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Impulsive behaviour in interpersonal encounters: Associations with quarrelsomeness and agreeableness

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Associations between impulsivity and interpersonal behaviours have rarely been examined, even though impulsivity may disrupt the flow of social interactions. For example, it is unknown to what extent the commonly used Barratt Impulsiveness Scale (BIS-11) predicts impulsive behaviour in social situations, and how behaving impulsively during interpersonal encounters might influence levels of quarrelsomeness and agreeableness. In this study, 48 healthy working individuals completed the BIS-11 and recorded their behaviour in social situations using event-contingent recording. Record forms included items representing quarrelsome, agreeable, and impulsive behaviours. BIS-11 motor impulsiveness scores predicted impulsive behaviour in social situations. Impulsive behaviour was associated, in different interactions, with both agreeableness and quarrelsomeness. Behaving impulsively in specific interactions was negatively associated with agreeableness in participants with higher BIS-11 motor impulsiveness and positively associated with agreeableness in participants with lower BIS-11 motor impulsiveness. Impulsive quarrelsome behaviour may cause interpersonal problems. Impulsive agreeable behaviour may have positive effects in individuals with low trait impulsivity. The idea that there are between-person differences in the effects of state impulsivity on the flow of social interaction deserves further study.

Impulsivity is a personality trait that has been associated with risk behaviours such as drinking, gambling, and unsafe sex, and is a hallmark of several mental disorders (Bijttebier, Beck, Claes, & Vandereycken, 2009). Trait impulsivity is usually assessed using self-report questionnaires administered on a single occasion. Studies assessing state impulsivity have been largely confined to the laboratory. Both approaches have limitations: Questionnaires may be confounded by retrospective and reconstructive reporting biases, and laboratory paradigms often have low ecological validity. The aim of the present study was to assess impulsivity naturalistically, during real-time interpersonal encounters, as behaving impulsively may affect a person's relationships.

The Barratt Impulsiveness Scale (BIS-11, Patton, Stanford, & Barratt, 1995) is a widely used questionnaire for assessing trait impulsivity. Its factor structure reflects three facets of impulsivity: An inability to focus thoughts ('attentional impulsiveness' subscale), a

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tendency to act without thinking ('motor impulsiveness'), and a lack of orientation to the future ('non-planning'). However, Helmers, Young, and Pihl (1995) gave healthy male volunteers several self-report and behavioural laboratory measures of impulsivity and found that while all three BIS-11 subscales loaded significantly onto an Impulsive component in a principal component analysis, this component correlated poorly with the laboratory measures. Using different laboratory measures, Lane, Cherek, Rhoades, Pietras, and Tcheremissine (2003) obtained similar results. The absence of an association between trait impulsivity assessed using the BIS-11 and impulsive behaviour assessed using laboratory measures may be explained by the absence of a clear association between the laboratory measures and negative outcomes. It is also possible that the BIS-11 does not predict actual impulsive behaviour, at least in individuals without mental disorders. Further, while the BIS-11 may not correlate with impulsive behaviour assessed using laboratory measures, it may predict impulsive behaviour measured naturalistically.

In a study by Wu and Clark (2003), students completed behaviour records daily for 2 weeks. They reported on 20 impulsive behaviours selected to reflect the lives of undergraduate students. Higher levels of carefree or spontaneous behaviours (e.g., 'I skipped class on a whim') were correlated with higher BIS-11 motor impulsiveness scores and higher levels of behaviours indicating a failure to plan (e.g., 'I made a list of things to do', reverse scored) were correlated with higher BIS-11 non-planning scores. These findings support the idea that BIS-11 may only predict impulsive behaviour when it is measured naturalistically. However, Wu and Clark (2003) asked participants to complete behaviour records each evening. This time-contingent data recording approach diminishes but does not eliminate retrospective and reconstructive reporting biases. Retrospection can be reduced further by asking participants to initiate record completion immediately after the occurrence of a designated type of event and ask them to report about their behaviour during the event. This method is known as event-contingent recording (ECR, Moskowitz & Sadikaj, 2012).

