



Strong-willed but not successful: The importance of strategies in recovery from addiction



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ABSTRACT

Introduction: Philosophers, cognitive and social psychologists and laypeople often subscribe to the view that willpower is central to recovery from addiction. But there are reasons to suspect that willpower is much less important to explaining recovery than this view suggests.

Methods: Here we report findings from a qualitative longitudinal study on how substance dependent people see their agency and self-control, and how their self-control develops over time. 69 opioid, alcohol and methamphetamine dependent people were interviewed over a 3 year period.

Results: Most of the participants described themselves as strong willed; in fact, as very strong willed. However, there seemed no correlation between having a (self-assessed) strong will and recovery status. Rather, the number of strategies cited by participants distinguished those in stable recovery from those who were not. Participants in recovery were also more enthusiastic about strategies than those who have not succeeded in controlling substance use. Willpower remained important, but was itself used strategically.

Conclusions: People with addiction seem not to be short on willpower; rather, recovery is dependent on developing strategies to preserve willpower by controlling the environment.

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1. Introduction

Laypeople, cognitive and social psychologists and philosophers very frequently invoke effortful capacities of self-control to explain both addiction and recovery from addiction. Psychologists and neuroscientists probe the extent to which executive function, and especially the capacity of impulse inhibition, are altered by the cascade of neural changes consequent on addiction (Baler & Volkow, 2006; Garavan & Stout, 2005; Nestor, Hester, & Garavan, 2010). The claim that an impairment of executive function partially explains why recovery from addiction is so difficult dovetails with the way in which ordinary people often invoke 'willpower', understood as a capacity of effortful resistance of temptation, to explain why some people become addicts or recover from addiction. Since the difficulties that addicted people face with controlling drug use seem difficult to explain by reference to compulsion or to the pains of withdrawal (Carter & Hall, 2012), and in light of the fact that many addicted people succeed in achieving abstinence or controlled use (Heyman, 2009), the invocation of executive function or of willpower seems well motivated.

The hypothesis that something like willpower plays a role in loss of control seems to receive support from recent work in psychology

widely held to have delineated its contours. According to the *ego depletion* hypothesis, self-control relies on a depletable resource (Baumeister, 2002; Baumeister, Bratslavsky, Muraven, & Tice, 1998). Individuals differ in their capacity to exercise self-control, in virtue of possession of different amounts of this resource. This capacity has been identified with willpower, both by psychologists (Baumeister & Vohs, 2007) and philosophers (Holton, 2009). Differences in success at controlling drug use may therefore be explained by differences in the resources that willpower draws upon (Baumeister, 2002, 2003; Levy, 2006, 2011; note, however, that the ego-depletion hypothesis is currently highly controversial following the finding of a multi-lab preregistered trial that found that the effect size was at best very small; Hagger et al., 2016; see also Carter, Kofler, Forster, & McCullough, 2015).

While we are sympathetic to the claim that an impairment of self-control is central to addiction, we will argue that willpower or executive capacities play less of a role in successful self-control than the pursuit of strategies. By 'self-control' we understand the mechanisms and processes whereby agents negotiate a recurrent problem we all face: resisting the temptation to consume smaller sooner rewards (rewards that are available immediately or almost immediately) when they conflict with larger later rewards (rewards which we prefer but which are relatively distant in time). Conflicts between these kinds of rewards are frequent, ranging from the relatively trivial (say, the conflict between watching one more episode of *Game of Thrones* and being well-rested

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tomorrow) to the personally significant (say, the conflict between buying a new car every two years and having enough money for retirement). We will use the term 'willpower' to refer to what Mele (1987) calls 'brute resistance': the capacity to resist temptation by effort of will. Willpower, in this sense, is roughly synonymous with executive function. We will suggest that while differences in willpower play a role in explaining relative success in recovery, other factors will play a bigger role. Exercising control over one's environment is particularly crucial, we claim (Kennett, 2013). We think that the deployment of what we will call *strategies* plays a central role in enabling control over drug use in many or most addicted people who achieve it.

In this paper, we briefly review theoretical reasons to think that willpower is less important than the use of strategies. We then adduce evidence from a qualitative study of addicted people that supports our claim that the deployment of strategies is often or always more important than willpower in enabling recovery. Earlier work has highlighted the importance of strategies in enabling self-control (Ainslie, 2001; Mele, 1987; Schelling, 1984). We believe that this is the first evidence that the utilization of such strategies, many self-generated, underlies recovery for many people with addiction independent of the state of their willpower. It is important to recognize that the evidence we present here is limited in important ways. Despite these limitations, we believe that it suggests the implementation of strategies may frequently be more effective in aiding recovery than willpower.

