Texas A&M University

TITLE: Human Benefits of Golf Course Views: Emotional Well-Being, Stress and Performance

INVESTIGATORS:

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1992 FUNDING: $50,000

CLIMATIC REGION: Warm Humid
USGA REGION: Mid-Continent

Executive Summary
1992 Annual Report

Project No.	RF 91-868	**Department:**	Environ. Psychophy. Lab
Agency:	U.S. Golf Association	**System Part:**	TEES
Project Title:	Human benefits of Golf Course Views: Emotional Well-Being, Stress, and Performance.		

Assessment of Progress

The initial plan was to conduct two studies. The main objective of the first study was to identify and measure the physiological and emotional effects of off-site views of golf courses and compare these effects with those resulting from viewing other common types of landscapes. The main objective of the second study was to identify and measure the effects of viewing golf courses on the performance of cognitive tasks relevant to productivity in the workplace. The major accomplishments during the first year of the grant include:

- Video footage has been taken in the Houston, San Antonio, Austin, Dallas/Fort Worth, and Sam Houston Forest areas. On the basis of this footage, a small group of candidate sites has been chosen from a large number of potential sites within each environmental category (see Appendix 1). The videotaping was completed this fall.

- The raw video footage for Study 1 has been previewed and cataloged, and the final editing will be completed by the end of January, 1993.

- A systematic search of the mood induction literature over the past 20 years (>200 articles) using a number of electronic data bases and bound indexes was completed. As a result of this search, and taking into account the results from an informal pilot study (10 subjects), a music-based mood induction procedure was chosen in place of a verbal self-instructional procedure to elicit both the positive and negative moods for the comparison conditions in Study #2.

- A subset of these stimulus materials (16 musical passages) was pretested in a formal study completed in the spring (44 subjects). The results of this study persuaded us to discard 4 out of 8 potential positive stimuli and 4 out of 8 potential negative stimuli for Study #2 (see Appendix 2; Table 1 & Figure 1).

- Eight additional musical selections from the literature were added and were again pretested in a formal study completed this summer (110 subjects). The results of this study have allowed us to pick two clearly positive and two clearly negative stimuli for Study #2 (See Appendix 2; Table 2 & Figures 2 & 3).

- Seventy-two color slides were made from digitized frames of our video material and pretested in a formal study completed this fall (100 subjects). The results of this study have allowed us to pick clearly positive and clearly negative video segments that represent golf course, forest, and urban environments for Study #2 (See Appendix 3: Table 3 & Figures 4 - 6).

- All of the necessary computer, data acquisition, physiological recording, and audiovisual equipment has been purchased, tested, and installed.

- The research scientist on the project (Russ Parsons, Ph.D) has completed formal training in the software environment that will be used in the lab and has written and debugged the core of the computer programs required for experimental data acquisition and control.

- The results of our preliminary experiments were presented in October of this year at the annual meeting of the Society for Experimental Social Psychology. [*Tassinary, L.G. (1992, October). The impact of artifact-dominated versus nature-dominated environments on stress recovery. In L.G. Tassinary (Chair), Preconvention workshop in Social Psychophysiology, Annual meeting of the Society for Experimental Social Psychology, San Antonio, TX.*]

Appendix 1
Summary of Visits

Appendix 1
Summary of Visits

CANDIDATE GOLF COURSES

Candidate Courses	Taped for Study 1	Format	Taped for Study 2	Format	Comments
AUSTIN	yes	Hi-8	no		Interior roads
Austin CC					
Balcones CC					
Balcones Course	no		no		Limited views; yellow
Spicewood Course	no		no		grass
Barton Creek CC	no		no		Limited views
Blue Bonnet Hill	no		no		Limited views
Great Hills CC	no		no		Limited views
Jimmy Page GC	no		no		Limited views
Lost Creek CC	yes	Hi-8	no		Interior roads
Riverside Place CC	no		no		Under construction
Riverside GC	yes	Hi-8	no		Interior roads
BASTROP					
Pine Forest GC	yes	Hi-8	no		
CAMERON					
Cameron CC	yes	Hi-8	no		
DALLAS					
Cedar Crest Park GC	no		no		Limited views
Dallas Athletic Club CC	no		no		Limited views
Preston Trail GC	yes	Hi-8	no		
Royal Oaks CC	no		no		Limited views
Stevens Park GC	yes	Hi-8	no		
Tenison GC	yes	Hi-8	no		Interior roads
HOUSTON					
Great Wood CC	no		no		Under construction
Gus Wortham Park GC	no		no		Limited views
Herman Park GC	no		no		Limited views
Houston CC	no		no		Limited views
Memorial Park GC	no		no		Limited views; construction
River Oaks CC	no		no		Limited views
SAN ANTONIO					
San Terra	no		no		
TEMPLE					
Wild Flower CC	no		yes	BetaCam	
THE WOODLANDS					
Tournament Players Course	no		yes	BetaCam	

CC = Country Club
GC = Golf Course

CANDIDATE FOREST AREAS

Candidate Forest Areas	Taped for Study 1	Format	Taped for Study 2	Format	Comments
BASTROP					
STH 21 & L.C.R.A. Plant Rd.	yes	Hi-8	no		N
East of L.C.R.A. Plant Rd.	yes	Hi-8	no		N
BRYAN					
STH 21 & 6 - 1	no		yes	BetaCam	NE
STH 21 & 6 - 2	no		yes	BetaCam	N
STH 21 & 6 - 3	no		yes	BetaCam	NE; Water
CALDWELL					
FM 908 & STH 21 - 1	no		yes	BetaCam	NW; Water
FM 908 & STH 21 - 2	no		yes	BetaCam	N; Water
CAMERON					
STH 36	no		yes	BetaCam	SW; Water
CONROE					
FM 2854 & STH 105 - 1	no		yes	BetaCam	E; Water
FM 2854 & STH 105 - 2	no		yes	BetaCam	NE; Water
GIDDINGS					
STH 290 & STH 21	no		yes	BetaCam	SE; Water
LYONS					
FM 60	no		yes	BetaCam	SW
MADISONVILLE					
OSR & IH45 - 1	no		yes	BetaCam	NE; Water
OSR & IH45 - 2	no		yes	BetaCam	N; Water
OSR & IH45 - 3	no		yes	BetaCam	NW; Water
NAVASOTA					
FM 1774	yes	Hi-8	no		N
STH 105 & STH 6 - 1	no		yes	BetaCam	SSW
STH 105 & STH 6 - 2	no		yes	BetaCam	SW
ROCKDALE					
FM 486	yes	Hi-8	no		N
FM 487 - 1	no		yes	BetaCam	N
FM 487 - 2	no		yes	BetaCam	NNE; Water
SALADO					
FM 2868 - 1	no		yes	BetaCam	N
FM 2868 - 2	no		yes	BetaCam	W
FM 2868 - 3	no		yes	BetaCam	W
Pace Park - 1	no		yes	BetaCam	S; Water
Pace Park - 2	no		yes	BetaCam	N
Pace Park - 3	no		yes	BetaCam	SSW; Water
Pace Park - 4	no		yes	BetaCam	SSW

FM = Farm to Market Road
OSR = Old San Antonio Road
STH = State Highway
IH= Interstate Highway

