14 Two to Tango: Automatic Social Coordination and the Role of Felt Effort

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What do jazz bands, sports teams, construction crews, and SeaWorld dolphins have in common? To succeed at their jobs, these groups of people (and other gainfully employed animals) require a high degree of social coordination. For many complex tasks, such as those above, the ability to effectively coordinate with others requires intensive training. However, social coordination also occurs automatically, nonconsciously, and effortlessly throughout our daily encounters with other people. Just as walking down the street involves the coordinated action of muscles, nerves, and control centers in the brain, having a conversation with someone involves coordinated actions like speaking at the right time, understanding the intentions of the speaker, and, often, mimicking facial expressions and posture (Clark 1996). Coordination can even be anticipatory, as when people alter their mood state prior to interacting with unfamiliar others (Erber, Wegner, and Therriault 1996). The ubiquity and automatic nature of such processes suggests that social coordination may be a fundamental property of social interaction.

In this chapter, we consider why social coordination is, and has evolved to be, so fundamental. Indeed, coordination may be the default response in any situation, and across any modality, in which information is socially transmitted. This possibility may help to explain why social coordination processes typically occur outside of conscious awareness and are associated with the absence of feelings of subjective effort.

To begin, we will consider the wide range of coordination experiences that occur in social interactions and the functions these experiences might serve. We will also outline several routes to automatic social coordination, including their neural and social cognitive substrates. We will then review some of our own research highlighting coordination processes in some novel content areas. Finally, we will address how the experience of effortlessness, characterized by processing fluency (Reber, Schwarz, and Winkielman 2004) and flow (Csikszentmihalyi 1975), serves as a functional indicator of successful coordination.

In What Ways Do We Coordinate?

The hallmarks of social coordination emerge in virtually all situations involving more than one person. In our view, social coordination represents a matching process exemplified either by imitation of action or by complementation of action (see also Bandura 1977; Bernieri and Rosenthal 1991; Carson 1969; Clark 1996). Thus, coordination represents a suite of potential actions which are tied together by interpersonal influence. For instance, babies exhibit behavioral coordination when they mimic the facial expressions of their mothers. Adults exhibit coordination when they take turns speaking during a conversation. In essence, we can say that "two (or more) people are coordinated to the extent that the actions, thoughts, and feelings of one person are related over time to the actions, thoughts, and feelings of the other person or persons" (Vallacher, Nowak, and Zochowski 2005, 36).

Perhaps the most easily recognized form of coordination, and thus the most studied, involves the synchronization of *behavior*. According to Bernieri and Rosenthal (1991), there are two subtypes of behavioral coordination—behavior matching–mimicry and interactional synchrony. Mimicry refers to the direct imitation of actors by perceivers (e.g., Chartrand and Bargh 1999; Dimberg 1982; LaFrance 1982), while interactional synchrony refers to the coordination of rhythmic and timing elements (e.g., Bernieri 1988; Condon and Sander 1974). We would also add complementation to the mix, referring to behaviors that represent the natural or rule-based counterparts to other behaviors (e.g., one person holding open a door is complemented by another person walking through the open doorway; e.g., Fiske 2000; Markey, Funder, and Ozer 2003; Tiedens, Chow, and Unzueta 2007; Tiedens, Unzueta, and Young 2007; Tracey, Ryan, and Jaschik-Herman 2001). Social psychological research on automatic behavioral coordination has tended to focus on the role of mimicry in interpersonal interactions. For example, people are more likely to rub their faces and shake their feet when interacting with someone who exhibits those same behaviors (e.g., Chartrand and Bargh 1999). People may also adopt others' facial expressions (e.g., Bush, Barr, McHugo, and Lanzetta 1989; Dimberg 1982; Vaughan and Lanzetta 1981), word usage (e.g., Garrod and Anderson 1987), and speech patterns (e.g., Neumann and Strack 2000; Pickering and Garrod 2004). Interactional synchrony can also be expressed in a variety of ways (Bernieri and Rosenthal 1991), from the simultaneous movement of performing musicians to the cyclic rise and fall of conversational speaking (Hayes and Cobb 1982). Examples of complementary behaviors abound as well, such as those that occur during financial transactions or when people are deferent to authority figures (Fiske 1992), and even when we respond with a "you're welcome" to a "thank you."

Evidence suggests that humans are naturally predisposed to behavioral coordination. Simple forms of this coordination emerge quite early in life. Infants as little as 3–6 weeks old show evidence of mimicked facial displays and gestures, even when the original displays are no longer visible (Meltzoff and Moore 1977, 1994; Meltzoff 2004). Over the next two to four years, children develop the capacities for more complex forms of motor imitation and complementary action (e.g., Ashley and Tomasello 1998; Jones 2007; Warneken and Tomasello 2006). One of the most recognizable and important consequences of this developmental process is the ability to engage in coordinated language use (Clark 1996).

Despite the prevalence of such research, behavior is not the only medium by which people coordinate. Evidence also exists for the synchronization of thoughts, feelings, and even basic physiological processes. With respect to the coordination of *affect*, research on emotional contagion indicates that people can "catch" the feelings of others (Hatfield, Cacioppo, and Rapson 1994). Instantiations of this process may occur at a very early age, as when infants cry in the presence of other crying infants (e.g., Simner 1971). Similar forms of automatic, empathetic responses continue to occur throughout life (see Hodges and Wegner 1997; Preston and de Waal 2002). It has been proposed that emotional contagion might sometimes emerge as a consequence of behavioral mimicry. People often nonconsciously imitate the facial expressions and postures of interaction partners; these behavioral cues can generate feedback that influences the affective experiences of the imitators (Darwin 1872; Hatfield, Cacioppo, and Rapson 1992; Levenson and Ruef 1997; Niedenthal 2007; Vaughan and Lanzetta 1980, 1981). However, people do not always mimic the emotional expressions of others. When these expressions signal certain interpersonal affordances (Fridlund 1997; Frijda 1986), perceivers may instead coordinate their internal states with actors' expressions in a complementary (or correspondent) fashion. For instance, anger in another's face can produce fear in observers, and conversely, feeling fear can lead observers to mistakenly "see" anger in relevant targets (Maner et al. 2005; Murray 1933).

With respect to the coordination of *cognition*, there is relatively less evidence for direct mimicry of thoughts and beliefs. However, activating interpersonal or relational concepts can produce forms of cognitive synchronization. For instance, reminding people about their family or friend relationships can lead them to evaluate situations in a manner consistent with the norms of those relationships (Baldwin and Holmes 1987). Similarly, nonconsciously activating an "elderly" mental representation can lead individuals to think and act as though they were elderly themselves. Kawakami, Young, and Dovidio (2002) primed the concept of elderly by having participants categorize photographed targets and showed that people took longer to make decisions, in line with the idea that the thought processes of older people are slower than those of younger people. This study built on an earlier one by Bargh, Chen, and Burrows (1996) in which participants were primed with words related to the stereotype of elderly (e.g., "Florida," "wrinkle"). Although none of the words involved the concept of slowness, after leaving the experiment, these participants walked more slowly down the hall than did participants not primed with this stereotype. Such studies suggest that the activation of mental representations (either of a target category or a category stereotype) may automatically involve coordination with those representations. This process may also have the benefit of preparing individuals to interact with others in a coordinated fashion (Cesario, Plaks, and Higgins 2006).