Though many theorists continue to maintain that willpower is central to self-control, recent work has cast doubt on this claim: differences in willpower do not correlate positively with differences in trait self-control (TSC), a measure of the difference between individuals in their capacity to exercise self-control, and TSC is predictive of success in a range of domains requiring self-regulation (de Ridder, Lensvelt-Mulders, Finkenauer, Stok, & Baumeister, 2012; Muraven, Pogarsky, & Shmueli, 2006; Tangney, Baumeister, & Boone, 2004). Individuals high in TSC are significantly more vulnerable to the effects of ego depletion than those who are lower in TSC, and, conversely, individuals more than one standard deviation below the mean in TSC show virtually no effect of depletion (Imhoff, Schmidt, & Gerstenberg, 2014).

The dissociation between TSC and willpower is explained, we think, by the fact that there is more than one way to exercise self-control. One way consists in the effortful resistance of temptation. This way of exercising self-control draws upon, and depletes, willpower. Because it depletes willpower, this approach is doomed to fail when it is called upon too often or continuously for too long, but under the right conditions it may be a powerful means of achieving agents' ends. However, self-control may very often better be achieved not by effortful resistance of temptation, but by deploying strategies to ensure either that temptations are not encountered, or that when they are encountered they are relatively easy to resist and little willpower is required. The selection and deployment of such strategies requires foresight and planning. This form of self-control is thus often termed diachronic self-control.

Individuals may avoid temptations, and therefore calls upon their willpower, by utilizing very simple strategies. If they find it difficult to resist sweet foods, they may choose not to have them in their homes, and avoid walking past the local bakery with its tempting smells. Alternatively, individuals may make it easier to resist temptations by making giving in relatively more costly. For example, they may choose to deposit money in term deposit accounts which impose penalties for early withdrawal: the penalty makes it less likely that they will give in to the urge to buy on impulse. The deployment of such strategies is a means of exercising self-control: by these means, we can deliberately bring it about that our pursuit of larger later rewards is not disrupted by conflicting smaller sooner rewards.

There is evidence that individuals high in TSC utilize such strategies to avoid giving in to temptations. Imhoff, Schmidt and Gerstenberg (2014) found that individuals high in TSC reported a lower frequency of engaging in effortful self-control. Data from Hofmann, Baumeister, Förster, and Vohs (2012) suggests we ought to interpret this evidence

as indicating deployment of strategies. Using an experience sampling methodology, Hofmann et al. found that high TSC correlated neither with whether subjects resisted desires when they experienced a conflict with regard to them nor with whether they went on to act on them. Rather, high TSC individuals reported fewer instances of experiencing temptations, and especially temptations from the set that an independent study reported as problematic. This suggests that rather than being better at resisting temptations, they are avoiding them.

More direct evidence comes from recent work by Ent, Baumeister, and Tice (2015). Participants in their experiments were given the option of performing a task in a boring but distraction free or a more distracting environment. Individuals high in TSC were significantly more likely to choose the distraction free environment. High TSC participants in this study self-reported that they avoid temptations. Taken together with the evidence that high TSC subjects are not better at resisting desires than other people, the available data strongly suggests that high TSC individuals deploy strategies to pursue their goals. This hypothesis explains their vulnerability to ego depletion. There is evidence that the capacity to effortfully resist temptations may be built up with practice (Hui et al., 2009; Muraven, Baumeister, & Tice, 1999; Oaten & Cheng, 2006a, 2006b, 2007). If high TSC individuals pursue their goals by avoiding temptations, they will fail to build up this capacity, and in the unfamiliar environment of the laboratory, where they cannot deploy their strategies, they will be especially vulnerable to self-control failures. What high TSC individuals do seem to be better at is anticipation and planning.

We now report evidence that the recovery of people with addictions is partially explained by their capacity to generate and use strategies that enable them to shape and manage their future environment. This data was gathered from surveys of addicted people in recovery that were designed with different aims in mind. Due to this fact, we did not probe the strategies that participants deployed as closely as we would now have liked. Moreover, the numbers involved were small. These facts entail significant limitations on our data. However, we believe that it is strongly suggestive that for at least some addicted people, recovery is explained not by willpower – which does not predict success – but by the deployment of strategies. Successful recovery requires diachronic self-control.

