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Do Emotions Matter in Environmental Choice? The Effect of :) and :(

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CORNHUSKER ECONOMICS

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Market Report	Yr Ago	4 Wks Ago	4/29/11
Livestock and Products, Weekly Average			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight	$98.59	$124.55	$116.78
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb.	134.61	160.08	157.75
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb.	114.14	138.37	134.25
Choice Boxed Beef, 600-750 lb. Carcass	170.08	188.06	184.56
Western Corn Belt Base Hog Price Carcass, Negotiated	82.69	88.22	91.80
Feeder Pigs, National Direct 50 lbs, FOB	*	*	*
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean	89.97	94.35	93.39
Slaughter Lambs, Ch. & Pr., Heavy, Wooled, South Dakota, Direct	*	202.75	190.00
National Carcass Lamb Cutout, FOB	295.78	397.50	406.63
Crops, Daily Spot Prices			
Wheat, No. 1, H.W. Imperial, bu.	3.90	7.60	7.75
Corn, No. 2, Yellow Omaha, bu.	3.60	7.12	7.43
Soybeans, No. 1, Yellow Omaha, bu.	9.82	13.69	13.98
Grain Sorghum, No. 2, Yellow Dorchester, cwt.	5.70	11.80	12.00
Oats, No. 2, Heavy Minneapolis, MN , bu.	2.05	3.75	3.42
Feed			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton.	135.00	140.00	140.00
Alfalfa, Large Rounds, Good Platte Valley, ton.	92.50	72.50	72.50
Grass Hay, Large Rounds, Premium Nebraska, ton.	*	*	*
Dried Distillers Grains, 10% Moisture, Nebraska Average.	107.00	213.50	217.00
Wet Distillers Grains, 65-70% Moisture, Nebraska Average.	36.00	75.50	78.50

*No Market

The problem of shared resources, especially Common Pool Resources (CPRs), has been studied extensively. In such cases (e.g. aquifers), if the users are driven solely by self-interest and do not cooperate/coordinate their actions, over-extraction occurs. However, over the years many researchers (e.g. Ostrom, 2010) have found that users are not always driven solely by self-interest, and often manage to prevent the overuse of resources through self-regulation, tempering their self-interest. Similarly, while the use of other shared resources such as water in rivers and creeks and the atmosphere may not lead to over-extraction, a variety of "downstream" problems can arise, as exemplified in poor quality of water in a downstream lake. Importantly, if the upstreamers temper their behavior through empathetic considerations, they will reduce the problem by undertaking costly actions. This situation raises two interesting empirical questions. First, is there a difference in behavior of the upstreamers if their decision is framed as a decision regarding profit maximization with resulting pollution, versus if their decision is framed as a costly decision on avoiding pollution. Second, whether downstreamers can potentially influence the behavior of upstreamers through the use of non-monetary sanctions (e.g. positive/negative word-of-mouth, display of social (dis)approval, etc.).

To test these questions we designed a three-player game. The game involved an upstream farmer who chooses a conservation technology which affects downstream water pollution; a water user who draws drinking water from the downstream river/lake; and a player with a dual role – she is an upstream farmer and thus chooses a tillage practice, but she is also affected by the quality of drinking water. After both farmers choose their tillage practice, we report the resulting cleanliness of the lake to the downstream water user. They can subsequently express a positive or negative emotion by sending a (costly) smiley or a frowney face (Figure 1 on next page). Each subject participated in one of three treatments: **EMPATHY**, **SELF-INTEREST** and **NEUTRAL**

FRAME. These treatments differed from each other in the language that was used to describe the experiment. The empathy treatment used language that nudged subjects towards more empathetic behavior. Similarly, the self-interest treatment nudged towards pure profit maximization, whereas the neutral frame removed all loaded context. The game, conducted in the Experimental and Behavioral Economics Laboratory in the Department of Agricultural Economics, had a total of 216 people participate. The subjects earned on average $28.90, depending on their choices in the game.

