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The influence of time perspectives on compulsive buying is mediated by self-control

Alexander Unger

alexander.unger@hwg-lu.de

University of Business and Society, East Asia Institute Ludwigshafen

Chongzeng Bi

Southwest University

Gerhard Raab

University of Business and Society, Transatlantic Institute Ludwigshafen

Julie Papastamatelou

University of Paderborn

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Abstract

Compulsive buying is a severe globalized phenomenon which has been observed across cultures Research has revealed a interplay between personality deficiencies and environmental factors such as a materialistic consumer culture enhancing compulsive buying. New research findings showed that specific time perspectives and low self-control also play an essential role in increasing compulsive buying.

We applied the Zimbardo Time Perspective Inventory, the short version of the German Self-Control Scale and the German Compulsive Buying Scale. We conducted hierarchical linear regressions, Structural Equation models and mediation analysis to test our hypotheses.

We observed significant effects of Present-Fatalistic and Future. Further overall balanced vs. unbalanced indices were linked to compulsive buying in the predicted direction. It has been consistently found that time perspectives—as operationalized in various ways, such as individual time dimensions, as a deviation from a negative overall constellation, and as a deviation from a balanced overall constellation—exert an influence on compulsive buying, which is mediated by self-control.

1 Introduction

The phenomenon of compulsive buying as dysfunctional pathological pattern[1, 2] has been investigated for decades and has been explained by interacting personal and environmental factors[3].

There was a predominant debate if compulsive buying is an impulse control disorder (ICD) or is part of the obsessive-compulsive disorder spectrum (OCDS). Accordingly compulsive buying was widely understood as a two-factorial construct[4]. Recently, most researchers argued in favor of classifying compulsive buying as behavioral addiction[2]. Nonetheless, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)[5] has not recognized compulsive buying as a behavioral addiction. Instead, In the International Classification of Diseases (ICD-11) of the World Health Organization[6] compulsive buying is still classified as an ICD, but is considered as being classified as behavioral addiction (ICD-11 code: 6C7Y).

At the personality level for example depression[7] has been identified as important risk factor of compulsive buying.

A materialistic consumer culture has been viewed as one of the most substantial environmental factors responsible for compulsive buying[8], among those vulnerable individuals being highly susceptible for the promises and temptations of shopping. The nexus between materialism and the popular online shopping[9] possibilities have been identified as a highly problematic accelerant of developing compulsive buying[8].

Compulsive buying has also been brought into conjunction with low of self-control[10]. Self-control is the ability to delay gratifications, whereas, temporal discounting[11] implies a situational shift from long-term to short-term needs. e.g. eating delicious Sicilian pizza after a long working day while sacrificing one`s own diet goals. Temporal discounting implies a situational shift to favor smaller immediate rewards over larger delayed ones[12], which constitutes another assumed association between time perspectives (TPs) and compulsive buying.

Studies[13, 14] observed that compulsive buyers are less able to postpone gratifications and are more susceptible to temporal discounting.

Different TPs can directly affect the degree of delayed gratification. E.g. individuals scoring high on Future and low on Present-Hedonistic would be more able to delay gratifications. Various studies have shown that TPs are substantially associated with temporal discounting and delayed gratification: It has been reported that Past-Negative, Present-Hedonistic, and Present-Fatalism correlate negatively with delayed gratification, whereas Future and Past-Positive correlate positively with delayed gratification[15]. On the contrary, Past-Negative and Present-Hedonism are strongly associated with temporal discounting as observed for health behaviors[16]. The differences in temporal discounting are highly related to the research on TPs[17], which has been found essential for a wide range of self-control relevant behaviors such as drug use[18], and risky financial decisions[19]. TPs can be understood as trait- and state-like constructs at the same time. Situational shifting of TPs can be the result of adapting to a specific situation[20, 21].

1.1 Time perspectives and compulsive buying

Regarding TPs, the Zimbardo Time Perspective Inventory (ZTPI) outlines five TPs that shape human cognition, motivation, and emotion. A Past-Negative orientation focuses on aversive past experiences and is linked to regret and social difficulties. Past-Positive involves a nostalgic view of the past, which can detract from engagement in present and future. Present-Hedonistic is characterized by seeking for immediate pleasure and novelty and Present-Fatalistic by a belief that life is externally controlled, associated with helplessness and anxiety. Finally, Future entails working toward long-term goals through discipline. The TP concept is important for the association of self-control ability and compulsive buying. TPs influence the available self-control capacity which in turn decreases compulsive buying. The TPs have been found to be an important factor for many dysfunctional behaviors. Some studies already demonstrated the influence of TPs on compulsive buying[22] and that TPs influence compulsive buying similarly across different cultures[23].

1.2 Time perspectives and self-control

It is assumed that the configuration of the TP dimensions is associated with self-control[24].

Studies have observed a relationship between low self-control and high compulsive buying[25, 26]. Low self-control individuals will more likely engage in dysfunctional strategies like compulsive buying. In the self-control literature we have a clear-cut distinction between individual level of self-control[27] and a situational fluctuation of available self-control resources[28] due to the assumption that self-control is a limited resource. We refer to the first in the current study. Both concepts are not contradictory and interconnected to each other by the so called muscle-analogy of self-control: When self-control is executed humans suffer from a lack of self-control (also known as state of ego-depletion) until the resources are recovered.

Behavioral acts of self-control requiring self-control will lead to improvement in self-control at the individual trait-level on the long run.

It has been explained that individuals low in self-control develop self-regulation strategies which can be applied effortlessly instead of executing their limited self-control[10]. A successful goal achievement could result in pride, boosting self-esteem and in the experience of positive emotions. As a consequence individuals with beneficial TPs will try to reach difficult self-control requiring goals. A distinguished model was tested[24] by connecting TPs, construal level[29] and self-control: Based on the dual-motive model of self-control[30] the influence of Future and Present-Hedonism on reported self-control was tested by assuming a mediating role of distal and proximal motives. Accordingly, individuals with a high Future show higher self-control because they prioritize distal over proximal motives, whereas individuals with a high Present-Hedonistic prioritize proximal over distal motives resulting in poorer self-control.

1.3 Self-control, time perspectives and compulsive buying

It is well-established that compulsive buyers often use shopping to regulate their negative emotions in a dysfunctional way[31] because they have less self-control capacity[25]. Further, TPs are linked to emotional dysregulation, particularly among young adults[32] and to self-control[24]. Nevertheless, there is currently no study that has examined the significance of time perspectives and self-control for compulsive buying at the same time. The present study aims to close this research gap by investigating the complex influence of both constructs on compulsive buying as described next.

