The Network Theory of Willpower

1 INTRODUCTION

Various things might influence our ability to act (A):
1. Whether A is logistically possible
2. Whether A is something we are capable of doing (Honore 1964: Malo 2003)
3. Whether we can resist A — where A-ing is incompatible with A-ing (Malo 1996)
4. Whether we are over-determined to do A — where A-ing is incompatible with all other intentions
5. [your suggestion here]
6. Willpower

What is willpower?

Willpower is the thing that, when sufficiently strong, accounts for one's ability to fulfill an intention, controlling for 1-5 (n.b., this is broader than the 'willpower' that people have in mind when using 'self-control' — i.e., the ability to overcome and/or resist strong desires).

What is the nature of willpower?

Willpower is the (causal) effect of a network of variables.

2 ARMCHAIR APPROACH

Anecdotal introspective evidence indicates what willpower is related to:

2.1 Anecdotal Evidence

Stress

Anecdotal and introspective evidence indicates that willpower is related to performance variance on tasks that require executive function is significantly related to the sterngth of willpower, it is by no means the only factor significantly related to ego-depletion effects (Wier 2012). This prompted studies which found that blood glucose levels were depleted by various ego-depleting tasks — even if only by a marginally significant (p < .05) amount (Gallo et al. 2007). When experiments control for variables such as time of day, then it could be worthwhile to consider the relationship between lower blood glucose and performance on a demanding task (ibid., Study 6). By comparing the performance of participants who ingest glucose in between ego-depletion tasks with participants who ingest water in between ego-depletion tasks, it was found that marginally significant ego-depletion effects in the placebo group were not present in the glucose group — which suggests that ingesting glucose can partially undermine ego-depletion effects (Study 6).

Blood Glucose

By focusing 'locally' some researchers realized that blood glucose is related to ego-depletion effects (Miller 2012). This prompted studies which found that blood glucose levels were depleted by various ego-depleting tasks — even if only by a marginally significant (p < .05) amount (Gallo et al. 2007). When experiments control for variables such as time of day, then it could be worthwhile to consider the relationship between lower blood glucose and performance on a demanding task (ibid., Study 6). By comparing the performance of participants who ingest glucose in between ego-depletion tasks with participants who ingest water in between ego-depletion tasks, it was found that marginally significant ego-depletion effects in the placebo group were not present in the glucose group — which suggests that ingesting glucose can partially undermine ego-depletion effects (Study 6).

3.2 Addtional Findings

In addition to findings that confirm armchair intuition, there are other interesting effects.

Executive Function

Investigations of willpower have probably revealed only fragments of the whole picture (Norenzayan, 2006). Even when accounting for all the variables that might be able to isolate node-level effects like glucose depletion (Gallo et al. 2007).

3.2.1 Unconscious Nodes

Some nodes in the network will overlap. For example, both anecdotal experience and empirical results. Weight Watchers (Ahem, Olson, and Lynch 2013) and Alcoholics Anonymous (Scott, Connors, and Miller 2003) are familiar examples of how external social support can improve agents' ego-depletion effects (Wier 2012). This prompted studies which found that blood glucose really was related to ego-depletion effects (Wier 2012). By fortunate "accident" some researchers realized that blood glucose is related to performance variance on tasks that require executive function (Gailliot et al., 2007).

4 THE NETWORK

Investigations of willpower have probably revealed only fragments of the whole picture (Norenzayan, 2006). Even when accounting for all the variables that might be able to isolate node-level effects like glucose depletion (Gallo et al. 2007). And in alcohol-dependent human, the presence of certain molecules in the gut is significantly related to alcohol consumption (Leclercq et al. 2012). More specifically, it was found that marginally significant ego-depletion effects in the placebo group were not present in the glucose group — which suggests that ingesting glucose can partially undermine ego-depletion effects (Study 6).

Social Support

Support

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3.2 Conclusion

Experimental findings suggest that willpower is related to a variety of variables, none of which seem to singularly capture the nature of willpower

4.1 Selected Implications

External Nodes

Some nodes in the network will overlap. For example, both anecdotal experience and empirical results. Weight Watchers (Ahem, Olson, and Lynch 2013) and Alcoholics Anonymous (Scott, Connors, and Miller 2003) are familiar examples of how external social support can improve agents' ego-depletion effects (Wier 2012). This prompted studies which found that blood glucose really was related to ego-depletion effects (Wier 2012). By fortunate "accident" some researchers realized that blood glucose is related to performance variance on tasks that require executive function (Gailliot et al., 2007).

