The COM-B System of Behaviour Change: Properties, Problems and Prospects

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Abstract

The COM-B system of behaviour change is analysed.   The system involves three processes termed "Capability", "Opportunity" and "Motivation". The crucial motivational element of "Wanting" is missing from the system. Wanting eliminates the intention-behaviour gap in explaining why people do or do not do the things necessary for their survival. Prospects for self-protective behaviour change in health emergencies such as the SARS-COV-2 pandemic will be greatly improved when the core motivational process of wanting is restored within motivational theory.

The COM-B System of Behaviour Change: Properties, Problems and Prospects

Human choices and methods for influencing them are core topics in theoretical psychology. In attempting to mitigate the effects of the SARS-COV-2 pandemic, it is more than an academic issue to determine whether current models of behaviour change are fit for purpose. A major class of models termed 'social-cognitive models' (SCM) rely on social and cognitive representations that are hypothesised to take place inside people's heads. In spite of their widespread use, neither the pre- nor post-SARS-COV-2 evidence on behaviour change justifies any confidence in the SCMs. The evidence suggests that current psychological theories and models are an inadequate foundation for effective interventions. A critique of the main SCMs has been published elsewhere (Marks, Murray & Estacio, 2018). The majority of SCMs show an individualistic bias, internalize choice as a process similar to the operating system of a computer, assumed that the processes are both universal and rational by following a fixed set of formulae that the models attempt to describe. In using small samples of college students or patients, the power, ecological validity and generalizability of the majority of studies is questionable. Multiple procedural issues indicate that the standard procedure for developing questionnaires used in theory testing systematically produce problematic questions. Most studies use self-reported measures of intention and behaviour rather than objective measures. The models generally neglect of culture, ethnicity, religion and gender. SCMs do not adequately address the motivational determinants of risky behaviours. In certain cases, the very riskiness of certain behaviours is responsible for their adoption.

On the basis of current evidence, SCMs and other theories claiming universal application receive only weak empirical support. In spite of the lack of supportive evidence, one recent model called the 'Capability-Opportunity-Motivation