2. Method

The paper draws on findings from a sub-study of an Australian Research Council funded study entitled 'Addiction, identity and moral agency, integrating theoretical and empirical approaches'. The aim of the study was to evaluate how people with addiction perceived their self-control and agency. The larger study employed a mixed methods (qualitative and quantitative) longitudinal design. The results presented here are based on the Sydney component of the study, which was mainly qualitative. Study participants ($n = 69$) completed a life-line interview at baseline, and were followed up over a three-year period (baseline in 2011, and successive 12 month follow-up episodes in 2012, 2013, and 2014). At baseline all participants were asked about their goals for the next year and any plans they had made to achieve their goals. The questions we focus on in this paper: 'Do you see yourself as weak- or strong willed or just as everybody else?' and 'What strategies do you use to stay in control of your substance use?' were not the main focus of the research. The question about strength of will was not asked in the baseline interview, but added during the first follow-up. While we recognize the limitations of measuring will-power through self-report, this approach was mandated by the primary goal of this research: exploration of people's self-concept.

Recruitment and interviewing took place in a public detoxification treatment and an opioid substitute treatment facility. The follow-up interviews mostly took place at the hospital connected to these facilities, but also in public places or at participants' homes.

Respondents were between 23 and 64 years of age; most respondents were between 30 and 50. Around 70% were male (49) and 30% were female (20). The main focus was on alcohol and opioid dependency, since these substances have the highest prevalence for the in-treatment

population, but a small sample of amphetamine users was recruited, so comparison with a stimulant was possible (Alcohol = 32, Opioids = 35, Amphetamines = 7, some overlap because of multi-substance use). Most of the respondents were Australian (50). Most people were from poorer socio-economic backgrounds.

The study was approved by the Human Research Committee of St Vincent's Hospital and Macquarie University. Written informed consent was obtained from all participants. They were reimbursed for their time and expertise.

Interviews were recorded, fully transcribed verbatim, and analysed in NVivo. Each participant was given a pseudonym. Qualitative data was analysed at several levels: (i) interpretive content analysis, to identify typologies of ethical issues, (ii) thematic analysis, built on open and axial coding, to identify factors across different typologies; and (iii) values-discourse analysis, to identify ethical frameworks and thinking strategies. All the data was analysed by one researcher who also conducted the interviews. However, the transcripts of the interviews were read by two other researchers, and the results of the coding were extensively discussed within the research group. A small sample of the data was also analysed by two other researchers. This analysis of the other researchers was not used to determine inter-rater reliability, as we believe that in qualitative research each researcher brings a valued, but different point of view (Armstrong, Gosling, Weinman, & Marteau, 1997; Wertz et al., 2011). These different points of views were the purpose of the group discussions of the analysis and the coding by other researchers.

For the purpose of this paper, a qualitative comparative analysis was conducted (Jansen, 2014). When we looked at the answers from the respondents with regard to will-power, we saw that only a minority of people labelled themselves as weak-willed. We had expected that only people who had control over their substance use would label themselves strong-willed. But regardless of their recovery status, respondents labelled themselves as strong-willed. Perceiving oneself as strong-willed seems not to be a distinguishing property. We divided the respondents into groups corresponding to their recovery status, taking into account their responses on whether they had strategies to stay in control, and how detailed their plans for the future were, to look closer at their planning capacities. Since one person did the data collection, and spoke to the respondents several times over 3 years, she divided the respondents into the different recovery groups. The decisions on how many recovery types there were, and which respondents belonged to which group, were extensively discussed in the research group to ensure the reliability of the segmentation.

3. Results

3.1. Addicted people label themselves as strong-willed

When asked whether they see themselves as weak or strong willed, people predominately answered that they saw themselves as strong-willed. In fact, they often described themselves as very strong-willed. One person described himself as 'one of the strongest willed person you'd come across' (R66). Most people were quite consistent during the follow up in how they characterised the strength of their will: If they characterised themselves as strong one year, they were very likely to characterise themselves the same way the following year.

