Conceptual metaphor and graphical convention influence the interpretation of line graphs

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Contents

This is the code used to identify the valenced quantities used in the graphs in 'Conceptual metaphor and graphical convention influence the interpretation of line graphs'.

Load tidyverse and open list of valence norms in ascending order of mean valence:

```
library(tidyverse)
(df <- arrange(read_csv('../data/valence_list.csv'), V.Mean.Sum))
```

```
## Warning: Missing column names filled in: 'X1' [1]
```

```
## # A tibble: 13,915 x 65
##       X1 Word  V.Mean.Sum V.SD.Sum V.Rat.Sum A.Mean.Sum A.SD.Sum A.Rat.Sum
##    <dbl> <chr>      <dbl>    <dbl>     <dbl>      <dbl>    <dbl>     <dbl>
##  1  8847 pedo~       1.26     0.65        19       5.05     3.21        22
##  2  9863 rapi~       1.3      0.73        20       6.33     2.39        21
##  3   254 AIDS        1.33     0.8         21       5        2.6         20
##  4 12661 tort~       1.4      0.82        20       5.09     2.55        45
##  5  7046 leuk~       1.47     1.39        19       5.75     2.38        20
##  6  7841 mole~       1.48     0.98        21       5        2.81        25
##  7  8004 murd~       1.48     0.81        21       6.24     2.76        21
##  8  9794 raci~       1.48     0.68        21       5.88     2.49        26
##  9  2014 chemo       1.5      0.95        20       4.82     2.79        22
## 10  5872 homi~       1.5      0.92        18       6.1      2.4         20
## # ... with 13,905 more rows, and 57 more variables: D.Mean.Sum <dbl>,
## #   D.SD.Sum <dbl>, D.Rat.Sum <dbl>, V.Mean.M <dbl>, V.SD.M <dbl>,
## #   V.Rat.M <dbl>, V.Mean.F <dbl>, V.SD.F <dbl>, V.Rat.F <dbl>, A.Mean.M <dbl>,
## #   A.SD.M <dbl>, A.Rat.M <dbl>, A.Mean.F <dbl>, A.SD.F <dbl>, A.Rat.F <dbl>,
## #   D.Mean.M <dbl>, D.SD.M <dbl>, D.Rat.M <dbl>, D.Mean.F <dbl>, D.SD.F <dbl>,
## #   D.Rat.F <dbl>, V.Mean.Y <dbl>, V.SD.Y <dbl>, V.Rat.Y <dbl>, V.Mean.O <dbl>,
## #   V.SD.O <dbl>, V.Rat.O <dbl>, A.Mean.Y <dbl>, A.SD.Y <dbl>, A.Rat.Y <dbl>,
## #   A.Mean.O <dbl>, A.SD.O <dbl>, A.Rat.O <dbl>, D.Mean.Y <dbl>, D.SD.Y <dbl>,
## #   D.Rat.Y <dbl>, D.Mean.O <dbl>, D.SD.O <dbl>, D.Rat.O <dbl>, V.Mean.L <dbl>,
## #   V.SD.L <dbl>, V.Rat.L <dbl>, V.Mean.H <dbl>, V.SD.H <dbl>, V.Rat.H <dbl>,
## #   A.Mean.L <dbl>, A.SD.L <dbl>, A.Rat.L <dbl>, A.Mean.H <dbl>, A.SD.H <dbl>,
## #   A.Rat.H <dbl>, D.Mean.L <dbl>, D.SD.L <dbl>, D.Rat.L <dbl>, D.Mean.H <dbl>,
## #   D.SD.H <dbl>, D.Rat.H <dbl>
```

Find 20 most negatively valenced words in dataset:

```
filter(df[1:20, ])
```

```
## # A tibble: 20 x 65
##       X1 Word  V.Mean.Sum V.SD.Sum V.Rat.Sum A.Mean.Sum A.SD.Sum A.Rat.Sum
##    <dbl> <chr>      <dbl>    <dbl>     <dbl>      <dbl>    <dbl>     <dbl>
##  1  8847 pedo~       1.26     0.65        19       5.05     3.21        22
##  2  9863 rapi~       1.3      0.73        20       6.33     2.39        21
##  3   254 AIDS        1.33     0.8         21       5        2.6         20
##  4 12661 tort~       1.4      0.82        20       5.09     2.55        45
##  5  7046 leuk~       1.47     1.39        19       5.75     2.38        20
##  6  7841 mole~       1.48     0.98        21       5        2.81        25
##  7  8004 murd~       1.48     0.81        21       6.24     2.76        21
##  8  9794 raci~       1.48     0.68        21       5.88     2.49        26
##  9  2014 chemo       1.5      0.95        20       4.82     2.79        22
## 10  5872 homi~       1.5      0.92        18       6.1      2.4         20
## 11    43 abuse       1.53     1.07        19       6.21     2.17        42
## 12   643 asph~       1.53     0.84        19       6.91     1.9         22
## 13  5824 HIV         1.53     0.9         19       5.1      2.86        20
## 14  9861 rape        1.54     1.36        82       7.24     1.99        83
## 15  5764 herp~       1.57     0.87        21       5.58     2.44        26
## 16  3837 drun~       1.58     1.02        19       5.73     2.55        22
## 17 12046 suic~       1.58     1.5         19       6.21     2.67        39
## 18 12446 terr~       1.6      1.23        20       7.42     2.43        19
## 19  7923 moth~       1.61     1.04        18       7.33     2.06        21
## 20  5143 geno~       1.62     1.2         21       5.83     2.69        23
## # ... with 57 more variables: D.Mean.Sum <dbl>, D.SD.Sum <dbl>,
## #   D.Rat.Sum <dbl>, V.Mean.M <dbl>, V.SD.M <dbl>, V.Rat.M <dbl>,
## #   V.Mean.F <dbl>, V.SD.F <dbl>, V.Rat.F <dbl>, A.Mean.M <dbl>, A.SD.M <dbl>,
## #   A.Rat.M <dbl>, A.Mean.F <dbl>, A.SD.F <dbl>, A.Rat.F <dbl>, D.Mean.M <dbl>,
## #   D.SD.M <dbl>, D.Rat.M <dbl>, D.Mean.F <dbl>, D.SD.F <dbl>, D.Rat.F <dbl>,
## #   V.Mean.Y <dbl>, V.SD.Y <dbl>, V.Rat.Y <dbl>, V.Mean.O <dbl>, V.SD.O <dbl>,
## #   V.Rat.O <dbl>, A.Mean.Y <dbl>, A.SD.Y <dbl>, A.Rat.Y <dbl>, A.Mean.O <dbl>,
## #   A.SD.O <dbl>, A.Rat.O <dbl>, D.Mean.Y <dbl>, D.SD.Y <dbl>, D.Rat.Y <dbl>,
## #   D.Mean.O <dbl>, D.SD.O <dbl>, D.Rat.O <dbl>, V.Mean.L <dbl>, V.SD.L <dbl>,
## #   V.Rat.L <dbl>, V.Mean.H <dbl>, V.SD.H <dbl>, V.Rat.H <dbl>, A.Mean.L <dbl>,
## #   A.SD.L <dbl>, A.Rat.L <dbl>, A.Mean.H <dbl>, A.SD.H <dbl>, A.Rat.H <dbl>,
## #   D.Mean.L <dbl>, D.SD.L <dbl>, D.Rat.L <dbl>, D.Mean.H <dbl>, D.SD.H <dbl>,
## #   D.Rat.H <dbl>
```

