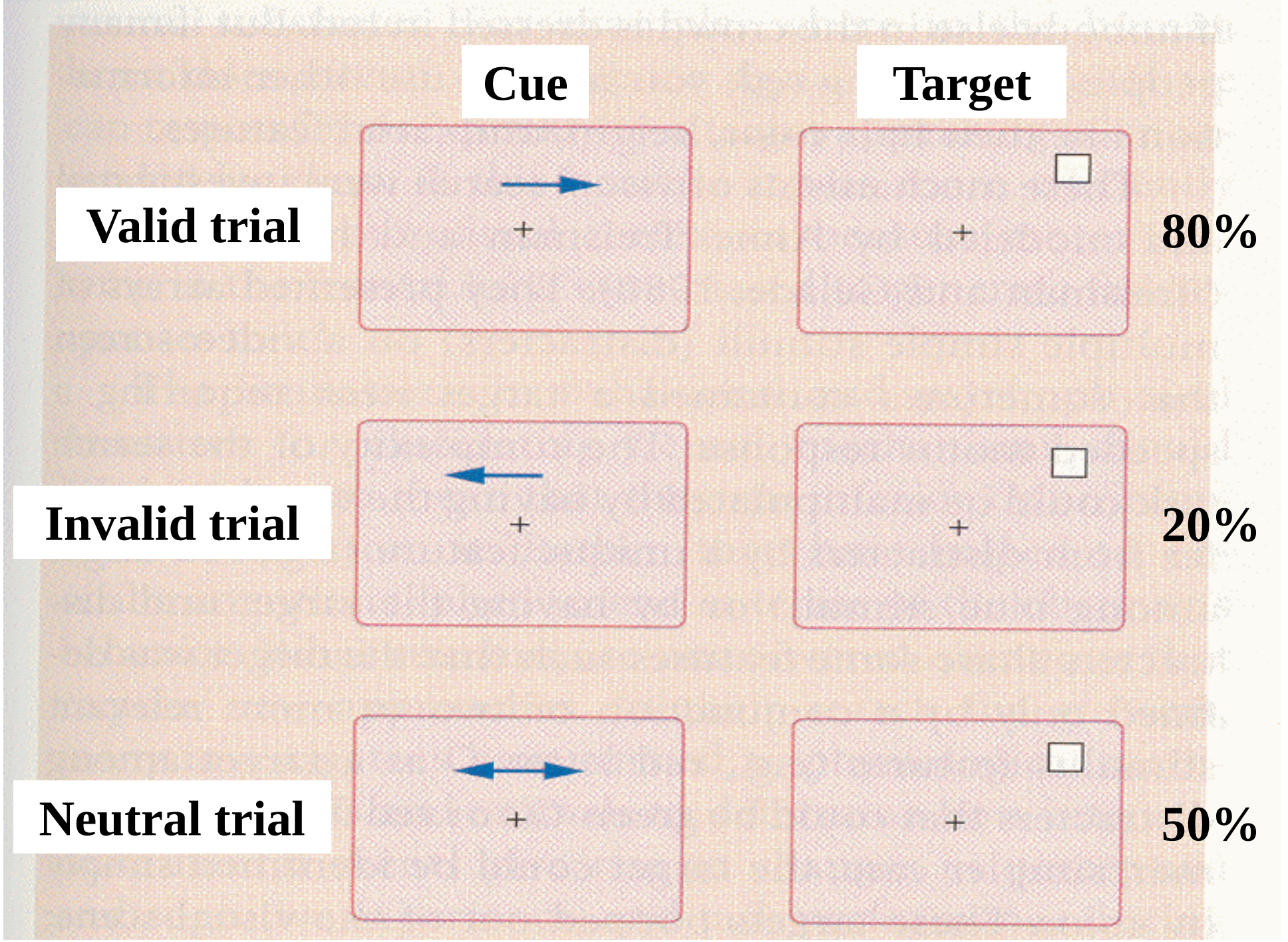
The Cueing Task (Posner, 1980)

