MIS Quarterly

SPECIAL ISSUE

WHAT DOES THE BRAIN TELL US ABOUT TRUST AND DISTRUST? EVIDENCE FROM A FUNCTIONAL NEUROIMAGING STUDY[1]

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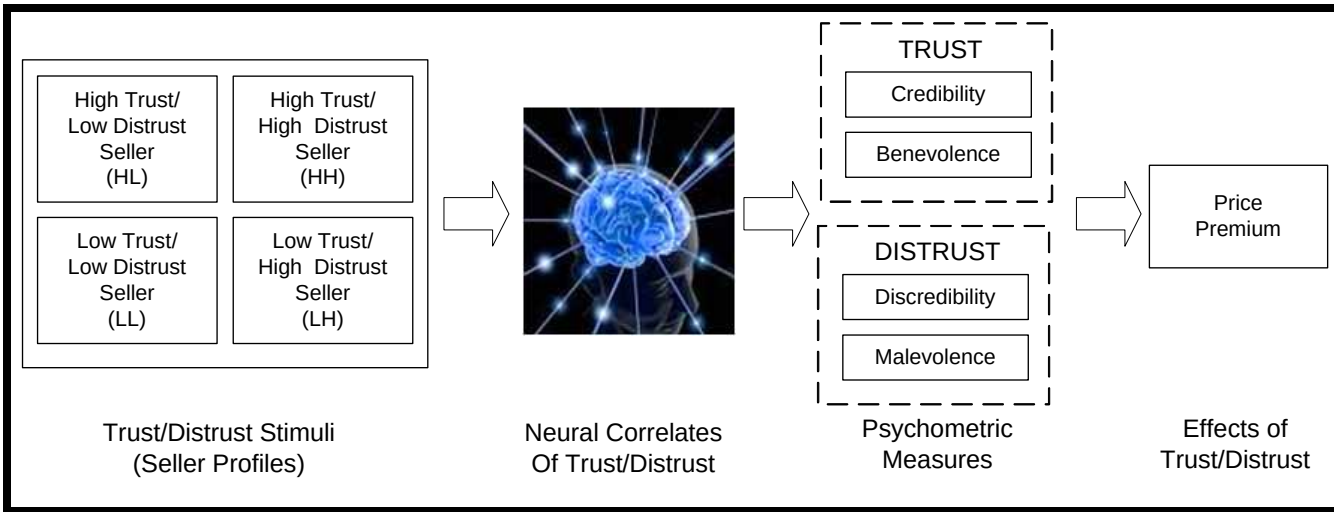


Figure 1. Theoretical Framework Linking Brain Activity with Trust, Distrust, and Price Premiums