To see if strength of will was predictive of recovery, we've divided the respondents into 6 groups: *no recovery* (4), *rocky recovery* (8), *vulnerable recovery* (7), *resigned* (3), *controlled use* (5), *stable recovery* (5). The *no recovery* group consists of people who tried to control their substance use, but succeeded for no longer than a few days or weeks. *Rocky recovery* refers to those people who showed a pattern of being abstinent or who controlled their use for a few months, but then lost control again for an extended period. *Vulnerable recovery* refers to those who managed to stay abstinent for longer periods, but reported a constant struggle. *Resigned* refers to those respondents who appeared to give up the attempt to control their use. *Controlled use* refers to those who were satisfied with

the amount they consumed, although their use might still be high. Finally, *stable recovery* refers to people who managed to stay abstinent for a long period, and who reported no ongoing struggle.

Participants in every group except one predominately labelled themselves as strong-willed or average. The exception was the vulnerable recovery group, who often described themselves as weak-willed.

If these reports are accurate, people may struggle with substance use despite a strong will. We will suggest that strategies are often more reliable than willpower for bringing about recovery, so we do not find these reports surprising. But there are possible explanations for the lack of correlation between willpower and self-control that are compatible with it nevertheless playing an important role in self-control and which might be true in some or all of these cases.

3.2. Possible roles for willpower?

One possibility is that participants are not as strong-willed as they claim. Some doubted their self-diagnosis of being strong-willed: 'I'm a pretty strong-minded person, in saying that the addiction got me for 20 years so it's sort of ... it is a paradox in that regard' (R2, *rocky*).

A second possibility is that participants are indeed strong-willed but that their willpower is focussed on managing harsh and ego-depleting life circumstances.

I: You grew stronger over the years?

M: Yeah. Yeah. Yeah. Having to, basically having to. You know being on the streets and things like that. ... just having to do things for myself... Not being able to just sit back and say oh can you do them for me?
[(R35C)]

I was once sentenced by a judge you know, it's funny you used that term strong weak willed, he actually said (...) you've displayed strengths and weaknesses in your life and to get to this point and survive [you must have had strength of will]
[(R39B)]

Another possibility might be that being strong-willed isn't sufficient unless one applies one's will in the right way. One can be strong-willed in pursuing destructive behaviour. Ex-user Crispin Sartwell explains as follows:

Addiction is often conceived of as a failure of will... But in fact, and not necessarily incompatibly, addicts often suffer from an excess of will. Ask yourself what it takes to do that, say, every day. I tell you what it takes: it takes willpower. (...) you have to overcome a thousand bodily recalcitrances and make yourself keep pouring (Sartwell, 1999).

The respondents sometimes describe themselves in a similar way:

I've always been pretty strong willed. I guess I didn't always (...) use it (...) the best ways.
[(R40C, *stable*)]

Very strong-willed (chuckling). That's my problem, I'm very strong-willed.
[(R36B, *rocky*)]

I've always had it. (...) it's always been that strength that I've had, some inner strength. And I put myself in bad positions and I know it at times 'cause I like the bit of excitement and stuff, like dangerous positions.
[(R10C, *rocky*)]

This last respondent suggests a possible danger of a strong will: perhaps believing that one has a strong will leads to reckless behaviour,

because the person believes that they have the strength to extricate themselves from difficulties. Conversely, one respondent described how his weakness of will was also his strength (R49B). Another respondent described how he made his house a smoke-free zone, because he knew he was too weak-willed to resist temptation (R11). It may be that people who perceive themselves as weak-willed are more cautious. Many respondents describe relapses as involving a kind of hubris: they thought they could use again in a controlled fashion. 'I thought I was doing really well and I didn't have to do all that stuff to stay clean' (R18B).

3.3. Strategies are predictive of recovery

When asked what strategies they had to control their substance use, important differences between the groups emerged.

Unsurprisingly, people who are *resigned* don't cite many strategies since they have given up attempting to control their use. People in the *controlled* use category don't cite many strategies either. That may not mean that they don't rely on strategies extensively: perhaps their strategies are deeply ingrained or unconscious.

People in the *no recovery* group cite few strategies, but rate themselves as relatively high on willpower. Perhaps this explains why they make so little progress in recovery: they rely on willpower to resist temptation as it arises rather than recourse to diachronically implemented strategies. People in this group also tended to generate fewer concrete plans at baseline when asked about their goals for the next 12 months, which may indicate low TSC.

Those in *rocky recovery* seem the respondents best described by the ego-depletion theory. They are high in willpower and that keeps them abstinent for a certain amount of time, but then they relapse, perhaps because they get depleted. Another possibility might be that they use their willpower in the wrong way: once they relapse, they use their willpower to pursue a path of self-destructive behaviour.