CANDIDATE URBAN AREAS

Candidate Urban Areas	Taped for Study 1	Format	Taped for Study 2	Format	Comments
AUSTIN					
29th & Lamar	yes	Hi-8	no		E
31st/Univ/Speedway	yes	Hi-8	no		N
Duval	yes	Hi-8	no		N
Federal Bldg. (9th & Trinity)	no		yes	BetaCam	SW
Guadalupe & 4th	no		yes	BetaCam	NW; Water
Lamar/38th/Med Pkwy	yes	Hi-8	no		N
San Jacinto Center	no		yes	BetaCam	W; Water
CAMERON					
STH 36	yes	Hi-8	no		E; W
DALLAS					
Dallas Museum of Art - 1 (Sculpture Garden)	no		yes	BetaCam	E; Water
Dallas Museum of Art - 2 (Sculpture Garden)	no		yes	BetaCam	SE
Dallas Municipal Bldg - 1	no		yes	BetaCam	N; Water
Dallas Municipal Bldg - 2	no		yes	BetaCam	E; Water
Dallas Municipal Bldg - 3	no		yes	BetaCam	E
Dallas Municipal Bldg - 4	no		yes	BetaCam	NE
800 Main Street	no		yes	BetaCam	SE
One Bell Plaza - 1	no		yes	BetaCam	NW
One Bell Plaza - 2	no		yes	BetaCam	W; Water
One Bell Plaza - 3	no		yes	BetaCam	N
One Bell Plaza - 4	no		yes	BetaCam	W
Trammell Crow Bldg.	no		yes	BetaCam	W; Water
FORT WORTH					
General Worth Plaza	no		yes	BetaCam	SSW
Kimbell Art Museum - 1	no		yes	BetaCam	WSW
Kimbell Art Museum - 2	no		yes	BetaCam	NNE; Water
Fort Worth Waterpark	no		yes	BetaCam	SW; Water
HOUSTON					
Gray	yes	Hi-8	no		W
Rice	yes	Hi-8	no		E
Richmond	yes	Hi-8	no		W
Shepard	yes	Hi-8	no		N
University Place	yes	Hi-8	no		E
Westheimer	yes	Hi-8	no		E
LAS COLINAS					
Smith's Landing - 1	no		yes	BetaCam	S; Water
Smith's Landing - 2	no		yes	BetaCam	W; Water
ROCKDALE					
STH 79	yes	Hi-8	no		E; W

Appendix 2
Music Studies

Appendix 2
Music Studies

General Introduction

Over the past ten years several review articles have favorably assessed the reliability and validity of various mood induction procedures (e.g., Clark, 1983; Larsen & Sinnett, 1991; Martin, 1990). The objective of the present study is to further refine a music-based mood-induction procedure through the explicit evaluation of a number of different musical stimuli that have been used at different times both within the same laboratory and across different laboratories. Our goal is to select musical passages that consistently evoke either positive or negative moods in listeners and yet are equivalent in rated familiarity, liking, interest, and arousal.

Study 2a: Pretest of music-based mood induction procedure

Methods

Subjects. Subjects were 44 students: 7 were enrolled in an introductory psychology course and the remaining 37 were enrolled in an 1st, 3rd and 4th year design courses in the Department of Architecture. All participated as a means of fulfilling a course requirement.

Materials. The musical passages were taken from the existing literature (Albersnagel, 1988; Caspy, Peleg, Schlan & Goldberg, 1988; Clark & Teasdale, 1985; Eich, 1989; Eich & Metcalf, 1989; McFarland, 1984, 1985; McFarland & Kennison, 1989; Parrot, 1982; Pignatiello, Camp & Rasar, 1986; Slyker & McNally, 1991). Table 1 provides detailed descriptive information on each piece.

Apparatus. All of the musical passages were recorded directly from compact disc media onto professional quality IEC IV/TYPE IV metal audio cassettes (TDK MA-XG 90) using a Pioneer compact disc player (Model #PD-M640) and a Pioneer Stereo Double Cassette Deck (Model #CT-W650R). The same cassette deck that was used for recording was also used for playback.

Procedure. Subjects were run in three group sessions on three consecutive days (i.e., 17, 14, & 13 subjects in each group). Each session lasted approximately 75 minutes. Subjects were told that the purpose of this experiment was to pretest musical passages for use in future research concerned with the influence of music on mood and emotion. They were also told that they would hear 10 pieces of music, each anywhere from 3 to 5 minutes in length and were asked to imagine that they were in a room alone listening to the music.

At the end of each piece they were given one minute to answer eight questions concerning their reaction to the piece of music they just heard. 10 rating sheets were handed out to each subject at the beginning of the session and they were instructed to place each rating sheet at the bottom of the pile after they finished rating a given selection.

A given group of subjects listened to only ten out of possible sixteen musical passages, but all groups listened to an equal number of pieces selected to elicit primarily positive

or negative moods. Groups A and B listened to the same pieces but in a reverse order. Group C listened to four pieces (two positive and two negative) that were listened to by Groups A & B, but also listened to 6 new pieces (three positive and three negative). Six selections were rated by 31 subjects, four selections by 44 subjects, and six selections by 13 subjects.

Results

Overview. The mean ratings of all musical passages are displayed in Figures 1 & 2. The two unipolar ratings of emotional experience were combined to form a single bipolar scale by subtracting the rated negative feelings from the rated positive feelings. This procedure was also used to combine the two unipolar ratings of attentional focus into a single bipolar scale by subtracting the inward focus ratings from the outward focus ratings. This resulted in six independent ratings for each of the positive and negative musical passages.

Positive Music. As can be seen in Figure 1, the selections distributed themselves into three distinct groups in regard to familiarity (1 vs 4,5, 8 vs 2,3,6,7) and two distinct groups in regard to arousal (1,3,4,5,6 vs 2,7,8).

Negative Music. As can also be seen in Figure 1, the selections distributed themselves into two distinct groups in regard to emotional experience (1,2,3,8 vs 4,5,6,7), two distinct groups in regard to interest (7&8 vs 1,2,3,4,5,6), and two distinct groups in regard to attentional focus (4,5,8 vs 1,2,3,6,7).

Discussion

It appears that four out of the eight negative musical passages meet our selection criteria of evoking primarily negative feelings and being equivalent on other relevant dimensions (i.e., selections 1,2,3 & 8). It also appears that four out of the eight positive musical passages meet the selection criteria of evoking primarily positive feelings and being equivalent on other relevant dimensions (i.e., selections 3,4,5 & 8). In the next experiment we ran a total of 110 subjects and included 8 additional selections that had also been used previously in the literature. The results of this experiment will determine the musical stimuli that we will use as mood-induction comparison conditions in Study 2.

Study 2b: Pretest of music-based mood induction procedure

Methods

Subjects. Subjects were 110 students enrolled in an introductory psychology course. All participated as a means of fulfilling a course requirement.

Materials. The musical passages were taken from the existing literature (see above). Table 2 provides detailed descriptive information on each piece.

Apparatus. Same as above.

Procedure. Subjects were run in 8 group sessions over a two week period of time (i.e., 5, 7, 13, 15, 17, 19, 15, 19 subjects in each group). Each session lasted approximately 75 minutes. Subjects were told that the purpose of this experiment was to pretest musical passages for use in future research concerned with the

influence of music on mood and emotion. They were also told that they would hear 10 pieces of music, each anywhere from 3 to 5 minutes in length and were asked to imagine that they were in a room alone listening to the music.

At the end of each piece they were given one minute to answer eight questions concerning their reaction to the piece of music they just heard. 10 rating sheets were handed out to each subject at the beginning of the session and they were instructed to place each rating sheet at the bottom of the pile after they finished rating a given selection.

A given group of subjects listened to only ten out of possible sixteen musical passages, but all groups listened to an equal number of pieces selected to elicit primarily positive or negative moods. Groups A and B listened to the same pieces but in a reverse order. Groups C listened to four pieces (two positive and two negative) that were listened to by Groups A & B, but also listened to 6 new pieces (three positive and three negative). Group D listened to the same pieces of music as group C but in a reverse order. Six selections were rated by 49 subjects, four selections by 110 subjects, and six selections by 61 subjects.

Results

Overview. The mean ratings of all musical passages are displayed in Figure 2. The two unipolar ratings of emotional experience were combined to form a single bipolar scale by subtracting the rated negative feelings from the rated positive feelings. This procedure was also used to combine the two unipolar ratings of attentional focus into a single bipolar scale by subtracting the inward focus ratings from the outward focus ratings. This resulted in six independent ratings for each of the musical passages.

Positive Music. As can be seen in Figure 2, the selections distributed themselves into roughly two distinct groups in regard to familiarity (2, 3, 5 vs 1, 4, 6, 7, 8)), two distinct groups in regard to emotional experience (8 vs 1, 2, 3, 4, 5, 6, 7), and two distinct groups in regard to arousal (8 vs 1, 2, 3, 4, 5, 6, 7).

Negative Music. As can be seen in Figure 2, the selections distributed themselves into two distinct groups in regard to emotional experience (1, 2, 3, 4, 8 vs 5, 6, 7) and two distinct groups in regard to interest (1, 2, 8 vs 3, 4, 5, 6, 7).