People can also automatically adopt the goals of others. When observing others' actions, people encode these actions in terms of the goals they represent (Hassin, Aarts, and Ferguson 2005). This process can lead to the activation of those same goals in observers. For instance, in one study, male participants who read a story about a man and a woman interacting (designed to prime the goal of seeking casual sex) spent more effort helping a female researcher than did participants who read a control story (Aarts, Gollwitzer, and Hassin 2004). Cognitive coordination can also proceed through assortative techniques (e.g., Buss 1984), as when romantic partners select each other on the basis of shared personality traits. Of course, we can also consider social learning more generally to be a case of cognitive coordination.

Finally, one of the most plainly nonconscious types of social coordination involves the coordination of basic *physiological* processes. Perhaps the most well-known example is the synchronization of ovulatory cycles that occurs between women who are cohabitating or living in close proximity (McClintock 1981; Weller and Weller 1993). Additionally, other processes over which people have little executive control show the tendency to coordinate as well. Levenson and Ruef (1997) review the extensive work done on the synchrony of autonomic nervous system activity. For instance, studies of therapists and their patients have shown that these individuals' heart rates often vary in matched or inversely matched patterns (e.g., DiMascio, Boyd, Greenblatt, and Solomon 1955; Kaplan and Bloom 1960). Similar findings have been uncovered for heart rate synchronization between mothers and infants (Field, Healy, and LeBlanc 1989), skin conductance within small groups (Kaplan, Burch, and Bloom 1964), and a variety of physiological measurements within married couples (Gottman and Levenson 1985).

In aggregate, these findings indicate that coordination is a wide-ranging, multimodal phenomenon. People coordinate their behaviors, thoughts, feelings, and even basic physiological activities. They begin to show inclinations to coordinate shortly after birth and continue to do so over the life span. It seems likely, therefore, that researchers will continue to uncover forms of coordination emerging (under the right conditions) within any and every social domain. But just how do these processes work?

Three Routes to Social Coordination

Research into the elicitors of social coordination has suggested the plausibility of at least three causal routes. These routes vary in the degree of cognition they entail, yet it is likely that they jointly influence (and mutually constrain) the emergence of coordinated activity.

Route 1: Dynamical Systems

In many ways, human interactions, as well as those of other organisms, follow the same principles that underlie interactions between elements of nonliving systems. For instance, elements of a system share some degree of similarity and connection whether those elements are players on a basketball team, planets in a solar system, or (literally) peas in a pod. These elements achieve a degree of synchrony through shared changes in external or internal state. Often, however, this synchrony is achieved nonlinearly such that changes in one element do not proportionately match the changes in other elements.

From the perspective of dynamical systems, social coordination occurs as a product of self-organizing, natural forces that require no cognitive-representational substrate (cf., Richardson, Marsh, and Schmidt 2005). Coordination in this case involves entrainment of dynamic processes—the directional or mutual influence between elements that creates alterations in individual (intrinsic) dynamics (Bernieri and Rosenthal 1991; Schmidt and Turvey 1994). For instance, two pendulums that are hung from the same bar but swinging out of sync will gradually match each other's rhythm without input from outside sources (Bennett, Schatz, Rockwood, and Wiesenfeld 2002). Similarly, a motionless tuning fork held near a vibrating one of comparable frequency will begin vibrating, itself (McGrath and Kelly 1986). People show similar patterns of entrainment when asked to swing their legs (e.g., Schmidt, Carello, and Turvey 1990) or rock in rocking chairs near one another (e.g., Richardson, Marsh, Isenhower, Goodman, and Schmidt 2007). The behaviors in these examples usually result in either in-phase (behavior matching) or antiphase (behavior complementation) synchronization and may occur spontaneously (e.g., Oullier, de Guzman, Jantzen, Lagarde, and Kelso 2008). In addition to motor movements, other phenomena exhibit entrainment as well. For example, the common vernacular that people use to describe their everyday experiences is a product of mutual influence (e.g., Garrod and Anderson 1987).

From this perspective, any two people with some connection (e.g., proximity, prior relationship, visual line of sight, etc.) have mutual influence over one another. As this influence increases, such as when proximity or relationships become closer, coordination will increase (Vallacher et al. 2005). The same is true when two people share a high degree of preexisting similarity (e.g., in body shape, educational background, mood). As influence increases, synchronization of states will become more fixed, and often mutual entrainment will give way to unidirectional entrainment (e.g., the less dominant person will model the more dominant person in an interaction; Markey et al. 2003). Of course, the manner in which this process will play out, including the particular dynamics and end states involved, is also constrained by aspects of the social context (Kenrick, Li, and Butner 2003).

Interestingly, fixation of synchronized states may be more likely to occur for behavioral coordination than for other, more internal forms of coordination (e.g., beliefs). Vallacher and colleagues (2005) report a series of computer simulations in which they varied the degree of influence and preexisting state similarity between "participants." In their studies, a high degree of influence produced extremely tight behavioral synchronization but, at the same time, prevented interpersonal convergence of a parameter representing internal state. The researchers conclude that, with respect to people, "very strong influence… is likely to prevent the development of a relationship based on mutual understanding and empathy" (46). Thus, institutions that mandate strict behavioral coordination, including many companies and families, may in fact be instilling the seeds of disobedience, providing some support for the aphorism that "the more you tighten your grasp, the more will slip through your fingers."

A dynamical systems perspective therefore provides one important route to social coordination. This route involves naturally self-organizing synchronization that, although requiring some degree of perceptual connection between individuals, is not necessarily mediated by the activation of cognitive representations (Richardson et al. 2005). We now turn to a route that is so mediated.

Route 2: Direct Perception–Action Link

A second route to social coordination also involves a perception–action link, but one that is mediated by shared mental representations. That is, the same representations are involved in both perceiving some activity and performing that activity (which includes behavior, cognition, and emotion). This route has its origins in Carpenter's (1874) and James' (1890/1981) notions of ideomotor action, which posit that simply thinking about performing an action makes it more likely that you will perform that action. In fact, one need not "think" in the conscious, effortful sense, at all. The link between perception and action is a passive and automatic one. Perceiving an action activates representations associated with that action, making that action more accessible and thus likely to be exhibited (Bargh et al. 1996; Dijksterhuis and Bargh 2001). Following from this link, people coordinate not intentionally but as a natural by-product of perceiving the actions of others.

