation seeking, refers to a tendency to try new thing that may be dangerous and chasing activities that are sensational [6]. As Whiteside & Lynam [15] point out, these four factors did not represent variation of impulsivity rather they represent four discrete process which leads to impulsive behavior. Both Barratt impulsiveness scale (BIS) and UPPS impulsive behavior scale have got good reliability result [29].

On the other hand, the experimental tradition of measuring impulsivity among human participants mainly focus on measuring impulsive choice and impulsive action [22,8]. Methods which measure impulsive choice involve the provision of either hypothetical or real reward with varying degree based on time. Such procedures are primarily designed to measure ability to delay gratification or delay discounting; a process of diminishing the value of reward as the time to get the reward is increasing [7]. Such procedure involves offering chance for the participant to choose between small but immediate reward and better but delayed reward. Hence in this method, selection of small immediate reward is considered as impulsive choice while waiting to get better but distant reward is considered as ability to delay gratification [8]. Unlike to self-report methods that depends on recall and honest responding, this method presents relatively real-life challenges and test self-imposed inhibition or delay of gratification [28]. In delay discounting measure, the well-known "marshmallow experiment" can be a good example.

The Marshmallow experiment was conducted in 1960s by Mischel [32]. The experiment was conducted among children aged between 4 and 5 years. Participant children were allowed either to eat one marshmallow without waiting the return of the experimenter or wait the experimenter and get one additional

marshmallow [32]. In addition to this, Mischel [33] study delay gratification using monetary reward, Mischel et al. [12] and Mischel, Ebbsen, & Raskoff Zeiss [34] using toys and Rachlin, Raineri & Cross [35] using hypothetical monetary reward in the place of marshmallow.

Besides to the measure of delay discounting, in experimental measurement of impulsivity, there are also Computer based programs design to measure impulsivity. Majority of such methods focus on measuring impulsive action (motor impulsivity) [22]. The most commons include GoStop impulsivity paradigm, Two Choice Impulsivity Paradigm (TCIP) and Single Key Impulsivity Paradigm (SKIP) [22,28]. The GoStop task is designed to measure the capacity to inhibit response. It is a computer based measurement technique which present series of visual stimuli and request the participants to respond for Go signal or withhold their response for stop signal [28]. On the other hand, the Two choice impulsivity paradigm (TCIP) and Single key impulsivity paradigm (SKIP) are a computerized form of delay gratification measure (delay discounting measure). The only difference between these two measures is, while the duration of the task in the Two choice impulsivity paradigm (TCIP) depends on responses by the subject, in Single key impulsivity paradigm (SKIP) the duration of the task is not dependent on the subject's response [28,31].

Predictors of delay of gratification

It has been long since Psychologist and Psychiatrists recognized the determinant role of impulsivity in the overall functioning of an individual. Since then, numerous efforts are done to understand what impulsivity constitute and to identify possible predictors. Frequently studied predictors of impulsivity include personality specifically extroversion, IQ, income age gender and social trust [1,12,36-41]. A study done by Mischel et al. [12] reveals that delay discounting decrease with increasing age in children. Similarly, a comparative study done by Green et al. [38] among children, young and adult participants, also showed that delay of gratification increase with increasing age. As the researchers indicate, this difference may be attributed to difference in experience and maturity [38]. Besides to this, a study done by Green et al. [37] indicated the role of income on predicting impulsivity. Compared to high income older and younger adults, delay discounting was high among low income adults. As the researchers claim, this indicate how income moderate the effect of age on delay of gratification. This study implies that socio-economic difference may be one of the factors predicting impulsivity.

Gender is another variable that catch the attention of the researcher. Different studies have been conducted to examine the role of gender in delay of gratification. The result however is far from consistency [42]. A research done by Mischel & Underwood [40] for example indicated that females are significantly better in delaying gratification than men. However, in the contrary to this, Beck & Triplett [39] found that females discounted more sharply than men. On their work which summarizes researches done on gender and delay of gratification, Hosseini-Kamkar, & Morton [42], stated that while studies result on sex role on self-regulation before onset of puberty is consistent, the result among adults are mixed. This implies that sex difference on impulsivity may be

linked with biological (hormonal) difference. In addition to the above discussed predictors, specific psychological variables like need for achievement, perfectionism, and positive affect [1,33,43] are also found to be a significant predictor of delay gratification.