1.4 Study aims

We aimed to explore the relationship between TPs, self-control and compulsive buying. We tested a series of mediation models assuming self-control mediating the influences of TPs and the overall configuration (DBTP, DBTP-R and DNTP) on compulsive buying.

We thus hypothesized that Future will be linked to self-control (H1) whereas Present-Hedonism (H2) and Present-Fatalism (H3) will result in decreased self-control, when testing direct effect of TPs on self-control. We assume that Past-Negative (H4), Present-Fatalism (H5), and Present-Hedonism (H6) will be linked positively whereas Past-Positive (H7), and Future (H8) will be linked negatively to compulsive buying. For the overall configuration we hypothesize that the Deviation from a Balanced Time

Perspective (DBTP and DBTP-R) will be linked positively (H9 and H10) and Deviation from a Negative Time Perspective (DNTP) will be linked negatively to compulsive buying (H11). Based on hypotheses H1-H3 and the assumption that self-control reduces compulsive buying (H12), we further assume that the direct influence of TPs and of the overall TP configuration on compulsive buying will be mediated by self-control (H13) as displayed in Fig. 1.

2 Methods

2.1 Participants

The sample consists of *n* = 299 (165 females, 6 non-binary) German students (M_{AGE} = 23.6 years, *SD* = 2.9) recruited in exchange of reimbursement of 3 EUR. All participants signed a consent-form and were fully debriefed about the purposes of the study. For defining the sample size, we choose the applied Process Macro mediation analysis[33] as reference analysis and refer to corresponding recommendations[34]. Based on a study[25] who reported a path coefficient of -0.375 for self-control on compulsive buying we assumed a H ("*higher*") effect. Further we estimate a S ("*small*") to H ("*higher*") coefficient for the influence of DBTP on self-control. Thus, we assume a SH or a MH combination[34], resulting in a relatively large range of *n* = 412 to *n* = 124 for the percentile-bootstrapping method. As a compromise an approximative sample size of *n* = 300 was applied.

2.2 Procedure

Participants were recruited at the campus of three Universities in Germany between the 10st March to 23st July 2024. The data collection took place in seminar rooms with one to seven participants in each session. We applied the screening questions age (>/= 18 years); studying status (enrolled); and fluent German language. All used self-reported measurements are standardized psychological scales without any risk to participants. An ethics report was therefore not required at our institutions. Informed consent was received from all participants, and all participants were fully debriefed before leaving the study. The research was conducted in line with the ethical principles of the Declaration of Helsinki.

2.3 Measures

German short version of the Zimbardo Time Perspective Inventory (ZTPI)

The German short version of the ZTPI[35] consists of 10 items measuring each of the five TPs by two Items. The scale consists of Likert-type items with a 5-point response format ranging from 1 (= applies not at all) to 5 (= applies very much). Example items of the ZTPI are as follows: (a) "*I think about the bad things that have happened to me in the past*" (Past-Negative); (b) "*On balance, there is much more good to recall than bad in my past*" (Past-Positive); (c) "*My life path is controlled by forces I cannot influence*" (Present-Fatalistic); (d) "*It is important to put excitement in my life*" (Present-Hedonistic); and (e) "*I complete projects on time by making steady progress*" (Future).

Because the TPs in the applied short version are based on only two items for each subdimension, a calculation of reliability is not meaningful. The ZTPI enables the calculation of the DBTP[36], the DNTP[37], and the revised version (DBTP-R) of DBTP[38].

The overall configuration of the Zimbardo Time Perspective Inventory (ZTPI) are based on theoretical and empirical consideration about optimal values of the ZTPI for well-being and psychological functioning[17]. These concepts assume the existence of an optimal and balanced Time Perspective[39, 40] versus a negative and unbalanced Time Perspective[37]. We apply these three overall configurations of the ZTPI in the current study, which are (a) the Deviation from a Balanced Time Perspective(DBTP)[39]; (b) the revised version of the Deviation from a Balanced Time Perspective (DBTP-R)[38]; and (c) the Deviation from a Negative Time Perspective (DNTP)[37].

The formula for the DBTP is as follows:

$$DBTP = \sqrt{(oPN - ePN)^2 + (oPP - ePP)^2 + (oPF - ePF)^2 + (oPH - ePH)^2 + (oF - eF)^2}$$

The formula included the following observed variables: oPN = Past-Negative; oPP = Past-Positive; oPF = Present-Fatalistic; oPH = Present-Hedonism and oF = Future (these acronyms are the same for DBTP-R). The expected optimal values are as follows: ePN = 1.95; ePP = 4.60; ePF = 1.50; ePH = 3.90; and eF = 4.00.

The formula for the revised DBTP-R is the same as for the DBTP but with different expected optimal values. These are: ePN = 1.00; ePP = 5.00; ePF = 1.00; ePH = 3.40; and eF = 5.00.

Finally the formula for the DNTP is as follows:

$$DNTP = \sqrt{(nPN - ePN)^2 + (nPP - ePP)^2 + (nPF - ePF)^2 + (nPH - ePH)^2 + (nF - eF)^2}$$

The formula includes the observed values for the TPs: nPN (Past-Negative); nPP (Past-Positive); nPF (Present-Fatalistic); nPH (Present-Hedonistic); and nF (Future). Instead of optimal values the formula includes expected negative values, which are as follows: ePN = 4.35; ePP = 2.80; ePF = 3.30; ePH = 2.65 and eF = 2.75.

German short version Self-Control Scale (SCS-K-D)

We applied the of the *German short version Self-Control Scale* (SCS-K-D)[27]. The SCS-K-D consists of 13 Likert-type items. The response format ranges from 1 to 9. Most items are formulated in a reversed way. High scores of the scale indicate high dispositional self-control. Example items are as follows: (a) "*I have a hard time breaking bad habits*" (reversed) and (b) "*I am good at resisting temptations*". The reliability in this study was sufficient high (*Cronbach's α* = .800; *McDonald's ω* = .801).

