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Predicting Smoking Lapses in the First Week of Quitting: An Ecological Momentary Assessment Study

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Objectives: This study focused on lapse shortly after an attempt to quit smoking. Ecological momentary assessment (EMA) studies have mapped real-time situational factors that induce lapses in everyday life. However, the possible role of nonsmoking intention is disregarded in the dynamic context of daily life, whereas intention plays a key role in behavior change and shifts during smoking cessation. This study therefore aimed to capture the influence of intention on lapse, next to the known risk factors of negative affect, low self-efficacy, craving, positive outcome expectations towards smoking (POEs), being around smokers, and stress. It is hypothesized that scores on these factors shift during the day, especially shortly after quitting, which may induce lapse. Based on behavioral explanation models, intention is hypothesized to mediate the influence of the mentioned factors on lapse.

Methods: An EMA study was conducted among 49 self-quitters in the first week of smoking cessation.

Results: Generalized Linear Mixed Model regression analyses revealed that low nonsmoking intentions, low self-efficacy, and being around smokers (estimates were, respectively, −0.303, −0.331, and 2.083) predicted lapse. Nonsmoking intention partially mediated the influence of self-efficacy on lapse. Nonsmoking intention was predicted by not being around smokers, high self-efficacy, and low POEs (estimates were, respectively, −0.353, 0.293, and −0.072).

Conclusions: This small-scale EMA study confirms the importance of nonsmoking intention on lapse, next to self-efficacy and being around smokers. It adds insights into the mediating role of intention on the relationship between self-efficacy and lapse, and into the predictors of nonsmoking intention.

Key Words: ecological momentary assessment, nonsmoking intention, smoking lapse

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Many smokers wish to quit and undertake an attempt to quit (West and Brown, 2015; van Laar et al., 2016). However, only about 5% of the smokers who undertake an attempt to quit manage to quit smoking (Hughes et al., 2004; Fiore et al., 2008).

While most studies (eg, Vangeli et al., 2011) have relied on retrospective recall to identify causes of lapse (<5 cigarettes during the attempt to quit) and relapse (≥5 cigarettes on 3–7 consecutive days) (Hughes et al., 2003; Gwaltney et al., 2005a), ecological momentary assessment (EMA) is a valid approach to understand lapse and relapse in the dynamic context of real life (Shiffman et al., 2008). In EMA studies, the participants prospectively record their behavior, situations, and moods at multiple times during the day, for several days or weeks. This allows the psychological states and experienced situations surrounding a quit attempt to be mapped during everyday life, and then related to lapse and relapse.

Ecological momentary assessment studies have highlighted the importance of momentary factors on smoking lapse and relapse. Self-confidence to resist a cigarette (self-efficacy) is a key dynamic predictor of lapse and relapse (Gwaltney et al., 2002; Shiffman et al., 2002; Gwaltney et al., 2005a, 2005b; van Zundert et al., 2010; Kirchner et al., 2012; Brodbeck et al., 2014). However, 1 study (Minami et al., 2014) could not confirm this. Furthermore, lapse is predicted by negative affect (Shiffman et al., 1996a, 1996b, 1997; Shiffman and Waters, 2004; Shiffman et al., 2007; Minami et al., 2014), craving (Killen and Fortmann, 1997; McCarthy et al., 2006), stress (Shiffman and Waters, 2004), and coping strategies (O'Connell et al., 2007; Brodbeck et al., 2013). In addition, quitters are more likely to lapse when smoking is permitted, when cigarettes are available, and when other smokers are present (Shiffman et al., 1996b, 2007). These empirical EMA studies provide support for the relapse prevention (RP) theory (Marlatt and Donovan, 2005), which proposes that lapse occurs in high-risk situations involving

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high levels of craving, stress, negative affect, smoking cues, low self-efficacy, and inadequate coping. In addition, positive outcome expectations towards smoking (POE) then make individuals believe that smoking a cigarette will have a positive effect at that moment (eg, stress reduction) (Gwaltney et al., 2005a).