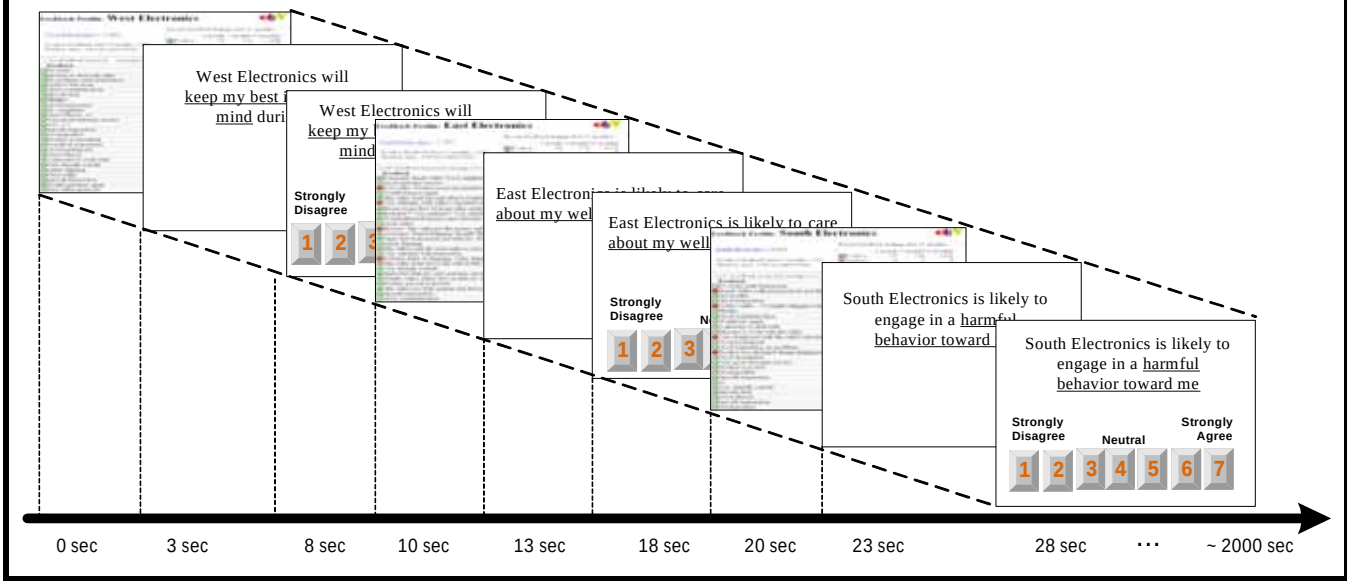


Figure 2. Graphical Representation of fMRI Experimental Procedure

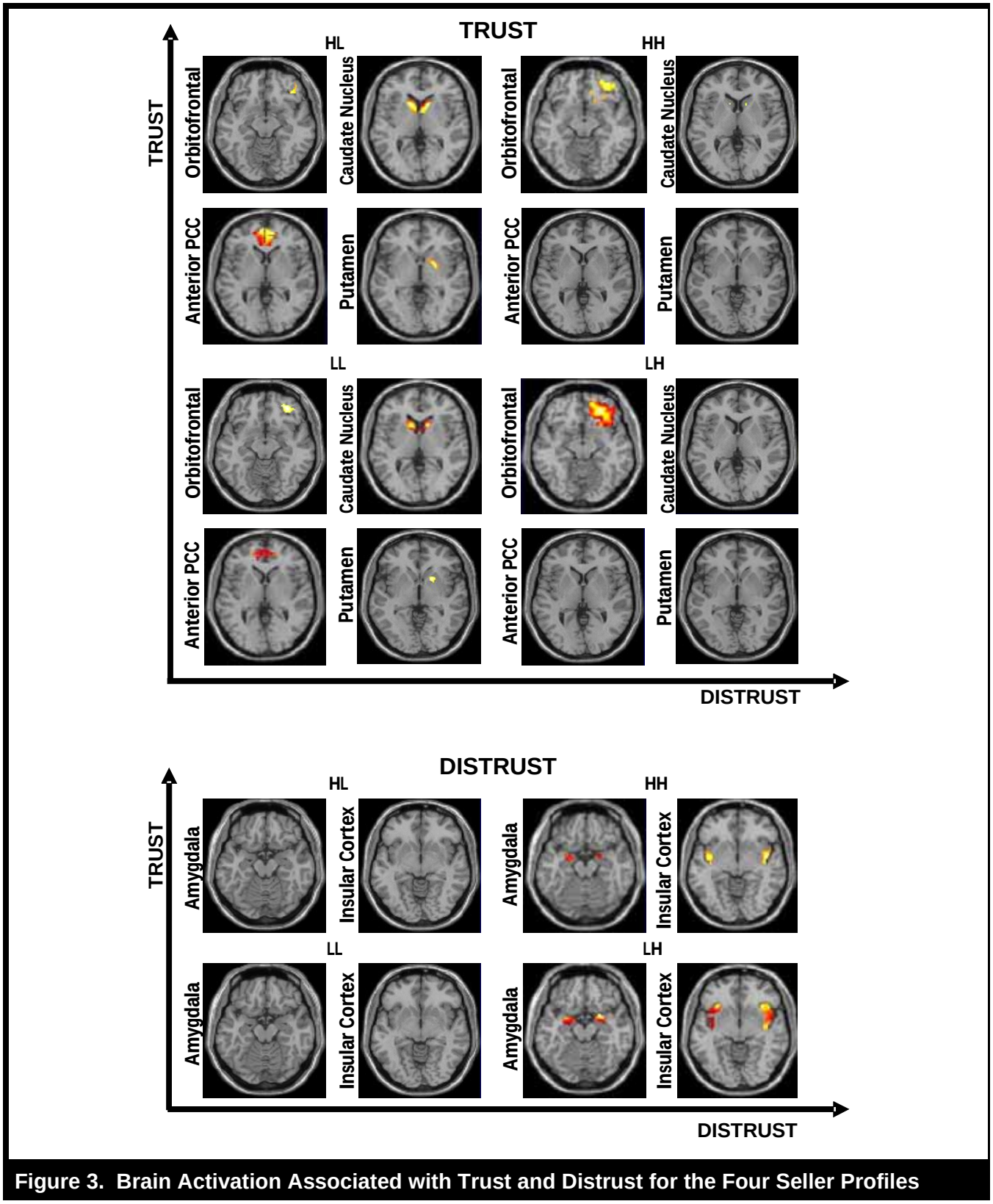
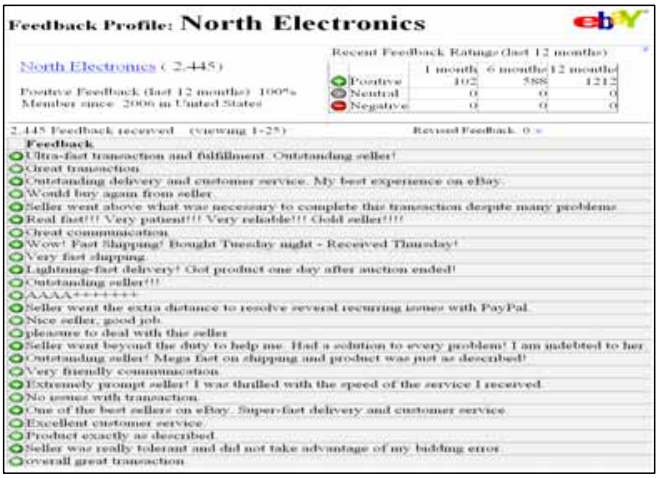