-Detect a target that can appear in one of two locations

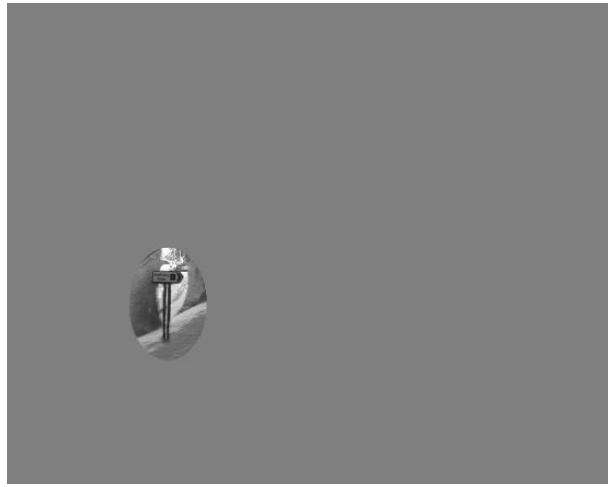
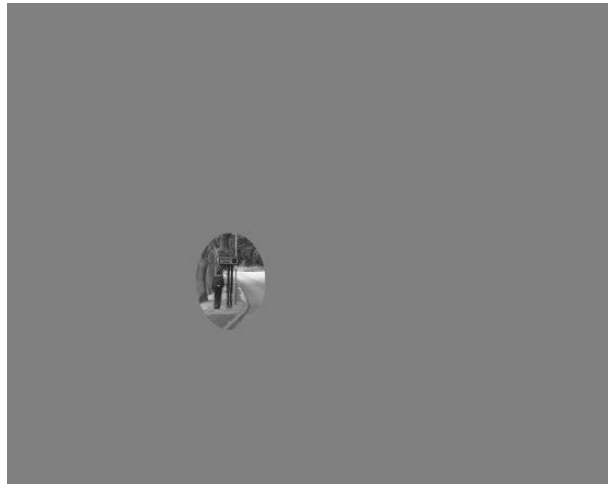
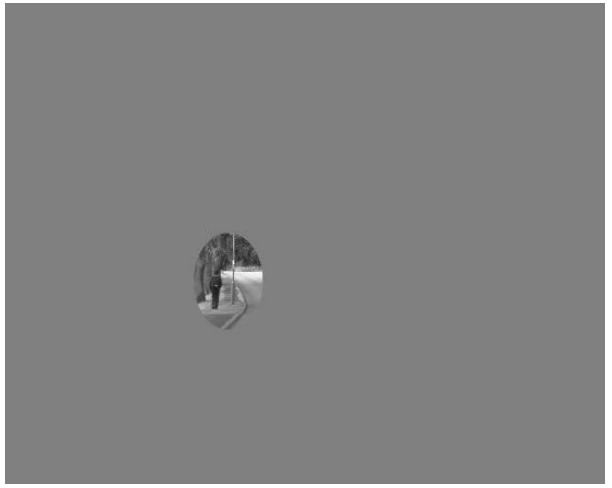
-A cue appears beforehand giving the observer the likely location of the target

-Valid cues typically lead to better and faster performance



3. Assess if the users employ the expectancy information

Control conditions to account for size and location differences

	Target present	Target absent
High expectation		
Low expectation		

Applied to webpage design

Proposal: make web browsing more efficient by placing information where users expect it

1. Assess the expectancies of users: locations of key links, e.g., ‘Shopping Cart’, ‘Recommended’
   - Perhaps online, as in the driving study
   - Or, through eye-tracking