German Compulsive Buying Scale (GCBS)

The *German Compulsive Buying Scale* (GCBS)[41]consists of 16 Likert-type items with a response format ranging from 1 (= *not apply at all*) to 4 (= *applies very much*). (cf. for an example items Appendix D) The instrument enables the calculation of a compulsive buying index ranging from 16 (= *minimum*) to 64 (= maximum) indicating the compulsive buying proneness. One example item is "*Sometimes I see something and feel an irresistible urge to buy it*". The GCBS showed an acceptable reliability (Cronbach's α = .844; McDonald's ω = .841).

Finally, the *socio-demographic variables* were measured.

2.4 Data analysis

We conducted correlational analysis, hierarchical multiple regressions (HMRs) of TPs on self-control and on compulsive buying. We tested first whether the conditions for both HMRs were met. These conditions are fulfilled and documented Supplementary Note S1.

Then we tested a series of mediation models assuming self-control mediating the influences of TPs and the overall configuration (DBTP, DBTP-R and DNTP) on compulsive buying via structural equations models (SEMs) and via the PROCESS macro by[33].

3 Results

3.1 Correlational analysis and hierarchical linear regressions

First a correlation matrix of all measured variables was calculated including descriptives statistics. This is documented in Supplementary Table S1.

As a next step and as preliminary testing of the five TPs two hierarchical multiple regressions (HMRs) were conducted including the gender variable as control variable (decomposed dummy variable as described in the Supplementary Note S2) in the first block and the five TPs in the second block (using the enter method in both blocks), predicting self-control in the first HMR (cf. Supplementary Note S2 and Table S2) and predicting compulsive buying in the second HMR (cf. Supplementary Note S3 and Table S3). The hypotheses H1-H3 were supported, additional Past-Negative was negatively linked to self-control. Past-Negative (as nonsignificant trend) and Present-Fatalistic were positively, whereas Future was negatively linked to compulsive buying.

3.2 Structural equation modeling analyses

For testing the mediation models, three SEM models were analyzed, by applying a bootstrapping sampling procedure (5,000 iterations). Model 1 includes those TPs showing a significant effect on compulsive buying (Present-Fatalistic and Future) and one TP showing a nonsignificant trend in the

predicted direction (Past-Negative) in the HMR as independent variables, self-control as mediator and compulsive buying as dependent variable. Gender was included as a control variable and decomposed into two dummy variables. Due to the small number of participants identifying as non-binary (*n* = 6), this group was combined with female participants for statistical purposes for the male dummy (1 = male). This coding was used solely for control and not for substantive interpretation. As second dummy we included for statical reasons only the nonbinary dummy (1 = nonbinary). The same was applied for the models 2–3.

As displayed in Fig. 2 we observed that all three TPs showed significant effects on self-control as predicted: Future increased self-control (β = 0.51, *B* = 0.35, *SE* = 0.03, *z* = 10.61, *p* < 0.001), whereas Past-Negative (β = -0.15, *B* = -0.09, *SE* = 0.03, *z* = -3.12, *p* = 0.002 and Present-Fatalistic (β = -0.120, *B* = -0.08, *SE* = 0.03, *z* = -2.47, *p* = 0.014) significantly decreased self-control.

Note

The model fit indices were as follows: $\chi^2(8) = 2.72$, *p* = 0.951, NFI = 0.99, RFI = 0.97, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = 0.00, 90% CI [0.00, 0.00], pclose = 0.995, **p*<.05; ***p*<.01; ****p*<.00.

As expected self-control reduced significantly compulsive buying (β = -0.12, *B* = -1.65, *SE* = 0.84, *z* = -1.96, *p* = 0.049).

Regarding the total effects of the three TPs on compulsive buying, we observed a significant reducing effect of Future (β = -0.20, *B* = -1.78; 95% CI [-2.63, -0.96]). Moreover, we observed significant enhancing effects of Present-Fatalism (β = 0.22, *B* = 1.90; 95% CI [1.03, 2.81]) and Past-Negative(β = 0.10, *B* = 0.81; 95% CI [0.06, 1.52]).

For the direct effects of the TPs on compulsive buying we observed that Present-Fatalism had a significantly enhancing effect on compulsive buying (β = 0.20, *B* = 1.77, *SE* = 0.47, *z* = 3.79, *p* < 0.001), whereas Future showed a significant reducing effect on compulsive buying (β = -0.13, *B* = -1.21, *SE* = 0.55, *z* = -2.18, *p* = 0.029). The effect of Past-Negative was insignificant (β = 0.08, B = 0.66, *SE* = 0.42, *z* = 1.60, *p* = 0.110). The indirect effects of the three TPs through self-control (a*b) were all significant in the predicted direction: Past-Negative = β = 0.02, *B* = 0.15, 95% CI [0.32, 0.35]); Present-Fatalism (β = 0.02, *B* = 0.13, 95% CI [0.023, 0.35]) and Future (β = -0.06, *B* = -0.57, 95% CI [-1.09, -0.09]).

Research on TPs has revealed that overall configurations of the ZTPI as defined as DBTP or DNTP are often shown to me more influential than the separate influence of the single TPs. We tested two alternative models by replacing the single TPs by DNTP and DBTP (model 2). In model 3 we replaced the TPs with DNTP and DBTP-R. Both models (Figs. 3 and 4) revealed similar results. For model 2 (Fig. 3) we observed, that both direct effects of DNTP and DBTP on self-control were significant with reversed effects of DNTP (β = 0.13, *B* = 0.09, *SE* = 0.05, *z* = 2.029, *p* = 0.044) and DBTP (β = -0.24, *B* = -0.16, *SE* = 0.04, *z* = -3.74, *p* < 0.001).

Note

The model fit indices were as follows: $\chi^2(6) = 0.59$, $p = 0.997$, NFI = 1.00, RFI = 0.99, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = 0.00, 90% CI [0.00, 0.00], pclose = 1.00, *p<.05; **p<.01; ***p<.001.

Again as in the model with single TPs self-control reduced significantly compulsive buying (β = -0.21, B = -2.82, SE = 0.74, z = -3.83, p < 0.001).

The total effect of DBTP on compulsive buying reached significance (β = 0.14, B = 1.25, 95% CI [0.17, 2.38]), whereas the total effect of DNTP on compulsive buying was insignificant (β = -0.14, B = -1.27, 95% CI [-2.52, 0.02]).

The direct effects of DNTP (β = -0.116, SE = 0.576, z = -1.841, p = 0.066) and DBTP (β = 0.089, SE = 0.563, z = 1.383, p = 0.167) on compulsive buying were both insignificant.

