Subjective Interdependence and Prosocial Behaviour

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Abstract

Interdependence describes the mutual control different individuals have over their own and others' outcomes. Recent research suggests that interdependence is mentally represented along dimensions of mutual dependence, conflict (vs. correspondence) of interests, and relative power. People construe interdependence from cues in their social environment, but subjective perceptions are also influenced by stable individual differences. Importantly, perceptions of interdependence are associated with prosocial behaviour. Perceived conflict of interests, in particular, is detrimental to prosociality, whereas mutual dependence can foster prosocial behaviour. Further, perceived conflict of interests and power may together shape cooperative outcomes. Future research may help elucidate the roots of cross-cultural differences in subjective interdependence and examine how formal and informal institutions promote prosocial behaviour by shifting our perceptions of interdependence.

Keywords: Conflict of interests, interdependence, prosocial behaviour, power, situation perception.

According to Kurt Lewin, "interdependence is the greatest challenge to the maturity of individual and group functioning" [1, p. 226]. Interdependence describes the mutual control different individuals have over their own and others' outcomes [2,3]. According to one of the classic social psychological theories—Interdependence Theory [2]—the construct of interdependence encompasses mutual dependence, conflict (or correspondence) of interests, and relative power.[1] The strength and structure of interdependence between individuals determines the conditions in which they can decide to compete or cooperate [2,4,5]. It also sets the space in which individual differences in personality can influence behaviour [6,7].

Humans have an often intuitive grasp of their interdependence with others. We understand that our well-being is tied in with that of a romantic partner, or sense a conflict of interests with a colleague competing for a promotion, or recognise that a supervisor holds power over us. These perceptions we term 'subjective interdependence'. This review summarises answers to a number of questions about subjective interdependence: How do people mentally represent interdependence? What influences their perceptions of interdependence? How does subjective interdependence relate to prosocial behaviour? In the following, we first introduce recent advances in the conceptualisation and measurement of perceptions of interdependence. We then review new insights into how people construe their interdependence with others and the relationship of subjective interdependence with prosocial behaviour. We conclude with a discussion of avenues for future research.

[1] Interdependence Theory also defines a fourth dimension, coordination vs. social exchange. However, people do not seem to perceive interdependence along this dimension [8]; therefore, here we focus on the remaining dimensions. Kelley et al. also describe two additional dimensions, information certainty and future interdependence [2]. Although these are introduced as dimensions of interdependence, we believe that they are better understood as dimensions of uncertainty (over information and over future interactions) that apply to all dimensions of interdependence.

Interdependence

We define interdependence as the pattern of mutual control two or more individuals have over their own and each other's outcomes, whether these outcomes are material, emotional, or symbolic. Interdependence in outcomes can be distinguished from other more specific forms of interdependence [2]. For example, people may be procedurally interdependent such that one person's decisions influence the options open to the other [9]. However, in our view, these options are important specifically insofar as they determine the person's outcomes.

Although interdependence is sometimes described as a single dimension [3,4], it is better understood as a multidimensional construct. Here, we focus on three dimensions described by Interdependence Theory: mutual dependence, conflict of interests, and relative power [2]. Interdependence Theory defines these dimensions based on a decomposition of matrix games such as the Prisoner's Dilemma—i.e., abstract representations of available behavioural options and associated outcomes in social interactions. Here, we use more informal definitions informed by Interdependence Theory (Table 1; for alternative definitions, see e.g. [10,11]).

Table 1. Definitions of mutual dependence, conflict of interests, and relative power adapted from [31]. The third column shows items from the short form of the Situational Interdependence Scale used in several recent studies [8].

