



The “more is less” effect in equifinal structures: Alternative means reduce the intensity and quality of motivation



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HIGHLIGHTS

- Increasing the number of means to a goal reduces their perceived instrumentality.
- Means distinctiveness (vs. similarity) reduces perceived means instrumentality.
- Increasing means–goal association reduces the instrumentality of other means.
- Increasing the number of means impacts decision making and reduces the motivation intensity.
- Increasing the number of means to a goal reduces intrinsic motivation.

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ABSTRACT

Prior research in a multifinality context has demonstrated a *dilution effect* whereby the number of goals connected to a means is inversely connected to the perceived instrumentality of each means (Zhang, Fishbach, & Kruglanski, 2007). In the present research, six studies tested whether the dilution effect would also occur in an equifinality context where more than one means serves a single goal. The results corroborated this hypothesis. Presenting additional means (Study 1) and having participants self-generate multiple means (Study 2) led, as expected, to a reduction in perceived effectiveness of the means. The effect was stronger when the means within the set were seen as distinct rather than similar (Study 3). Increasing the strength of association between one means and the goal led to a reduction in the associative strength of the other means within the set and to a decrease of its perceived effectiveness (Study 4). The dilution effect was found to influence means selection and the magnitude of means engagement (Study 5). Lastly, presenting additional means to attain a goal reduced the perceived effectiveness of the means, which in turn reduced participants' intrinsic motivation to pursue it (Study 6). Overall, the present work demonstrates that the presence of alternative means to a goal reduces the quality and intensity of engagement in a given means. Broad implications of these findings are discussed.

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There's more than one way to bake a cake, so the saying goes, and being able to pursue one's goals through a multitude of means is a common experience. To attain fitness one can jog, cycle, swim, or participate in an aerobics class, to name just a few options; to quench one's thirst one may imbibe a glass of water, an energy drink, or a fruit juice, and to invest one's funds one can select stocks, bonds, or buy precious metals, for example. Attainment means to the same goal are referred to as *equifinal* (Heider, 1958; Kruglanski, Pierro, & Sheveland, 2011; Kruglanski et al., 2002) and they afford the possibility of choice and of substitution of one means for another in case of initial failure. Choice

and substitution appear advantageous things to have. Indeed, prior research shows that the presence of numerous means to a goal (compared to only a few) increases one's subjective likelihood of goal attainment (Kruglanski et al., 2011).

But having multiple means to a goal may have drawbacks as well. According to recent research, it may undermine each mean's importance and reduce individuals' commitment to each means. Kruglanski et al. (2011, Study 3) demonstrated this phenomenon by asking state employees to generate two work related goals, and to generate either one or several means to each of those goals. Participants were then asked how irritated or upset they would be if they failed to attain the goal via a particular means. The results (replicated in the remaining studies of the Kruglanski et al.'s, 2011 research) revealed that participants reported being significantly less irritated/upset in the multiple

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versus single means condition. Kruglanski et al. (2011) interpreted these findings as attesting to a decreased dependence on (or commitment to) a given means in the presence of alternative means (cf. Rusbult, 1980; Thibaut & Kelley, 1959; van Lange, 2007). The foregoing explanation implies that in the situation at hand, the perception of each means' effectiveness remained constant, and the number of alternative means only reduced the extent to which each means was adjudged as essential or indispensable to goal attainment. But there might be an additional drawback associated with multiple vs. single means context that has not been investigated thus far; a phenomenon that may have deep ramifications for our understanding of motivation and goal-pursuit. Specifically, it is possible that the presence of multiple means to the same goal dilutes the strength of association between any one means and the goal, which in turn is construed as a lessened instrumentality of the means with respect to goal attainment. This possibility is consistent with research on the dilution model (Zhang, Fishbach, & Kruglanski, 2007) described next.

1. The dilution model

The dilution model is based on the concept of spreading activation (Anderson, 1983; Anderson & Bower, 1973) whereby the greater the number of associations attached to a mental construct the weaker each of those associations. Consistent with this logic, Zhang et al. (2007) proposed that when several goals are attached to a given means, the activation by the means of any one of those goals would be impeded, meaning that the goal would not come to mind as readily when the means is presented. In turn, the decrease in strength of the means–goal association is subjectively interpreted as implying that the means is less instrumental to the goal — a phenomenon that occurs because effective means are likely to be used often and thus to be strongly associated with the goal (Shah & Kruglanski, 2003, see also Meyer & Schvaneveldt, 1971, 1976). Consequently then, means attached to several goals (as opposed to a single goal) are perceived as less effective for goal-attainment.