Figure 3. Brain Activation Associated with Trust and Distrust for the Four Seller Profiles

Appendix A

Seller Profiles



Feedback Profile: North Electronics

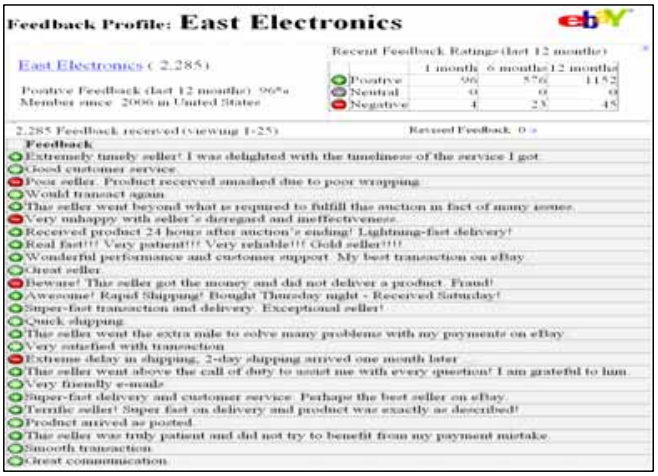
North Electronics (2,445)

Positive Feedback (last 12 months): 100%
Member since 2006 in United States

Recent Feedback Ratings (last 12 months)	1 month	6 months	12 months
Positive	102	588	1212
Neutral	0	0	0
Negative	0	0	0