Future Direction on Possible

As it is clear in the above discussion, considering the comprehensive effect of impulsivity in an individual life, experts in Psychology and Psychiatry tried to conduct various scientific studies. Hence, with the aim of contributing to the existing literature, in this section, I tried to add some recommendations in the place I consider needs further attention. The recommendation mainly focuses on two agendas, i.e. Predictors of delay of gratification and methods used to measure delay of gratification.

When we look at the most studied predictors of delay of gratification, due emphasis is only given on intra-individual factors like age, personality, IQ and gender. It is hardly easy to find studies that address external and contextual factors which may affect delay of gratification. Apart from few researches [41,33] done on social trust and delay of gratification, almost all of the above discussed predictor variables were internal to the individual. These two studies conducted to test the role of external factors like social trust and culture difference on delay of gratification found statistically significant result. For example, Mischel [33] conducted a comparative study between groups of participants from different culture on delay of gratification. The result of his study indicates that, groups from different culture were significantly different in the ability to delay gratification. Furthermore, Mischel's [44] study also tests the effect of father-presence of absence in children's ability of delaying gratification. Among participants between 8-9 years, absence of the father within the home was significant predictor of preference for immediate reward than delayed reward. As the researcher suggested, the absence of the father may make the children to feel uncertain about the probability of the delayed reward.

Relatively recent study by Michaelson et al. [41] also support the above finding. Michaelson et al. [41] found that the participant's perception of the individual who offer the reward has an effect on delay of gratification. Their experimental study finding indicated that, the more the participant consider the individual who is promising the reward as trustworthy, the better they able to choose a delayed better reward than immediate small reward. However, when participants are suspicious or uncertain about the reward, they are more likely to prefer immediate gratification [41]. These studies heightened the role of external (contextual) factors in shaping preference towards immediate or delayed gratification.

However, I suggest that, due to their strong influence in various aspect of the individual life, in addition to social trust, external variables especially religiosity and parenting style can also have role in explaining delay of gratification. The relationship between parenting style and personality is a well-studied concept. As it is discussed above, personality is one of the predictor of impulsivity. A result which support this claim is found in longitudinal study [45]. In a 3-wave longitudinal study they found that, while authoritarian parenting style associated with low self-

regulation, positive parenting style was associated with high self-regulation. Similar result also found in a study done by Eisenberg, Chang, Ma & Huang [46]. Among Chinese participants, positive parenting style was associated with better effortful control while authoritarian parenting style associated negatively with effortful control. Besides to this, there are also evidences which support the role of parenting style on delay of gratification. For example, a factsheet from American Psychological Association [47] stated that permissive parenting style associated with making impulsive children. As it is clear in the above discussion, self-regulation and effortful control are key elements in delay of gratification. Hence, such finding indirectly implies the role of parenting style on delay of gratification. Unfortunately, however, much effort is not given for this topic.

Similarly, the role of Birth order in affecting impulsivity (delay of gratification) also did not get much place by scholars. Research in birth order and personality suggested that the order of birth may result in different treatment or parenting style which finally end up in personality difference. Therefore, when we say the role of birth order in impulsivity, it is not mean that birth order per se affect impulsivity. Rather the effect of birth order in impulsivity, I suggest, is through its interaction with parenting style. Following the theory of Alfred Adler in 1870-1937, numerous researches is done on the role of birth order on personality. Stressing the role of birth order on personality, Topness and Gross [48,49] stated that first born children are more responsible and high in perfectionism, whereas, last born children are more likely to be spoiled. While feeling responsible (which is characteristics of first born) is related with ability of delaying gratification, characteristics of spoiled children fit most of the feature of impulsivity. This and related findings implies the role of birth order in affecting impulsivity.

Among the variable which needs attention in the future research on delay of gratification is religiosity. The role of religiosity in affecting different aspect of an individual life has got considerable attention. Religion is known in teaching appropriate conduct and prohibiting impulsive act [50]. Religion, at least the largest monotheistic religions, forbid impulsive acts like aggressive behavior, promiscuous sex and drug use [50]. Therefore, religious individual may grow up internalizing such ethics and this in turn help to enhance self-regulation. Giving this, it is logical to expect the role of religiosity in affecting impulsivity at least among adolescents and adults. However, the reviewer believes that, the role of religiosity in impulsivity did not get appropriate research focus. Only recently, as far as the reviewer's knowledge, few attempts are done. Caribé et al. [51] for example tried to address the effect of religiosity on impulsivity in mental health. The study found that religiosity was negatively related with impulsivity. A more recent study by Paula [50] showed the moderating effect of religiosity between impulsivity and internalizing symptoms. The result of Paula's study indicated that high religiosity benefits high impulsive participants in mental health. Even though these studies are a good start, to make better generalization and understand the relationship between religiosity and impulsivity better, more studies need to be done.