This paper reports on an EMA study that assessed the predictors of smoking lapse in the first week of an attempt to quit. The predictors that were found in the previous EMA studies are taken into account, and the factor ''nonsmoking intention'' is added. Intention is the most proximal determinant of behavior in prominent models of health behavior—see, for example, the theory of planned behavior (TPB) (Fishbein and Ajzen, 2010)—but is disregarded in the dynamic context of daily life. Intention has been shown to be vital for making an attempt to quit (Hughes et al., 2005; Vangeli et al., 2011), maintaining smoking cessation (Stanczyk et al., 2014), and preventing relapse (Elfeddali et al., 2013). Intention is considered to represent a stable behavioral goal that one is striving for (eg, Fishbein and Ajzen, 2010), whereas it has also been shown to spontaneously change over relatively short periods of time (Hughes et al., 2005). Available EMA studies show that smokers' intention to quit after their quit date is dynamic, and is predictive for lapse (Minami et al., 2014) and relapse (McCarthy et al., 2008), whereas the experience of a lapse increases the intention to smoke again (Shiffman et al., 1996b). These findings make it very plausible that the nonsmoking intention shifts after the quit date, which might induce lapse. Given that changes in intention might initiate lapses, it is also interesting to identify which factors cause these changes.

Whereas most EMA studies considered 1 or a few lapse predictors, this study aimed to capture the joint influence of a broad spectrum of factors. Given that health behavior theories in general and, more specifically, the TPB, assume that intention mediates the influence of outcome expectations, social influence, and self-efficacy on behavior (Fishbein and Ajzen, 2010), our study considers intention as a mediator in the relationship between craving, negative affect, self-efficacy, POE, smokers being present, and stress.

This study tested the following hypotheses. First, on the basis of previous EMA studies and the RP theory, we expected that high levels of stress, negative affect, craving, and POE, combined with low self-efficacy, are associated with lapse. Second, in line with the TPB, we hypothesized that the nonsmoking intention mediates the relationship between the factors included in hypothesis 1 and lapse. Third, on the basis of previous studies (Shiffman et al., 2002; Dijkstra and Borland, 2003), we hypothesized that the influence of self-efficacy on nonsmoking intention and lapse is moderated by POE. Self-efficacy will be associated with nonsmoking intention and lapse in the case of low POE, but not in the case of high POE.

This study used a traditional random sampling EMA protocol (Jacobs et al., 2005) in which quitters were prospectively followed by randomly prompting them 10 times a day to complete diaries on their intention, moods, and situation. We propose that the intensive random assessments provide detailed insight into the relationship between apparently trivial everyday circumstances and smoking cessation lapse.

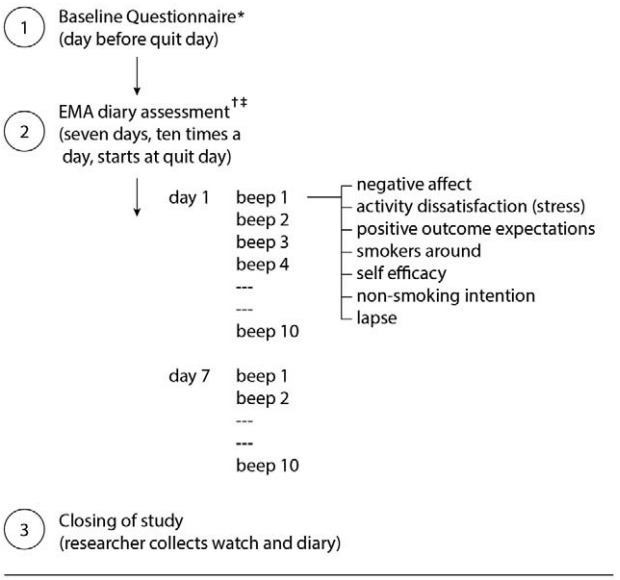

FIGURE 1. Study design and timeline. *Only for baseline description sample; †base of multilevel analyses (GLMM); ‡random assessment, approximately every 2 hours (between 7:30 and 22:30). GLMM, generalized linear mixed models analysis.