In the present study, participants used ECR to report about their impulsive behaviour during interpersonal encounters. ECR allows for intensive repeated measures in naturalistic settings and is thus considered a form of ecological momentary assessment. ECR has been successfully employed in social psychology, organizational psychology, clinical psychology, and behavioural medicine (see Moskowitz & Sadikaj, 2012; for an overview). While various events of interest have been identified, for example, smoking a cigarette or drinking alcohol (Shiffman, 2009), we focussed on interpersonal encounters as the event of interest.

Consistent with Wu and Clark (2003), our first hypothesis was that BIS-11 motor impulsiveness scores would positively predict interpersonal impulsivity. Wu and Clark (2003) also found that BIS-11 non-planning scores predicted naturalistic impulsive behaviour, however, their method (unlike ours) for recording impulsive behaviour during interpersonal encounters was oriented to the past rather than to the present. Consistent with the frequent finding that impulsivity often has negative outcomes (Bijttebier *et al.*, 2009; Helmers *et al.*, 1995), our second hypothesis was that behaving impulsively during interpersonal encounters would positively predict quarrelsome behaviour during these encounters. We further considered individual differences in BIS-11 scores and mean impulsive behaviour across events as potential moderators of the predicted association. These analyses explored the idea that behaving impulsively during interpersonal encounters might, at least sometimes for some people, be positively associated with agreeable behaviour rather than quarrelsome behaviour.

Method

Participants

After study approval by a local Research Ethics Board, participants were recruited using newspaper advertisements. Potential participants provided written informed consent and were screened for eligibility. Inclusion criteria were a Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) score of 15 or less, a Seasonal Pattern Assessment Questionnaire (SPAQ; Rosenthal, Bradt, & Wehr, 1984) score of 6–11, no lifetime DSM-IV Axis I disorders according to the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 2002), no serious medical condition or use of psychotropic medication, and not pregnant, breast-feeding, working less than 30 hr/week, at night, or alone, or intending to change jobs.

Men and women were invited to participate during winter and summer, originally to study the influence of bright light exposure on social behaviour (aan het Rot, Moskowitz, & Young, 2008). Participants in at least one season were 20 men and 28 women with a mean age of 30.29 years ($SD = 7.57$), a mean BDI score of 3.50 ($SD = 3.78$) indicating no depression, and a mean SPAQ score of 8.19 ($SD = 1.70$) indicating mild seasonality. There were no significant differences in gender distribution, age, BDI score, or SPAQ score between the 29 participants who started the study in winter and the 19 participants who started the study in summer, or between the 35 participants who completed both seasons and the 13 participants who completed one season. For more details, see aan het Rot, Moskowitz, *et al.* (2008).

Social behaviour

Event-contingent recording was employed to sample interpersonal encounters from everyday life, using a well-validated method originally developed by Moskowitz (1994). During 20 consecutive days per season using standardized forms, participants recorded their interpersonal encounters (spoken conversations lasting at least 5 min) immediately after they occurred. Each record form included behaviours representing quarrelsomeness, agreeableness, dominance, and submissiveness (e.g., 'I criticized the others', 'I exchanged pleasantries', 'I expressed an opinion', and 'I spoke softly', respectively). Participants were instructed to check all behaviours that applied during an event. The items on each form were taken from the Social Behavior Inventory (for a summary of psychometric evidence see Moskowitz & Sadikaj, 2012). Four versions of the form listed different items and were rotated on a daily basis; three items were included for each of the four types of social behaviours measured. Items were rotated to prevent participants from adopting a fixed set of responses. Scoring each of the four types of behaviours per event involved computing their individual mean frequency and then subtracting the mean frequency for all behaviours. This was done to adjust for individual differences in response style. For more details on the ECR method used, see aan het Rot, Moskowitz, *et al.* (2008).

Impulsivity

To measure impulsivity during interpersonal encounters, each ECR form included one of four impulsive behaviours derived from the BIS-11, chosen based on their applicability to social situations: 'I did something without thinking', 'I said something without thinking', 'I acted on impulse', or 'I acted on the spur of the moment'.

Trait impulsivity was assessed using the BIS-11 (Patton *et al.*, 1995) before each season of ECR. At study entry, one participant did not complete the BIS-11; his missing score for

the first season was substituted by his score obtained in the second season. At study entry, the mean total BIS-11 score among all 48 participants was 63.40 ($SD = 6.70$), which is comparable to that seen among the undergraduate students studied when the BIS-11 factor structure was assessed (Patton *et al.*, 1995). There were no significant differences between participants who started the study in winter versus in summer, or between participants who completed both seasons versus one season.