2,445 Feedback received (viewing 1-25) — Revised Feedback: 0

Feedback
Ultra-fast transaction and fulfillment. Outstanding seller!
Great transaction
Outstanding delivery and customer service. My best experience on eBay.
Would buy again from seller
Seller went above what was necessary to complete this transaction despite many problems
Real fast!!! Very patient!!! Very reliable!!! Gold seller!!!!
Great communication
Wow! Fast Shipping! Bought Tuesday night - Received Thursday!
Very fast shipping
Lightning-fast delivery! Got product one day after auction ended!
Outstanding seller!!!
AAAA++++++++
Seller went the extra distance to resolve several recurring issues with PayPal
Nice seller, good job
pleasure to deal with the seller
Seller went beyond the duty to help me. Had a solution to every problem! I am indebted to her
Outstanding seller! Mega fast on shipping and product was just as described!
Very friendly communication
Extremely prompt seller! I was thrilled with the speed of the service I received
No issues with transaction
One of the best sellers on eBay. Super-fast delivery and customer service
Excellent customer service
Product exactly as described
Seller was really tolerant and did not take advantage of my bidding error
overall great transaction



Feedback Profile: East Electronics

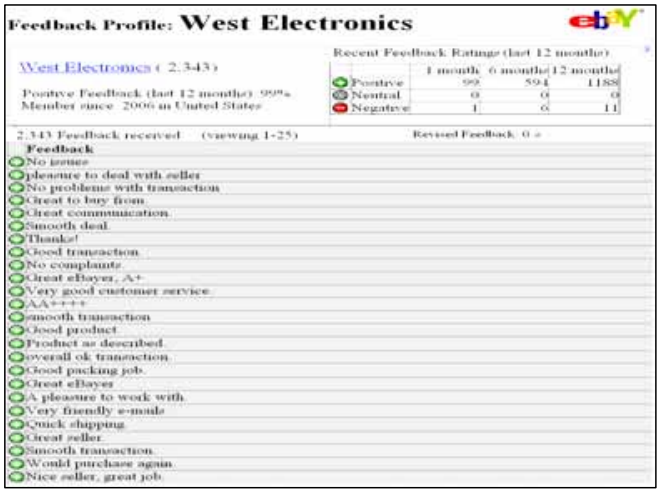
East Electronics (2,285)

Positive Feedback (last 12 months): 96%
Member since 2006 in United States

Recent Feedback Ratings (last 12 months)	1 month	6 months	12 months
Positive	96	576	1152
Neutral	0	0	0
Negative	4	23	45

2,285 Feedback received (viewing 1-25) — Revised Feedback: 0

Feedback
Extremely timely seller! I was delighted with the timeliness of the service I got
Good customer service
Poor seller. Product received smashed due to poor wrapping
Would transact again
This seller went beyond what is required to fulfill this auction in fact of many issues.
Very unhappy with seller's disregard and ineffectiveness.
Received product 24 hours after auction's ending! Lightning-fast delivery!
Real fast!!! Very patient!!! Very reliable!!! Gold seller!!!!
Wonderful performance and customer support. My best transaction on eBay
Great seller
Beware! This seller got the money and did not deliver a product. Fraud!
Awesome! Rapid Shipping! Bought Thursday night - Received Saturday!
Super-fast transaction and delivery. Exceptional seller!
Quick shipping
This seller went the extra mile to solve many problems with my payments on eBay
Very satisfied with transaction
Extreme delay in shipping, 2-day shipping arrived one month later
This seller went above the call of duty to assist me with every question! I am grateful to him.
Very friendly e-mails
Super-fast delivery and customer service. Perhaps the best seller on eBay
Terrific seller! Super fast on delivery and product was exactly as described!
Product arrived as posted
This seller was very patient and did not try to benefit from my payment mistake.
Smooth transaction
Great communication



