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Affective Social Ties without the Need to Belong?

Comment on Frans van Winden, "Affective Social Ties— Missing Link in Governance Theory"*

1. Introduction

Frans van Winden presents a quick introduction to the dynamic 'dual process' model of social ties, which was developed by van Winden and colleagues in various publications during the last 20 years. Drawing on evidence from economics and psychology, van Winden argues that preferences are determined by different mixtures of emotional/subcortical and cognitive/neocortical brain activity, with the mixture depending on the social context. Thus, the main contribution of van Winden's approach concerns the role of preferences, which are not exogenously given but endogenous. In particular, van Winden focuses on one specific aspect of the social context, namely affective social ties between individuals. He argues that close relationships are more affect-laden than exchange relationships, and that by taking emotional and cognitive factors into account the 'dual process' model is able to explain voluntary contributions to public goods. The idea is that a player has social preferences and the weight given to another player's payoff depends on the strength of the social tie between both players, which changes over time due to automatic affective responses. Since the weights in a player's utility function are endogenous, van Winden's model encompasses other models in which the weights are fixed (e.g., selfish preferences, altruism, or inequality aversion).

In this comment, I want to discuss two aspects. The first aspect is conceptual and concerns the nature of affect-laden, close relationships. The second aspect concerns the experimental evidence from van Dijk et al. (2002), Sonnemans et

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al. (2006) and Brandts et al. (2009) which, in my opinion and contradictory to van Winden's interpretation, is not clearly favorable to van Winden's model.

2. The Need to Belong

In distinguishing close relationships from exchange relationships van Winden argues that in close relationships "people care about each other, have a concern for each other's welfare, and respond to each other's needs" (109). This is in line with Baumeister and Leary's seminal work on interpersonal relationships, where they argue that social ties satisfy the need to belong which itself is a fundamental human motivation (Baumeister and Leary 1995, 497). According to Baumeister and Leary, a social tie fulfills the need to belong if the following two requirements are met: First, the interaction has to be repeated; and second, the social tie has to be perceived as being stable, i.e., both players must perceive each other as being responsive.[1] I think it is at this point that there is something missing in van Winden's model. In his model, the existence of a social tie between Ann and Bob implies that Ann's utility is the weighted sum of Ann's and Bob's payoffs, $U_A = \pi_A + \alpha_{AB}\pi_B$ where π_A and π_B are the payoffs (determined by endowments, contributions and the production function of the public good) and α_{AB} is the weight given to Bob's payoff. In van Winden's model, however, players do not care about the stability of social ties and have no incentive in maintaining them because utilities depend only on payoffs while no utility is derived from the social tie itself. As long as Ann's and Bob's payoffs and α_{AB} remain constant, Ann's utility is independent of how payoffs are earned. In fact, Ann would be indifferent between (i) a situation in which Bob has a high payoff because he received a gift from Ann, (ii) a situation in which Bob has a high payoff because the state taxed Ann and redistributed the taxes to him, and (iii) a situation in which Bob's payoff is high because he fraudulently stole the money from Ann. Of course, these three situations differ with respect to the affective experiences they trigger and in how α_{AB} changes over time, but in van Winden's model players are myopic and do not take these dynamic effects into account. Hence, from an ex ante perspective Ann is indifferent between situations (i), (ii) and (iii). However, I would argue that if there is a social tie between Ann and Bob, Ann would prefer situation (i) because only in this situation she can signal that she is concerned about Bob. If Ann cares about maintaining her social tie towards Bob, she should let him know that she cares about the relationship, but in van Winden's model this aspect of close relationships is absent.[2]

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[1] Baumeister and Leary (1995) argue that a main feature of the need to belong is that "people need to perceive that there is an interpersonal bond or relationship marked by stability, affective concern, and continuation into the foreseeable future. This aspect provides a relational context to one's interactions with the other person, and so the perception of the bond is essential for satisfying the need to belong. [...] To satisfy the need to belong, the person must believe that the other cares about his or her welfare and likes (or loves) him or her." (500)

[2] At this point, one could argue that van Winden's model is more general in the sense that the model applies to relationships represented by close and weak affective ties, as suggested in Baurmann's