Dimension	**Definition**	**SIS Items**
Mutual Dependence	The degree to which both individuals mutually control each other's outcomes.	1. What each of us does in this situation affects the other. 2. Whatever each of us does in this situation, our actions will not affect the other's outcomes. (R)
Conflict of Interests (vs. Correspondence)	The degree to which one individual's gain is another individual's loss.	3. Our preferred outcomes in this situation are conflicting. 4. We can both obtain our preferred outcomes. (R)
Relative Power	The degree to which one individual has greater control over their own and the other's outcomes than vice-versa.	5. Who do you feel has more power to determine their own outcome in this situation? 6. Who has the least amount of influence on the outcomes of this situation? (R)

Recently, Interdependence Theory has been integrated with principles from evolutionary psychology and situation research to provide a coherent account of how people subjectively perceive interdependence. Functional Interdependence Theory (FIT) proposes that patterns of interdependence that were re-occurring over evolutionary time shaped the structure of human cognition, such that information about interdependence is mentally

represented along the dimensions of mutual dependence, conflict of interests, and relative power [2,12]. Fitness interdependence between individuals (i.e., outcome interdependence in terms of inclusive fitness [3,4]) may thus be reflected in subjective perceptions of interdependence. On this theoretical basis, Gerpott et al. developed the Situational Interdependence Scale (SIS), a validated instrument for measuring perceptions of interdependence along multiple dimensions [8]. This work has shown that people can discriminate situations along three largely orthogonal dimensions of interdependence. However, subjective interdependence can also be assessed in context-specific terms (e.g., negotiation outcomes [13,14]), as a property of relationships [15,16,17], or as a feature of entire cultures [18,19].

Person and Situation Influences on the Construal of Interdependence

Several theoretical accounts suggest that how a person construes a situation is influenced both by aspects of the person and aspects of the situation ('situation cues') [20,21]. That said, there has been limited research on individual differences in the construal of situational interdependence in particular. Gerpott et al. found that perceptions of mutual dependence and conflict of interests (but not power) in everyday situations are influenced by stable traits, but correlations with HEXACO personality traits were small ($|r| < .20$) [8]. Similarly, correlations between HEXACO personality traits and perceptions of conflict in terms of different templates were at most small [23]. The gap between the stability of perceptions of interdependence and what can be predicted by HEXACO personality traits suggests that there may be stable influences beyond broad personality traits that shape perceptions of interdependence which further research may reveal.

There exists a greater, but dispersed literature on situation cues. In face-to-face interactions, people infer their relative power from their counterpart's facial expressions [24,25], posture [8], and voice [27]. In doing so, they may however put excessive weight on

invalid cues [27]. Much less research has investigated which cues people use to infer conflict or mutual dependence in face-to-face interactions. Recent research showed that in economic games, frames—such as describing a game as a 'Stock Market' rather than a 'Community' game—can influence perceptions of conflict of interests [28]. Similarly, intergroup conflict dampens people's recognition of their conflict of interests with in-group members (the 'self-interest illusion' [29]), suggesting that cues of intergroup competition affect perceived interdependence. However, these studies focused on specific frames or conditions, and further research using a wider variety of ecologically valid stimuli would be welcome.

There is some evidence that people's perceptions of interdependence are grounded in a shared social reality, i.e., that perceptions are (somewhat) accurate. For example, perceptions of conflict of interests and power in economic games track objective differences along these dimensions [6,30,31]. Moreover, romantic partners show moderate agreement in their perceptions of interdependence across different dimensions in jointly experienced situations [31]. Yet, initial perceptions of interdependence may be influenced by stereotypes about situations. For example, inexperienced negotiators often initially overestimate the conflict of interests between negotiating parties [14,32]. However, negotiators are able to learn about the true interdependence structure of the situation by asking questions or by experiencing outcomes over time [32,33,34]. This suggests that while initial perceptions of interdependence may be shaped by prior experiences, people can and do update their perceptions using social cues they receive or seek out [12,21]. Future research may further elucidate these learning processes in dynamic situations.

Subjective Interdependence and Prosocial Behaviour

Recent research using economic games and experience sampling methods has shown that perceptions of interdependence are associated with prosocial behaviour [28,31,35]. We define prosocial behaviour broadly as "any action that benefits another [person]" [36, p. 255].