Feedback Profile: West Electronics

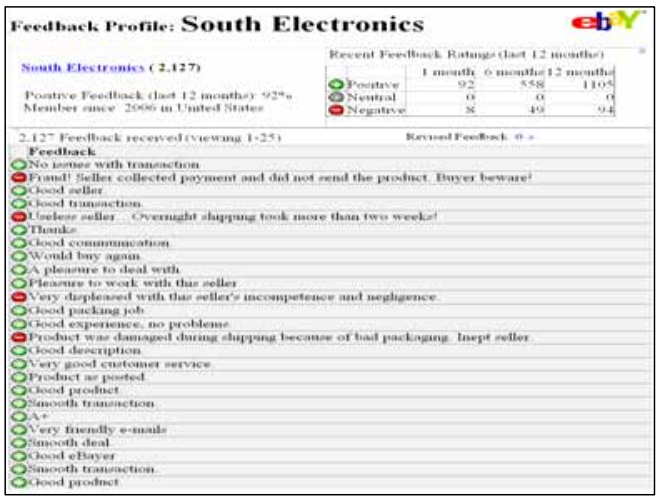
West Electronics (2,343)

Positive Feedback (last 12 months): 99%
Member since 2006 in United States

Recent Feedback Ratings (last 12 months)	1 month	6 months	12 months
Positive	99	594	1188
Neutral	0	0	0
Negative	1	6	11

2,343 Feedback received (viewing 1-25) — Revised Feedback: 0

Feedback
No issues
pleasure to deal with seller
No problems with transaction
Great to buy from
Great communication
Smooth deal
Thanks!
Good transaction
No complaints
Great eBayer, A+
Very good customer service
AAA+++
smooth transaction
Good product
Product as described
overall ok transaction
Good packing job
Great eBayer
A pleasure to work with
Very friendly e-mails
Quick shipping
Great seller
Smooth transaction
Would purchase again
Nice seller, great job



Feedback Profile: South Electronics

South Electronics (2,127)

Positive Feedback (last 12 months): 92%
Member since 2006 in United States

Recent Feedback Ratings (last 12 months)	1 month	6 months	12 months
Positive	92	558	1105
Neutral	0	0	0
Negative	8	49	94

2,127 Feedback received (viewing 1-25) — Revised Feedback: 0

Feedback
No issues with transaction
Fraud! Seller collected payment and did not send the product. Buyer beware!
Good seller
Good transaction
Useless seller... Overnight shipping took more than two weeks!
Thanks
Good communication
Would buy again
A pleasure to deal with
Pleasure to work with this seller
Very displeased with this seller's incompetence and negligence.
Good packing job
Good experience, no problems
Product was damaged during shipping because of bad packaging. Inept seller
Good description
Very good customer service
Product as posted
Good product
Smooth transaction
A+
Very friendly e-mails
Smooth deal
Good eBayer
Smooth transaction
Good product

Appendix B

Sample Measurement Items for Trust and Distrust, Their Dimensions, and Controls

Cred1	[Seller] has the expertise to understand my needs and preferences.
Cred2	[Seller] has the ability to successfully undertake this auction.
Cred3	[Seller] will deliver this product according to the posted delivery terms.
Cred4	[Seller] is likely to be credible during this transaction.
Benev1	[Seller] is likely to care about my well-being during this transaction.
Benev2	[Seller] will keep my best interests in mind during this transaction.
Benev3	If there is a problem with this auction, [Seller] will go out on a limb for me.
Benev4	[Seller] is likely to make sacrifices for me during this auction, if needed.
Discred1	I feel cautious about characterizing this [Seller] as honest.
Discred2	I am skeptical that [Seller] is competent in sending this product on time.
Discred3	I am worried that [Seller] would not be truthful in its dealings with me.
Discred4	It is uncertain whether [Seller] would keep its promises and commitments.
Malev1	I suspect [Seller] is interested in just its own well-being, not mine.
Malev2	[Seller] is likely to engage in a harmful behavior toward me.
Malev3	I believe [Seller] will perform this auction in a fraudulent way.
Malev4	I am doubtful that this [Seller] would act in my best interests.
Control 1	At this time in the experiment, we would like you to press button [1].
Control 2	At this time in the experiment, we would like you to press button [2].
Control 3	At this time in the experiment, we would like you to press button [3].
Control 4	At this time in the experiment, we would like you to press button [4].