Because most lapses occur during the initial days of the attempt to quit (Hughes et al., 2004; O'Connell et al., 2007; Elfeddali et al., 2012; Brodbeck et al., 2013), we followed self-quitters in the first week of their attempt to quit (Fig. 1).

METHODS

Design, Participants, and Recruitment

The main part of the study concerned the EMAs that were taken in 50 self-quitters during their first week of quitting. The day before the EMAs started, the participants filled in a baseline questionnaire (Fig. 1). In the EMAs, participants had a digital wristwatch, and when the watch beeped, they recorded their present mood, the activity that they were doing and whether they liked it, smoking-related cognitions, and lapses in a written EMA diary. The watch was programmed to beep at unpredictable random times between 07:30 and 22:30. In line with the EMA protocol (Jacobs et al., 2005; Green et al., 2006), the participants were instructed to fill in their report immediately after each beep, and they were asked to record the time at which they completed that diary. Reports given $\geq$15 minutes after the beep (judged by comparing the self-reported and actual beep time) were invalid. Each participant took a total of 70 prospective measurements. The participants were only included in the analyses if at least one-third (24/70) of their reports were valid. All of the participants except 1 met this criterion. The participants logged an average of 60 valid diary reports (SD 3; beep range: 28–70 beeps; 78%; n = 38 had a compliance rate of $\geq$80%).

The participants were considered to be eligible if they were $\geq$18, smoked $\geq$5 regular or hand-rolled cigarettes a day,

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and intended to quit smoking at the start of the study without professional help. Two master's degree students were responsible for recruiting and informing participants. They started by inviting people from their networks (students, colleagues, family, etc) by e-mail and verbal contact, using a snowball approach. In a personal consultation, potential participants received standardized information about the study. After providing verbal informed consent, each participant received standardized face-to-face and written instructions, a watch, a diary, and the baseline questionnaire.

This study complied with the American Psychological Association's ethical principles and was approved by the institutional ethics board of the Open University of the Netherlands. Approval was gained after the study because the university had no research ethics board before the start of the study. It is not obligatory to obtain ethical approval for a study with human subjects in the Netherlands. An ethics board was not required (and was often not available) at Dutch universities until 2016. After installation of the institutional ethics board, the research protocol was tested and approved.

Measurements

Baseline Questionnaire

At baseline, age, sex, education level, level of nicotine dependence, previous attempt(s) to quit, self-efficacy (SE), and quit plans (action planning, coping planning) were measured by means of existing questions and scales. Nicotine dependence was measured with the validated Fagerström test (sum score: 0 = not addicted, 10 = highly addicted) (Heatherton et al., 1991).

EMA Diary

Negative Affect (NA) was measured by a 4-item scale (feeling restless, irritated, down, or agitated). The scale used a 7-point Likert scale (1 = not at all, 7 = very) (Cronbach $\alpha = 0.80$). An example item was: "At this moment I feel down." Our choice of items was guided by the Positive and Negative Affect Schedule questionnaire (Watson et al., 1988) and previous EMA studies that measured NA (Myin-Germeys et al., 2003).