Data analyses

Data were analysed using SAS 9.3 (SAS, Cary, NC, USA). Events involving alcohol consumption in the preceding 3 hr were excluded. This left 5236 events recorded in winter ($N = 41$) and 4778 events recorded in summer ($N = 42$). The internal consistency of the four impulsive behaviour items used on the ECR forms was assessed per season by first averaging event-level impulsive behaviour scores (1 or 0) per participant for each version of the forms and then calculating Cronbach's coefficient α over the four versions.

Variables at event level included impulsive, quarrelsome, and agreeable behaviour. Variables at person level included Season (winter, summer), Complete (one season, both seasons), Start (winter, summer), Sex (male, female), BIS-11 total and subscale scores, and mean impulsive behaviour across events. Models containing person-level and event-level effects were analysed using mixed models, with maximum likelihood estimation of the model parameters and computation of the denominator degrees of freedom following the procedure described by Kenward and Roger (1997). Models exclusively containing person-level effects were analysed using *t*-tests or general linear models.

To test our first hypothesis, we modelled sum scores for the BIS-11 or its three subscales as individual predictors of event-level impulsive behaviour (calculated as the score per form, 1 or 0, multiplied by 100). When testing our second hypothesis, we were interested in separating between-person effects from within-person effects. We considered two person-level predictors, BIS-11 scores and mean impulsive behaviour across events, and one event-level predictor, impulsive behaviour during specific events. For both person-level predictors, group-mean centering was applied such that the group-centred mean BIS-11 and mean impulsive behaviour scores represented a person's relative standing on these scores within the group. For the event-level predictor, behaviour scores were centred within each person by subtracting each person's mean impulsive behaviour score from each event-level score. These person-centred scores represent the deviation of event-level impulsive behaviour from the person's general tendency to behave impulsively during social interactions. The person-level predictors and the event-level predictor were modelled as predictors of quarrelsomeness or agreeableness.

The significance level was set at .05. Following the recommendations of Aiken and West (1991), significant interactions were examined by estimating simple intercepts and slopes for predictor scores that were 1 *SD* above the sample *mean* ('high') or 1 *SD* below the sample *mean* ('low') and testing the significance of the difference between the two slope estimates.

Results

Trait impulsivity: BIS-11 scores

Barratt Impulsiveness Scale-11 total and subscale scores did not significantly differ by season, F 's < 0.39 , p 's $> .53$, by sex, by the number of seasons completed, or by the

starting season. The *mean* (*SD*) BIS-11 total score was 62.68 (7.33) in winter versus 63.00 (7.56) in summer. The BIS-11 motor impulsiveness, attentional impulsiveness, and non-planning scores were 23.51 (3.52) versus 23.33 (3.60), 15.59 (2.89) versus 15.60 (2.06), and 23.59 (3.83) versus 24.07 (3.96), respectively for winter and summer.

Cronbach's coefficient α for the BIS-11 total score was 0.67 in winter and 0.70 in summer, indicating moderate reliability. The coefficient α 's for the BIS-11 motor impulsiveness, attentional impulsiveness, and non-planning subscales were 0.54, 0.49, and 0.49 in winter and 0.53, 0.00, and 0.60 in summer. Since BIS-11 attentional impulsiveness scores were unreliable in summer, we tested our hypotheses in the winter data and used the summer data for replication.

Winter data

State impulsivity: Event-level impulsive behaviour

Cronbach's coefficient α for the four impulsive behaviour items used on the ECR forms was 0.86, indicating they were a reliable measure of impulsive behaviour during interpersonal encounters. Event-level impulsive behaviour did not differ significantly by sex or by whether the participant had completed both seasons. Participants who started the study in winter reported less impulsive behaviour than participants who started in summer, $F(1,40.9) = 4.14, p < .05$. Consequently, in subsequent analyses we co-varied for the season in which participants started the study.

Hypothesis 1: BIS-11 scores and event-level impulsive behaviour. The BIS-11 subscale scores were simultaneously entered as predictors of event-level impulsive behaviour. Event-level impulsive behaviour was positively predicted by BIS-11 motor impulsiveness scores, $b = 1.35, F(1,49.4) = 4.10, p < .05, d = .58$, and was not significantly predicted by BIS-11 attentional impulsiveness, $b = -1.69, F(1,57.6) = 3.02, p > .08, d = .46$, or non-planning, $b = -0.30, F(1,56.2) = 0.20, p > .65, d = .12$.