Discussion

It appears that four out of the sixteen musical passages meet our selection criteria of evoking either primarily positive feelings (i.e., Holst & Delibes) or primarily negative feelings (i.e., Albinoni & Stravinsky) and yet remaining equivalent on other non-relevant dimensions (i.e., Familiarity, Liking, Interest, and Arousal). Because attentional focus will be explicitly manipulated in Study 2, it is fortunate that these particular selections also vary both significantly and orthogonally along this dimension as well (i.e., outward focus - Delibes & Stravinsky; inward focus - Holst & Albinoni).

References

Albersnagel, F.A. (1988). Velten and musical mood induction procedures: A comparison with accessibility of thought associations. *Behavioral Research Therapy, 26* (1), 79-96.

Caspy, T., Peleg, E., Schlam, D. & Goldberg, J. (1988). Sedative and stimulative music effects: Differential effects on performance impairment following frustration. *Motivation and Emotion, 12* (2), 123-138.

Clark, D.M. (1983). On the induction of depressed mood in the laboratory: Evaluation and comparison of the Velten and musical procedures. *Advances in Behavioral Research Therapy, 5,* 27-49.

Clark, D.M. & Teasdale, J.D. (1985). Constraints on the effects of mood on memory. *Journal of Personality and Social Psychology, 48* (6), 1595-1608.

Eich, E. & Metcalf, J. (1989). Mood dependent memory for internal versus external events. *Journal of Experimental Psychology, 15* (3), 443-455.

Larsen, R.J. & Sinnett, L.M. (1991). The meta-analysis of experimental manipulations: Some factors affecting the Velten mood induction procedure. Special Issue: Meta-analysis in personality and social psychology. *Personality and Social Psychology Bulletin, 17* (3), 323-334.

Martin, M. (1990). On the induction of mood. *Clinical Psychology Review, 10* (6), 669-697.

McFarland, R.A. (1984). Effects of music upon emotional content of TAT stories. *Journal of Psychology, 116,* 227-234.

McFarland, R.A. (1985). The relationship of skin temperature changes to the emotions accompanying music. *Biofeedback and Self Regulation, 10* (3), 255-267.

McFarland R.A. & Kennison, R. (1989). Handedness affects emotional valence asymmetry. *Perceptual and Motor Skills, 68,* 435-441.

Parrot, A.C. (1982). Effects of painting and music, both alone and in combination, on emotional judgments. *Perceptual and Motor Skills, 54,* 635-641.

Pignatiello, M.F., Camp, C.J., & Rasar, L.A. (1986). Musical mood induction: An alternative to the Velten technique. *Journal of Abnormal Psychology, 95* (3), 295-297.

Slyker, J.P. & McNally, R.J. (1991). Experimental induction of anxious and depressed moods: Are Velten and musical procedures necessary? *Cognitive Therapy and Research, 15* (1), 33-45.

Table 1: Musical Passages used in Study 2a

	#	Composer	Selection	Conductor	Performance	Recording Company	SPT[1]	TPT[2]
Positive	1	Mozart	NightMusic; 1st Movement (allegro)		Academy of St. Martin in the Field' Chamber Ensemble	Philips	0:00-5:47	5:47
	2	Holst	The Planets: Venus, the Bringer of Peace	L. Bernstein	New York Philharmonic	CBS	0:00-3:42	8:15
	3	Holst	The Planets: Jupiter, the Bringer of Jollity	L. Bernstein	New York Philharmonic	CBS	0:00-5:17	8:15
	4	Mozart	Nightmusic; 4th Movement (rondo)		Academy of St. Martin in the Field' Chamber Ensemble	Philips	0:00-3:54	3:54
	5	Tchaikovsky	Nutcracker; Overture	M.T. Thomas	Philharmonic Orchestra	CBS	0:00-3:09	3:09
	6	Beethoven	Symphony #6; 3rd Movement	H. von Karajan	Berlin Philharmonic	Deutsche Grammophon	0:00-3:08	3:08
	7	Beethoven	Symphony #7; 1st Movement	H. von Karajan	Berlin Philharmonic	Deutsche Grammophon	0:00-3:23	11:11
	8	Bach	Jesu, joy of man's desiring; from Cantata # 147		Orpheus Chamber Orchestra	Deutsche Grammophon	0:00-3:23	3:23
Negative	1	Hindemith	Trauermusik	H. Blomstedt	San Francisco Symphony	London	0:00-3:45	8:38
	2	Prokofiev	Alexander Nevsky: Cantata, op. 78; Russia under the Mongolian Yoke	L. Slatkin	St. Louis Symphony Orchestra	VoxBox	0:00-3:25	3:25
	3	Albinoni	Adagio in G Minor		Orpheus Chamber Orchestra	Deutsche Grammophon	0:00-2:50	7:19
	4	Holst	The Planets: Mars, the Bringer of War	L. Bernstein	New York Philharmonic	CBS	0:00-3:01	6:33
	5	Holst	The Planets: Uranus, the Magician	L. Bernstein	New York Philharmonic	CBS	0:00-5:23	5:23
	6	Grieg	Peer Gynt No. 2; Abduction of the Bride	Y. Ahronovitch	Vienna Symphony	Pro Arte	0:00-4:30	4:30
	7	Dvorak	Symphony #9; From the New World; 2nd Movement (largo)	H. von Karajan	Wiener Philharmonic	Deutsche Grammophon	0:00-4:10	12:21
	8	Stravinsky	Rite of Spring; Part 1	Z. Mehta	New York Philharmonic	CBS	2:55-7:55	16:22

[1] **Selection Playing Time**
[2] **Total Playing Time**

Table 2: Musical Passages used in Study 2b

	#	Composer	Selection	Conductor	Performance	Recording Company	SPT[1]	TPT[2]
Positive	1	Holst	The Planets: Jupiter, the Bringer of Jollity	L. Bernstein	New York Philharmonic	CBS	0:00-5:17	8:15
	2	Mozart	Nightmusic; 4th Movement (rondo)		Academy of St. Martin in the Field's Chamber Ensemble	Philips	0:00-3:54	3:54
	3	Tchaikovsky	Nutcracker; Overture	M.T. Thomas	Philharmonic Orchestra	CBS	0:00-3:09	3:09
	4	Beethoven	Symphony #6; 3rd Movement	H. von Karajan	Berlin Philharmonic	Deutsche Grammophon	0:00-3:08	3:08
	5	Bach	Jesu, joy of man's desiring; from Cantata # 147		Orpheus Chamber Orchestra	Deutsche Grammophon	0:00-3:23	3:23
	6	Mozart	Divertimento in D Major; 1st Movement (Allegro)		Academy of St. Martin in the Field's Chamber Ensemble	Philips	0:00-4:13	4:13
	7	Delibes	Coppelia; Act 1; Mazurka	R. Bonynge	National Philharmonic Orchestra	London	0:00-4:11	4:11
	8	Saint Saen	Carnival of the Animals; Introduction and Royal March of the Lions	P. Entremont	L'Eglise du Liban	L'Eglise du Liban (SONY Classical)	0:00-1:59	1:59
Negative	1	Hindemith	Trauermusik	H. Blomstedt	San Francisco Symphony	London	0:00-3:45	8:38
	2	Prokofiev	Alexander Nevsky: Cantata, op. 78; Russia under the Mongolian Yoke	L. Slatkin	St. Louis Symphony Orchestra	VoxBox	0:00-3:25	3:25
	3	Albinoni	Adagio in G Minor		Orpheus Chamber Orchestra	Deutsche Grammophon	0:00-2:50	7:19
	4	Stravinsky	Rite of Spring; Part 1	Z. Mehta	New York Philharmonic	CBS	2:55-7:55	16:22
	5	Siebelius	The Swan of Tuonela; Op. 22; No.2	H. von Karajan	Berlin Philharmonic	Deutsche Grammophon	0:00 - 3:01	7:50
	6	Tchaikovsky	Swan Lake; Act 4; Final Scene	A. Fiedler	Boston Pops Orchestra	RCA Victrola	0:00 - 5:56	5:56
	7	Barber	Adagio for Strings; From Quartet Op. 11	A. Schenck	The New Zealand Symphony Orchestra	Stradivari Classics	0:00-5:01	9:04
	8	Bruch	Kol Nidrei; Op. 47: Adagio on Hebrew Melodies	C. Mackerras	London Philramonic Orchestra	RCA Victor (Red Seal)	0:00-3:10	11:57