In this paragraph I am going to sketch how van Winden's model can be modified to take the players' concern for maintaining social ties into account. Following Baumeister and Leary (1995, 498), I take approval as a prerequisite for the formation and maintenance of social ties.[3] I assume that approval depends on the relation between contributions and expected contributions, and that social ties are maintained by contributions to the public good because they signal affective concern and stability of the relationship. Put bluntly, a player wants to live up to her partner's expectation in order to experience gratification which stabilizes the social tie between both players and satisfies each player's need to belong. The private benefit of being perceived as responsive can be modeled as a 'warm glow' and implies that a player's contribution enters her own utility function twice, as part of the public good and as a private good (Andreoni 1989). Such a utility function (for Ann) would be

$$u_A = u(\pi_A, \pi_B, w_A) \text{ with } \tfrac{\partial u}{\partial w_A} > 0,$$

where w_A is a 'warm glow' which depends on Ann's contribution and the strength of the social tie between Ann and Bob. Assume that Ann experiences gratification (guilt) if her contribution is larger (smaller) than what she believes that Bob expects her to contribute.[4] Let f_{BA} Bob's first-order belief about Ann's action, i.e., f_{BA} is the mean of a probability distribution over the range of possible contributions. Let s_{ABA} denote Ann's second-order belief about f_{BA}, i.e., s_{ABA} is the mean over a probability distribution over all possible values of f_{BA}. Then, one possibility would be to model the 'warm glow' as $w_A = \alpha_{AB}(c_A - s_{ABA})$ where c_A is Ann's contribution. For $c_A > s_{ABA}$ Ann thinks that she exceeds Bob's expectations and expects to experience gratification. For $c_A < s_{ABA}$ she thinks that she fails to live up to his expectation and expects to experience guilt.[5] Hence, 'warm glows' are belief-dependent emotions. Now if Ann beliefs that Bob expects her to contribute, she is willing to incur a monetary loss from the contribution that will be outweighed by the increase in Bob's payoff and the non-monetary gain from the 'warm glow'. The benefit from the 'warm glow' is the experience of gratification or the avoidance of guilt, which satisfy Ann's need to belong. With respect

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    comment (2012, 169). Then, it is only in relationships characterized by strong affective ties that players derive utility from social ties (and consequently have an incentive to signal that they care about the relationships).

[3] In fact, Baumeister and Leary argue that the need for approval derives from the need to belong. Assuming that Ann's gift to Bob triggers approval, it becomes clear that only in situation (i) Ann's behavior is met with approval so that her need to belong is satisfied while in situations (ii) and (iii) she is not perceived as being responsive and receives no approval.

[4] Strictly speaking, 'warm glows' are not necessarily gratification and guilt but any non-material benefit. For ease of exposition I will use gratification and guilt.

[5] The idea of modeling the 'warm glow' as a function of second-order beliefs is taken from Dufwenberg, Gächter and Hennig-Schmidt (2011). Their model is based on psychological game theory (Battigalli and Dufwenberg 2007; Geanakoplos, Pearce and Stacchetti 1989), where it is assumed that a player's utility depends on belief-dependent emotions. Since van Winden refers to affect-laden psychological mechanisms related to the formation of social ties, it seems natural to include a psychological mechanism explaining how the emotions associated with social ties affect utilities.

to the example introduced in the preceeding paragraph, this modified version of van Winden's model could explain why Ann prefers situation (i).

Actually, the meachanism of 'warm glows' is more complex and of importance in situations in which communication takes place. In the modification of van Winden's model sketched in the previous paragraph there is no communication. The 'warm glow' results from Ann reasoning about Bob's expectations and her anticipation of how her own behavior is related to the emotions she will experience. If communication is allowed for after contributions are made, the expression of approval and disapproval is possible. Let's assume that Ann receives approval (disapproval) if her contribution is larger (smaller) than what she beliefs that Bob expects her to contribute. Approval and disapproval do not affect utility directly but are signals providing information about the interpersonal relationship.[6] Consequently, social ties would be maintained through gift-exchange with the gifts being the contribution and the information that is conveyed through the expression of approval. If a contribution is perceived as a signal for the contributor's responsiveness, it will be met with approval and thus satisfy the contributor's need to belong. Without communication it is possible that expectations are wrong. Ann could think that she is perceived as being responsive and cares about the relationship but Bob could have a totally different impression. With (successful) communication such a situation cannot be sustained because Bob's expression of disapproval will affect Ann's beliefs.