Prinz (1990, 2003) described this linkage as the result of common coding—the mental representations that code for *perception* of action are the very same ones that code for *production* of action. A wide variety of studies support the notion that perception and action often rely on the same mental procedures. For instance, watching another person grasp an object activates the same neural regions (e.g., Buccino et al. 2001) and muscular responses (e.g., Fadiga, Fogassi, Pavesi, and Rizzolatti 1995) that are active when people perform these grasping motions; seeing emotional expressions on others' faces triggers matching neural and facial reactions (e.g., Hatfield et al. 1994; Niedenthal 2007; Wicker et al. 2003); and listening to speech activates brain regions associated with speech production (e.g., Wilson, Saygin, Sereno, and Iacoboni 2004). In fact, this perception-to-action process occurs even when perception is in the mind's eye—when it is imagined. Imagining the actions of others involves mentally simulating both the perception of those actions and their actual execution (Goldman 2006) and can lead to a multimodal reenactment of that experience in the imaginer (Niedenthal 2007). Thus, people automatically coordinate with others, even when those others are simply figments of the mind. This mental simulation process may help to prepare for social interaction by "precoordinating," as when people adjust their moods to match those of future interaction partners (e.g., Erber et al. 1996).

In a reversal of the perception-to-action chain, performing actions can also facilitate perception. Participants induced to help another person in one part of an experiment subsequently perceived greater helpfulness in a target person in an ostensibly unrelated impression formation task; in another study, participants induced to feel they'd been "nosy" by looking at an apparently private note subsequently rated a target person as being more "nosy" compared to participants in a control condition (Kawada, Oettingen, Gollwitzer, and Bargh 2004). Cognitive processing is also influenced by physical action. In one classic study (Strack, Martin, and Stepper 1988), for example, participants who held a pen between their teeth (facilitating smiling) rated cartoons as funnier than participants who held a pen between their lips (inhibiting smiling). Moreover, moving one's arm improves memory for the arm movements of others (Reed and Farah 1995). So-called embodied effects on emotion have been demonstrated in a number of other studies (see Niedenthal 2007). Interfering with automatic mimicry can also inhibit the cognitive processing of other people. For instance, having people chew gum while looking at (encoding) faces can reduce memory for those faces (Zajonc, Pietromonaco, and Bargh 1982; but see Graziano, Smith, Tassinary, Sun, and Pilkington 1996).

The idea of a shared representational system also suggests that people should not (easily) be able to both perceive and perform the same action at the same time. Confirming this prediction, in one study (Müsseler and Hommel 1997), participants viewed a series of four arrows on a computer screen (e.g., "< > > <") and rapidly identified each arrow in succession by pressing the corresponding key on the keyboard. During each series that was presented, a fifth arrow appeared at the exact moment that the second arrow was being identified. Participants were required to identify this new arrow as quickly as possible after responding to the first four. For this final judgment, participants made more errors identifying the fifth arrow when it was identical to the second arrow than when the two were different, indicating that initial perception of the fifth arrow had been interfered with by the simultaneous action of identifying the second arrow.

The perception–action link suggests that social coordination often involves a passive, automatic process. People adjust their behaviors, thoughts, and feelings as a function of perceiving (or imagining) those same constructs in others. In fact, this process is at the root of priming phenomena more generally—mental constructs are made more accessible by relevant features of the environment (Bargh et al. 1996). Therefore, we can infer that the simple perception of others primes social coordination. It appears from this framework of the perception–action link that coordination would be a necessary and inevitable consequence of social perception. Obviously, though, we do not coordinate our internal and external states with everyone we run across. Why not?

Dijksterhuis and Bargh (2001) identified two classes of explanations for humans' relative flexibility in circumventing the direct perception–action link. The first involves a facilitation process—perception is likely to lead to action only in the presence of additional input (e.g., an active motivation). The second involves an inhibition process—perception is sufficient to create action but is typically prevented from doing so by the presence of a roadblock (e.g., an active motivation). While debate continues as to which class is more applicable, new evidence suggests that the answer may be "both." Researchers have identified a brain rhythm labeled the *phi complex* that is involved in social coordination and consists of two oscillatory components, one that facilitates the perception–action link and one that inhibits it (Tognoli, Lagarde, DeGuzman, and Kelso 2007). This suggests the possibility that some input may act on one component and other input on the other component, and thus social coordination may be both inhibited and facilitated by additional forces. One of the most significant and well-researched of these forces is the presence of active motivations, to which we now turn.

Route 3: Active Motivations

A third route to social coordination involves the influence of active goal states. Two types of goal states are relevant here—those whose completion is arrived at by deliberate coordination and those whose completion is arrived at by incidental coordination. These goals can both be temporarily or chronically active and can both be triggered consciously (e.g., by reflecting about a problem) or nonconsciously (e.g., by the presence of an eliciting environmental stimulus) (Chartrand, Maddux, and Lakin 2005). The extensive similarities in functioning between conscious and nonconscious goals suggests that the level at which they are active will make little difference in outcome (e.g., Bargh and Huang 2009; Bargh and Morsella 2008; Chartrand and Bargh 2002), though we suspect that conscious goals may have a stronger influence on deliberate coordination and nonconscious goals on incidental coordination.

People often generate goals whose ends involve psychological matching or synchronization (such as conformity; Epley and Gilovich 1999). This deliberate form of coordination can be relatively difficult when it concerns complex, high-skill tasks. Formal dancing is one example, as anyone who has had their toes crushed by a clumsy partner knows all too well. Team sports are another example: Learning the fundamentals of a sport like basketball or soccer takes a considerable amount of time and effort, and individual mastery is no guarantee that one will be able to effectively function within the team environment. However, other forms of goal-directed coordination have higher success rates. Consider the goal to communicate with others. Having a conversation with someone is a process of turn taking (or role-playing) that emerges quite naturally (Clark 1996), even when people speak different dialects or languages. Rarely do we hear conversations fail because one conversant directly imitates what's being said at the same instant it's being said (mockery among children notwithstanding). Interestingly, behavior matching is itself sometimes considered to be a communicative act. Mimicking another's behavior may signal a sense of similarity or connection with the person being mimicked (Bavelas, Black, Lemery, and Mullett 1986, 1987), and thus mimicry *is* the desired behavioral end.

In addition to these deliberate forms of social coordination, coordination often emerges incidentally as a function of goal-driven behavior. Language use again plays a prominent role here. Most forms of social activity require communication to proceed effectively, and language thus provides the medium by which actions become synchronized (Clark 1996). For instance, a couple who goes out to a nice restaurant is not necessarily interested in coordinating their own actions with those of the restaurant employees. They simply want to eat a good meal. Yet, this meal is acquired through back-and-forth conversation, and often a meshing of judgments, with the waiter or waitress.