People in *vulnerable recovery*, however, rate themselves very low on willpower, but are relatively high on strategies. This could indicate that they have changed from relying on their willpower to relying on their strategies. Perhaps because it takes time for strategies to become ingrained, their recovery is vulnerable. They don't trust themselves yet.

People in *stable recovery* seem to be high on willpower and on strategies. Interestingly at baseline this group generated the most detailed plans for the next 12 months. At the beginning of their recovery, most could easily cite 5–7 strategies, but as their recovery progressed, they no longer cited many strategies. It seems that for these people, as recovery progresses strategies become less conscious. In this group, many people succeeded in radically changing their environments and their identity. They have a stable daily structure. Sometimes no one in their new environment knows they are an ex-user. People in this group often report that they don't experience much temptation or craving anymore.

In general, people who have been in treatment come out with many conscious strategies, but not everyone is equally enthusiastic about the strategies that are available to them. People in all groups except the controlled use and the stable recovery group express ambivalence about their strategies: they state that they find it difficult to use them, that they don't really believe they work, or that they lack the discipline to use them. This ambivalence is not found in the stable recovery group: people in this group are very enthusiastic about strategies.

3.4. Control over environment is an important strategy used by people in stable recovery

When we looked more closely at the strategies people in stable recovery named, one strategy stood out: changing one's environment. Four of the five people in stable recovery actively changed their living

environment, to avoid substance related cues. Although the fifth person, Albert, didn't change his living environment, his work provided an environment in which he can't use. 'I am at work, so I can't use, I'm way out in the suburbs. I'm over at Terrey Hills at the moment you know and I'm not socialising with the same crowd that I normally hang around.' (R32B) One of his strategies is to go to work, no matter what.

Changing environments is often very difficult. In order to change their environment, people had to give up subsidised housing, because subsidised housing is often in neighbourhoods where there are many substance users. Rebecca describes how she moved places several times until she was in a trigger-free environment. When asked at the second follow up what the best thing that happened to her in the past year was, she replied:

I think moving to [BB] and starting my life down here was really very positive, definitely. And that was a big choice to make and I had to not listen to a lot of people telling me not to do it because I gave up my department of housing and I'm paying private rent now. So I had a lot of people telling me that I was crazy and that I wouldn't get work but no, I listened to myself and I moved down here and I'm very, very happy. And I got a job straight away.

[(R40C)]

In her new environment, no one knows she is an ex-user. Rebecca reports that after a while, the craving disappeared:

Oh it's not a real craving. It's more just like I think, oh that would be nice but it's not something that's a part of my life. (...) I remember what that feels like. That's ... but it's not something that I really have to work through because it's just not a part of my life. It doesn't fit into my life now. (...) I guess what I'm saying is that it hasn't really come up for me where I've had a craving and thought that, oh I could actually go and do that.

[(R40C)]

Tom has a similar story. He moved to a different state, and no-one knows he is an ex-user. Changing environments from a busy inner city to a small country town helped him to control his craving. He slowed his pace, and that slowed down his thought processes.

Graham moved in with his girlfriend, who has no substance abuse problems. This also provided him with a new identity: that of a partner. Graham still feels craving now and then, but it isn't strong anymore; he just distracts himself by watching a movie or engaging in some other activity. Iris moved to New Zealand. These people made quite radical changes in their environment and social networks. Because they were lucky enough to be able to find employment relatively easily, they could afford to give up subsidised housing.

3.5. What gets in the way of control of environment?

Respondents in other recovery groups also described efforts to control their environment: almost all were unsatisfied with their housing, and saw their current living situation as contributing to their relapses. But for many respondents options to move are very limited, for financial or social reasons. Moving away sometimes meant losing the only support they have left. 'I tried to take myself away from the people that I used with so [now] I don't really have any friends.' (R65B, *controlled*). People who are still struggling with recovery often say that they want to change their environment, but doing so results in isolation. People who couldn't move away from the drug scene described other strategies, for example blocking out their environments with music. When he has to do grocery shopping, one respondent wears his headphones so although he sees dealers walking up and down the street, he can't hear their sales pitch; he deliberately tunes out and just listens to his music.

I've just got to just play it sensible, (...) that's why I've got me music, you know, just if I don't want to hear them I just put them on (...) and block out everything.