Daily stress, craving, and SE scales were measured using existing scales and the same Likert scale. Daily stress was measured by the activity-related dissatisfaction scale, which is a 2-item scale assessing the degree of (dis)satisfaction with the activity that the participant was engaging in at that moment (Myin-Germeys et al., 2003). Items were: "I would prefer to be doing something else right now" and "What I am doing right now bothers me" (Cronbach $\alpha = 0.61$). Craving was measured with a 6-item scale that was developed for a retrospective study (Dijkstra and Borland, 2003). An example item was: "At this moment I am craving a cigarette" (Cronbach $\alpha = 0.98$). SE was measured using 2 items that were applied in earlier retrospective studies (eg, Elfeddali et al., 2012). An example question is: "At this moment it is easy for me not to smoke" (Cronbach $\alpha = 0.87$). POEs were measured with a 3-item scale derived from Dijkstra and Borland (2003) POE scale (answer categories: 1 = definitely not to 7 = yes, definitely). An example question was: "At this moment I would feel better if I were smoking" (Cronbach $\alpha = 0.94$). Being around smokers was assessed with 1 item asking whether the participant was around someone who was smoking. For the purposes of this question, the participant had to consider the time since the previous beep. Nonsmoking intention was measured in line with a question that has been frequently used in retrospective studies (Fishbein and Ajzen, 2010; Elfeddali et al., 2012), although we adapted it to measure the intention at that specific moment: "At this moment I do not intend to smoke." Similar to the study by Brodbeck et al. (2013), lapse was assessed with the question: "Since the last beep I have smoked . . ." (0 = no, 1 = yes . . . [number of cigarettes]).

Analyses

Baseline characteristics were described, and lapsers and abstainers were compared on baseline characteristics. In these analyses, lapsers were considered to be those participants who reported at least once in their EMA diaries that they had smoked a cigarette. Multilevel generalized linear mixed models analysis (GLMM) was performed to investigate the factors that are prospectively associated with lapse (hypothesis 1), the possible mediating influence of nonsmoking intention (hypothesis 2), and the possible moderating influence of POEs (hypothesis 3).

To test the first hypothesis, we performed a GLMM using a binomial distribution with the logit link function and a 2-level structure (person; beep). The outcome variable was lapse (measured at each time point). The predictors were stress, negative affect, craving, self-efficacy, smokers being around, and POE. Intention was not included as a predictor. To satisfy the causal requirement that a predictor must precede the behavior that it aims to predict, predictor variables measured at t were lagged to time point $t-1$ to predict lapse at time point t. Consequently, the first observation of each predictor each day was set to missing. Being around smokers by definition refers to the previous period, so no lag was computed for this factor. Using this procedure, 326 observations were set to missing, leaving n = 2609 observations. To test hypothesis 2, we used the 2-step Baron and Kenny's (1986) approach. We first tested whether nonsmoking intention was predicted by the factors tested in hypothesis 1. They were again lagged to $t-1$. In step 2, nonsmoking intention (also lagged to $t-1$) was added as a predictor of lapse in the model of hypothesis 1. To test hypothesis 3, the interaction term POE × SE was added to 3 models: the models in which nonsmoking intention was predicted; and the models in which lapse was predicted. The predictors were group-mean centered. The multilevel analyses were performed in R using the Lme4 package (Bates et al., 2014).

RESULTS

Baseline Characteristics and Differences Between Lapsers and Abstainers

Table 1 shows that most participants were young women with a low addiction level. Respondents started their attempt to quit on the agreed day (ie, the day that the EMA study started). A total of 55% (n = 27) had never previously quit smoking. Participants expected to encounter the greatest difficulties in sustaining their quit attempt in social situations.

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TABLE 1. Baseline Characteristics and Differences Between Lapsers and Abstainers (Chi-square Analyses, *t* Tests)

	Total (N = 49)*	Lapsers (n = 31; 63%)	Abstainers (n = 18; 37%)
Age (M, SD)†	38 (9.9)	39.29 (10.6)	35.67 (8.75)
Sex (%, n), female	57% (28)**	52% (16)	67% (12)
Educational level (%, n), low to middle	46% (23)	48% (15)	44% (8)
Addiction level (Fagerström)‡	3.46 (1.69)	3.75 (1.63)	2.94 (1.73)
Previous quit attempt (yes)	55% (27)	55% (17)	57% (10)
Self-efficacy (M, SD)§			
Difficulty in habitual situations	4.55 (1.47)	4.70 (1.32)	4.30 (1.70)
Difficulty in emotional situations	4.12 (1.76)	4.45 (1.64)	3.54 (1.84)
Difficulty in social situations	6.17 (.75)	6.25 (.71)	6.03 (.83)
Action plans (M, SD)¶	2.86 (.76)	2.72 (.79)	3.09 (.68)
No. of coping plans ($\sum$)‖	1.51 (3.04)	1.10 (2.72)	2.20 (3.49)