Both indirect effects of DNTP (a*b = -0.256, 95% CI [-0.636, -0.014]; p = 0.039) and DBTP (a*b = 0.456, 95% CI [0.191, 0.887]; p = 0.001) via the assumed mediator of self-control were significant, indicating full mediations by self-control for both.

Note

The model fit indices were as follows: $\chi^2(6) = 1.91$, $p = 0.928$, NFI = 1.00, RFI = 0.99, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = 0.00, 90% CI [0.00, 0.02], pclose = 0.988, *p<.05; **p<.01; ***p<.001.

When we replaced DBTP with DBTP-R (model 3) we observed the following effects (Fig. 4): Consistent with the two prior SEM-models self-control showed a significant reducing effect on compulsive buying (β = -0.17, B = -2.22, SE = 0.78, z = -2.85, p = 0.004). DNTP on self-control was insignificant (β = -0.11, B = -0.08, SE = 0.05, z = -1.57, p = 0.117) whereas DBTP-R again reduced self-control significantly (β = -0.54,, B = 0.30; SE = 0.04, z = -7.38, p < 0. 001).

The enhancing direct influence of DBTP-R on compulsive buying was significant (β = 0.228, B = 1.58, SE = 0.58, z = 2.71, p = 0.007), whereas the influence of DNTP on compulsive buying was insignificant (β = -0.02, B = -0.11, SE = 0.67, z = -0.29, p = 0.774).

According to DNTP neither the total effect (β = -0.00, B = -0.02, 95% CI [-1.39, 1.46]) nor the indirect effects (a*b) via the mediator of self-control on compulsive buying (β = 0.02, B = 0.17, 95% CI [-0.03, 0.53]) reached significance.

In contrast for DBTP-R the total effect on compulsive buying (β = 0.31, B = 2.24, 95% CI [1.22, 3.40], p < 0.001) and the indirect effect (a*b) via self-control on compulsive buying (β = 0.09, B = 0.65, 95% CI [0.24, 1.20], p = 0.002) were both significant. Gender effects on compulsive buying were significantly in all three models for the male dummy coded variable, reflecting the higher compulsive buying among females, but these results were not interpreted inferentially.

Next we conducted separate mediator models for DNTP, DBTP, and DBTP-R using the PROCESS macro[33] to test the isolated influence of each of the three overall configurations. This is also advisable

due to the high intercorrelations among the predictors in models 2 and 3. We observed for all three models a significant meditation by self-control, with significant indirect effects. All results are presented together and summarized in Fig. 5 to enable better comparison of the three independent models.

Note

*p < .05; **p < .01; ***p < .001; Each mediation model represents an independent model and not a parallel mediation model; Deviation from a Balanced Time Perspective (DBTP); Deviation from a Balanced Time Perspective – Revised (DBTP-R); Deviation from a Negative Time Perspective (DNTP). The indirect effects were as follows: DBTP, *B* (a * b) = 0.61, 95% CI [0.28, .99]; DBTP-R, *B* (a * b) = 0.54, 95% CI [0.15, 0.94]; and DNTP, *B* (a * b) = -0.54, 95% CI [-0.90, -0.24].

4 Discussion

The primary aim of this study was to investigate the complex relationships between TPs, self-control, and compulsive buying. The results from the hierarchical regression and SEM provide robust support for our hypothesized model. The findings consistently demonstrate that individual TPs are associated with compulsive buying, and that this relationship is substantially related to the individual's capacity for self-control: The results of separate mediator analyses show that all operationalizations of a balanced TP were mediated similarly by self-control. Notably the total effect of DBTP-R was stronger than the total effect of DBTP. Further, in contrast to the AMOS analysis we also observed significant effects of DNTP. The current study has confirmed that the influence of TPs on compulsive buying is mediated by self-control. Present-Fatalism and Future were identified as substantial factors, showing that these TPs influence compulsive buying directly and indirectly via self-control. Moreover, it has been shown across different comprehensive TP operationalizations that these have all the same influence on compulsive buying with self-control as a partial mediator. Therefore, self-control was identified as mediator of the general influence of TPs on compulsive buying.

In line with Zimbardo time perspective theory[17], the future-oriented TP emerged in our model as a robust adaptive factor. It was positively associated with self-control and negatively associated with compulsive buying. This is in line with extensive literature suggesting that future-oriented individuals, which consider the long-term consequences of behavior, are capable of delaying gratification and resisting impulsive urges[42, 17]. The future-oriented individual's capability to consider long-term consequences is associated with a lower vulnerability for compulsive buying. Conversely, a Present-Fatalistic orientation was identified as a primary risk factor in our model. It was directly associated with lower self-control and higher compulsive buying. This highly corresponds with research linking fatalism to poorer outcomes in life due to a lack of agentic belief [17]. The role of the Past-Negative perspective was more differentiated: It was consistent negatively associated to self-control, confirming that a ruminative and negative focus on the past is a significant drain of self-regulatory resources. This is supported by literature linking rumination to ego-depletion and impaired executive function[43]. This suggests that compulsive buying for

those with a Past-Negative focus may function as a maladaptive emotion regulation strategy to escape negative feelings associated with the past[10], a strategy that is enacted chiefly when self-control is low.

A Present-Hedonistic orientation was negatively associated to self-control but was excluded from the final model for compulsive buying. This indicates that the pleasure-seeking drive, while negatively associated to general self-discipline, may not be uniquely associated to compulsive buying. Its influence could be more diffuse, affecting a range of impulsive behaviors rather than being specific to compulsive buying. The non-significance of Past-Positive underscores that a warm, sentimental view of the past is not a vulnerability factor for low self-regulation and could instead be a source of resilience[44].

The core contribution of this study lies in the robust evidence for self-control as a key psychological mechanism. The mediation analyses, conducted, consistently revealed significant indirect effects for the primary TPs. This finding integrates Zimbardo's Time Perspective Theory with the strength model of self-control [28]. It demonstrates that TPs are not just cognitive frames that guide motivation; instead they constitute rather foundational dispositions that are related to resources required to resist specific temptations, such as the urge to buy compulsively[45].

The DBTP and particular its revised version (DBTP-R) showed a strong total effect. This suggests that the revised metric may better capture the psychological rigidity and dysregulation associated with a severely imbalanced TP[40]. The significant indirect effects indicate that a general temporal imbalance impairs financial behavior primarily by broadly reducing self-control.