Hypothesis 2: Impulsiveness and quarrelsome and agreeable behaviour. Impulsive behaviour during specific events (event-level predictor) and mean impulsive behaviour scores and BIS-11 motor impulsiveness scores (person-level predictors) were examined as main effects in the prediction of agreeableness and quarrelsomeness. The person-level predictors did not significantly predict agreeable or quarrelsome behaviours. More specifically, BIS-11 motor impulsiveness scores did not significantly predict quarrelsomeness, $b = 1.78, F(1,39.5) = 0.40, p > .53, d = .20$, or agreeableness, $b = 0.30, F(1,40.4) = 0.01, p > .91, d = .03$. Mean impulsive behaviour scores also did not significantly predict quarrelsomeness, $b = -0.09, F(1,40.2) = 3.16, p > .08, d = .56$, or agreeableness, $b = 0.02, F(1,41.5) = 0.08, p > .78, d = .09$.

Impulsive behaviour during specific events did predict both more quarrelsome behaviour, $b = 0.04, F(1,5194) = 27.75, p < .0001, d = .15$, and more agreeable behaviour, $b = 0.02, F(1,5196) = 6.60, p < .02, d = .07$. We examined whether these within-person effects were independent by co-varying for event-level agreeable behaviour when quarrelsome behaviour was the dependent variable and by co-varying for event-level quarrelsome behaviour when agreeable behaviour was the dependent variable. The results did not change (data not shown). The within-person correlation coefficients between quarrelsome and agreeable behaviour ranged from -0.63 to -0.14 , $M = -0.42, SD = 0.10$. Thus, participants were not usually concurrently quarrelsome and agreeable. In sum, when participants behaved impulsively, they reported themselves

to be either more quarrelsome or more agreeable than when they did not behave impulsively.

Table 1. Outcomes of analyses of the moderating effects of two person-level predictors of impulsiveness on the effects of event-level impulsive behaviour on quarrelsome and agreeable behaviour

	Winter		Summer	
	Quarrelsome behaviour	Agreeable behaviour	Quarrelsome behaviour	Agreeable behaviour
Start	0.00	0.00	2.66	1.08
BIS motor impulsiveness	1.49	0.00	0.08	0.00
Mean impulsive behaviour	4.32*	0.07	5.24*	0.06
Event-level impulsive behaviour	18.74***	0.12	39.93***	1.20
Mean impulsive behaviour BY Event-level impulsive behaviour	0.38	19.94***	0.04	14.41***
BIS motor impulsiveness BY Event-level impulsive behaviour	1.52	11.23***	5.31*	5.51*

Values represent F-statistics: * $p < .05$; *** $p < .0001$.

We then examined whether the person-level predictors, BIS-11 motor impulsiveness scores and mean impulsive behaviour scores, moderated the association of impulsive behaviour during specific events with quarrelsome and agreeable behaviours. The analyses are presented in Table 1. For quarrelsome behaviour, the interaction terms were not significant. For agreeable behaviour, post-hoc probing of the significant interaction of mean impulsive behaviour by event-level impulsive behaviour did not indicate a significant association between event-level impulsive behaviour and agreeable behaviour at either lower or higher mean impulsive behaviour scores, t 's < 0.60 , $p > .54$. In contrast, there was a significant effect of the BIS-11 motor impulsiveness by event-level impulsive behaviour interaction. Post-hoc probing revealed a positive slope for event-level impulsive behaviour at lower BIS-11 motor impulsiveness scores, $b = 0.09$, $t(5196) = 3.30$, $p < .002$, $d = .09$, and a negative slope for event-level impulsive behaviour at higher BIS-11 motor impulsiveness scores, $b = -0.08$, $t(5196) = -2.97$, $p < .003$, $d = .08$. The difference between the two slopes was significant, $t(5196) = 3.35$, $p < .0009$. Thus, when participants with higher BIS-11 motor impulsiveness scores were impulsive they were less agreeable than when they were not impulsive. When participants with lower BIS-11 motor impulsiveness scores were impulsive, they were *more* agreeable than when they were not impulsive. See Figure 1.