*One participant is excluded due to missing data.
†M, mean; SD, standard deviation.
‡Scale range 1–10.
§These scores reflect a greater perceived difficulty to sustain the quit attempt: score 1 = not difficult/7 = extreme difficult.
¶Score 1 = definitely not/5 definitely.
‖$\sum$ = overall sum score, range 0 to 11.
**$P < 0.01$.

The sum score on the coping planning scale indicated that the participants had not made plans to cope with high-risk situations. A total of 63% (n = 31) experienced 1 or more lapses in the first week of quitting. Abstainers were significantly more often women.

Within-day Predictors of Smoking Lapse: EMA Analyses

Before testing the predictors of lapse, we tested for possible high intercorrelations between the predictors to avoid problems with multicollinearity in the multilevel models. This revealed high intercorrelations between POE, SE, and craving; therefore, only POE and SE were used in the model tests. SE and POE were considered to be the most informative variables, because they play a central part in RP theory and in empirical research. To test the momentary predictors of lapse (Table 2, hypothesis 1), we used the following approach. The dependent variable was lapse (yes/no) since the previous beep that day. The lagged scores on being around smokers, POE, SE, NA, and activity dissatisfaction were the predictors of lapse at time point *t* in a 2-level multilevel model using a binomial distribution with the logit link function. Beeps were at level 1, within participants at level 2. The slopes for NA and activity dissatisfaction were assumed to be random parameters in the model, given that the relationships of NA and activity dissatisfaction with lapse depend on personality characteristics. Hence, some people, such as those with type 1 personality (Sarafino and Smith, 2014), are more vulnerable to activity dissatisfaction and NA than others. Therefore, because the slope parameter for the effects of activity dissatisfaction and NA may vary across participants, we tested a model with intercept, and slopes of activity dissatisfaction and NA as random parameters.

With regard to hypothesis 1, Table 2 shows that SE and being around smokers were the only significant predictors for lapse. Contrary to hypothesis 3, the analysis showed that POE and SE did not interact. Replacing POE in the model with craving yielded similar results.

With regard to hypothesis 2, Baron and Kenny's (1986) approach showed the following results. First, Table 3 shows that being around smokers and SE were strong predictors of nonsmoking intention. In the same direction as lapse (Table 2), being around smokers in the period before the beep lowered the nonsmoking intention

TABLE 2. Multilevel Model Results Logistic Regression on Smoking Lapse* (N = 2609, AIC† = 667, Deviance = 641.7)

	Estimate	Standard Error	*t*
Intercept	−5.215	0.398	−13.09
Self-efficacy	−0.532§	0.109	−4.87
Activity dissatisfaction	−0.076	0.116	−0.66
Positive outcome expectations	0.031	0.169	0.19
Negative affect	0.289	0.180	1.61
Around smokers	2.164§	0.258	8.39
SE × POE‡	−0.046	0.059	−0.78

*slopes of activity dissatisfaction and negative affect as random parameters.
†Akaike information criterion.
‡Interaction self-efficacy (SE) × positive outcome expectations towards smoking (POE).
§$P < 0.01$.