Why should this matter for van Winden's model? First, in van Winden's model utilities depend only on payoffs which are determined by endowments and contributions. Ties evolve automatically without the players investing in them since there is no gain in utility from maintaining a close social tie *per se*. This is at odds with any behavior in which players actively engage in impression management and invest in relationships (Baumeister and Leary 1995, 502; Leary 2010, 870–871). By incorporating 'warm glows', the model is modified so that players care about the maintenance of social ties because social ties satisfy the need to belong which is itself a fundamental human motivation. Secondly, 'warm glows' become relevant if the model is extended to larger groups. Without any private benefits like 'warm glows', individual contributions decrease with increasing group size. The logic is as follows: Because of the social tie between Ann and Bob, Ann cares about Bob's payoff. Ann's utility increases in Bob's payoff, but it does not matter whether his payoff increases because Ann or some other player contributed to the public good, i.e., players are only concerned about the total supply of the public good and are indifferent between different sources of contributions. With increasing group size one's own contribution has only a negligible impact on the public good and Ann's incentive to free-ride becomes stronger, leading to complete crowding-out (Andreoni 1988) which is incompatible with the empirical results (see Andreoni 1990 and the references therein).

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[6] There is experimental evidence that the purely symbolic expression of approval can be used to induce higher contributions in public good games (Dugar 2012; Greiff and Paetzel 2012) and that approval (disapproval) facilitates coordinating on the most inefficient (efficient) equilibrium in coordination games (Dugar 2010).

Models taking 'warm glows' into account, however, provide much better predictions because with 'warm glows' contributions will decrease with group size but complete crowding-out will be avoided.[7]

3. Social Ties or Conditional Cooperators?

The second aspect I want to discuss in this comment concerns the source of the preference change. To me, it is not clear whether the prosocial behavior in the experimental data van Winden refers to is due to the existence of social ties or due to the presence of conditional cooperators. Van Winden claims that "[k]ey for the social ties model is that adaptations show an important affective component and are not (predominantly) based on changes in beliefs (although beliefs may change as consequence)" (113–114). How can van Winden distinguish between a preference change based on changes in a player's beliefs and a preference change based on changes in a player's motivational state?

In answering this question he refers to van Dijk et al. (2002), Sonnemans et al. (2006) and Brandts et al. (2009), each investigating the formation of social ties in a three stage experiment. Since in all three experiments the adapted ring test is used to measure social ties, my critique applies to all three experiments but for ease of exposition I will focus on the experiment presented in van Dijk et al. (2002). In stages one and three an adapted ring test was conducted and in stage two pairs of participants played a repeated public good game. In the ring test a participant has to choose repeatedly between different self-other payoff combinations and the choices determine payoffs. Based on a participant's choices one can compute the participant's attitude towards the other participant.[8] In the ring test in stage one each participant was paired with an unknown other participant, so that the participant's degree of altruism towards an unknown participant is measured. In the ring test in stage three each participant interacted with the same participant with whom she interacted in the repeated public good game in stage two. Hence, a participant's partner was not an unkown other participant but a participant whose behavior in the public good game was known. A positive (negative) difference between the results from the second and the first ring test (the difference in social value orientation) is then taken to be a measure of a positive (negative) social tie.

Since both participants who interacted in the repeated public good game in stage two simultaneously choose their payoff combinations in the ring-test in stage three, a cofounding effect occurs because there might be conditional

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[7] In a group of n players Ann's 'warm glow' consists of n-1 components, i.e., $\alpha_{Ai}(c_A - s_{AiA})$ for $i \neq A$. As long as Ann has no negative and some positive social ties she will make a positive contributions, thus avoiding complete crowding-out.

