“COHERENT ARBITRARINESS”: STABLE DEMAND CURVES WITHOUT STABLE PREFERENCES
Ariely, Loewenstein and Prelec, QJE 2003.

A nice demonstration that people may not have a clear idea how much they value – and how to price - unfamiliar things.

Experiment 1:
55 MBA students: see 6 products (without the market price: on average $70).

First: Subjects were asked if they were willing to buy each product for a dollar figure = last 2 digits of their Social security number.
Then: subjects stated their Willingness to pay.
A random device was used to decide which answer is decisive and for the WTP a BDM procedure was used.

<table>
<thead>
<tr>
<th>Quintile of SS# distribution</th>
<th>Cordless trackball</th>
<th>Cordless keyboard</th>
<th>Average wine</th>
<th>Rare wine</th>
<th>Design book</th>
<th>Belgian chocolates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$ 8.64</td>
<td>$ 16.09</td>
<td>$ 8.64</td>
<td>$ 11.73</td>
<td>$ 12.82</td>
<td>$ 9.55</td>
</tr>
<tr>
<td>2</td>
<td>$ 11.82</td>
<td>$ 26.82</td>
<td>$ 14.45</td>
<td>$ 22.45</td>
<td>$ 16.18</td>
<td>$ 10.64</td>
</tr>
<tr>
<td>3</td>
<td>$ 13.45</td>
<td>$ 29.27</td>
<td>$ 12.55</td>
<td>$ 18.09</td>
<td>$ 15.82</td>
<td>$ 12.45</td>
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<tr>
<td>4</td>
<td>$ 21.18</td>
<td>$ 34.55</td>
<td>$ 15.45</td>
<td>$ 24.55</td>
<td>$ 19.27</td>
<td>$ 13.27</td>
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<tr>
<td>5</td>
<td>$ 26.18</td>
<td>$ 55.64</td>
<td>$ 27.91</td>
<td>$ 37.55</td>
<td>$ 30.00</td>
<td>$ 20.64</td>
</tr>
<tr>
<td>Correlations</td>
<td>.415</td>
<td>.516</td>
<td>.328</td>
<td>.328</td>
<td>.319</td>
<td>.419</td>
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<tr>
<td>p = .0015</td>
<td>p &lt; .0001</td>
<td>p = .014</td>
<td>p = .0153</td>
<td>p = .0172</td>
<td>p = .0013</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Average stated willingness-to-pay sorted by quintile of the sample’s Social Security number distribution. The last row indicates the correlations between Social Security numbers and WTP (and their significance levels).
Even though people seem to have no clue how to price certain items, they seem to know the relative ordering within the categories of wine and computer accessories.

Experiment 3:
Annoying sounds of 100, 300 and 600 seconds.

At the beginning of the experiment, subjects are asked about the last 3 digit number of their social security number. Subjects were then asked whether, hypothetically, they would listen again to the sound they just experienced (for 300 seconds) if they were paid the money amount they had generated from their social security number. In the main part of the experiment, subjects had three opportunities to listen to sounds in exchange for payment. The three different durations were again ordered in either an increasing set (100 seconds, 300 seconds, 600 seconds) or a decreasing set (600 seconds, 300 seconds, 100 seconds). In each trial, after they indicated their WTA, subjects were shown both their own price and the random price drawn from the distribution (which was the distribution used in Experiment 2 but multiplied by 10). If the price set by the subject was higher than the computer’s price, subjects continued directly to the next trial. If the price set by the subjects was lower than the computer’s price, subjects received the sound and the money associated with it (the amount set by the randomly drawn number), and then continued to the next trial. This process repeated itself 3 times, once for each of the three durations.
Results:
People have not just problems evaluating how much they value annoying sounds. Similar results can be achieved by using ounces of unpleasant liquid (composed of equal parts of Gatorade and Vinegar) as opposed to money and having people choose between the liquid and the unpleasant sound. Depending on the anchor (1 or 3 minutes) people have different trade offs between these two unpleasant things… (For each drink size, what is the highest number of seconds of unpleasant noise, s.t. you prefer the unpleasant noise…)
Not only is it difficult for people to know what preferences they have, their preferences may sometimes be unstable because we have troubles remembering, or correctly evaluating an experience.


When remembering an experience, some people argue that we follow a “peak-end” rule. That is, the peak and the final unpleasantness of an event, determine (largely) how we evaluate that event.

In the Short trial the subject kept one hand in water at 14°C for 60 seconds, after which he was allowed to remove the hand from the water and to dry it with a warm towel. In the Long trial the immersion lasted a total of 90 seconds. Water temperature was kept at 14° for the first 60 seconds, at which point (unbeknownst to the subject) the experimenter caused the temperature of the water to rise gradually from 14° to 15° over the next 30 seconds. Different hands were used for the Short and for the Long trials. Half the subjects experienced the Short trial before the Long one; the sequence was reversed for the other subjects. The trials were separated by seven minutes during which the subject performed an unrelated task, which was resumed after the second trial.
Seven minutes later, the subject was called in for a third trial, informed that one of the two previous procedures would be repeated exactly, given a choice of whether the first or the second trial should be repeated, and asked to answer several questions about the first two trials.

On a “discomfort meter” from 0 (no pain at all) to 14 (intolerable pain) the 32 participants continuously indicate the pain they experience. 21 subjects record a decline in pain in the warmer water. The long trial had a lower average of peak and end pain than the short trial for those subjects. As expected, a large majority of them (17 of 21) preferred to repeat the Long trial. The other eleven subjects did not indicate a significant decrease of pain as the temperature of the water was raised. For these subjects the Peak-End average was very similar on the Short and on the Long trial. Only five of the eleven subjects preferred the Long trial. The difference between the preferences of the two groups was statistically significant, as was the overall preference for the Long trial (69 percent for the 32 subjects).

They did a similar thing with colonoscopies, leaving the colonoscope in place for a minute (extending discomfort!) yielded a significant improvement in the global evaluations of the procedure…

There are some nice empirical finance paper on biases and their effects in saving and choice of funds by Thaler et al…