TABLE 3. Multilevel Model Results of Momentary Nonsmoking Intention as Dependent Variable* (N = 2609, AIC† = 7311, Deviance = 7283.1)

	Estimate	Standard Error	*t*
Intercept	5.548	0.120	45.76
Self-efficacy	0.293§	0.019	14.85
Activity dissatisfaction	−0.004	0.024	−0.17
Positive outcome expectations	−0.072§	0.023	−2.89
Negative affect	0.017	0.033	0.51
Around smokers	−0.353§	0.051	−6.96
SE × POE‡	0.005	0.010	0.51

*Slopes of activity dissatisfaction and negative affect as random parameters.
†Akaike information criterion.
‡Interaction self-efficacy (SE) × positive outcome expectations towards smoking (POE).
§$P < 0.01$.

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TABLE 4. Multilevel Model Results of Logistic Regression on Smoking Lapse* (N = 2609, AIC† = 663, Deviance = 635.6)

	Estimate	Standard Error	z
Intercept	−5.140	0.380	−13.53
Nonsmoking intention	−0.303§	0.110	−2.73
Self-efficacy	−0.331¶	0.130	−2.53
Activity dissatisfaction	−0.083	0.167	−0.70
Positive outcome expectations	0.119	0.118	0.71
Negative affect	0.292‖	0.173	1.69
Around smokers	2.083§	0.257	8.11
SE × POE‡	−0.008	0.059	0.14

*Slopes of activity dissatisfaction and negative affect as random parameters.
†Akaike information criterion.
‡Interaction self-efficacy (SE) × positive outcome expectations towards smoking (POE).
§$P < 0.01$.
¶$P < 0.05$.
‖$P < 0.10$.

at time t, while having high SE at $t-1$ positively affected that intention. POE only slightly lowered the nonsmoking intention, whereas POE and SE did not interact (hypothesis 3). Activity dissatisfaction and NA at time $t-1$ had no effect on the intention at time t. Replacing POE with craving yielded similar results.

In the second part of our test of hypothesis 2, nonsmoking intention was added as a predictor of lapse in the model tested for hypothesis 1. Table 4 shows lower nonsmoking intention, lower SE, and the presence of others smoking to be strongly related with lapse. NA showed borderline significance. The results suggest that intention partially mediates the progression from SE to lapse, but not from the other factors (hypothesis 2). In line with the conditions defined by Baron and Kenny (1986), the effect of SE with nonsmoking intention in the model (−0.331; Table 4) was substantially smaller than that without intention (−0.532; Table 2). SE was significantly related to intention (0.293; Table 3). The mediating effect of intention was confirmed by a Sobel test (Sobel test statistic = −2.77, $P < 0.01$). The fact that the values of the other predictor variables were approximately the same both with and without intention in the model provides support that nonsmoking intention only mediates the relationship between SE and lapse. This logistic regression analysis also did not show an interaction between POE and SE (hypothesis 3). Replacing POE in the model with craving yielded similar results.

DISCUSSION

The EMA study aimed to disentangle the predictors of lapse in smoking cessation and revealed several key findings. First, although individuals might have a stable behavioral goal-directed intention, as proposed in prominent models of health behavior, they also have more momentary intentions that shift early in smoking cessation and can induce lapse. Our study reveals that a low nonsmoking intention, a low self-efficacy, and having smokers around cause lapse. Furthermore, nonsmoking intention partially mediated the effect of self-efficacy on lapse. Nonsmoking intention was predicted by not being around smokers, high self-efficacy, and low POEs.

The strong predictive values of momentary low self-efficacy and being around smokers on lapse are in line with RP theory (Marlatt and Donovan, 2005) and other EMA studies (Shiffman et al., 1996a, 1996b; Gwaltney et al., 2001; Gwaltney et al., 2005a; van Zundert et al., 2010; Kirchner et al., 2012; Brodbeck et al., 2014). In contrast to previous studies, the influences of negative affect, positive outcome expectations, and craving on lapse were less consistent (Killen and Fortmann, 1997; Shiffman et al., 1997; Dijkstra and Borland, 2003; Shiffman and Waters, 2004; Gwaltney et al., 2005a; McCarthy et al., 2006; Minami et al., 2014). In line with the findings of Shiffman and Waters (2004), activity dissatisfaction (which is considered to be an indicator of momentary stress) was not a predictor of lapse in our study. It should be noted, however, that the results are not entirely comparable: the present study measured activity dissatisfaction, whereas Shiffman and Waters (2004) measured stressful events and global perceived stress.