A number of studies demonstrate that coordination can emerge as a result of priming a goal that is not explicitly coordinative in nature. For example, the goal to be liked does not require coordination for its completion, yet people who have this goal are more likely to mimic the behavior of others (e.g., Lakin and Chartrand 2003). This typically occurs automatically and nonconsciously, suggesting that mimicry functions as social glue, binding people more closely together (Chartrand et al. 2005; van Knippenberg and van Baaren 2006). In another setting, Griskevicius and colleagues (2006) conducted a series of experiments in which participants were primed with either a physical self-protection goal, a romantic goal, or a control goal and then were given the opportunity to evaluate an object (e.g., a piece of abstract art). Before this evaluation, participants were shown the (bogus) responses of other people in the study, giving participants the opportunity to either conform to those responses or not. Those participants with an active self-protection goal conformed more than those participants with a control goal. This likely occurred because, in dangerous situations, matching the behavior of others reduces how conspicuous one is (Dijksterhuis, Bargh, and Miedema 2000; Hamilton 1971). However, this mimicry was incidental to the active goal and even to the evaluative task, especially considering that mimicking others' evaluations of abstract art is unlikely to effectively lessen one's vulnerability to threat. Interestingly, an active romantic goal led male participants to conform less in these studies, but only when participants' image would not be damaged by failing to conform. This presumably occurred because, just as coordination can act as a signal of similarity, not coordinating helps one to stand out from the crowd and thus attract (romantic) attention (Griskevicius et al. 2006).

Thus, a goal, whether temporarily or chronically active, can modulate the extent to which people coordinate their actions (see also Ackerman and Kenrick 2008). This may occur when coordination is the desired outcome of that goal or when it is only the means to successful goal pursuit. As the two prior routes suggest, though, an active goal may not be a necessary feature for social coordination. Instead, the degree to which goals play a facilitatory or inhibitory role in the expression of coordination (Dijksterhuis and Bargh 2001) may depend on the particular goal and the context in which it is being pursued. Consistent with this, recent research suggests that the basic neural architecture involved in social coordination may be innate, but the expression of particular forms of coordination may often be moderated by goal-relevant features of the social interaction (see Chartrand and van Baaren 2009).

Benefits of Social Coordination

Many of the forms of coordination we have just reviewed require the concurrent use of multiple online processes. People need to monitor others' actions, regulate their own actions away from their current state and into line with what is being observed, and continually monitor the discrepancy between actions of the self and the other (though these all may occur at a nonconscious level; Chartrand and Bargh 2002). Use of these processes can divert cognitive resources away from other primary goals. Thus, one might wonder, why bother?

A wide array of benefits has been proposed to stem from automatic coordination, reflecting both evolutionary selection pressures and more proximate challenges. Perhaps the most commonly discussed benefit involves the fostering of social bonds (e.g., Chartrand et al. 2005; Galinsky, Ku, and Wang 2005). People are inherently social and possess a fundamental motivation to establish coalitions with others (Ackerman and Kenrick 2008; Baumeister and Leary 1995; Caporael and Baron 1997). Coordination can help to both cement existing relationships and lubricate new social interactions. For example, mirroring the posture and behaviors of others is associated with, and can even produce, liking and a sense of rapport between individuals (e.g., Chartrand and Bargh 1999; LaFrance and Broadbent 1976; LaFrance 1982). Appropriately synchronizing behaviors can help individuals get along, while failures to do so may produce detrimental outcomes (e.g., Bernieri and Rosenthal 1991; Finkel et al. 2006). Further, the emotional convergence associated with this synchronization (Hatfield et al. 1994) may underlie the development of empathic bonds.

When in Rome…

The creation of close, affiliative relationships is certainly a fundamental enterprise; however, it may be that social bonding is simply one instantiation of coordination's primary adaptive function(s). We suggest a broader possibility. The cognitive substrate that underlies interpersonal coordination may have evolved to aid individual goal achievement within a social world. Social living allows creatures to capitalize on the information provided by other creatures in situations where the correct course of action is uncertain (importantly, we are not implying conscious indecision or uncertainty). By following in the footsteps of others who share the same goals, imitators may find more efficient solutions to immediate and future problems than they would on their own. These problems need not be social (e.g., a person may need to decide which color berries to eat and which not to eat). More derived forms of coordination (e.g., complementarity) again function to aid individual goal achievement, though the problems involved may be more social in nature. The notion that social coordination evolved to facilitate the rather broad concepts of goal achievement or problem solving may appear to be an appeal to the contentious idea of domain-general evolution (for reviews of this literature, see Ackerman and Kenrick 2008; Barrett and Kurzban 2006; Pinker 2002). However, uncertainty *is* a domain-general feature inherent to problem solving and goal pursuit (e.g., Dawes 1993). The specific ways in which coordination actually emerges would, in turn, be susceptible to domain-specific features of the problem or goal. Thus, we suggest that social coordination aids in the successful pursuit of chronic and temporarily active goals, of which the formation of coalitions is but one, and consequently in preparation for future action as well.

With respect to immediate goal achievement, coordination can serve as an end in and of itself, as when effectively coordinating with others communicates one's membership and value in a group (Bavelas et al. 1986; Kurzban and Neuberg 2005; Scheflen 1964). Additionally, people face a number of critical individual and social problems (Ackerman and Kenrick 2008; Barkow, Cosmides, and Tooby 1992; Kenrick, Li, et al. 2003) whose solutions may be facilitated through interpersonal coordination. People may learn faster by utilizing shared intelligence, gather resources more efficiently through division of labor, defend themselves by mimicking group behaviors, evaluate the desirability of romantic partners based on others' preferences, read the intentions of others by mentally simulating their actions, and so on. For example, mimicking the behavior and posture of others in business negotiations can increase both the odds of making a deal and the monetary gain garnered from that deal (e.g., Maddux, Mullen, and Galinsky 2008). Additionally, recognizing and instigating coordinated activities may vault one into leadership roles (e.g., Van Vugt, Hogan, and Kaiser 2008). Coordination can therefore provide for better outcomes than individuals would be able to achieve on their own. These outcomes may often benefit the group (e.g., division of labor results in more efficiency for everyone), but this is not a prerequisite for useful coordination.

Humans are also creatures of habit. We repeatedly encounter situations that involve similar problems and solutions. By synchronizing our reactions to these situations with the reactions of others, people may condition the emergence of such reactions within similar future situations, thus helping to prepare for future action. One of the earliest examples of this process concerns emotional synchronization between parent and child. Proper mother–infant coordination of emotional expression helps the infant with effective emotion regulation (Field 1994). Lack of this coordination during early development can lead to future problems with emotion management (Tronick 1989).

Co-opting Coordination

To the degree that social coordination provides a powerful tool for goal pursuit, people have likely evolved sensitivities to capitalize on its use. That is, the foundations of social coordination probably did not evolve for many of the specific purposes coordination currently serves—it is unlikely that such diverse functions would have simultaneously created selection pressures for coordination. Instead, many of these current functions may represent what Buss and colleagues (1998, 539) label co-opted adaptations ("features that evolved by selection for one function are co-opted for another function"). Co-option is a common process whereby new structures or functions are "built on top of" preexisting ones (see Bargh and Morsella 2008 for an example involving conscious and nonconscious goal pursuit, and Williams, Huang, and Bargh, forthcoming for an example involving basic and derived goals). We have suggested (above) that coordination may have evolved to facilitate individual goal pursuit. Much of coordination's social utility may have been co-opted from this original function. We now discuss three possibly derivative functions—rapport building, reverence–leadership, and ostracism.