Behaviour' moeld or 'COM-B' has been applied in a variety of behavioural domains including personal protective behaviours to prevent infection during the SARS-CoV-2 outbreak. Michie, van Stralen and West (2011) synthesised interventions into a single framework with two levels, one representing intervention functions and the other representing higher-order policy categories. The resulting Behaviour Change Wheel (BCW) is claimed by its inventors to provide "a systematic way of characterising interventions that enables their outcomes to be linked to mechanisms of action, and can help to diagnose why an intervention may have failed to achieve its desired goal. The nine intervention functions and seven policy categories are linked to a model of behaviour at the hub of the wheel" (Michie, Atkins & West, 2014), which is the COM-B. I review here the nature of the COM-B system, its properties, problems and prospects.
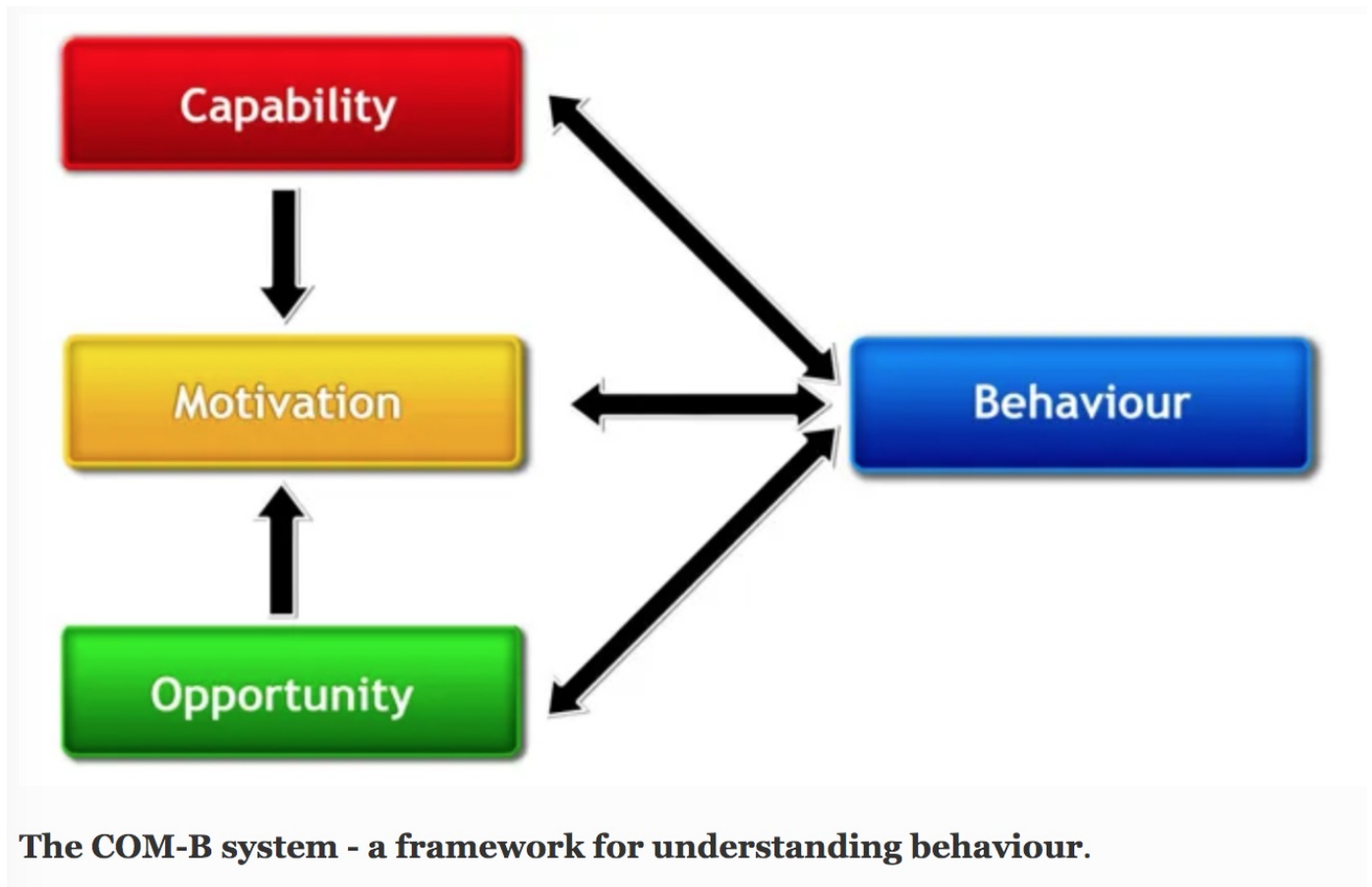
The COM-B System

Michie, Van Stralen and West (2011) proposed "a 'behaviour system' involving three essential conditions: capability, opportunity, and motivation" that forms the hub of the 'Behaviour Change Wheel' (BCW)." The authors mention two sources for the idea of the COM-B:

"a US consensus meeting of behavioural theorists in 1991 [see Fishbein et al., 2001] and a principle of US criminal law dating back many centuries...Under US criminal law, in order to prove that someone is guilty of a crime one has to show three things: means or capability, opportunity, and motive."

They continue:

"This suggested a potentially elegant way of representing the necessary conditions for a volitional behaviour to occur...We have built on this to add nonvolitional mechanisms involved in motivation (e.g., habits) and to conceptualise **causal associations** between the components in an interacting system."

A conceptual framework used by the courts to prove the innocence or guilt of accused felons may not necessarily be the most appropriate model to apply to the everyday behavioural choices of non-criminals. In spite of the widespread attention paid to the COM-B, in the analysis to be presented, the hub of the COM-B is incomplete and manifestly does not work when applied to the most basic of choices such as smoking, drinking and the wearing of face masks in a pandemic. Here I explain why.

The COM-B system - a framework for understanding behaviour.