The present study failed to confirm the previously reported moderation effect of POE on the relationship between self-efficacy and lapse (Shiffman et al., 2002; Dijkstra and Borland, 2003). It furthermore did not find a moderation effect of POE on the relationship between self-efficacy and nonsmoking intention (hypothesized in the present study, but not previously studied by others as far as the authors know). The absence of these 2 interaction effects may be attributable to the fact that we measured POE and self-efficacy at the same time-point. Another plausible explanation for not finding some of the hypothesized relationships is that this study was shorter than most EMA studies.

Our study has confirmed the high lapse rates (63%) in the first week of quitting. A review (Hughes et al., 2004) reported relapse rates of 24% to 51% in self-quitters after 1 week, whereas Elfeddali et al. (2012) found a 71.2% relapse rate after 1 month. However, in the present study, women were more successful in sustaining abstinence than men, in contrast with previous findings (eg, Vangeli et al., 2011).

This study is subject to certain limitations. First, the study sample was small, which might have affected the power of the study. This also prevented us from examining the progress from lapse to relapse. Second, generalizability is limited, given that the study consisted of a select convenience sample of self-quitters, mainly young, highly educated women making their first quit attempt. Lower educated and heavy smokers are under-represented. Based on other studies in samples with more heavy smokers (Gwaltney et al., 2005a; O'Connell et al., 2007; Brodbeck et al., 2014), it seems likely that POE and craving play a more prominent role than we found. The recruitment method probably caused this selectivity, but it may also have been caused by our decision to exclude smokers who followed smoking-cessation treatment. The reason for exclusion was that most EMA studies involved smokers who were in treatment, whereas in the Netherlands, only 5% use professional treatment (National Expertise Center for Tobacco Control, 2015), which made the study of self-quitters in our research more relevant. Third, we did not study coping with high-risk situations, a factor that is also known to be an

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important predictor of (re)lapse (Marlatt and Donovan, 2005; O'Connell et al., 2007; Brodbeck et al., 2014). A related issue is that we measured only activity dissatisfaction, whereas social-related stress, and more general feelings of stress, might also induce lapse. Moreover, we did not measure positively appraised situations, such as being out with friends. The fourth issue is that POE and craving were not modeled together to avoid multicollinearity. Although we found that POE and craving predicted intention, but not lapses, their joint influence needs further study. The 2 scales also need to be reconsidered because they seem to overlap. The fifth issue concerns the validity of paper-and-pencil data. The compliance in our study was high, but we were not able to check whether diary hoarding and back-filling occurred. The fact that the participants in our study were partly recruited from the researchers' own social networks might have biased adherence and honesty of reporting. Our researchers collected the data personally, and in a substantial part, the study participants were among people they knew. As smoking cessation is a sensitive matter, it could have been that smoking lapse was not reported. The sixth issue is that we measured nonsmoking intention with only 1 question, which may have violated the validity and reliability of this measurement. A final comment relates to the use of the Baron and Kenny (1986) mediation test, whereas a bootstrapping mediation analysis might provide more sophisticated results. Unfortunately, this macro is not yet available in multilevel analysis with a binary outcome variable. Therefore, our mediation analysis results need to be interpreted with caution.

CONCLUSIONS

To conclude, this small-scale study has demonstrated that momentary nonsmoking intention shifts throughout the first week of an attempt to quit, and reduces lapse risk, together with high self-efficacy and having no smokers around. Nonsmoking intention also partly mediates the effects of self-efficacy on lapse. Nonsmoking intention itself is influenced by self-efficacy, positive outcome expectations, and being around smokers.

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