Interpersonal synchronization may not only facilitate individual outcomes but, as a consequence, may also build rapport by signaling similarity between parties (Bavelas et al. 1986, 1987; Chartrand and Bargh 1999). The functional utility of signaling similarity (including knowing whose goals are like yours, creating relational closeness, etc.) would likely have created pressure to capitalize on the communicative aspects of coordination. Consistent with this idea, acts of coordination can produce a number of positive interpersonal outcomes. People who are behaviorally mimicked report liking the mimicker more, even when they are not aware of having been mimicked (e.g., Chartrand and Bargh 1999; Maurer and Tindall 1983). Complementation of behavior may produce even stronger feelings of liking and comfort than mimicry does (e.g., Tiedens and Fragale 2003). Emotional synchronization can also lead to closer peer relationships and increased romantic relationship satisfaction (e.g., Anderson, Keltner, and John 2003; Dryer and Horowitz 1997). Social coordination can bind individuals together through the shared positive experiences people undergo. Many forms of cultural and religious ritual involve groups of people performing synchronized, rhythmic, and repetitious actions (Fiske 2000; Wiltermuth and Heath 2009) that in turn produce states of ecstasy and awe (Haidt 2007).

People also tend to react quite powerfully to individuals who communicate expertise in some of the more difficult forms of coordination (e.g., Haidt 2003; Morgan 1941; Meindl, Ehrlich, and Dukerich 1985). For example, we treat with reverence those sports teams whose play resembles a single, cohesive unit. We consider the epitome of musical collaboration to be the time when a group's members create and perform in harmony. We also idolize leaders whose ideas resonate with our ideals. These experts often acquire legions of followers who are quite fanatical in their devotion. The reverence and popularity accorded to natural coordinators may vault them into leadership positions (Van Vugt et al. 2008). As observers, it may be that we derive pleasure from mentally synchronizing our actions with those who can do the things we only wish we could do.

The communicative aspect of social coordination also provides a useful tool for identifying those people with whom we do *not* wish to affiliate. The communication of similarity and closeness through coordination is largely an unintended, nonconscious act (Scheflen 1964), and in fact, deliberate, conscious imitation attempts can produce a negative backlash against imitators (e.g., Thelen, Miller, Fehrenbach, and Frautschi 1983). Additionally, a demonstrated inability to effectively coordinate with others is a clear predictor of problematic group functioning and thus may lead to individuals' being devalued as group members (Chartrand and Bargh 1999; Cottrell, Neuberg, and Li 2007). People lacking indicators of coordination ability, as with unpredictability (Kurzban and Leary 2001), antisocial tendencies (Dunn and Hughes 2001), stuttering (Whaley and Golden 2000), and autism (Rogers and Pennington 1991), may face ostracism and expulsion from social groups (Kurzban and Neuberg 2005; Williams, Forgas, and von Hippel 2005). Consistent with this, people are less likely to mimic members of outgroups compared to members of the ingroup (Yabar, Johnston, Miles, and Peace 2006). The presence of outgroup competitors, itself, may even motivate forms of ingroup coordination (e.g., Bornstein and Erev 1994; Van Vugt et al. 2008).

Emerging Research

Despite a large literature on imitation and synchronization effects, and their concordant benefits, social coordination remains relatively unexamined within a number of domains. Here, we present two independent lines of investigation that reveal new forms of coordination involving romantic relationship formation and self-regulatory processes.

Cooperative Courtship

Researchers concerned with romantic relationship formation have tended to ignore the role of the broader social environment or concentrate solely on its more competitive aspects (e.g., Buss 1988; Kenrick and Trost 1997; Schmitt 2005). However, it is certainly feasible that coordinated action between people (e.g., cooperation) has played a role in shaping the courtship process. Research examining cooperative courtship is virtually nonexistent in humans, but the phenomenon has been documented in a variety of other social species. For example, wild male turkeys form coalitions to display their fitness to females (Krakauer 2005), male common chimpanzees occasionally cooperate in guarding mates (Watts 1998), and female alliances among bonobo chimpanzees help to reduce male sexual coercion (Smuts and Smuts 1993).

Following from the examples set by other species, we investigated the possibility that humans socially coordinate to improve their own romantic outcomes (Ackerman and Kenrick, forthcoming). We conducted several studies in which people reported both their past experiences and projective future actions in (social) romantic situations. These initial studies suggested that, despite the inherent motivation to compete for romantic partners (Buss 1988), people were still willing to help each other achieve successful mating outcomes. This help was exemplified by a suite of cooperative strategies that included assistance with self-esteem support, information management, and social networking. Thus, coordination took a variety of complex forms, all of which promoted individual romantic goal achievement.

We also uncovered evidence for sex-specific forms of cooperation indicative of coordination *between* the sexes. This evidence fit with the basic premise of parental investment theory (Trivers 1972), which suggests that within a species, the sex that invests more in (potential) offspring will be more romantically choosy than the sex that invests less. In humans, women tend to invest more in children than do men, and consistent with this investment, they tend to be more selective in choosing mates (e.g., Buss and Schmitt 1993; Gangestad and Simpson 2000; Kenrick, Sadalla, Groth, and Trost 1990; Schmitt 2003). Indeed, in our studies, women were more likely to cooperate in creating romantic barriers and in giving barrier-building help to their same-sex friends. Men, on the other hand, were more likely to cooperate in attempting to achieve romantic access and in giving barrier-breaking help to their same-sex friends. However, the type of help given to opposite-sex friends was reversed for men and women, suggesting that people are sensitive to the intended outcomes of their friends' romantic goals. These patterns indicate a behavioral complementarity between the sexes such that men and women synchronize their cooperative strategies to counter the role of the other sex (e.g., women build thresholds, men try to overcome these, etc.).

Cooperative courtship tendencies were also found in a study in which people expected to *actually* meet potential romantic partners (Ackerman and Kenrick, forthcoming). In this study, participants took part in an experiment modeled after the TV game show *The Dating Game*. Participants (two same-sex friends or two strangers) became "contestants" in a game to win a date with a (fictitious) opposite-sex Dater in each round of the game. However, in one condition this Dater was described as very desirable, and in another condition as less desirable. Before participants met the Dater, they were allowed to choose a behavioral strategy that was either competitive (e.g., meeting with the Dater to try and win the date) or cooperative (e.g., giving their meeting time with the Dater to the other contestant), though not described in these terms. As above, women primarily attempted to help the other contestant avoid undesirable Daters, and men primarily attempted to help the other contestant attract desirable Daters. However, these patterns of cooperation emerged only when the contestants were friends and not when they were randomly paired strangers. We might therefore say that "the mating game" (Nettle 2005) is, in fact, a team sport. Thus, social coordination as exemplified by romantic cooperation is a function of a preexisting close relationship, just as coordination (in other forms) is more often found between people who share rapport (e.g., Chartrand et al. 2005; LaFrance and Broadbent 1976; Scheflen 1964).