[(R5, no follow-up available)]

One of the controlled users described how he limits his alcohol consumption by pre-buying his beer:

Well I don't hang out at pubs, I don't go to the pub anymore. Me and my boss, on a Friday afternoon, he'll stop at the bottle shop on the way home and get two stubbies for us and we'll have that on the way home and he'll drop me off and then I'll go home and I might just grab a six-pack of beer and I'll sit back and watch Friday night football.

[(R12B)]

For most respondents, controlling their environment is difficult due to financial and social restrictions. But people in stable recovery all managed to not only leave their old environment, but create a new environment for themselves in which they have a new identity.

3.6. Willpower plays a significant role in application of strategies

The respondents in stable recovery not only cited a wide range of strategies (control one's emotions, go to counselling, eating well, smell the roses, occupy mind and body, lose victim mentality, focus on positive things in the future), but also a strong determination.

Willpower seemed to be an important ingredient of their success. But this willpower needed to be directed stubbornly to their recovery. Albert describes how he has never been so sure about anything in his life than this [getting off the drugs]. Tom stresses that it is important to never stop trying, but it is very important to choose your battles, to choose how you expend your willpower:

It's choosing my battles and choosing what I want to deal with right now. (...) So you know it's a matter of choosing how ... not only the battle but how you, you know, how you work the battle, how you enter into it.

[(R39C)]

Tom seems here to describe a strategic use of willpower. Rebecca describes a similar experience: it is not only about fighting, but about fighting wisely.

I think it [addiction] is definitely a disease but it can become a choice. You can choose to not have the disease, do you know what I mean? (...) It's like a really bad flu that you know you have to fight off. (...) You can choose to fight it off just by becoming healthier and making smarter decisions. Like instead of going out in the wet and rain without a raincoat you wouldn't do that to get sick, (chuckling), just doing smarter things, yeah.

[(R40C)]

In this description of what works for Rebecca we see that both strategies (analogous to preventing the flu) and willpower (fighting off the flu) are important.

4. Conclusion and discussion

Addiction has often been characterised as a failure of the will (Baumeister, 2002; Baumeister & Vohs, 2007). While the importance of the deployment of strategies that involve limiting one's exposure to temptation has long been recognised in the treatment field as crucial to maintaining abstinence, in the light of the widespread belief that addicted people have weak wills, strategies may have been seen as necessary to compensate for a lack of willpower. But our data combined with the recent research on TSC described above suggests otherwise. It is not peculiar to addiction that strategies, planning, and the

avoidance of temptation, are required for agential success. It is not (just) those who are compromised in their willpower who must utilize strategies to achieve their goals; rather, we all need to. Poor or no strategies, and limited opportunities might be more fundamental than lack of willpower to understanding loss of control in addiction.

Although we started with a large sample ($n = 69$), after losing almost half of the group in the follow up, and dividing the remaining participants into 6 groups, the numbers for each group were quite small. Another limitation of our study was that we measured will-power by self-report, because the main focus of the interview was people's self-concept. It is also a limitation that we did not ask the respondents how they understood will-power though we have explored several possible interpretations. However, we think it fair to assume that their understandings are broadly consistent with a view of strength of will as involving two distinct factors: action in accordance with best judgment and perseverance whether in accordance with values or not. This view of strength of will is suggested by reported studies of lay views of its opposite, weakness of will (May & Holton, 2012; Mele, 2010). It is the tension between the two factors that explains the ambivalence expressed by some of our respondents. As we mentioned at the outset, the interviews were not conducted with the goal of assessing the extent to which recovery was better explained by the deployment of strategies or the use of willpower. Despite these limitations, we believe our data (in conjunction with the psychological evidence already available) offer some support to our claim that willpower takes a secondary role in successful self-control.

Most of the participants described themselves as strong willed; in fact, as very strong willed. Indeed the very difficult life circumstances that had to be managed every day by many of the participants supports this self-assessment. Participants needed to be strong to survive day to day. But strong will did not predict recovery. That fact raises an immediate problem for the view that willpower explains recovery — and conversely that weakness of will is the core failing in addiction. One possibility is that a strong will can be misapplied: recovery is explained by the correct application of a strong will and uncontrolled use by its misapplication. While the correct application of willpower is surely part of the story of recovery, we think it is unlikely that it is central. As some participants note, strength of will may lead to a hubristic resumption of use, and then prove completely inadequate. We think that planning capacity and the deployment of diachronic strategies that bypass willpower is more important for recovery.