In the COM-B system, Capability, Opportunity, and Motivation are said to 'interact' to generate Behaviour. C, O and M are claimed to be sufficient and necessary conditions for B. Before discussing the model, we need some definitions:

Definitions

Michie et al. (2011) give the following definitions:

'Capability' is defined as the individual's psychological and physical capacity to engage in the activity concerned. This includes having the necessary knowledge and skills. In plain language, 'capability' means 'fit to'.

'Motivation' is defined as all those brain processes that energize and direct behaviour, not just goals and conscious decision-making, e.g. habitual processes, emotional responding, as well as analytical decision-making. Thus motivation equates with 'need to'.

'Opportunity' is defined as all of the factors that 'lie outside the individual that make the behaviour possible or prompt it'. Thus opportunity means 'can do'.

To these definitions, it is necessary to add definitions for 'want' and 'need':

'Want' - A mental state that motivates an individual or group towards a goal that is desirable but inessential for survival.

"Need' - A physical or mental state that motivates an individual or group towards a goal that is desirable and essential for survival.

   Note that 'want' and 'need' are overlapping but different constructs so that it is possible to want without need (e.g. to go to the cinema) or to need without want (e.g. to go to the dentist). One can simultaneously both need and want something (e.g. to go to the supermarket) or both not need and not want (e.g. to go into quarantine when travelling into the UK during the pandemic). All four scenarios exist when capability and opportunity are both present. Clearly, this is a major logical

problem for the COM-B system and the BCW. If the hub is broken, then the wheel cannot work either.

The authors of the COM-B model claim that if one is fit to, needs to and can do a particular behaviour, *then one will do it*. Yet, as indicated above, the simplistic three-pronged approach won't work because the process of wanting is missing.

Using the original context for the COM-B model – the proving of guilt or innocence in the courtroom – the following A mental state that motivates an individual or group towards a goal that is desirable but inessential for survival.

A mental state that motivates an individual or group towards a goal that is desirable but inessential for survival.

Consider the example drawn from the domain of criminology: *Robbing a Bank*. I refer to that fictitious character Joe Blow (pronouns: him/her/their). According to the COM-B: Joe Blow (JB) would (X rob a bank, Y kiss the queen, Z fly to the moon, whatever) if it can be shown that JB is fit to, needs to, and can do X, Y or Z. The key missing element of wanting is the determining factor when the other three factors are all present. JB must want to carry out X, Y or Z if he is to actually to do it. If JB doesn't want to, he/she/they simply won't do it, no matter what.

Imagine the following scenario:

1) Capability: JB is fit to rob a bank because he/she/they is physically strong and has a jemmy and a set of tools for breaking open doors and safes.

2) Opportunity: JB has discovered that there is a back alley and a back door with an alarm that a friend who works in the bank will leave switched off on any night of their choosing.

3) Motivation: JB is hugely in debt (to a bank, as it happens) so he/she/they need(s) money very badly, and so there is a strong motive to rob a bank.

However, in spite of ticking all three boxes of the COM-B, JB chooses not to rob the bank. Why so? It could be for a million-and-one different reasons. JB does not rob the bank because:

- robbing the bank would be wrong,
- robbing the bank would be risky - i.e. if JB is convicted of the crime, JB would go to prison,
- if found out, it would look bad in front of the neighbours,
- robbing the bank would upset the bank manager whom JB knows well and meets for drinks in the local pub,
- robbing the bank would upset JB's partner,
- robbing the bank would be an unreasonable and unfair,
- etc

In spite of JB ticking all three of the COM-B boxes, the COM-B fails to predict JB's behaviour. There is a hidden barrier. In multiple situations people do not choose to do something from which they could benefit simply because *they do not want to.*

Returning the example, imagine another similar individul, JB's twin, who ticks all three of the COM-B boxes and proceeds to commit the bank robbery. JB's twin, Les Blow (LB), lives on the other side of town. JB tells LB about the bank, the back alley and the dodgy security guard. Like JB, LB also meets all three COM-B criteria - fit to, needs to, and can do the bank robbery. However, LB has none of JB's moral and social scruples and proceeds to rob the bank. The twins act differently under essentially similar circumstances, revealing the crucial importance of wanting.