This research, as well as newly emerging work, highlights many of the specialized forms of coordination that occur in the romantic realm. For instance, we found that people are also willing to have friends act as counterfeit relationship partners in order to stimulate social coordination with potential mates and thus promote barrier-building and access goals (Ackerman and Kenrick, forthcoming). Other researchers (e.g., Hill and Buss 2008; Jones, DeBruine, Little, Burriss, and Feinberg 2007) have found that people synchronize their romantic preferences with same-sex individuals in the social environment, effectively copying these others' mating choices (a similar process also occurs in animals like birds and fish). Further examples of romantic coordination surely await discovery.

Vicarious Self-Control

One method of prompting rapport between two individuals is by having one person take the perspective of the other (Galinsky, Ku, and Wang 2005). Perspective taking also makes it more likely that one person will mentally simulate the actions of the other (Goldman and Sebanz 2005). That is, imagining what another person is experiencing (the mental simulation) elicits a form of internal replication involving much the same neural and pre-motor activity that would occur if perspective takers performed the actions, themselves (e.g., Decety and Sommerville 2008; Goldman 2006; Niedenthal, Barsalou, Winkielman, Krauth-Gruber, and Ric 2005).

This cognitive synchronization not only can lead to greater empathic understanding between individuals but can also result in a variety of downstream effects. For instance, simulating another's experience can produce feelings of pain (e.g., Jackson, Brunet, Meltzoff, and Decety 2006) and cognitive dissonance (e.g., Norton, Monin, Cooper, and Hogg 2003) and even lead people to attribute qualities associated with an actor's behavior to themselves (e.g., people who read about a self-sacrificing person may rate themselves as more self-sacrificing; Goldstein and Cialdini 2007). These downstream effects may occur because, when people engage in actions, they encode associations between these actions and the sensory and affective effects that result from the actions (Hommel 2004; Niedenthal 2007). Simulation of these actions generates a multimodal response (e.g., muscle movements, facial expressions, physiological changes) through retrieval of these experiences. We applied these findings to the question of whether simulating the experience of another's *self-control* might result in such downstream responses.

Self-control is not a limitless resource. Exercising it to avoid temptation, make decisions, and act appropriately temporarily depletes executive control abilities, leading people to perform worse on subsequent tasks requiring self-control (e.g., Baumeister, Bratslavsky, Muraven, and Tice 1998; Muraven and Baumeister 2000; Vohs et al. 2008). What would this mean for other people in the social environment? If cognitive coordination tends to make goals "contagious" (Aarts et al. 2004; Hassin et al. 2005), then perceiving another person's self-control should prime a self-control goal in observers. However, if simulating that self-control activity produces downstream effects, imagining what that person experiences may result in the consequence of that self-control activity—depletion—even in observers.

We investigated these alternate possibilities in two studies (Ackerman, Goldstein, Shapiro, and Bargh 2009). In the first, participants read a story about a waiter who worked at a restaurant selling high-quality food and who arrived to work hungry but unable to eat on the job (thus necessitating self-control). Half of the participants simply read this story with no further instructions, and the other half were instructed to take the perspective of the waiter while reading. Later, the participants were asked to judge the amount of money they would be willing to spend on a series of luxury goods as a measure of self-control over impulse buying. Those participants who took the perspective of the waiter reported being willing to spend an average of $6,000 more on the products, indicating that their ability to control their impulses was depleted.

In the second study, both the original waiter story and another in which the waiter was not hungry and worked at an undesirable restaurant (thus necessitating no self-control) were used. Participants were either instructed to take the perspective of a waiter or not and then completed a word-construction task in which they had to create new words using the letters from a source word. Again, there was vicarious depletion, as participants' taking the perspective of the hungry waiter led to a decline in word-construction performance compared to those participants who did not take the perspective of the hungry waiter, and compared to those participants who took the perspective of the full waiter. However, among non-perspective-taking participants, reading the hungry waiter story improved word-construction performance relative to reading the full waiter story (indicative of a goal-contagion effect).

We have found similar effects across a range of other measures. For instance, vicarious depletion can undo people's resistance to persuasive messages, leading them to view unwelcome requests more favorably and even agree to changes espoused in those requests. In one study, vicariously depleted students were twice as likely to agree to a change in their school's grading system (instituting the dreaded "curve") as were typical students. Vicarious depletion can also affect people's perception of time, leading them to overestimate how long a task involving mental self-control takes relative to a task not involving mental control. Such patterns suggest that simple perception can inspire others to exert a greater amount of self-control, but mentally simulating self-control use can instead deplete people vicariously.

Future Directions

As demonstrated above, social coordination can result in quite different outcomes depending on the type of activity being coordinated and the extent to which coordination takes place. Researchers have tended to operationalize coordination in terms of a single modality (e.g., behavioral mimicry, emotional contagion, etc.), yet synchronized responses can take place all they way down the psychological stream, from behavior to affect to cognition, and back up again. Studies revealing that facial mimicry is associated with affective changes resulting from facial feedback are one useful step in understanding this process (e.g., Bush et al. 1989; McIntosh 1996; Vaughan and Lanzetta 1980, 1981). However, we suspect that further investigation of social coordination's multimodal nature will continue to reveal important insights. For instance, are people equally likely to synchronize thoughts, feelings, and actions with others; is it easier to synchronize certain modalities than others? What does the synchronization of one modality imply for the subsequent synchronization of other modalities? What forms of perception best facilitate interpersonal coordination, and within which modalities? While the objective answers to such questions remain to be uncovered, some insights might be gained by considering the subjective sense of ease with which coordination proceeds.

The Role of Felt Effort

Many commonly recognized forms of social coordination require intensive training. Consider the willpower required for basketball players to master the triangle offense or for operating room personnel to effectively collaborate during eight-hour surgeries. Yet, in virtually any domain, as people gain expertise in their roles, coordination becomes easier and more automatic. In fact, these features characterize the vast majority of instances of social coordination. As we have seen, people both mimic and complement the thoughts, feelings, and behaviors of others, often without even realizing it. The nonconscious nature of these examples guarantees, by definition, that they require both little attention and little effort. Why would this be? Why is social coordination often so effortless?

The answer may lie with automaticity (Bargh and Chartrand 1999; Moors and De Houwer 2006). Goals, plans for completing these goals, and even the consequences of goal pursuit can, through repeated pairings, become associated with the situations in which these goals typically arise, such that the presence of relevant situational features can automatically (unintentionally, autonomously) activate the associated goal representations (Bargh 1990, 1994, 1997). This automaticity allows for the diversion of cognitive resources away from repetitive (mental and physical) actions (Jastrow 1906; Shiffrin and Schneider 1977), resulting in greater efficiency and a reduction in subjective effort (Bargh 1989). Without this diversion, we would have trouble managing more complex tasks. Consider the wide array of cognitive and behavioral actions necessary to simply walk across a room (Clark and Phillips 1993; Sutherland 1997). Walking requires the simultaneous coordination of depth, obstacle, and rate perception, as well as the use of over 200 muscles. If walking, and all such activities, were not largely automatized, we would have a tough time simply getting out of bed in the morning (Miller, Galanter, and Pribram 1960).