Across multiple studies, perceptions of interdependence explained about 25%–50% of the variance in behaviour between different economic games (e.g., Prisoner's Dilemma and Stag Hunt [6,31]). By manipulating perceptions of conflict of interests, Columbus et al. showed that this effect of subjective interdependence on prosocial behaviour is at least partly causal [28]. In an experience sampling study of everyday interactions with friends, colleagues, or strangers, or specifically with one's romantic partner, perceived conflict of interests showed a small to mid-sized negative association with prosocial behaviour, whereas perceived mutual dependence exhibited a smaller, positive association (Figure 1) [31]. Perceiving oneself as having more or less relative power in everyday situations was not associated with prosocial behaviours. However, interactions between dimensions of interdependence revealed a more nuanced pattern. Specifically, the negative association of perceived conflict of interests and prosocial behaviour was exacerbated in situations in which the actor reported holding greater relative power [31]. Importantly, other recent research also highlights the importance of studying multiple dimensions of objective and subjective interdependence in combination [37,38,39].

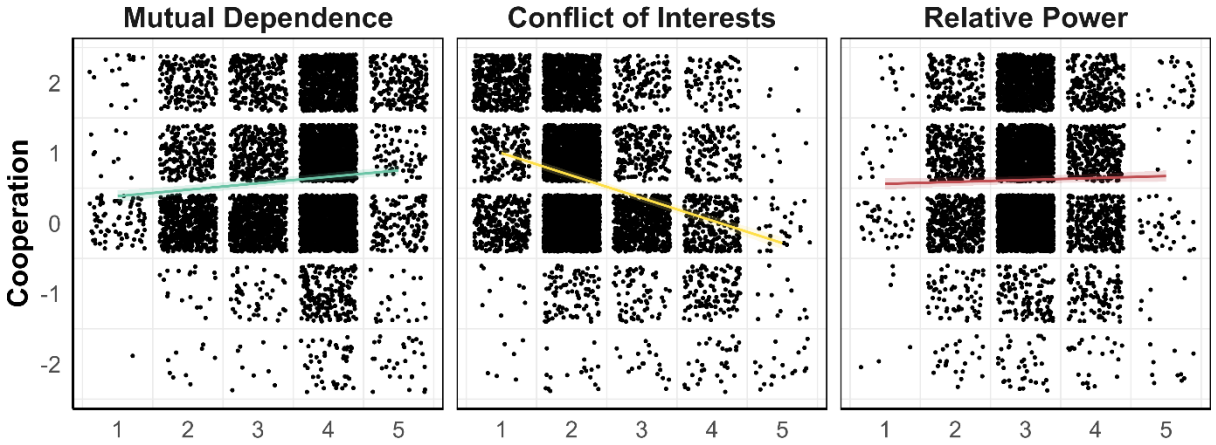

Figure 1. Associations of perceived mutual dependence, conflict of interests, and relative power with self-reported prosocial behaviour in everyday life. Columbus et al. used experience sampling to study perceived interdependence in everyday life [31]. In each panel, each dot represents one situation; regression lines show the estimated relationship between perceived interdependence and prosocial behaviour. © American Psychological Association.

Recent research has also probed whether the association between subjective interdependence and prosocial behaviour may further depend on individual differences, situational context, or relational variables. A meta-analysis by Thielmann et al. found that the relations between prosocial personality traits (such as Honesty-Humility) and prosocial behaviour depended on objective indices of the degree of conflict of interests [7,40]. However, in another study, subjectively perceived conflict of interests and power did not interact with personality to predict prosocial behaviour in economic games and everyday situations [6]. Situationally, trust may act as a buffer against the negative effects of conflict of interests on prosocial behaviour [41]. Indeed, in another experience sampling study, perceived conflict of interests had a weaker negative association with prosocial behaviour in situations in which persons reported trusting their interaction partner [42]. Finally, interdependence describes why some situations are diagnostic, i.e., informative about others'

character. For example, prosocial behaviour had a more positive impact on trust when it occurred despite a perceived conflict of interests [31].