Regarding measurement of delay of gratification, as it is indicated

above, the most common methods include delay discounting and some computer based assessments. It is clear in the above discussion that delay discounting is measured by providing real/hypothetical reward that increase in value for delayed time [7]. Such procedures offer respondents to choose between two positive things varying only in value. For example, 10 dollars now or 20-dollar tomorrow. In such method, apart from losing some benefit which will come ahead, there is no negative thing or loss the person who choose immediate small reward may face. However, real life challenges are not like choosing between two good things with different level of values. If we look at impulsive buying for example, the choice between immediate small reward *versus* distant better reward is not a free offer. Rather, most real impulsive behavior, whether it is impulsive buying or pathological gambling, involves not only free choice but also payment for what is chosen.

In addition to this, most of delay discounting methods focus on how people discount the value of rewards based on time interval [52]. However, the nature of impulsivity also requires to measure how people discount not only reward but also aversive outcomes. As Madden & Johnson [7] stated impulsivity involves choosing small but sooner reward over delayed better and choosing distant but aversive outcome over immediate small consequence. Furthermore, in most of delay discounting measures, the time expected to wait to get better reward is too short that, even an impulsive person can wait. As DeYoung [53] stated impulsive individuals can wait some days or weeks to get better reward. However, in real life, the period which is expected to get better outcome is either long which is counted in years or not defined. Hence, the result of delay discounting measure may sometimes not adequately differential impulsive and non-impulsive individuals. Similarly, computer based measurement of delay of gratification also lack contextual or situational factors which tempt impulsive individuals to act impulsively. Unlike to computer challenges, real life challenges for example, advertisements, peers and other factors daily tempt an individual and test their patience. The absence of such temptation and other situational factors in computer based assessment, can potentially limit the test result not to adequately predict real life behavior.

To resolve such limitations, I suggest the importance of using experience sampling in combination with delay discounting or computer based assessments. The use of experience sampling together with delay discounting measures can help to measure impulsivity in more realistic way. As Conner, Barrett, Tugade & Tennen [54] stated experience sampling is a procedure whereby participants are expected to report their experience in response to signaling pager mostly electronic device. Since experience sampling involve collecting information in real time in a daily base, it did not suffer the weaknesses of the above discussed delay discounting and self-report method [55]. Hence, the use of this method in combination with delay discounting and self-report methods allows the researcher to access natural and real data.

Summary

Impulsivity can be defined as inability to delay gratification.

Both longitudinal and cross-sectional studies conducted mostly in the field of Psychology and Psychiatry indicate that ability to delay gratification predict different positive outcome whereas impulsivity predict negative outcome in various aspect of life. In an attempt to measure impulsivity, experts often use self-report method and/or laboratory (experimental) method. Among the self-report method, the Barratt impulsiveness scale and UPPS impulsive behavior scale are the widely used methods. The experimental method of measuring impulsivity includes, measure of delay discounting, GoStop impulsivity paradigm, Two Choice Impulsivity Paradigm (TCIP) and Single Key Impulsivity Paradigm (SKIP). Considering the negative impact of impulsivity on an individual life, experts tried to identify what predicts impulsivity. The frequently studied predictors (most of which are intra-individual factors) include, age, IQ, gender, and income.

Unfortunately, even though some variables relatively show better consistency in predicting impulsivity (like IQ for example), due to the multidimensionality of the construct, the findings of most of the studies are mixed.

To better understand what predicts impulsivity, in this review, suggestion is forwarded to include not only intra-individual factors but also external and contextual factors like religiosity, parenting style and birth order. Furthermore, due to some limitations on experimental methods of measuring impulsivity, there is a need to look for a more comprehensive and multidimensional assessment tool which can address the various components of impulsivity. In this aspect, I recommend, a combined use of experience sampling and delay discounting method to generate better result in understanding determinants of delay of gratification.

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