[1] **Selection Playing Time**
[2] **Total Playing Time**

Figure 1: Ratings of musical selections used in Study 2a

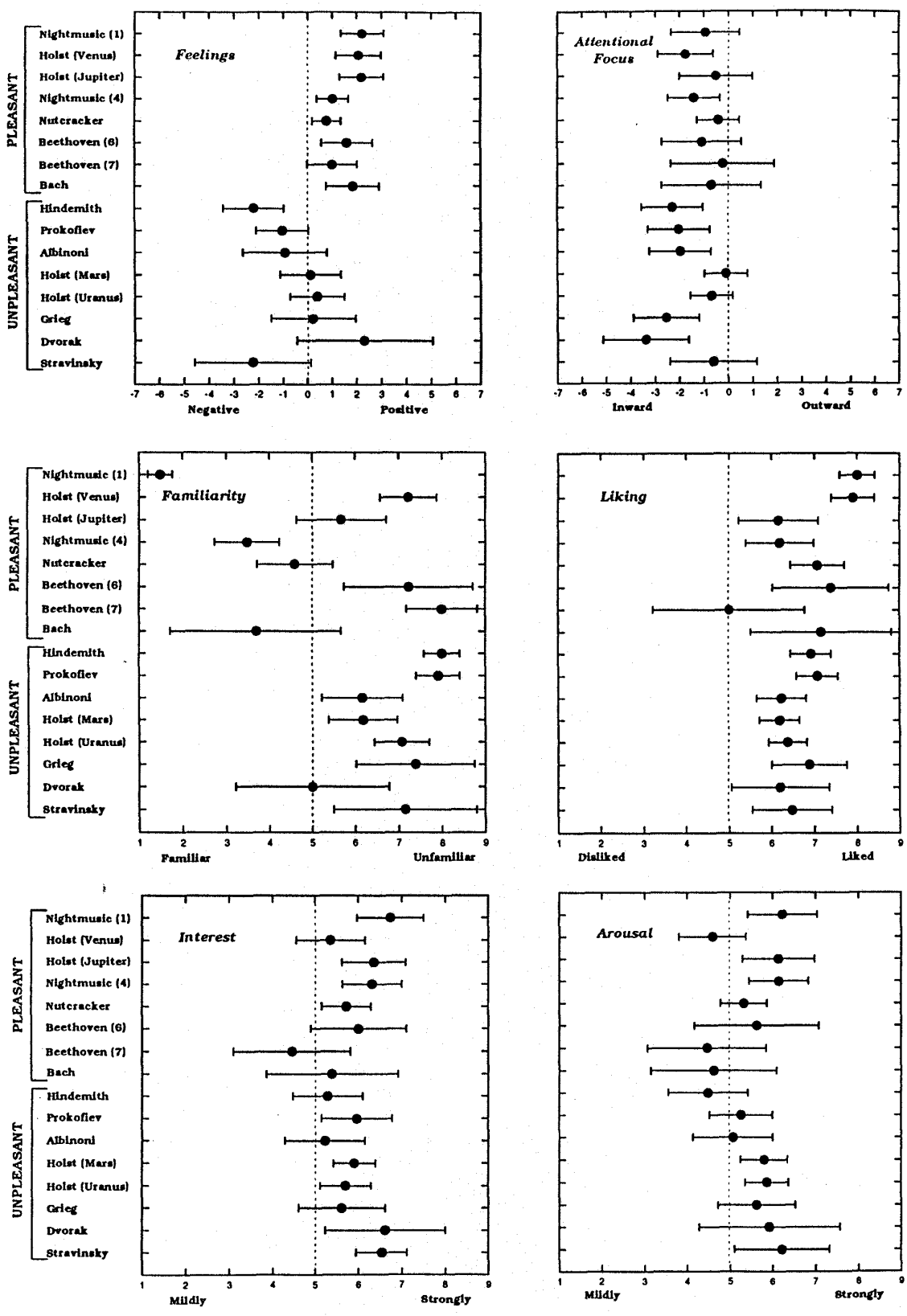


Figure 2: Ratings of musical selections used in Study 2b

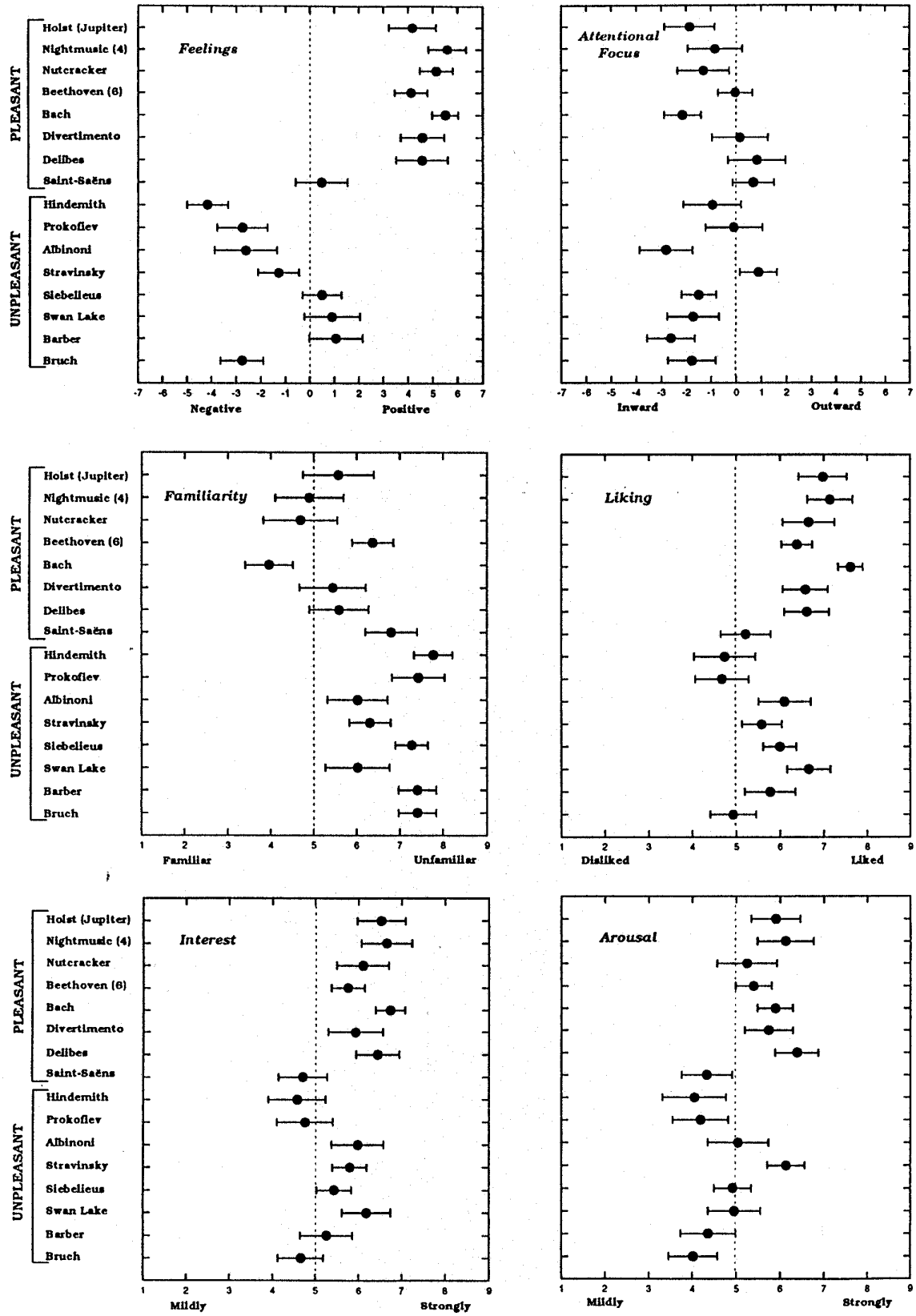
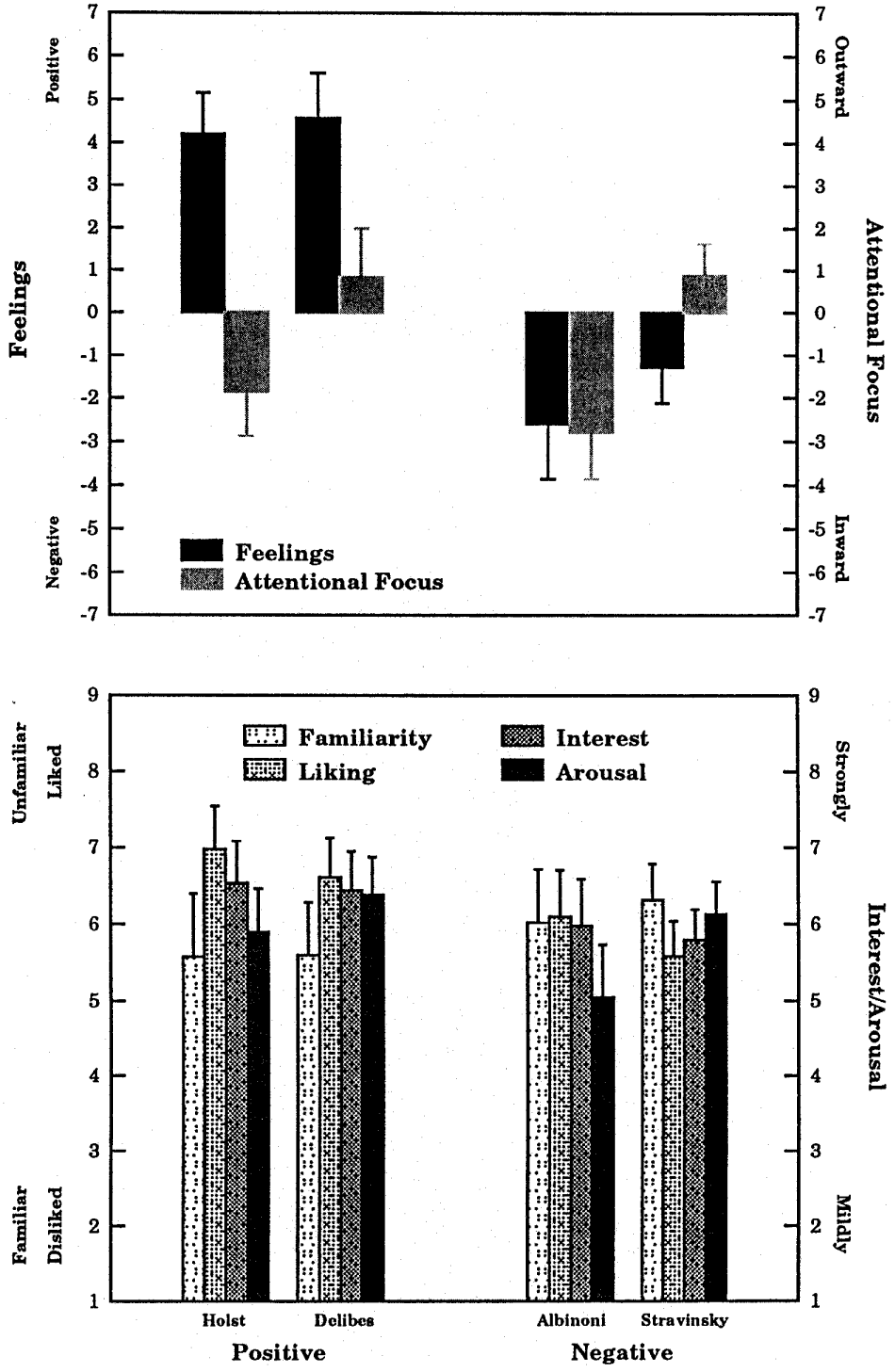


Figure 3: Summary graph of selected musical stimuli



Appendix 3
Visual Environments Study

Appendix 3
Visual Environments Study

Contents:

Table 3: Environmental Scenes used in Study 2c

Environment	Scene	Description	Water	People/ Animals
GOLF COURSE				
	1	Woodlands, TPC, 3rd hole	Yes	Yes
	2	Woodlands, TPC, 1st hole	Yes	Yes
	3	Woodlands, TPC, 1st/9th holes	Yes	Yes
	4	Woodlands, TPC, 3rd hole	Yes	No
	5	Woodlands, TPC, 1st hole	Yes	No
	6	Woodlands, TPC, 1st/9th holes	Yes	No
	7	Woodlands, TPC, 5th hole	No	Yes
	8	Woodlands, TPC, 9th hole	No	Yes
	9	Woodlands, TPC, 15th hole	No	Yes
	10	Woodlands, TPC, 6th hole	No	No
	11	Woodlands, TPC, 1st hole	No	No
	12	Woodlands, TPC, 9th hole	No	No
	13	Wildflower CC, 16th Hole, E	Yes	Yes
	14	Wildflower CC, 16th Hole, ESE	Yes	Yes
	15	Wildflower CC, 16th Hole, NE	Yes	Yes
	16	Wildflower CC, 16th Hole, NE	Yes	No
	17	Wildflower CC, 17th Hole, W	Yes	No
	18	Wildflower CC, 16th Hole, ESE	Yes	No
	19	Wildflower CC, 12th Hole, NW	No	Yes
	20	Wildflower CC, 11th Hole, E	No	Yes
	21	Wildflower CC, 13th Hole, N	No	Yes
	22	Wildflower CC, 12th Hole, NW	No	No
	23	Wildflower CC, 13th Hole, N	No	No
	24	Wildflower CC, 11th Hole, E	No	No
FOREST				
	25	Caldwell, FM 908, NW	Yes	Yes
	26	Caldwell, FM 908, N	Yes	Yes
	27	Conroe, FM 2854, NE	Yes	Yes