Unconnected Nodes

Not all nodes in the network will be connected. For example, both anecdotal experience and empirical results. Weight Watchers (Ahem, Olson, and Lynch 2013) and Alcoholics Anonymous (Scott, Connors, and Miller 2003) are familiar examples of how external social support can improve agents' ego-depletion effects (Wier 2012). This prompted studies which found that blood glucose really was related to ego-depletion effects (Wier 2012). By fortunate "accident" some researchers realized that blood glucose is related to performance variance on tasks that require executive function (Gailliot et al., 2007).

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5 CONCLUSION

The network theory of willpower can not only predict what willpower is related to as a whole but and that none of these variables seem to provide a singular or complete account of the nature of willpower; it can also offer a principle explanation for the role of variables in explaining the phenomenon of willpower. In other words, the network theory makes sense of multiple armchair intuitions and experimental findings of armchair intuitions and experimental findings of willpower (and p) unify the approaches themselves by highlighting the shared features of otherwise unrelated investigations.
Mood	Sometimes an overwhelmingly good mood can make it abnormally easy to fulfill our intentions. Indeed, a good mood might even trump the effects of some of the other variables like fatigue and hunger.

2.2 Introspective Evidence

In addition to our anecdotal evidence, we might appeal to our experience of what it is like to exercise willpower. When we introspect about this experience, we might find the following.

Ego-depletion

Think about exercise. One feeling stands out among the rest. As we exercise, we have a sense that our ability to (intentionally) continue exercising wanes. Sometimes — especially during exercise sessions that we sense that our ability to continue is so depleted that we feel as though all we can do is give up. It is not just that we have reached a threshold beyond which we have no control; we have an introspective sense that it is more than that. We are consuming some other resource. I think it is common for many people to refer to this resource with ‘willpower’.

2.3 Conclusion

Anecdotal and introspective evidence provide some reason to think that willpower is related to multiple variables.

3 EXPERIMENTAL APPROACH

We can only learn so much from the armchair, so we might also look to experimentation to tell us about the nature of willpower.

3.1 Confirming The Armchair Findings

Science often starts by proving our intuitions and experiences to form some kind of theoretical expectation that can be tested. So it is not surprising that some experimenters have already investigated some of the phenomena that were observed in the armchair.

Fatigue

Sleep deprivation — the effects of which include negative mood and fatigue — degrades performance on the psychomotor vigilance task, which requires executive function — and ingestion of the amino acid l-tryptophan similarly related to circadian rhythm.

Fatigue

As we consider the variables that are related to willpower, we can begin to post nodes in the network. For example, the fact that negative mood is correlated with weakened willpower (Tice et al. 2007, Study 3) and that positive mood is correlated with increased willpower (Stein & Reaves 2005) merits posting that mood might could be a part of the willpower network (see Figure 1). Add to that the fact that decreased social support is significantly related to negative mood, and vice versa and we might posit that social support is connected to the mood node in the willpower network (Sarason, Levine, Blashfield, & Sarason 1983). Thus, mood and social support might constitute a fragment of the willpower network (Figure 1).

Once enough nodes of the willpower network have been posited, positive and negative causal network fragments might emerge. For example, the fact that goal-attainment is related to positive mood (Brunstein, Schutte, and Ruth 1998; Mcintosh 1996; Sheldon and Kasser 1995) merits posting a node, goal-attainment, which is connected to the motivational support fragment. With a few more nodes, this fragment might form a mutually reinforcing causal network.

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This self-reinforcing network dynamic leads to negative affect in negative mood, which results in decreased self-regulatory capacity, which results in decreased social support, which results in decreased goal-attainment, which results in increased negative affect, and so on — completing the circle — results in (additionally) negative mood. This mutually reinforcing nature of this negative cycle will be familiar to those experiencing depression (see Figure 1).

In principle, the same nodes, with different values (e.g., a high instead of a low value for social support), could become a mutually reinforcing positive causal network. It is worth pausing a moment to highlight this: once

FIGURE 1: SKETCH OF THE WILL-POWER NETWORK


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