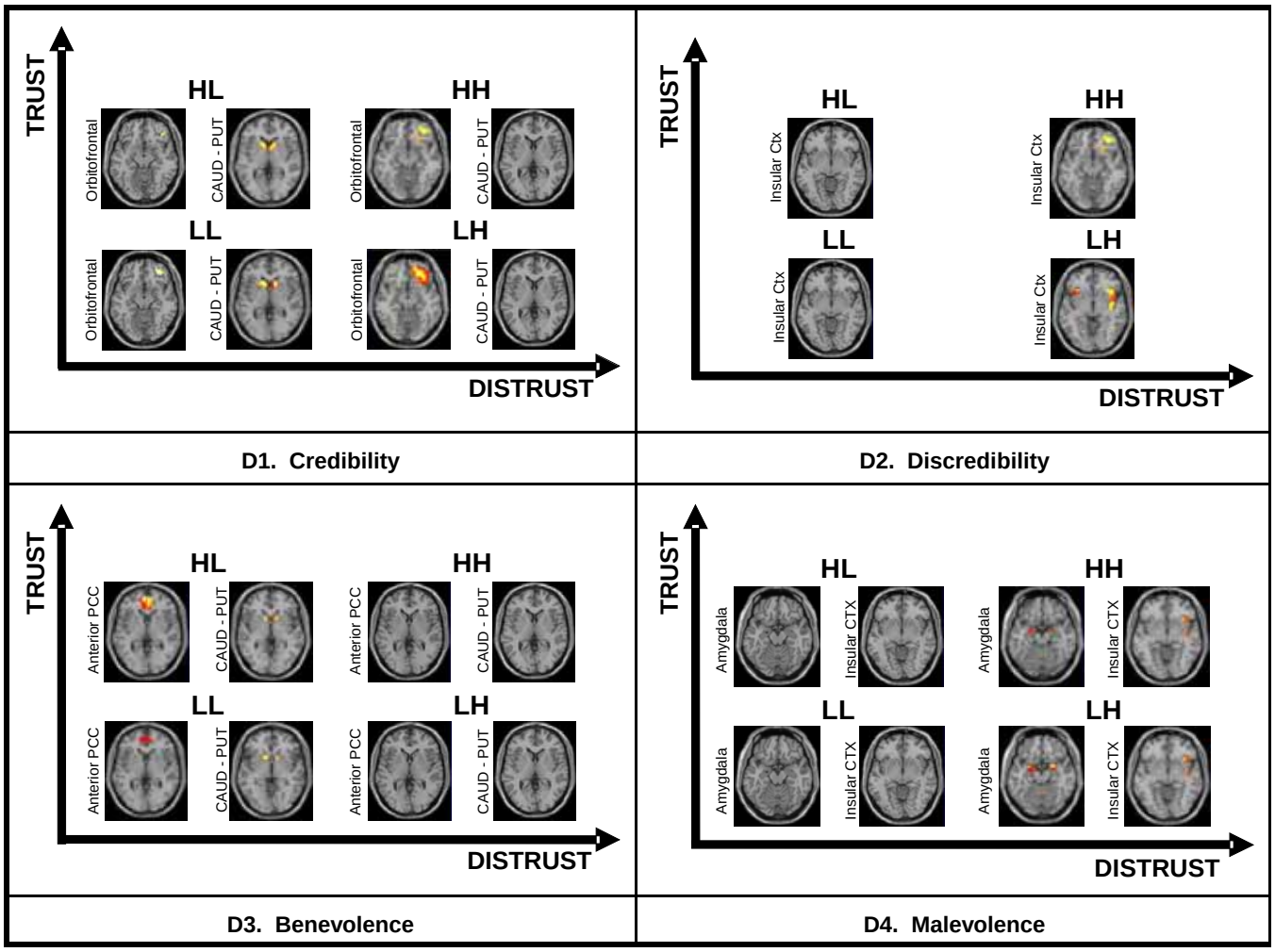
Appendix C

Discriminant Validity Tests for Trust and Distrust (Behavioral Data n = 177)