Supporting this view, participants in recovery cite more strategies and are more enthusiastic about them than those who have not succeeded in controlling substance use. There is also a clear correlation between recovery and evidence of concrete planning to reach goals probed in the baseline interviews. Importantly, recovery correlates with absence of cravings and of the experience of temptations. When cravings and temptations are not experienced, people need not rely on willpower. A major reason for this absence of cravings and temptations is that participants in recovery remove themselves from the environment in which they used to use and avoid friends from their using days (cravings are known to be triggered by cues of drug availability; O'Brien, Childress, Ehrman, & Robbins, 1998). These strategies seem to be deployed knowingly by participants as a way to avoid temptations. Conversely, participants who have not been successful in controlling use often report that they know that they should avoid old environments, but face very significant financial or social obstacles to moving to a new environment. Participants who remain in their old environment deploy strategies to avoid temptations. Several mention the use of headphones so they don't hear the sales pitch of dealers when they can't avoid them.

We stress that we do not believe that willpower is irrelevant to successful recovery. It probably takes willpower to deploy strategies at all. Because willpower is likely fragile, as Baumeister et al. (2007) have emphasised, such a use of willpower is successful because it need not continue; the person who effortfully deploys the strategy of blocking

out the sales pitch of the dealer with headphones doesn't need willpower to resist that pitch. Willpower is best used strategically, and the participants mention several strategies for doing so. They 'pick their battles'.

It is striking that the theoretical perspective that we develop here, inspired by work in psychology, seems to be shared by the participants. Both those in recovery and those in vulnerable recovery recognize that avoiding the need to use willpower, by changing environments and avoiding other cues associated with drug availability, is key to successful recovery. It may be that the most important difference between those who have achieved meaningful recovery and those who have not lies not in their skills or knowledge, but in whether they were able to overcome the financial and social obstacles to moving to a non-pathogenic environment.

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Contributors

Jeanette Kennett and Anke Snoek designed the study. Neil Levy and Jeanette Kennett wrote the theoretical framework. Anke Snoek was mainly responsible for collecting and analysing the data, and she wrote the empirical part of this paper.

Conflict of interest

All authors declare that they have no conflicts of interest.