In sum, impulsive behaviour in the winter was (1) predicted by BIS-11 motor impulsiveness, (2) positively associated with quarrelsomeness, (3) negatively associated with agreeableness in participants with higher BIS-11 motor impulsiveness scores, and (4) *positively* associated with agreeableness in participants with lower BIS-11 motor impulsiveness scores.

Summer data

Cronbach's coefficient α for the four impulsive behaviour items used on the ECR forms was 0.82, indicating they were a reliable measure of interpersonal impulsivity in summer. As in winter, we co-varied for the season in which participants started the study.

Figure 1. Agreeable behaviour during an interpersonal encounter depends conjointly on a person's trait motor impulsiveness and impulsive behaviour during the specific encounter (illustrated with winter data; difference between slopes is significant, $t(5196) = 3.35, p < .001$).

Hypothesis 1. BIS-11 motor impulsiveness positively predicted event-level impulsive behaviour, $b = 1.68, F(1,53.6) = 4.16, p < .05, d = .56$. The effects of BIS-11 attentional impulsiveness and non-planning scores were not significant, $F_s < 2.18, p's > .14$.

Hypothesis 2. In the main effects analyses, BIS-11 motor impulsiveness scores did not significantly predict quarrelsomeness and agreeableness, $F_s < 0.03, p's > .88$. Mean impulsive behaviour scores positively predicted quarrelsomeness, $b = -0.10, F(1,40) = 5.18, p < .03, d = .72$, but did not significantly predict agreeableness, $b = 0.01, F(1,41) = 0.06, p > .80, d = .08$. After co-varying for agreeable behaviour, impulsive behaviour during specific events predicted more quarrelsome behaviour, $b = 0.05, F(1,4736) = 57.63, p < .0001$. After co-varying for quarrelsome behaviour, impulsive behaviour predicted more agreeable behaviour, $b = 0.03, F(1,4738) = 15.09, p < .0002$.

We again examined whether the person-level predictors, BIS-11 motor impulsiveness scores and mean impulsive behaviour scores, moderated the association of impulsive behaviour during specific events with quarrelsome and agreeable behaviours. For agreeable behaviour, the interaction of mean impulsive behaviour and event-level impulsive behaviour was significant (Table 1), but post-hoc probing did not indicate a significant association between event-level impulsive behaviour and agreeable behaviour at both lower and higher mean impulsive behaviour scores, $t's < 1.27, p > .20$. For both quarrelsome and agreeable behaviour, the interaction of BIS-11 motor impulsiveness scores and event-level impulsive behaviour was significant (Table 1). When participants with higher BIS-11 motor impulsiveness scores were impulsive, they were less agreeable, $t(4736) = -2.47, p < .02$, as well as more quarrelsome, $t(4736) = 4.09, p < .0001$, than when they were not impulsive. When participants with lower BIS-11 motor impulsiveness scores were impulsive, they were *more* agreeable, $t(4736) = 1.94, p < .06$, but neither less nor more quarrelsome, $t(4736) = -0.08, p > .93$, than when they were not impulsive.

In sum, impulsive behaviour in the summer was (1) predicted by BIS-11 motor impulsiveness, (2) positively associated with quarrelsomeness, and negatively associated with agreeableness in participants with higher BIS-11 motor impulsiveness scores, and (3) positively associated with agreeableness in participants with lower BIS-11 motor impulsiveness scores.

Overall, the findings were similar across the two seasons. The results indicated that (a) the occurrence of impulsive behaviour during specific interpersonal encounters can be predicted from BIS-11 motor impulsiveness, (b) impulsive behaviour was associated with more quarrelsome behaviour, and (c) the association between impulsive behaviour and agreeable behaviour was moderated by participants' BIS-11 motor impulsiveness scores (see Figure 1). Importantly, when we repeated the multilevel analyses using event location and partner role as covariates, these findings did not change.

Discussion

Impulsivity is often assessed as a trait using questionnaires such as the BIS-11. ECR provides an alternative in that it allows for the intensive naturalistic repeated measurement of behavioural states (Moskowitz & Sadikaj, 2012). The four BIS-11 items we adapted to assess impulsive behaviour during interpersonal encounters showed high internal consistency in both winter and summer despite ratings on different days and in the context of different events, indicating they were a reliable measure of impulsive behaviour. Moreover, participants who behaved more impulsively during interpersonal encounters had higher BIS-11 motor impulsiveness scores. This supports the validity of our ECR measure of impulsivity and demonstrates the applicability of the BIS-11 to impulsive behaviour that occurs in naturalistic settings.