2. Adjust the visual layout to account for the expectancies:
   - Place links in expected (vs. default) locations

3. Assess if the users employ the expectancy information
   - Online mouse click tracking
   - A/B testing

Browser

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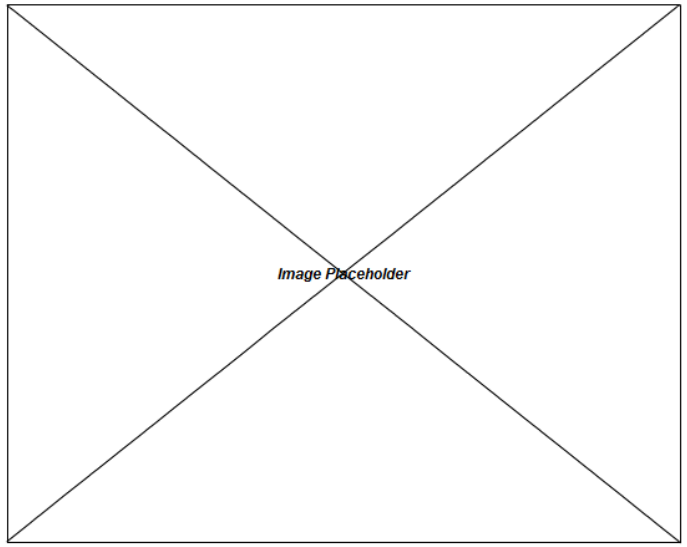

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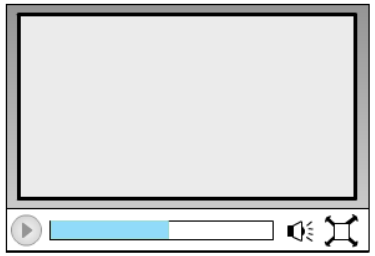


Button

Button

Button

Sign Up

Login: Mark

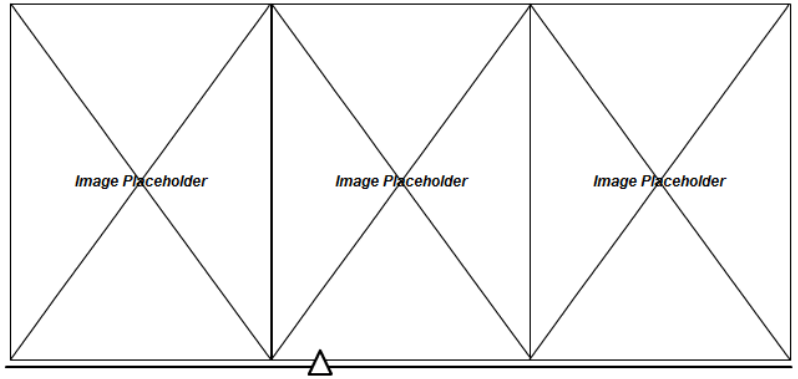
Email: MarkD@cinergix.com

Password: ********

Confirm: ********

Sign Up

Remember me



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Imagine this is a website to buy an electronic device, say a laptop.

Where would you expect to find the place to click for the specifications for the laptop?

Where would you expect to find the place to click put the item in the Shopping Cart?

Where would you expect the place to click to see accessories for the laptop that you might want?

(Crazy Egg, Chalkmark, Clickheat)

Bayesian model

Image with 2 assumed relevant locations

Observer judges if the target is in the display, yes or no

Assume a response for each location

x_{low}, x_{high}

Compute the posterior probability of signal presence (S_1) for each location

$p(S_{1,\,low} | x_{low}, x_{high})$,
$p(S_{1,\,high} | x_{low}, x_{high})$

Apply Bayes' theorem to express as prior probabilities

$$p(S_{1,\,low} | x_{low}, x_{high}) = p(S_{1,\,low})\, p(x_{low}, x_{high} | S_{1,\,low})$$
$$p(S_{1,\,high} | x_{low}, x_{high}) = p(S_{1,\,high})\, p(x_{low}, x_{high} | S_{1,\,high})$$

Compute ratio of overall posterior probability of signal presence (S_1) and overall posterior probability of signal absence (S_0)

$[p(S_{1,\,low}|x_{low}, x_{high}) + p(S_{1,\,high}|x_{low}, x_{high})]/\, p(S_0|\, x_{low}, x_{high})$

Compare ratio to a criterion (ideal criterion is $p(S_1)/p(S_0)$)

Respond 'yes' if ratio >= crit

Respond 'no' if ratio < crit