

Sophie Sackstein
BCS 153: Cognition

1) 1d space (line)

(A)—2—(B)—4—(C)———10——(D)

Similarity Matrix

	A	B	C	D
A	1	1/2	1/6	1/16
B	1/2	1	1/4	1/14
C	1/6	1/4	1	1/10
D	1/16	1/14	1/10	1

2) 2D arrangement of similarity space

(C)—3—(D)
 | |
 4 4
 | |
 (A)—3—(B)

Similarity Matrix

	A	B	C	D
A	1	1/3	1/4	1/5
B	1/2	1	1/5	1/4
C	1/4	1/5	1	1/3
D	1/5	1/4	1/3	1

3) It is possible that these objects cannot be easily represented in 2D space. Concepts may fit better in 2D space than 3D space depending on how we conceptualize them, for example if prairie dog was put in the similarity matrix for cats and dogs, and contained extra information is not represented in those dimensions (conceptualize dimensions of prairie dog, such as where

they live or behaviors). If you are just representing cats and dogs by fluffiness and size, but they are more features that are part of our representation, like loudness, they would not be adequately represented by those two dimensions. It's more likely with a larger sample of objects, we will have to represent their similarities in 3D space. For two objects, their similarity can be simply represented by a single line for their distance in psychological space, so 1D. With more than two objects you could represent objects in 3D space or 2D space based difference between features.