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References

- Ainslie, G. (2001). *Breakdown of will*. Cambridge: Cambridge University Press.
- Armstrong, D., Gosling, A., Weinman, J., & Marteau, T. (1997). The place of inter-rater reliability in qualitative research: An empirical study. *Sociology*, 31, 597–606.
- Baler, R. D., & Volkow, N. D. (2006). Drug addiction: The neurobiology of disrupted self-control. *Trends in Molecular Medicine*, 12, 559–566.
- Baumeister, R. F. (2002). Ego depletion and self-control failure: An energy model of the self's executive function. *Self and Identity*, 1, 129–136.
- Baumeister, R. F. (2003). Ego depletion and self-regulation failure: A resource model of self-control. *Alcoholism: Clinical and Experimental Research*, 27, 1–4.
- Baumeister, R. F., & Vohs, K. D. (2007). Self-regulation, ego depletion, and motivation. *Social and Personality Psychology Compass*, 1, 115–128.
- Baumeister, R. F., Bratslavsky, E., Muraven, M., & Tice, D. M. (1998). Ego-depletion: Is the active self a limited resource? *Journal of Personality and Social Psychology*, 74, 1252–1265.
- Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science*, 16, 351–355.
- Carter, A., & Hall, W. (2012). *Addiction neuroethics: The promises and perils of neuroscience research on addiction*. Cambridge: Cambridge University Press.
- Carter, E. C., Kofler, L. M., Forster, D. E., & McCullough, M. E. (2015). A series of meta-analytic tests of the depletion effect: Self-control does not seem to rely on a limited resource. *Journal of Experimental Psychology: General*, 144(3), 1–20.
- de Ridder, D., Lensvelt-Mulders, G., Finkenauer, C. F., Stok, M., & Baumeister, R. F. (2012). Taking stock of self-control: A meta-analysis of how trait self-control relates to a wide range of behaviors. *Personality and Social Psychology Review*, 16, 76–99.
- Ent, M. R., Baumeister, R. F., & Tice, D. M. (2015). Trait self-control and the avoidance of temptation. *Personality and Individual Differences*, 74, 12–15.
- Garavan, H., & Stout, J. C. (2005). Neurocognitive insights into substance abuse. *Trends in Cognitive Science*, 9, 195–201.
- Hagger, M. S., Chatzisarantism, N. L. D., et al. (2016). A multilab preregistered replication of the ego-depletion effect. *Perspectives on Psychological Science*, 11(4), 546–573.
- Heyman, G. (2009). *Addiction: A disorder of choice*. Cambridge MA: Harvard University Press.
- Hofmann, W., Baumeister, R. F., Förster, G., & Vohs, K. D. (2012). Everyday temptations: An experience sampling study of desire, conflict, and self-control. *Journal of Personality and Social Psychology*, 102L, 1318–1335.
- Holton, R. (2009). *Willing, wanting, waiting*. Oxford: Oxford University Press.
- Hui, S. A., Wright, R. A., Stewart, C. C., Simmons, A., Eaton, B., & Nolte, R. N. (2009). Performance, cardiovascular, and health behavior effects of an inhibitory strength training intervention. *Motivation and Emotion*, 33, 419–434.
- Imhoff, R., Schmidt, A. F., & Gerstenberg, F. (2014). Exploring the interplay of trait self-control and ego depletion: Empirical evidence for ironic effects. *European Journal of Personality*, 28, 413–424.
- Jansen, H. (2014). The logic of qualitative survey research and its position in the field of social research methods. *Forum: Qualitative Social Research*, 11(2), 1–14.
- Kennett, J. (2013). 'Just say no'? Addiction and the elements of self-control. In N. Levy (Ed.), *Addiction and self-control* (pp. 144–164). Oxford: Oxford University Press.
- Levy, N. (2006). Addiction, autonomy and ego-depletion. *Bioethics*, 20, 16–20.
- Levy, N. (2011). Addiction, responsibility and ego-depletion. In J. Poland, & G. Graham (Eds.), *Addiction and responsibility* (pp. 89–112). MIT Press.
- May, J., & Holton, R. (2012). What in the world is weakness of will? *Philosophical Studies*, 157, 341–360.
- Mele, A. (1987). *Irrationality: An essay on akrasia, self-deception, and self-control*. Oxford: Oxford University Press.
- Mele, A. (2010). Weakness of will and akrasia. *Philosophical Studies*, 150, 391–404.
- Muraven, M., Baumeister, R. F., & Tice, D. M. (1999). Longitudinal improvement of self-regulation through practice: Building self-control strength through repeated exercise. *The Journal of Social Psychology*, 139, 446–457.
- Muraven, M., Pogarsky, G., & Shmueli, D. (2006). Self-control depletion and the general theory of crime. *Journal of Quantitative Criminology*, 22, 263–277.
- Nestor, L., Hester, R., & Garavan, H. (2010). Increased ventral striatal BOLD activity during non-drug reward anticipation in cannabis users. *NeuroImage*, 49, 1133–1143.
- Oaten, M., & Cheng, K. (2006a). Improved self-control: The benefits of a regular program of academic study. *Basic and Applied Social Psychology*, 28, 1–16.
- Oaten, M., & Cheng, K. (2006b). Longitudinal gains in self-regulation from regular physical exercise. *British Journal of Health Psychology*, 11, 717–733.
- Oaten, M., & Cheng, K. (2007). Improvements in self-control from financial monitoring. *Journal of Economic Psychology*, 28, 487–501.
- O'Brien, C. P., Childress, A. R., Ehrman, R., & Robbins, S. J. (1998). Conditioning factors in drug abuse: Can they explain compulsion? *Journal of Psychopharmacology*, 12, 15–22.
- Sartwell, C. (1999). Addiction and authorship. *Canadian Aesthetics Journal/Revue Canadienne d'Esthétique*, 4 (http://www.uqtr.ca/AE/vol_4/sartwell.htm).
- Schelling, T. C. (1984). Self-command in practice, in policy, and in a theory of rational choice. *American Economic Review: Papers and Proceedings*, 74, 1–11.
- Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72, 271–324.
- Wertz, F. J., Charmaz, K., McMullen, L. M., Josselson, R., Anderson, R., & McSpadden, E. (2011). *Five ways of doing qualitative analysis: Phenomenological psychology, grounded theory, discourse analysis, narrative research, and intuitive inquiry*. New York/London: The Guilford Press.