[8] The original source of the ring test is Liebrand (1984), where the test was used to measure social value orientation. It's name is derived from the design of the test: In a coordinate system with the payoff to oneself on one axis and the payoff to the partner on the ther axis, all payoff combinations lie on a circle with center (0,0) and radius 500.

cooperators whose behavior in the ring test in stage three depends on their expectations. A participant's payoff from the ring test depends not only on the allocation chosen by herself but on the allocations chosen by both participants. Suppose Ann chooses the allocation (x_A, x_B) and Bob, who is being matched with Ann, chooses (y_B, y_A). Then, the final payoff from the ring test is $(\pi_A, \pi_B) = (x_A + y_A, x_B + y_B)$. In the ring test before the public good game participants have no information about their partners. This is different in the ring test after the public good game where participants' beliefs are crucial. A participant might be more cooperative in the ring test because she expects her opponent to be cooperative, or a participant might be more cooperative because of a strong social tie with her partner. Suppose both participants choose between a selfish alternative (e.g., +500,0) and a fair alternative (e.g., +354,+354). This is nothing but a prisoner's dilemma with payoffs as in *figure 1*.

	fair alternative (354,354)	selfish alternative (500,0)
fair alternative (354,354)	(708,708)	(354,854)
selfish alternative (500,0)	(854,354)	(500,500)

Figure 1: Payoffs from adapted ring test in stage three of van Dijk et al.'s (2002) experiment.

Along the lines of van Dijk et al. a participant's choice of the fair alternative would provide evidence for a social tie between both participants (more precisely, as evidence indicating that participant 1 gives more weight to participant 2's payoff than before the game). I think that this is only one possible explanation because conditional cooperation is not considered in van Dijk et al. (2002). For participants who developed strong social ties due to successful cooperation in stage two of the experiment, choosing the fair alternative is the utility-maximizing choice.[9] However, choosing the fair alternative could also be motivated by a preference for conditional cooperation. In general, participants who are conditional cooperators are willing to choose the fair alternative if they expect the opponent to choose the fair alternative (for empirical evidence from one-shot public good games see Fischbacher et al. 2001). For participants who have no social ties but are motivated by conditional cooperation the ring test in stage three is a coordination game (*figure 2*) provided that the preference for conditional cooperation is sufficiently strong ($X \geq 146$).

For conditional cooperators' behavior beliefs about the opponent's type are crucial and there is no reason to believe that beliefs do not change during the experiment. Any differences in social value orientation between stages one and three can be explained by a change in conditional cooperators' beliefs and without any reference to social ties. The argument runs as follows: A sizeable fraction of participants are conditional cooperators for whom the preferred outcome

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[9] With social ties strong enough (e.g., $\alpha = 0.5$) choosing the fair alternative becomes the unique Nash equilibrium.

is the mutual choice of the fair alternative.[10] In the ring test in stage one participants did not know each others' type, hence, conditional cooperators put a low probability on her opponent being a conditional cooperator. Consequently, conditional cooperators chose the selfish alternative. Successful cooperation in the repeated public good game in stage two affected beliefs so that in stage three a conditional cooperator expects her opponent to choose the fair alternative. Consequently, conditional cooperators chose the fair alternative. The bottom line is that a confounding effect arises because a participant's beliefs are endogenous and depend on the partner's behavior in stage two of the experiment and the experimental design does not control for beliefs.

	fair alternative (354,354)	selfish alternative (500,0)
fair alternative (354,354)	$(708+X,708+X)$	(354,854)
selfish alternative (500,0)	(854,354)	(500,500)

Figure 2: Utilities for conditional cooperators without social ties, derived from the payoffs of the adapted ring test in stage three of van Dijk et al.'s (2002) experiment.

Using a slightly different design, it would be possible to rule out a change in beliefs as explanation for any change in behavior. Suppose that in the ring tests in stages one and three not both but only one participant from each pair plays the ring test.[11] If social ties are absent and participants only care about their own monetary payoffs, we will observe selfish choices. If participants have social preferences and put a positive weight on the opponent's payoff because social ties developed during stage two, we will observe more fair choices than in the ring test in stage one. The crucial point is that the ring test, if played by only one participant, contains no strategic element because the decision of one player completely determines both players' payoffs. There is no role for beliefs and any increase in fair choices would provide clear-cut evidence for a preference change driven by the development of social ties.

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[10] In Fischbacher et al. (2001) 50 percent of all participants were classified as conditional cooperators.

[11] The downside of letting only one participant from each pair play the ring test is that the number of observations is reduced from n to $0.5n$ (where n is the number of participants). If this is a problem a possible remedy would be to let both participants play the ring test but determine the payoffs by the decision of a randomly chosen participant. This, however, might cause other problems.

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