The findings for the DNTP were less consistent. While the PROCESS macro analysis supported its expected protective effect, the AMOS model showed non-significant effects. This discrepancy suggests that while moving away from a negative temporal profile is beneficial, the *active presence of a flexible, balanced perspective* is however a more potent and reliable factor. This reinforces the theoretical proposition that optimal functioning arises from the dynamic integration of Positive-Past, Present-Hedonistic, and Future orientations, and not merely the absence of a negative dysfunctional TP profile[46]. Our findings consistently replicated established gender differences in compulsive buying, with females reporting significantly higher levels[1]. Crucially, gender did not interact with the core mediation pathways, suggesting that while the prevalence and mean levels of the behavior differ, the underlying psychological process—whereby TPs influence compulsive buying through self-control—is a universal mechanism that operates similarly for men and women.

5 Limitations

First our sample consists of a student sample with a quite small age range, which reduced the external validity of the study. Consequently, we refrained from analyzing age as factor of influence, although it is reported that younger individuals show a higher risk of becoming a compulsive buyer[1]. Due to the cross-sectional design of the study, the assumed causations are based on theoretical arguments only. For the mediation analysis, we followed a hypothesized temporal sequence: the predictor variable, TPs, was

viewed as a relatively enduring cognitive trait shaped over a lifetime (t1); the mediator, self-control, was regarded as a behavioral tendency formed over a prolonged period (t2); and the outcome variable, compulsive buying, was treated as a more transient, state-like phenomenon (t3). However, since all variables were measured at the same time in a cross-sectional design, the assumed temporal order could be affected by recall bias, weakening the validity of this sequencing. Thus, while the mediation model offers theoretically plausible insights, it cannot confirm causal relationships. Future studies would be needed to strengthen causal inferences and validate the direction of the observed associations. It was reported that the situational manipulation of TP changes self-control ability[24].

Another path of future research direction can expand the current study to experimental studies manipulating the current state of TP and the situational available self-control.

Applied approaches can deal with therapeutical benefits for compulsive buyers. TP based therapies were developed for Post-Traumatic Stress Disorder[47], which focused on the altering TPs.

6 Conclusion

In conclusion, this research elucidates a key mechanism through which our subjective relationship with time influences our buying behavior. We observed that a Future TP serves as a psychological shield, while Past-Negative and Present-Fatalistic TPs act as vulnerabilities, primarily by compromising vital and limited resources of self-control. Crucially, we demonstrated that the overall balance of one's TP is a powerful, parsimonious factor. The consistent mediating role of self-control across multiple analytical approaches and TP operationalizations provides evidence that our temporal focus, whether measured as distinct dimensions or as an overall TP profile, shapes our life outcomes by fundamentally governing our ability to control our impulses.

Theoretically, this study provides a more integrated model of compulsive buying by positioning self-control as the mediating link between deep-seated temporal biases and specific excessive buying behavior. It bridges the conceptual gap between the macro-level of temporal personality and the micro-level of dysfunctional and excessive shopping behavior .

From an applied perspective, these findings offer clear avenues for intervention by incorporating techniques from TP Therapy.

Declarations

Supplementary Information

We added one Supplementary Information file.

Ethics approval

The research protocol was approved by the Institutional Review Board (IRB) of the Southwest University, Chongqing, China (Approval No. SWU-ECHR-20260129). The research was conducted in line with the ethical principles of the Declaration of Helsinki.

Consent to participate

Informed consent was received from all participants in written form, and all participants were fully debriefed before leaving the study.

Consent to publish

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Author Contribution

Conceptualization (AU, JP), Investigation (AU, CB, GR); Data curation: (CB, JP); Methodology (AU, CB, JP); Writing – original draft (AU); Writing – review & editing (AU, CB, GR, JP)

Data Availability

We have uploaded the data and codebook to OSF:https://osf.io/z3726/?view_only=087981a5b2aa4e03b562b1376ac761c6