The same is true with respect to social coordination. There is a virtually infinite number of ways that people can coordinate their thoughts, feelings, and behaviors. Indeed, "most human activity involves coordinating one's actions with the actions of others" (Reis and Collins 2004, 233). Thankfully, social coordination is also highly automatized. In fact, we can draw a rather direct parallel between the coordination required for individual movement and for social life. People must learn how to walk effectively (and build the muscles necessary to do so), and they must also learn how to engage others socially (and build the self-awareness and language skills necessary to do so). These developmental processes are aided by adaptive predispositions that make learning specific procedures (like walking) more rapid and resistant to extinction (e.g., Cosmides and Tooby 1994; Kenrick, Ackerman, and Ledlow 2003; Seligman 1970). An evolved need to belong—to form and maintain social relationships (Baumeister and Leary 1995; Brewer 1991; Fiske, 2008)—also creates pressure to automate the majority of ways people synchronize their interactions. Although proficiency in walking and social coordination can be and are intentionally developed, many aspects of such activities are automatically (unintentionally) automatized (Bargh and Chartrand 1999). In fact, the basic features of individual motion and social coordination, such as leg swinging and behavior matching, may be automatic from the get-go, without needing to be learned (Chartrand and Bargh 1999). To draw a simple analogy, coordination *with* others is akin to coordination *within* oneself. The result is interactions that are typically as effortless as walking across the room.

This fact is perhaps most readily demonstrated by the phenomenal state experienced during times of faulty coordination. Within the individual, conflicts of intention and action (e.g., wanting to carry a hot plate but feeling one's hand burning) or of cognitive integration (e.g., attempting to accept two opposing ideas) are often a source of mental strife (Festinger 1957; Morsella 2005). Similarly, attempting to interact with unfamiliar others, especially those with whom we have trouble synchronizing, requires dynamic entrainment and is likely to bring the lack of coordination into consciousness (Jeannerod 2006). In the short term, uncoordinated interaction may frustrate the pursuit of chronic affiliation goals and is often an aversive experience. Self-regulatory resources are drained, tension sets in, and suspicion of others may increase (e.g., Finkel et al. 2006; Kurzban and Neuberg 2005; Richeson and Trawalter 2005). These reactions are also evident in people who face problems with social coordination as a function of certain individual differences. For instance, high self-focus can both reduce coordination and call attention to this reduction (e.g., Van Baaren, Maddux, Chartrand, de Bouter, and van Knippenberg 2003)), resulting in a variety of negative feelings (e.g., Kowalski 1996). These effects may be exaggerated in people with social anxiety who have difficulty synchronizing their behaviors with interaction partners and may react to social interactions by fidgeting and excessively seeking reassurance (e.g., Heerey and Kring 2007).

In contrast, effective coordination is characterized by a feeling of smoothness and positive social reactions (Chartrand and Bargh 1999). People often derive pleasure from engaging in coordinated activities like team sports, musical performance, and dance (e.g., Ehrenreich 2006; Haidt, Seder, and Kesebir, 2008; Levenson and Ruef 1997; McNeill 1995). Importantly, to effectively and skillfully engage in such activities requires a relatively high degree of automaticity from all of the interaction partners (Ehrenreich 2006; Fitts and Posner 1967). The positive responses associated with coordinated interactions may occur because the negative aspects of the self (Leary 2004) are transcended in favor of a connection with others (Ehrenreich 2006; Haidt et al., 2008). Additionally, it may be that coordination acts as a signal of interpersonal fluency, the social equivalent of processing fluency (e.g., Reber et al. 2004). Fluent processing involves a subjective sense of ease (Clore 1992; Whittlesea, Jacoby, and Girard 1990), resulting in elevated feelings of familiarity and trust with the fluently processed stimuli (e.g., Reber and Schwarz 1999; Whittlesea 1993). Indeed, the experience of fluency is associated with highly automatized behaviors (Dougherty and Johnston 1996).

Flow

These facts may help to link the process of social coordination to the experience of effortlessness as described by the state of *flow*. Flow is considered to be a feeling of reduced subjective effort in the face of maintained objective effort, often coupled with feelings of happiness and intrinsic motivation to continue engaging in an activity (Csikszentmihalyi 1975; Hektner, Schmidt, and Csikszentmihalyi 2007). For instance, a trained musician described this state as "you lose your sense of time, you're completely enraptured, you are completely caught up in what you're doing" (Csikszentmihalyi 1996, 121). The flow state tends to emerge during activities that are highly automatized and involve either individual coordination (e.g., driving) or social coordination (e.g., language use; Csikszentmihalyi and LeFevre 1989). In fact, some evidence indicates that with coordinated activities such as conversations, people are more likely to experience flow when talking to high coordinators (e.g., kin, friends) than less-high coordinators (e.g., strangers; Csikszentmihalyi and LeFevre 1989).

The state of flow is intimately tied to a reduction in felt effort. Often, reduced effort is accompanied by a reduction in conscious attention to the immediate task (Dehaene, Kerszberg, and Changeux 2001); however, the effortless nature of flow is exclusively subjective, with attention preserved or even enhanced (Csikszentmihalyi 1975). From this perspective, many of the automatic forms of social coordination discussed here do not meet the criteria of "effortless attention" because they do not involve conscious awareness. Yet coordinated activities such as talking or walking in lockstep certainly feel effortless. This raises a dilemma as to the nature of effortless attention and action. Is there something fundamentally unique about activities in which attention can be focused on those activities without a corresponding increase in felt effort?

Not necessarily, perhaps. There are at least two important points to consider with respect to this question. First, it is worth recognizing that increases in attention are not inevitably tied to increases in subjective effort. Kahneman (1973, 33) noted that states featuring high levels of arousal (and thus focused attention) may be characterized by "a pattern of relaxed acceptance of external stimulation," with a focus on motor inhibition, in addition to the more promotion-oriented arousal typically thought to characterize flow states. Focused attention on a task may only entail the subjective experience of increased effort when one's performance is insufficient or when one's expectations are violated. Effort is thus determined by the demands of the processing task and not necessarily by either intuitive notions of task difficulty or the degree of voluntary intention or attention devoted to that task (Kahneman 1973). For instance, when a person is in a state of perceptual and response readiness (e.g., prior to engaging in a well-practiced task), or when attention is driven by external stimuli (e.g., when visual attention is captured by angry faces), subjective effort is minimized.

Second, conscious control of attention does not equate with the awareness of particular stimuli or actions but instead with the awareness of the influence and effects of those stimuli or actions (Bargh and Morsella 2008). The "unconscious" acts as a behavioral guidance system that drives attention and action; people are often aware of what they are doing, but they also are often not consciously aware of the reasons for those actions. For example, people may be aware that they are completing a sentence-unscrambling task (to use a classic priming manipulation) yet still not be conscious of how the linguistic content of those sentences is influencing downstream thoughts, feelings, and behaviors. Similarly, people may perceive the actions of others without understanding that this perception produces entrainment and coordination between self and other.