Zhang et al. (2007) obtained support for these notions in a series of studies. Specifically, it was found that a means which serves two (vs. one) goals is seen as less effective for attaining any one of the goals: for example, learning that aerobic exercise could prevent heart disease as well as help maintain healthy bones resulted in it being perceived as less effective for preventing heart disease. The effect was found across domains and independently of the content of the means or of the goals (Zhang et al., 2007). The dilution model postulates that the sum of connection strengths to a given construct is *constant*; that is why, in fact, the greater the number of connections the lesser the strength of each connection. The constant sum assumption leads to a further prediction supported by Zhang et al. (2007) namely, that the stronger are some of the links (i.e., the quicker the activation of a given goal by the means) the weaker are the others (i.e., the slower the activation of alternative goals by that means).

Another premise of the dilution model is that the strength of the means–goal association depends on the extent to which the goals commonly associated with a given means subjectively differ from each other. The more distinctive, or different from each other, those goals are perceived to be, the stronger their tendency to undermine each other's association with the shared means. In contrast, the more similar, overlapping, or mutually facilitating the goals appear to be, the less their joint presence is likely to weaken their associative strength with the shared means. The underlying reason is that if the goals are similar, then one of them activates the other, and as a result, if one of the goals is activated by the means, then the other would be activated as well. This tendency counteracts the dilution effect and reduces its impact. This prediction too received support in the Zhang et al. (2007) research.

Though the studies by Zhang et al. (2007) provide consistent support for the dilution model, they suffer an inherent limitation

owing to the fact that in all instances the factor varied in their experiments was the number of goals attached to a given means. This allows a possible alternative interpretation that the observed findings in their research were at least partially mediated by a heuristic of the kind “Jack of many trades master of none,” suggesting that a means purporting to serve multiple goals serves none of them effectively. If the underlying logic of the dilution model holds, however, we would expect that it is the *number of connections* rather than the contents of the nodes to which the connections are made that determines the degree of dilution. In other words, the same dilution effect concerning the reduced perceived instrumentality of means should obtain not only with several goals attached to a single means, but also vice versa, with several means attached to a given goal. Should this prediction be supported we would have strong evidence that the dilution effect resides indeed in the *number of cognitive connections* between motivational constructs (goals and means) rather than in the specific direction of those connections (that is, whether they run from a single means to multiple goals or from a single goal to multiple means). Moreover, if it was found that the perceived effectiveness of a means is inversely related to the number of available means this would allow a new insight into the found reduction of commitment to a given means in the presence of alternative means (Kruglanski et al., 2011). Specifically, it would suggest that such undermining of commitment might stem from perceived effectiveness reduction of each means where alternative means are present.

Cast in a broader context, this could mean that the availability of multiple alternatives does not merely reduce individuals' commitment to each alternative (Kruglanski et al., 2011) via reduced dependence on it (Thibaut & Kelley, 1959), but instead it may do so via reduced perceived effectiveness of each of those alternatives to the goal it is expected to serve. Thus, for instance, having multiple possibilities to a given end, say multiple job offers, or multiple possibilities for a romantic relationship, may reduce the perceived allure of each of those alternatives and its ability to attain the desired end (say, of landing a satisfactory job, or having a fulfilling relationship). As a consequence, one might ultimately feel less satisfied with a chosen alternative the larger the set of alternatives from which that alternative was selected.

The present set of studies examined such implied effectiveness reduction in a set of equifinal means to a single goal; a vital point for the validation of goal-systems theory. We expected to replicate the effects obtained by Zhang et al. (2007) while reversing, relative to their research, the directionality of the connection between goals and means. Specifically, we predicted that the number of equifinal means connected to a given goal will be negatively related to the perceived instrumentality of those means to the goal in question. We further expected that strengthening the connection between one of the means and the goal will increase its perceived instrumentality to the goal and decrease the perceived instrumentality of the remaining means. We predicted that the dilution effect will be reduced if the equifinal means are perceived as similar to (versus distinct from) each other. Lastly, we examined the implications of the dilution effect for decision-making, and its impact on the quality and intensity of engagement in the means.

2. The present research

We carried out six experimental studies to test the dilution model in an *equifinality* paradigm, that is, with several different means connected to the same goal, rather than with several different goals being connected to the same means as investigated previously (Zhang et al., 2007; Orehek et al., 2012). Our studies were conducted in a variety of contexts as well as of content domains in order to determine the generality of the dilution effect. In Study 1, participants were presented with one or two means to a goal and they assessed the degree of effectiveness of the first of these means. Study 2 employed a similar design, but it included self-generated rather than experimenter-generated means. In Study 3,

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