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Figures

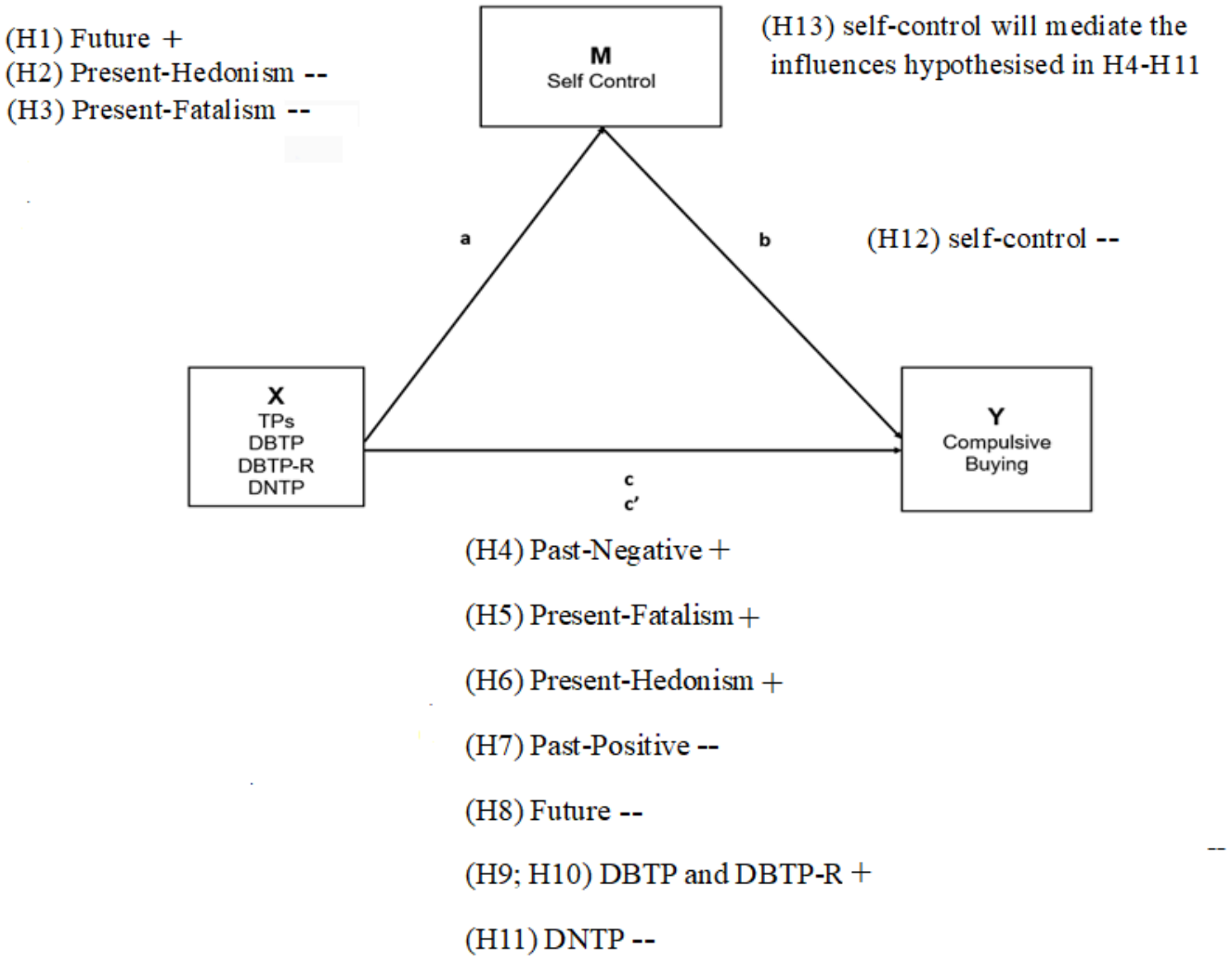


Figure 1

Conceptual mediation model showing self-control as mediator of the associations between time perspectives (TPs), Deviation from a Balanced Time Perspective (DBTP), Deviation from a Balanced Time Perspective–Revised (DBTP-R), Deviation from a Negative Time Perspective (DNTP), and compulsive buying.

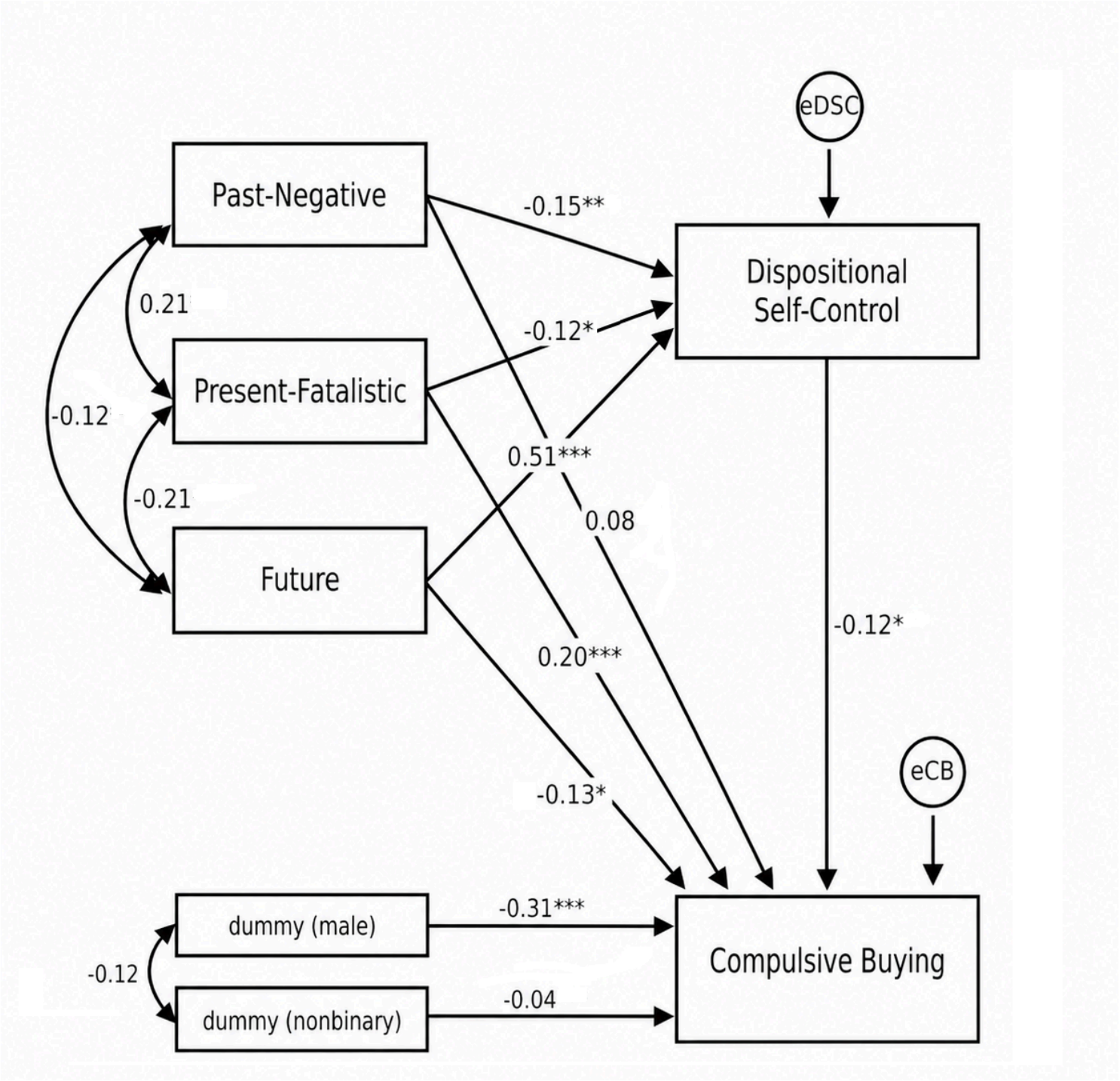


Figure 2

Mediation model with dispositional self-control as mediator of the influence of Past Negative, Present Fatalistic, and Future on compulsive buying.

Note. The model fit indices were as follows: $\chi^2(8) = 2.72$, $p = 0.951$, NFI = 0.99, RFI = 0.97, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = 0.00, 90% CI [0.00, 0.00], pclose = 0.995, *p<.05; **p<.01; ***p<.00.