Find 20 most positively valenced words in dataset:

```
filter(df[13895:13915, ]) %>% arrange()
```

```
## # A tibble: 21 x 65
##       X1 Word  V.Mean.Sum V.SD.Sum V.Rat.Sum A.Mean.Sum A.SD.Sum A.Rat.Sum
##    <dbl> <chr>      <dbl>    <dbl>     <dbl>      <dbl>    <dbl>     <dbl>
##  1  2812 cour~       8.05     0.71        19       5.5      2.56        20
##  2  6951 laug~       8.05     1.57       103       5.39     2.88       105
##  3  7252 lover       8.05     1.25        22       7.45     2.04        20
##  4  4292 exci~       8.11     0.9         18       6.43     2.54        21
##  5 12083 suns~       8.14     1.13        22       5.32     3.11        19
##  6  5881 hone~       8.16     1.12        19       4        2.68        39
##  7 10116 rela~       8.19     0.93        21       4.29     3.07        24
##  8  3240 deli~       8.21     0.92        19       5.02     2.69        43
##  9  6722 joy         8.21     1.18        19       5.55     2.85        49
```

```
## 10  6723 joyf~       8.21     0.98        39       5.53     2.88        43
## # ... with 11 more rows, and 57 more variables: D.Mean.Sum <dbl>,
## #   D.SD.Sum <dbl>, D.Rat.Sum <dbl>, V.Mean.M <dbl>, V.SD.M <dbl>,
## #   V.Rat.M <dbl>, V.Mean.F <dbl>, V.SD.F <dbl>, V.Rat.F <dbl>, A.Mean.M <dbl>,
## #   A.SD.M <dbl>, A.Rat.M <dbl>, A.Mean.F <dbl>, A.SD.F <dbl>, A.Rat.F <dbl>,
## #   D.Mean.M <dbl>, D.SD.M <dbl>, D.Rat.M <dbl>, D.Mean.F <dbl>, D.SD.F <dbl>,
## #   D.Rat.F <dbl>, V.Mean.Y <dbl>, V.SD.Y <dbl>, V.Rat.Y <dbl>, V.Mean.O <dbl>,
## #   V.SD.O <dbl>, V.Rat.O <dbl>, A.Mean.Y <dbl>, A.SD.Y <dbl>, A.Rat.Y <dbl>,
## #   A.Mean.O <dbl>, A.SD.O <dbl>, A.Rat.O <dbl>, D.Mean.Y <dbl>, D.SD.Y <dbl>,
## #   D.Rat.Y <dbl>, D.Mean.O <dbl>, D.SD.O <dbl>, D.Rat.O <dbl>, V.Mean.L <dbl>,
## #   V.SD.L <dbl>, V.Rat.L <dbl>, V.Mean.H <dbl>, V.SD.H <dbl>, V.Rat.H <dbl>,
## #   A.Mean.L <dbl>, A.SD.L <dbl>, A.Rat.L <dbl>, A.Mean.H <dbl>, A.SD.H <dbl>,
## #   A.Rat.H <dbl>, D.Mean.L <dbl>, D.SD.L <dbl>, D.Rat.L <dbl>, D.Mean.H <dbl>,
## #   D.SD.H <dbl>, D.Rat.H <dbl>
```

Find mean standard deviation:

```
round(mean(df$V.SD.Sum), 2)
```

```
## [1] 1.68
```

Find SD of words chosen for experimental stimuli (vacation days, murders):

```
df %>% filter(Word == 'vacation') %>% with(mean(V.SD.Sum))
```

```
## [1] 0.77
```

```
df %>% filter(Word == 'murder') %>% with(mean(V.SD.Sum))
```

```
## [1] 0.81
```