	28	Salado, Pace Park, S of Shop, S	Yes	No
	29	Cottonwood, STH 21, N	Yes	No
	30	Conroe, FM 2854, NE	Yes	No
	31	Bryan, STH 21, N	No	No
	32	Lyons, FM 60, SW	No	No
	33	Navasota, STH 105, SSW	No	No
	34	Navasota, STH 105, SW	No	No
	35	Bryan, STH 21, NE	No	No
	36	Salado, N end Pace Park, S	Yes	Yes
	37	Rockdale, FM 487, NNE	Yes	Yes
	38	Normangee, OSR & I45, N	Yes	Yes
	39	Salado, N end Pace Park, S	Yes	No
	40	Cameron, STH 36, SW	Yes	No
	41	Paige, STH 290, SE	Yes	No
	42	Salado, N end Pace Park, S	No	Yes
	43	Davila, FM 487, N	No	Yes
	44	Salado, FM 2868, W	No	No
	45	Salado, N end Pace Park, S	No	No
	46	Davila, FM 487, N	No	No
	47	Salado, E of town, N	No	No
URBAN				
	48	Ft. Worth, Kimbell, front	Yes	Yes
	49	Dallas, Trammell Crow	Yes	Yes
	50	Las Colinas, Smith's Landing (2)	Yes	Yes
	51	Dallas Art Museum (2) SE	Yes	No
	52	Ft. Worth, Waterpark	Yes	No
	53	Las Colinas, Smith's Landing (1)	Yes	No
	54	Dallas, One Bell Plaza (3) W	No	Yes
	55	Ft. Worth, Gen. Worth Plaza	No	Yes
	56	Dallas Art Museum (1) E	No	Yes
	57	Dallas Art Museum (1) E	No	No
	58	Dallas, One Bell Plaza (1) NW	No	No
	59	Ft. Worth, Gen. Worth Plaza	No	No
	60	Dallas Municipal Bldg (1)	Yes	Yes
	61	Dallas Municipal Bldg (2)	Yes	Yes
	62	Austin, San Jacinto Ctr	Yes	Yes
	63	Dallas Municipal Bldg (1)	Yes	No
	64	Dallas Municipal Bldg (2)	Yes	No
	65	Austin, San Jacinto Ctr	Yes	No
	66	Dallas, 800 Main St.	No	Yes
	67	Dallas Municipal Bldg (4)	No	Yes
	68	Austin, Federal Bldg	No	Yes
	69	Dallas Municipal Bldg (4)	No	No
	70	Austin, Federal Bldg	No	No
	71	Dallas Municipal Bldg (3)	No	No
	72	Ft. Worth, Kimbell, back	No	Yes