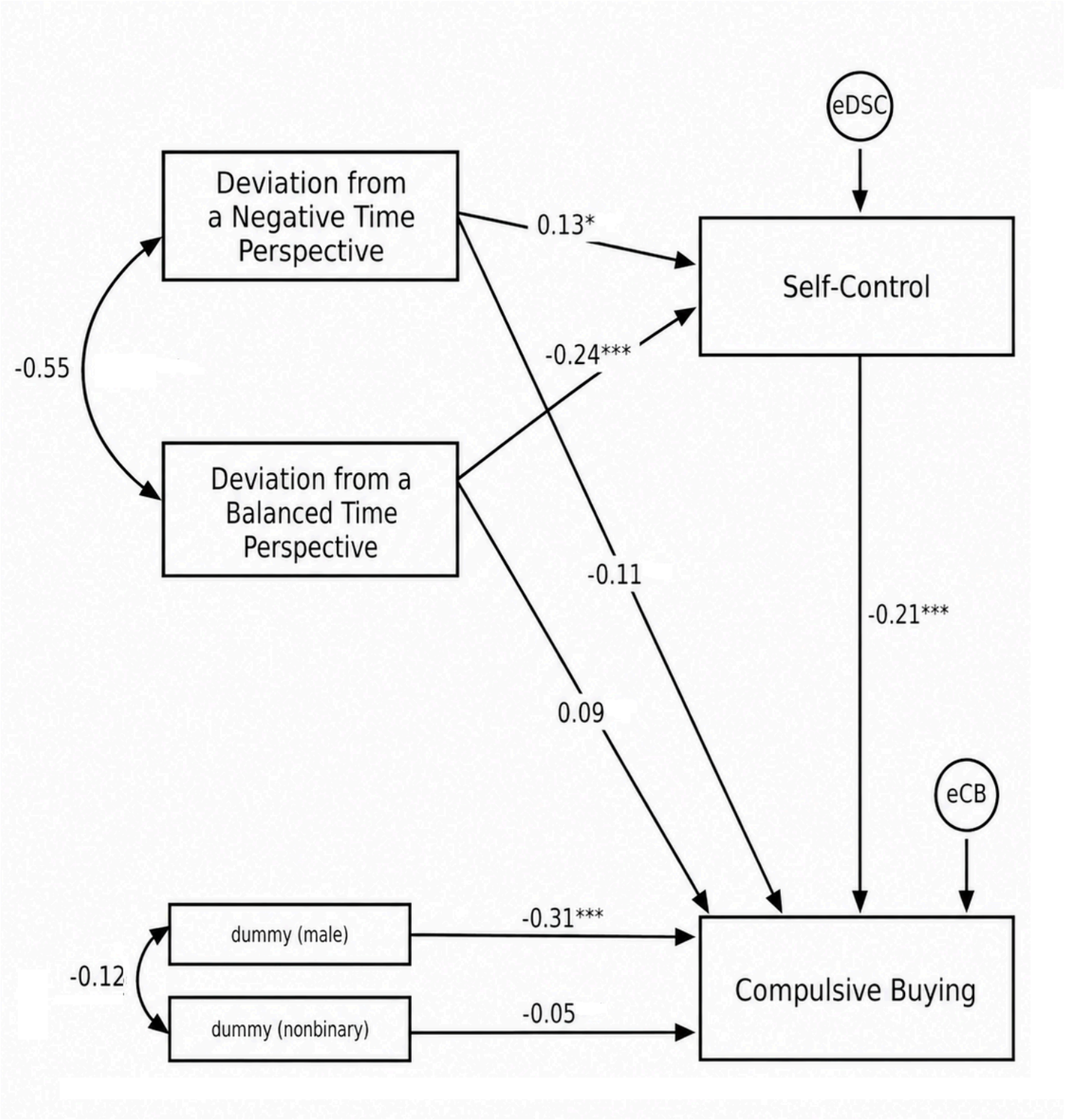


Figure 3

Mediation model with dispositional self-control as mediator of the influence of DNTP and DBTP on compulsive buying.

Note. The model fit indices were as follows: $\chi^2(6) = 0.59$, $p = 0.997$, NFI = 1.00, RFI = 0.99, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = 0.00, 90% CI [0.00, 0.00], pclose = 1.00, *p<.05; **p<.01; ***p<.001.