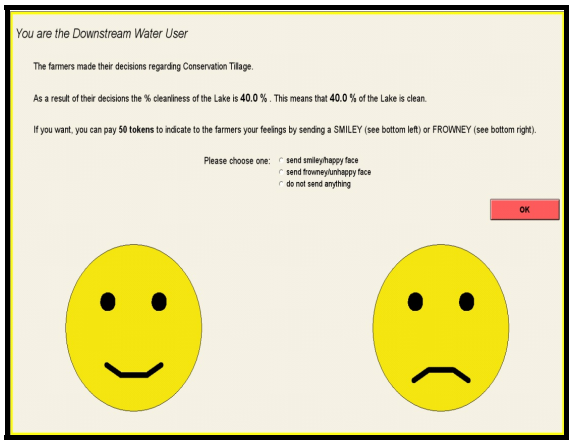

Figure 1. Example of an emotional feedback screen in EMPATHY FRAME.

The EMPATHY scenario led to higher quality water downstream (Figure 2). Priming for empathy works, as compared to neutral, context-free framing; whereas priming for self-interest does not. This suggests that the mere presence of environmental context tempers self-interest considerations. We also found that the downstreamers demonstrated substantial willingness to (costly) express their emotions: smiley or frowney emoticons were sent in more than 60 percent of the cases in the environmental framing treatments, and 35 percent in the neutral scenario. In the SELF-INTEREST FRAME and the EMPATHY FRAME treatment, 90 and 60 percent, respectively, of emoticons sent were frowneys. The NEUTRAL FRAME was the only treatment in which the downstream water users sent more smileys than frowneys. Finally, we observed that the effectiveness of emotion expression is comparable to the empathetic framing (Figure 2). After emotional feedback was sent, the statistical differences between the EMPATHY and SELF-INTEREST FRAME had disappeared. This is an indication that explicitly expressed emotions, even though not used by everyone, work similarly to the implicit appeal to emotions through framing.

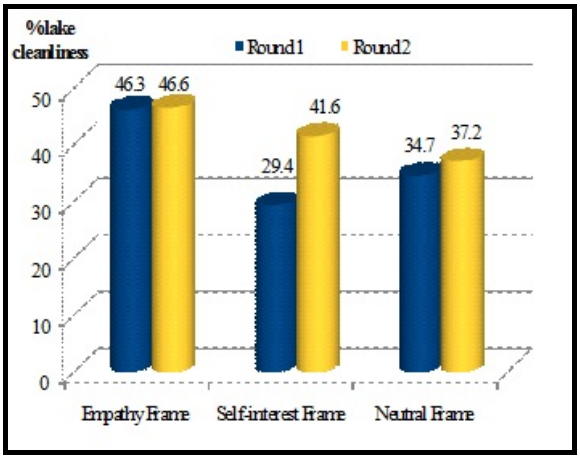

Figure 2. Average Lake Cleanliness by Round

There are three important implications derived from our study. **First**, our experiment supports that framing is highly effective in changing the behavior of subjects. EMPATHY FRAMING leads to an enhanced quality of water downstream. In fact, it is crucial to pay particular attention to the language in which the environmental policies are formulated and presented to the public. **Second**, the subjects with a higher stake in the cleanliness of the lake contributed much more towards this, than those with no stake. We observe this effect despite the identical Nash equilibrium for both types. This finding is in line with the metaeconomics approach and dual-interest framework (see http://agecon.unl.edu/metaeconomics): the up-streamers who were placed into the situation of "walking in the shoes of" downstreamers displayed more empathetic behavior than the upstreamers who could only imagine how it feels. So it is important to encourage the involvement of people living upstream (downstream) in the environmental problems of the downstream (upstream) regions. **Third**, negative emotional feedback (non-monetary punishment) is an effective tool in positively influencing environmental choices and leading to more equitable distributions. Hence, it should be considered in addition to the standard policies of monetary sanctions and rewards. Overall, empathy plays a substantive role. Achieving environmental quality (and quantity) goals is not only about self-interest.

Reference:

Ostrom, E. (2010). "Beyond Markets and States: Polycentric Governance of Complex Economic Systems." *American Economic Review, 100*(3), 641–672.

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