ITEM	Exploratory Factor Analysis (Promax Rotation)						PLS Confirmatory Factor Analysis					
	(4-Factor Solution)				(2-Factor Solution)		(4-Factor Solution)				(2-Factor Solution)	
	Cred	Benev	Discred	Malev	Trust	Distrust	Cred	Benev	Discred	Malev	Trust	Distrust
Cred1	**.76**	.58	-.49	-.42	**.86**	-.74	**.92**	.70	-.68	-.70	**.89**	-.76
Cred2	**.73**	.58	-.45	-.45	**.85**	-.71	**.89**	.69	-.76	-.67	**.90**	-.74
Cred3	**.80**	.56	-.50	-.50	**.86**	-.70	**.96**	.68	-.73	-.67	**.91**	-.72
Cred4	**.68**	.60	-.54	-.52	**.84**	-.73	**.96**	.71	-.71	-.64	**.92**	-.75
Cred5	**.67**	.57	-.53	-.54	**.83**	-.70	**.92**	.70	-.73	-.66	**.93**	-.72
Benev1	.59	**.78**	-.39	-.39	***.90***	*-.65*	.68	**.93**	-.70	-.54	***.97***	*-.68*
Benev2	.59	**.83**	-.42	-.42	***.91***	*-.64*	.72	**.88**	-.70	-.53	***.96***	*-.65*
Benev3	.60	**.68**	-.46	-.42	***.92***	*-.66*	.75	**.90**	-.66	-.60	***.96***	*-.67*
Benev4	.61	**.71**	-.53	-.43	***.90***	*-.68*	.76	**.93**	-.64	-.62	***.98***	*-.69*
Benev5	.56	**.70**	-.51	-.47	***.92***	*-.64*	.72	**.89**	-.61	-.70	***.96***	*-.68*
Discred1	-.52	-.44	**.65**	.49	-.72	**.86**	-.68	-.72	**.94**	.60	-.75	**.89**
Discred2	-.47	-.49	**.67**	.49	-.69	**.84**	-.69	-.68	**.90**	.66	-.73	**.87**
Discred3	-.46	-.47	**.61**	.42	-.75	**.84**	-.72	-.68	**.95**	.68	-.76	**.88**
Discred4	-.49	-.50	**.62**	.51	-.71	**.87**	-.73	-.70	**.91**	.70	-.74	**.90**
Discred5	-.48	-.46	**.59**	.48	-.70	**.86**	-.70	-.69	**.92**	.68	-.71	**.89**
Malev1	-.43	-.55	.48	**.73**	*-.66*	***.79***	-.69	-.64	.67	**.94**	*-.67*	***.82***
Malev2	-.49	-.54	.53	**.76**	*-.67*	***.80***	-.60	-.70	.65	**.95**	*-.69*	***.84***
Malev3	-.47	-.50	.52	**.68**	*-.69*	***.81***	-.65	-.62	.71	**.94**	*-.69*	***.83***
Malev4	-.44	-.53	.52	**.73**	*-.64*	***.82***	-.68	-.61	.70	**.94**	*-.67*	***.84***
Malev5	-.48	-.54	.49	**.82**	*-.62*	***.78***	-.64	-.70	.67	**.95**	*-.68*	***.80***

Appendix D

Brain Activity Associated with the Dimensions of Trust and Distrust Across Sellers