This finding is relevant to research into impulsivity because previous studies that measured impulsive behaviour in the laboratory have found no significant association with BIS-11 scores (Helmers *et al.*, 1995; Lane *et al.*, 2003). Our study and that of Wu and Clark (2003; see Introduction), suggest that the BIS-11 is better at predicting impulsive behaviour taking place in daily life than in a laboratory setting. One advantage of intensive naturalistic repeated measurement is that it provides insight into impulsivity across a wide range of situations, which is also the aim of the BIS-11. In contrast, behavioural laboratory measures of impulsivity assess impulsivity in a very limited range of situations.

Like Wu and Clark (2003), we found everyday impulsive behaviour to be associated with BIS-11 motor impulsiveness, which measures the tendency to act without thinking (Patton *et al.*, 1995). Unlike Wu and Clark (2003), we did not find a significant association between everyday impulsive behaviour and BIS-11 non-planning. This may be due to differences in the behaviour items used; the non-planning items used by Wu and Clark (2003) pertained to future events (e.g., 'I made a list of things to do', reverse scored), whereas the items we used pertained to current events (e.g., 'I did something without thinking'). Neither study found everyday impulsive behaviour to be associated with BIS-11 attentional impulsiveness.

An important result of our study was that impulsive behaviour was associated with quarrelsomeness in some interactions yet with agreeableness in other interactions. Moreover, the direction of the associations depended in part on trait impulsivity. In summer participants with higher trait impulsivity were more quarrelsome when they were impulsive and in winter impulsive behaviour was also positively associated with quarrelsomeness. Future research should determine whether trait impulsivity moderates the association between impulsive behaviour and quarrelsome behaviour. Further, participants with higher trait impulsivity were less agreeable when impulsive, yet they were not less agreeable overall. These findings were replicated in both seasons. A person who behaves in a disagreeable way encourages others to also behave in a disagreeable way towards that person (Sadler, Ethier, & Woody, 2011). The combination of high impulsivity and less pro-social behaviour may contribute to interpersonal problems, which in turn can

contribute to poor mental health (Conner, Duberstein, Conwell, & Caine, 2003; Heponiemi *et al.*, 2006).

In participants with lower impulsivity, behaving impulsively was positively associated with agreeable behaviour. This association was unexpected given the relative lack of literature on impulsive behaviour and positive outcomes, but since the association was observed in both winter and summer, it is unlikely to reflect a chance finding. Recently Righetti, Finkenauer, and Finkel (2013) performed four studies suggesting that 'in communal relationships the impulsive response is often to opt to sacrifice for the close other'. Future research should investigate whether impulsive agreeableness is associated only with close relationships, what circumstances may elicit such behaviour, and if impulsive behaviour may indeed at times have positive outcomes.

There are some limitations in the methods used in this study. For instance, our ECR approach involved paper forms rather than an electronic device for data recording. Some researchers have suggested that this means participant compliance with recording their social interactions immediately after they occur may be questionable (Stone, Shiffman, Schwartz, Broderick, & Hufford, 2003). Yet compliance may be more influenced by how well a study is explained and by participant motivation than by whether an electronic device was used or not (Green, Rafaeli, Bolger, Shrout, & Reis, 2006). Participants completed on average 6–7 forms daily which suggests regular engagement with the study procedures. Further, after each study season we asked participants how much difficulty they had with the forms, how accurate they thought they were, and what percentage of forms was completed immediately after an interpersonal encounter. These data (aan het Rot, Russell, Moskowitz, & Young, 2008) also indicated considerable compliance.

While we have focused on impulsivity during interpersonal encounters, others might be more interested in impulsivity during other situations. For example, ECR has been used to study substance use (Shiffman, 2009). Smoking and drinking may also be important events to study the occurrence of impulsive behaviour naturalistically. Of primary interest for future work is whether the relative predictive power of different kinds of impulsive behaviour remains the same across different trait levels of impulsivity and across the varying contexts of daily life. Overall, ECR provides a new approach for understanding impulsive behaviour during specific events.

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