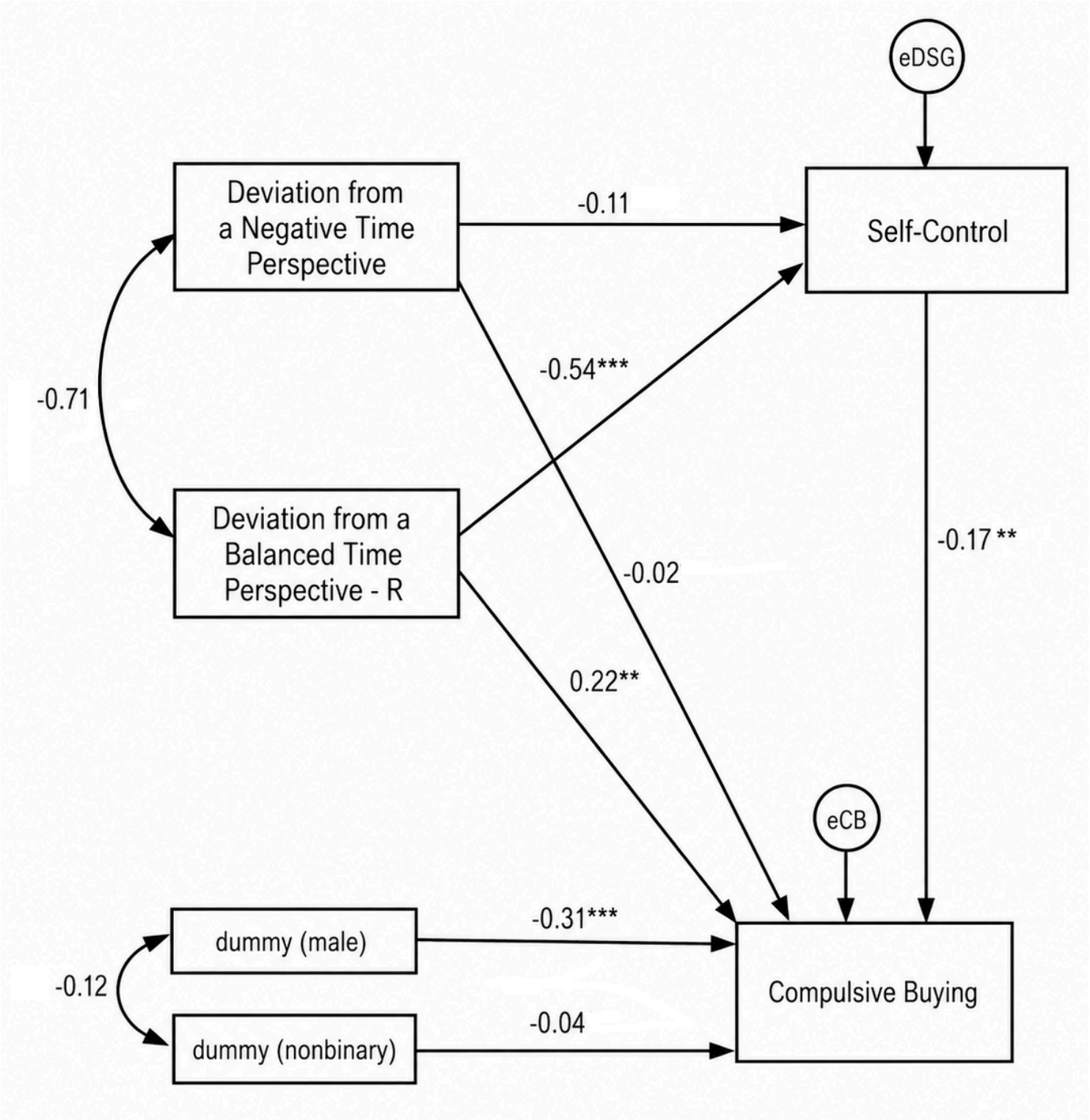


Figure 4

Mediation model with dispositional self-control as mediator of the influence of DNTP and DBTP-R on compulsive buying.

Note. The model fit indices were as follows: $\chi^2(6) = 1.91$, $p = 0.928$, NFI = 1.00, RFI = 0.99, IFI = 1.00, TLI = 1.00, CFI = 1.00, RMSEA = 0.00, 90% CI [0.00, 0.02], pclose = 0.988, *p<.05; **p<.01; ***p<.001.

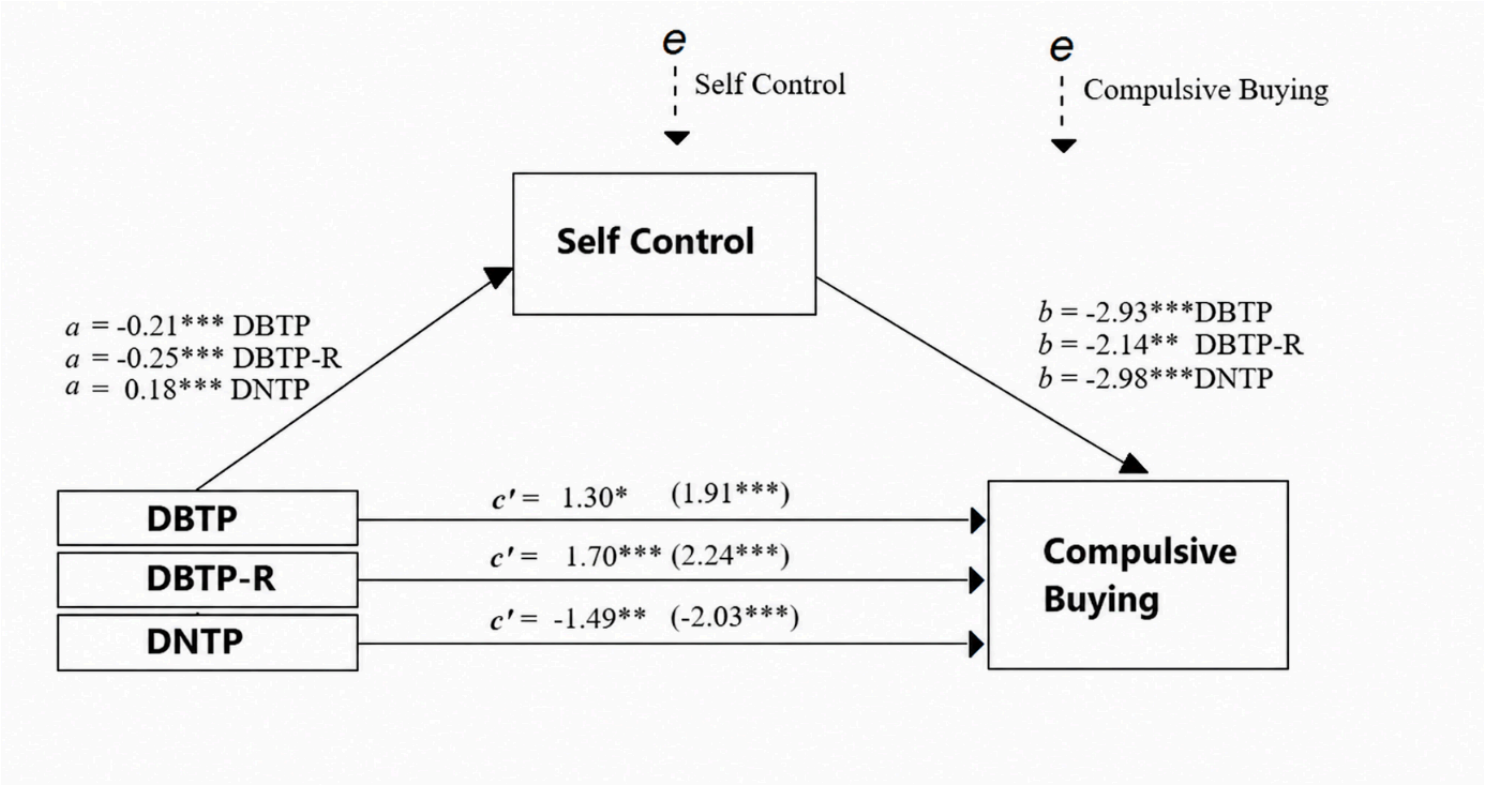


Figure 5

Three different mediation models with dispositional self-control as mediator of the influence of DBTP, DBTP-R and DNTP on compulsive buying.

Note. *p < .05; **p < .01; ***p < .001; Each mediation model represents an independent model and not a parallel mediation model; Deviation from a Balanced Time Perspective (DBTP); Deviation from a Balanced Time Perspective – Revised (DBTP-R); Deviation from a Negative Time Perspective (DNTP). The indirect effects were as follows: DBTP, *B* (a * b) = 0.61, 95% CI [0.28, .99]; DBTP-R, *B* (a * b) = 0.54, 95% CI [0.15, 0.94]; and DNTP, *B* (a * b) = -0.54, 95% CI [-0.90, -0.24].

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