The COMA-B

The COM-B requires reformulation. The diagram of the COM-B model shows five arrows representing so-called

'interactions', three of which point in both directions. However, four of the 'interactions' do not exist and none works in both directions. Only one 'interaction' in the COM-B diagram is anywhere near causal. As we have shown, in order to do something, a person also has to want to do it more than they want not to do it. The COM-B is reformulated as the 'COMA-B' in the diagram below. (A = 'Agrees to', which makes a better acronym than using W for 'Wants' : COMW-B).
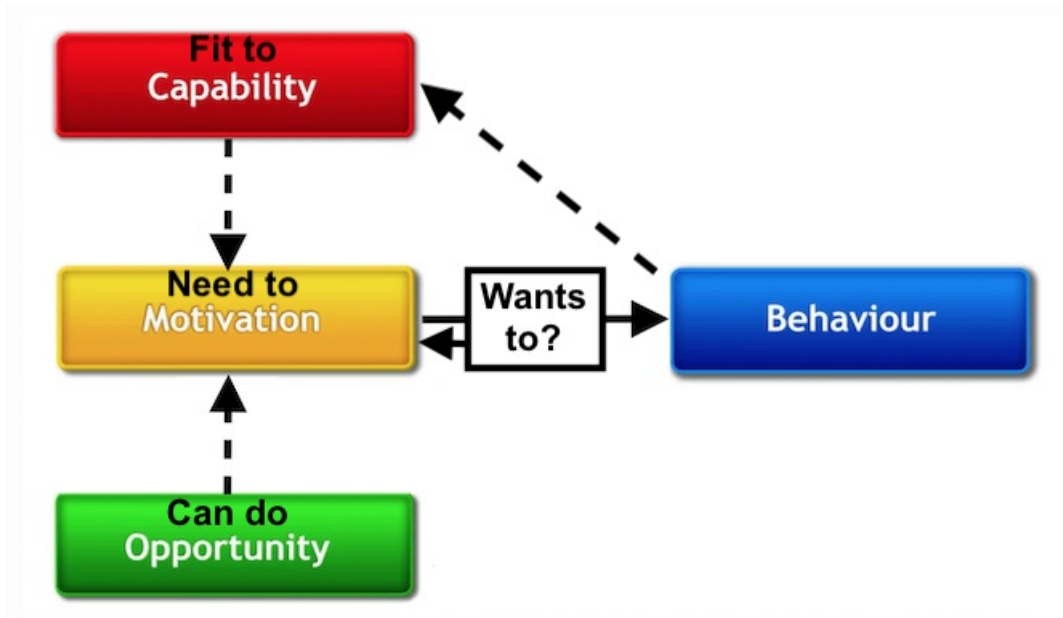

Adding the box for 'wants to' and placing the arrows differently converts the 'COM-B' into the 'COMA-B'. It is necessary to distinguish enablers from causes. Fit-to capability and can-do opportunity are enablers of need-to motivation; wants-to is causal. In sum, there are four necessary conditions for any action X:

1. needing to do X
2. having the capability to do X
3. having the opportunity to do X
4. wanting to do X