Subjective interdependence can also shape prosocial behaviour indirectly by affecting people's willingness to engage in punishment or gossip. In a recent study of responses to norm violations in everyday settings, individuals who perceived themselves as having more power relative to offenders were more likely to confront them; in contrast, individuals who perceived having less power were more likely to ostracise and gossip about offenders [43]. Using experience sampling of gossip instances, another recent study found that perceiving a conflict of interests between spreaders and targets of gossip also reduced receivers' trust in the reputation information contained in this gossip [44]. Future studies are needed to examine how perceptions of interdependence across multiple dimensions influence the willingness to engage in punishment or gossip, as well as one's reactions to such behaviours. For example, people may be more willing to engage in punishment when they perceive high mutual dependence [45], and they may condition their punishment and gossip responses on perceived conflict of interests with offenders and victims.

Future Research

In the following, we describe some avenues for future research on cross-societal variation in perceptions of interdependence and its relation to culture and institutions. One important question is whether culture influences situation perception top-down, and/or whether the experience of everyday situations shapes these broad values bottom-up [18]. An influential line of thought in cross-cultural research is that more collectivistic cultures are marked by interdependent construals of the self, whereas people in more individualistic cultures have more independent self-construals [46]. These differences have recently been linked to historical experiences of interdependence [47,48]. On the one hand, such cross-cultural differences in individualism-collectivism could in turn shape the perception of

specific situations. On the other hand, however, everyday experiences of interdependence may influence thinking and culture [18]. A better understanding of how cultural values relate to patterns of perceived interdependence, especially in terms of conflict of interests, may also shed light on the processes underlying cross-cultural variation in prosociality [49].

Cultures also differ in their formal and informal norms, as well as the institutions that enforce them. Institutions have been described as 'the rules of the game' according to which people engage in social decision-making [50]. Formal institutions such as courts and police shape actual conflicts of interests people experience [50,51,52]. Where rule of law is strong, people face penalties for misbehaviour (and potentially rewards for good behaviour) such that prosocial behaviour is incentivized, and they have corresponding interests with others around them [53]. Similarly, informal institutions, such as gossip and peer punishment, can provide incentives that make prosocial behaviour individually beneficial [51]. How strictly such informal institutions enforce norms varies greatly between 'tight' (strong norms, strict enforcement) and 'loose' (weak norms, tolerance for deviance) cultures [54,55,56]. Thus, cross-cultural variation in norms and norm enforcement might be reflected in people's experiences of interdependence in everyday interactions. In turn, the effects of well-functioning formal and informal institutions on perceptions of conflicts of interests might explain, at least in part, how institutions promote prosocial behaviour. However, individuals can also design institutions in a bottom-up fashion [51,52], and their perceptions of interdependence may affect the institutional solutions they develop.

One key direction for future research will be to understand how interdependence varies not only across situations, but also across relationships, organisations, and social ecologies. An individual may experience interdependence with different partners, and may respond differently to particular patterns of interdependence depending on whom they are interacting with. For example, an individual may respond differently to a conflict of interest

experienced with close other rather than a stranger. They may not only behave more or less prosocially, but also use different strategies of coordination, reputation management, or punishment. Whether such strategies are available, and whether they are used, may further depend on formal and informal institutions that exist within organisations (e.g., formal and informal hierarchies) and societies (e.g., robust social norms and reliable law enforcement). Studying experiences of interdependence within and across relationships, organisations, and social ecologies can thus elucidate how people navigate interdependence in everyday life.

Conclusion

Interdependence is at the heart of social interactions and group functioning. Recent research suggests that people subjectively perceive interdependence along multiple dimensions of mutual dependence, conflict of interests, and relative power [8], and that these perceptions are linked to prosocial behaviour [31,42]. Although they are somewhat accurate, people's perceptions of interdependence can also deviate from objective properties of the situation [31]. Understanding how people come to construe interdependence and what determines how they react to it is key to understanding prosocial behaviour.

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