Figure 4a: Emotional Feeling ratings of environmental scenes

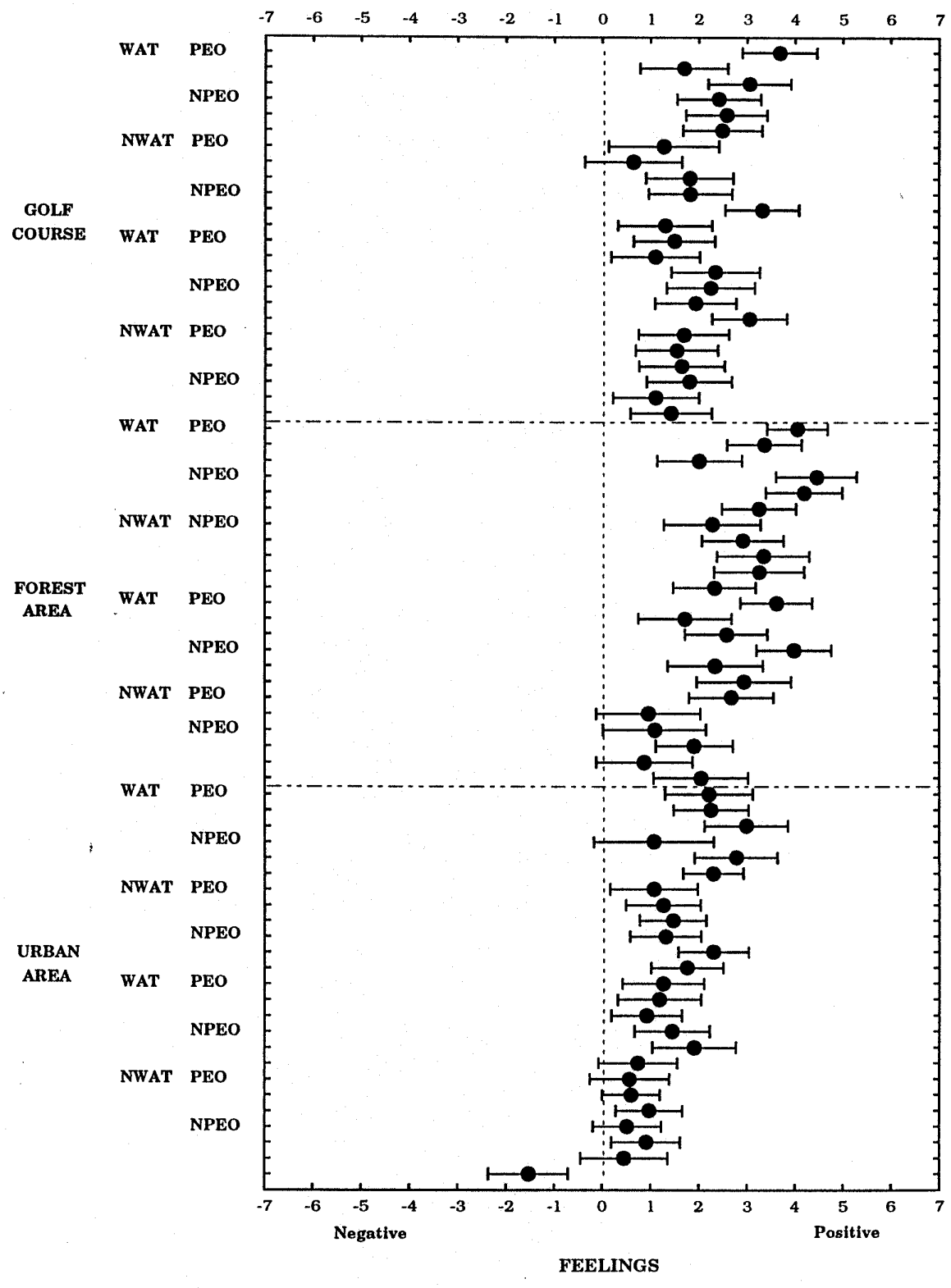


Figure 4b: Familiarity ratings of environmental scenes

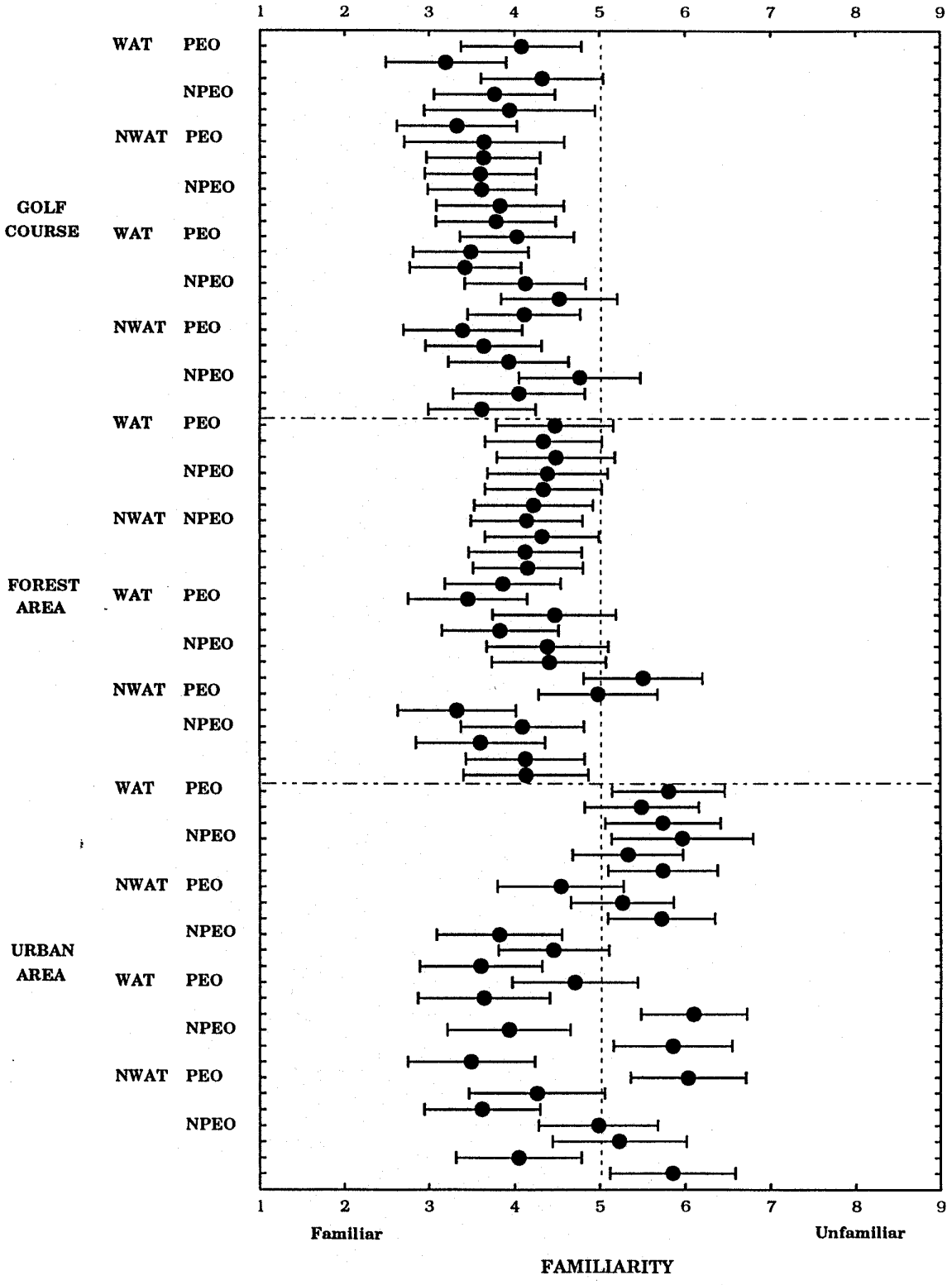


Figure 4c: Liking ratings of environmental scenes

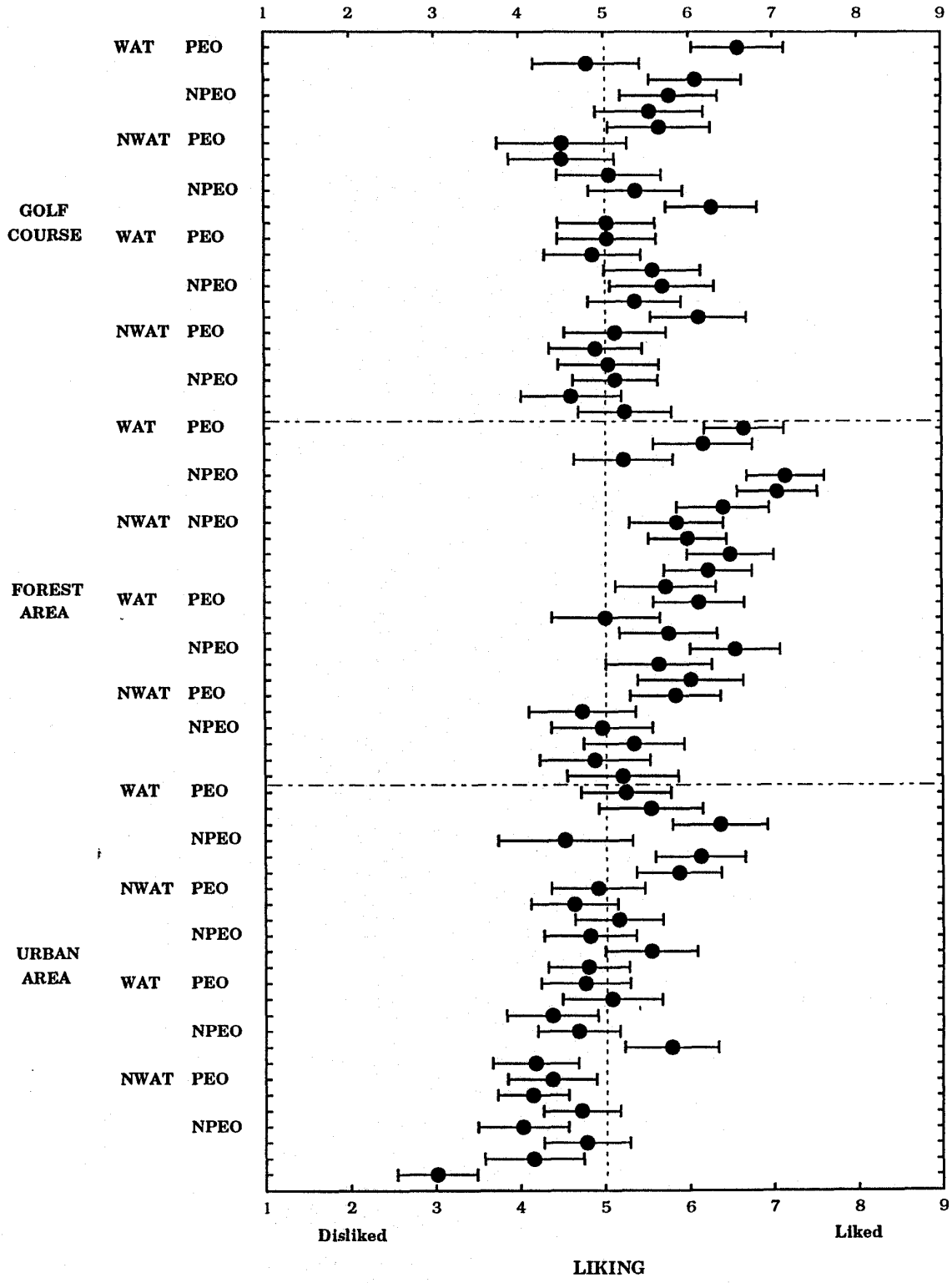