Reformulation of the COM-B

In a recent publication, West and Michie. (2020) have reformulated the COM-B system by bringing it more into line with logical and empirical requirements. Several features of the new COM-B-V2 are noted: "First, capability and opportunity are shown as influencing the relationship between motivation and behaviour, rather than the behaviour itself. This represents the idea that, at an individual and moment-to-moment basis, they act like 'logic gates' in that both of the 'gates' (capability and opportunity) need to be open for motivation generate the behaviour. Aggregated over time and people, we can think of capability and opportunity more quantitatively: the greater the capability and opportunity the more likely a behaviour is to occur because the more often the 'gates' will be open when the motivation is present" (West & Michie, 2020). Capability and opportunity have become 'gates', or what I have termed above, 'enablers'. However, the COM-B-V2 retains the fatal flaw of omitting wants as the crucial causal determinant of behaviour. Wanting converts intention into behaviour and removes the intention-behaviour gap.
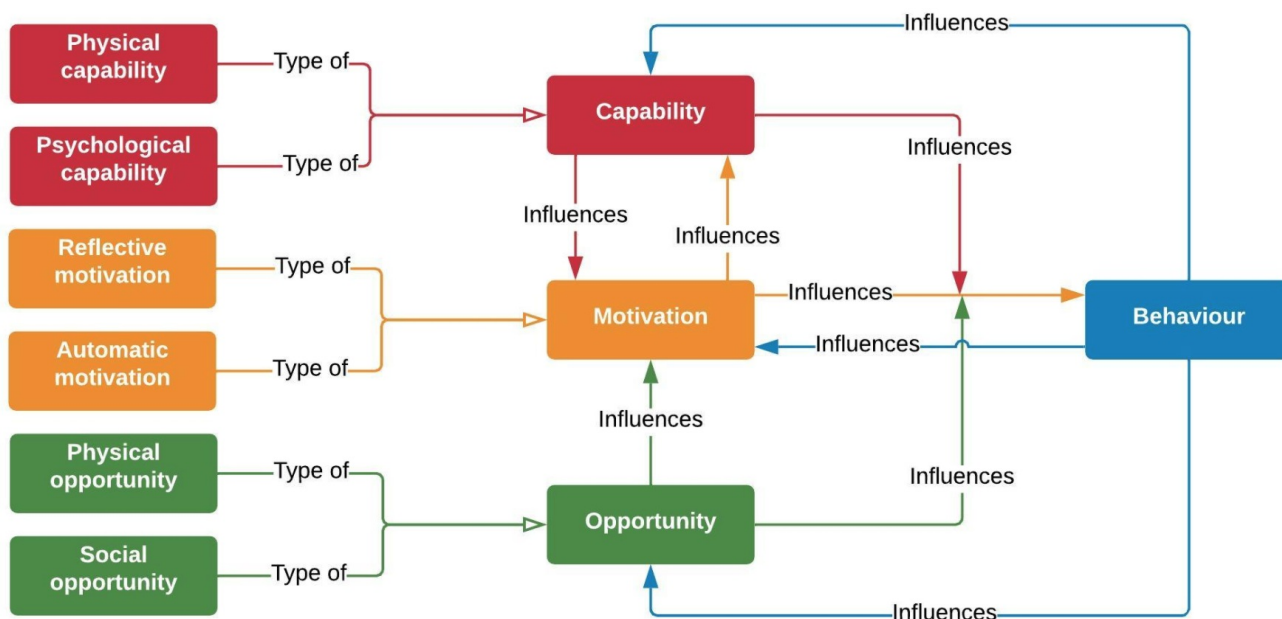
CONCLUSIONS

1. The COM-B and COM-B-V2 are dysfunctional as hubs for behaviour change interventions because they omit the crucial causal role played by wanting.

2. For the above reason, the COM-B and COM-B-V2 models of behaviour change are unfit for purpose. The failure to include wanting explains the intention-behaviour gap and the lack of empirical support for models of behaviour change.

3. Prospects for behaviour change models in health emergencies such as the SARS-COV-2 pandemic will be greatly improved when the core motivational process of wanting is restored within motivational theory.

REFERENCES

Fishbein, M., Triandis, H. C., Kanfer, F. H., Becker, M., Middlestadt, S. E., & Eichler, A. (2001). Factors influencing behavior and behavior change. *Handbook of health psychology*, *3*,

Marks, D.F., Murray, M. & Estacio, E.V.G. (2018). *Health psychology. Theory, research & Practice* (6th ed.). London: Sage Publications.

Michie, S., Atkins, L., & West, R. (2014). The behaviour change wheel. *A guide to designing interventions. 1st ed. Great Britain: Silverback Publishing*, 1003-1010.

Michie, S., Van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation science*, *6*(1), 42.

West, R. & Michie, S. (2020). A brief introduction to the COM-B Model of behaviour and the PRIME Theory of motivation. Qeios. doi:10.32388/WW04E6.2.