These two pieces of information suggest that the conscious awareness accorded to flow states may not be the driving force for the actions performed within those states. Consider that many of the elements associated with flow are not reliant on conscious awareness. For example, emotions (Ruys and Stapel 2008), motivation (Bargh and Huang 2009; Burton, Lydon, D'Alessandro, and Koestner 2006), and even creativity–flexibility (Hassin, Bargh, and Zimerman, 2009; Sassenberg and Moskowitz 2005) can all be experienced and utilized without conscious executive control. The intrinsic motivation that drives attention and the feeling of decreased subjective effort associated with flow are both hallmarks of (nonconscious) automaticity (Bargh 1989, 1990). Thus, virtually every element of flow can, and may typically, occur without conscious processing (the only element requiring consciousness is the awareness of one's current experience).

In fact, given the enormous complexities of mental processing involved in flow activities, it is highly unlikely that consciousness is in control. Consider the processing requirements for two people to engage in a coordinated conversation (see Clark 1996). A conversation typically entails multiple levels of co-occurring mental representations with respect to the words uttered, the syntax used, the overall goal of the discussion, the perceptual and verbal feedback provided by the other conversant, and so on. The activities commonly considered representative of flow experiences also include such processing requirements. All of this processing must be done simultaneously, or in parallel, despite the fact that the actions produced proceed in serial fashion. The manner in which this parallel distributed processing occurs is described by *cascade models* of cognition (which are typically applied to language production; e.g., Bargh 2006; Morsella and Miozzo 2002; Navarette and Costa 2004). Activities involving effortless action and attention are likely the result of this parallel processing, resulting in behavioral outcomes that are nonconsciously "selected for" the individual (e.g., Dell, Burger, and Svec 1997). This notion appears consistent with subjective descriptions of flow states, as when a former poet laureate described working in such a state as “you have the feeling that there’s no other way of saying what you’re saying” (Csikszentmihalyi 1996, 121). Consciousness is simply too slow a mechanism to effectively manage the processing requirements for such tasks.

From this perspective, conscious awareness may instead play the role of outside observer (Johnson and Reeder 1997. The state of flow would thus entail awareness of one’s automatized responses without that awareness’s being involved at a more causal level. Automatized behavior, by definition, does not require conscious elicitation, but it also does not preclude awareness of action. Thus, a person in a state of effortless attention and action may be experiencing something like a minor out-of-body experience, or, consistent with the poet laureate’s quote above, an understanding that one’s actions are not entirely under one’s control. [This conceptualization is similar to James’s description of consciousness as “express fiat” (1890/1981, 1131), not the originator of behavioral impulses, but their gatekeeper. Drawing on this account, consciousness may still play a role in flow experiences but at the level of behavioral inhibition]. Subjective effort would follow from task performance, not from attention–awareness for that task, allowing for focused attention without the depleting effects typically ascribed to elevated executive control. The positive feelings that result from flow experiences (Csikszentmihalyi, Abuhamdeh, and Nakamura 2005; Massimini, Csikszentmihalyi, and Carli 1987) could be explained as a combination of those typically accorded to observers of high-quality performances (e.g., awe, delight) as well as those that accompany rapid progress toward the current goal (Carver and Scheier 1981) and goal attainment itself (Förster, Liberman, and Friedman 2007). For example, during a basketball game, a player might become completely absorbed in the experience of the game, including the movements of the other players, a feeling that the basket is larger and time is moving slower, a loss of fatigue, and an intuitive sense of what actions to perform in order to score—in other words, the state of flow. If the player’s actions are successful moment to moment, he or she might be enraptured by the experience, just as observers in the crowd would be (Haidt 2007; Haidt et al., 2008). A sense of effortlessness would result because the actions being performed, including those involving physical and social coordination, are highly automatized and thus require very little subjective effort. This perspective may also suggest that the awareness accorded to one’s behaviors within flow states is in essence an enhancement or impairment of proprioception—the sense of bodily movements and positioning (e.g., Bermúdez, Marcel, and Eilan 1995; Farrer, Franck, Paillard, and Jeannerod 2003; Maxwell, Masters, and van der Karnp 2007). A more general implication is that effortless actions lie within the purview of the unconscious as demarcated by Bargh and Morsella (2008). Although one may be intensely aware of one’s actions, and attentionally caught up in them, this does not imply that those actions are being controlled by that awareness.

The automaticity and the feelings of both effortlessness and positive affect that accompany flow states appear quite encouraging. Indeed, a high degree of interpersonal automaticity probably *is* beneficial in many circumstances (e.g., Fitts and Posner 1967; Singer 2002). For instance, the ability to coordinate under conditions of high objective effort without the correspondent increase in subjective effort is characteristic of high-performing sports teams (e.g., Jackson and Csikszentmihalyi 1999). Additionally, redirecting the cognitive resources typically involved with self-monitoring to other-monitoring (where the self becomes an observer) may help prevent "choking" under pressure (e.g., Baumeister 1984). Feeling effortlessly in sync with others may also aid both in predicting their future behavior and subsequently adjusting one's own behavior in an appropriate fashion. Such outcomes are surely beneficial for cooperative coalitions such as military units, hospital staff, and so on. However, there is also a potential downside to the allure of effortlessness. The self-reinforcing properties of this form of social coordination may make us susceptible to exploitation, and the lack of conscious awareness associated with many instantiations of coordination (e.g., behavioral mimicry) makes this prospect especially pernicious. Consider that individuals who are able to coordinate with us in a relatively effortless manner are likely to automatically build rapport and trust. These feelings of closeness may, in turn, increase our vulnerability to the wiles of salespeople (e.g., Wood 2006), social cheaters (e.g., Cummins 1999), and bad leaders (e.g., Bennis 2007; Lipman-Blumen 2006).

In sum, much of social coordination is highly automated, associated with subjective ease, and reinforced by the positive individual and interpersonal experiences resulting from it. With respect to effortless attention (which requires some degree of conscious attention), we suspect that a state of effortlessness is likely to emerge between individuals who have automatized their roles in the particular social interaction and who are able to easily coordinate with others, thereby freeing up conscious resources for the appreciation of this interpersonal activity. Whether or not this effortlessness will truly lead to positive or negative outcomes may depend on who is doing the interacting and on the goals and agendas of those individuals.

Conclusions

Interpersonal coordination is a fundamental property of social interaction. Automatic forms of coordination help to lubricate new social interactions and cement existing relationships. Though social coordination often emerges nonconsciously, it produces powerful effects on interpersonal cognitions and actions while at the same time making the sensory experience of complex social dynamics seem easier. Here, we have tried to answer several basic questions about social coordination, including what it is, how it emerges, and why people continue to so readily match, complement, and synchronize with others. In doing so, we have proposed that social coordination exists primarily to promote individual goal achievement. The mechanisms that drive this process may also underlie the experience of effortlessness in social interaction, for good or for ill. Social coordination is a topic that has received empirical attention in a wide range of psychological subdisciplines, and yet the implications of this topic remain absent from a number of potentially fruitful areas of inquiry. As such, we expect that (coordinated teams of) researchers will continue to uncover novel forms of interpersonal coordination within virtually any domain they examine.

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