Figure 4d: Interest ratings of environmental scenes

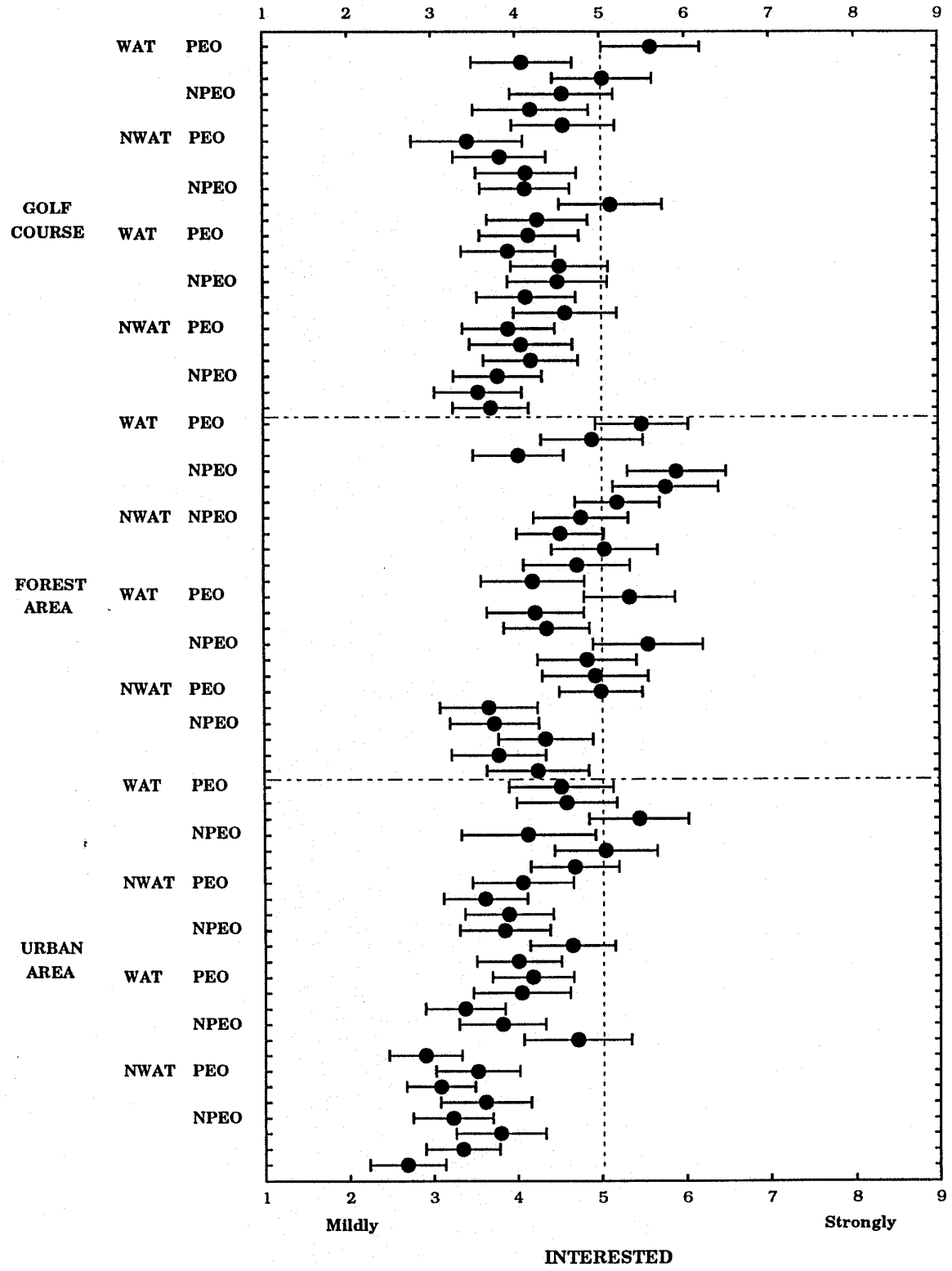


Figure 4e: Arousal ratings of environmental scenes

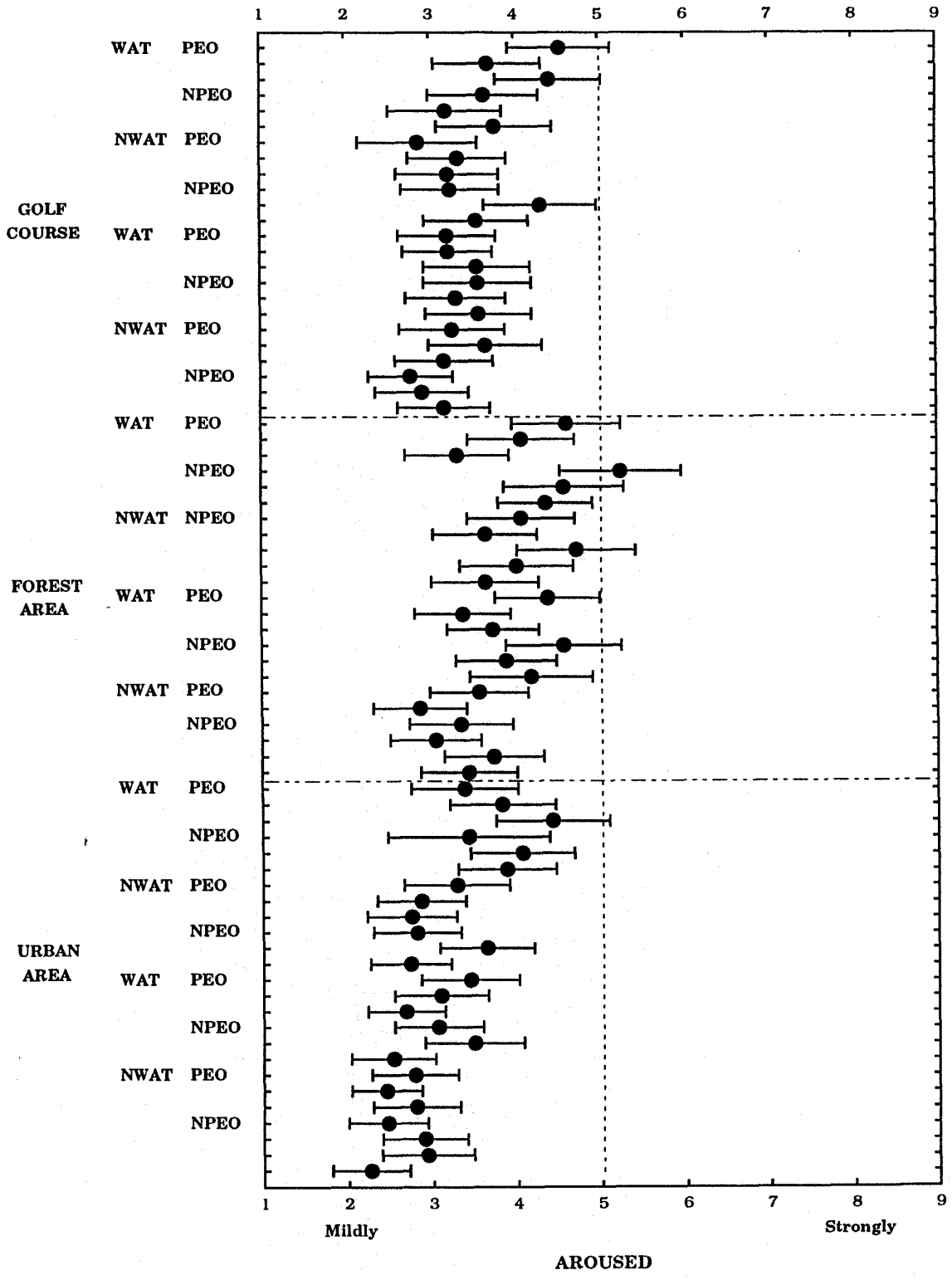


Figure 5: Summary graph of selected environments

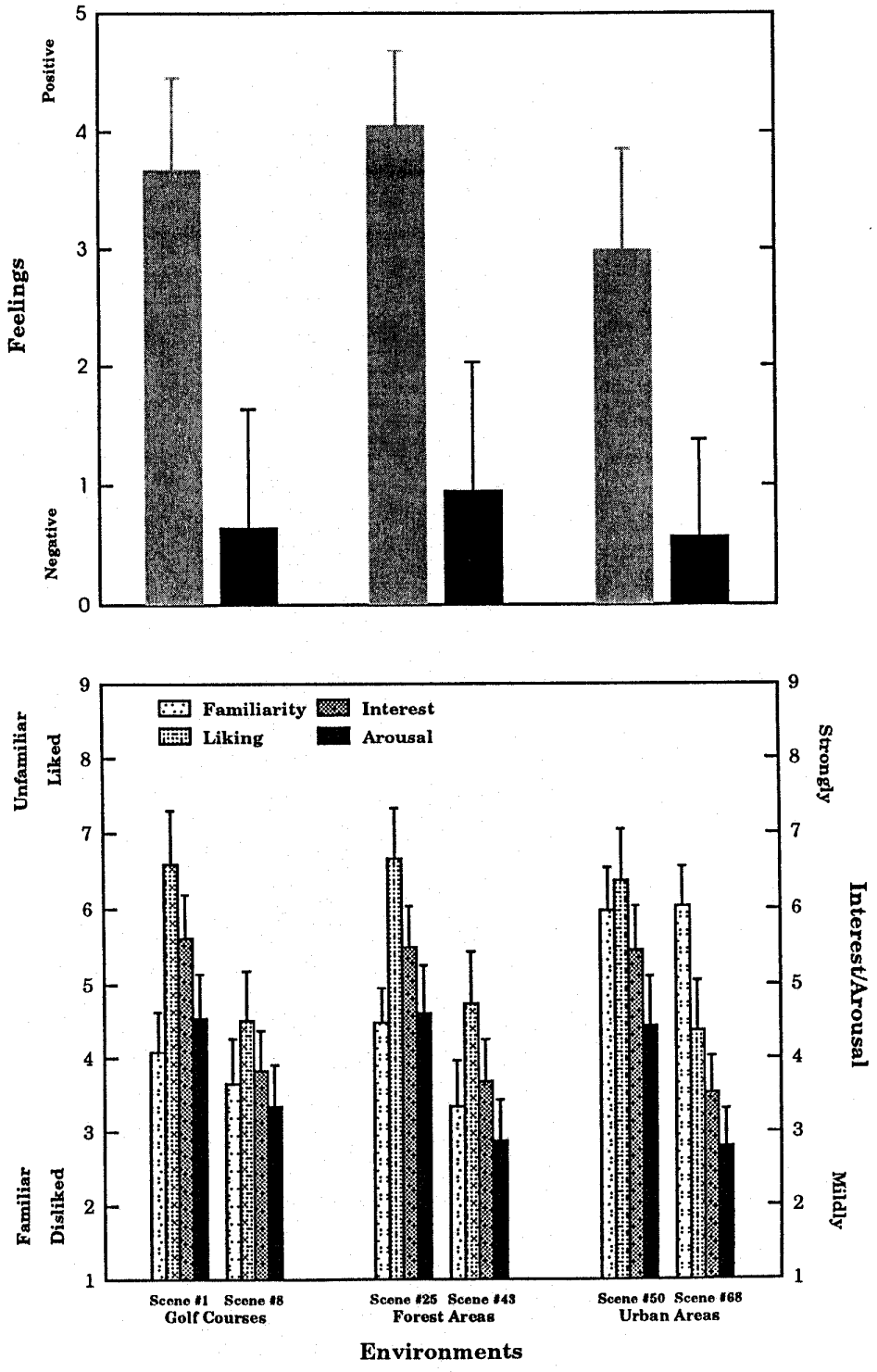


Figure 6a: Scene #1 (Positive Golf Course)

Figure 6b: Scene #8 (Negative Golf Course)

Figure 6c: Scene #25 (Positive Forest Area)

Figure 6d: Scene #43 (Negative Forest Area)

Figure 6e: Scene #50 (Positive Urban Area)

Figure 6f: Scene #68 (Negative Urban Area)