D1. Credibility

D2. Discredibility

D3. Benevolence

D4. Malevolence

Appendix E

Technical Details

Equipment

The fMRI scanner was a 3Tesla, Siemens whole body scanner with a standard CP head coil. Fifteen subjects were scanned with contiguous (no gap) 5 mm axial high-resolution T1-weighted structural slices (matrix size = 256 × 256; TR = 600; TE = 15 ms; FOV = 21cm; NEX = 1; slice thickness = 5 mm) were collected for spatial normalization procedures, and overlay of functional data. Precise localization-based standard anatomic markers (AC-PC Line) were used for all subjects (Talairach and Tournoux 1988). Functional scans were acquired with a gradient-

echo planar free induction decay (EPI-FID) sequence (T2*weighted: 128 × 128 matrix; FOV = 21 cm; slice thickness = 5 mm; TR = 2s; and TE = 30 ms, number of slices = 28) in the same plane as the structural images. The voxel size was 3.33 mm × 3.33 mm × 5 mm.

Protocol

Subjects answered questions while lying on their back. Visual stimuli were projected through fiber-optic goggles connected to a computer. Subjects selected their response by depressing one of seven buttons using a fiber-optic mouse in close proximity to their right hand. First, each of the four seller profiles was randomly shown to the subjects for 3 seconds, followed by a randomly chosen measurement item anchored on a seven-point Likert-type scale for this seller. Five seconds later, the Likert-type scales appeared in the screen, which was a signal to select their response. After clicking on the button, they were shown a new randomly selected seller profile and a corresponding measurement item for a randomly selected construct. This procedure was repeated for all sellers, measurement items, and control items. Upon completion of the experiment, the subjects were thanked, debriefed, and dismissed. Total time in the scanner was 34 minutes 20 seconds.

Analysis

The brain data were processed and statistically analyzed using SPM5 (Statistical Parametric Mapping, Wellcome Department of Cognitive Neurology, University College of London, UK), run under Matlab® (The Mathworks, Inc., Natick, MA). Slice timing correction was performed to compensate for delays associated with acquisition time differences among slices during the sequential imaging. A three-dimensional automated image registration routine (six-parameter rigid body, sinc interpolation; second order adjustment for movement) was applied to the volumes to realign them with the first volume of the first series used as a spatial reference. All functional and anatomical volumes were then transformed into standard anatomical space using the T2 EPI template and the SPM normalization procedure (Ashburber and Friston 1999). Next, all volumes underwent spatial smoothing by convolution with a Gaussian kernel of 8 cubic mm full width at half maximum (FWHM), to increase the signal-to-noise ratio (SNR) and account for residual inter-session differences.

Subject-level statistical analyses based on the changes in the blood oxygenation level dependent (BOLD) contrasts were performed using the general linear model (GLM) in SPM5. The four conditions (HH seller, HL seller, LH seller, LL seller) and baseline (control) were modeled using a canonical hemodynamic response function. Contrast maps were obtained through linear contrasts of all the event types. Group-level random effects analyses for main effects were accomplished by entering whole brain contrasts into one-sample *t* tests. For the group level analysis, region of interest (ROI) analysis was implemented. The ROI analysis method involves defining an area of interest in the brain within which to make measurements. A significance threshold based on spatial extent using a height of $t \geq 1.96$ and cluster probability of an uncorrected $p \leq 0.05$ (Forman et al. 1995) was applied to the effects of interest and surviving voxels were retained for further analyses.

References

Ashburber, J., and Friston, K. J. 1999. "Nonlinear Spatial Normalization Using Basis Functions," *Human Brain Mapping* (7), pp. 254-266.

Forman, S. D., Cohen, J. D., Fitzgerald, M., Eddy, W. F., Mintun, M. A., and Noll, D. C. 1995. "Improved Assessment of Significant Activation in Functional Magnetic Resonance Imaging (fMRI): Use of a Cluster-Size Threshold," *Magnetic Resonance in Medicine* (33), pp. 636-47.

Talairach, J., and Tournoux, P. 1988. *Co-Planar Stereotaxic Atlas of the Human Brain: 3-Dimensional Proportional System: An Approach to Cerebral Mapping*, New York: Thieme.