In [146]:

```
from os import listdir
from os.path import isfile, join
from bs4 import BeautifulSoup
import xml.etree.ElementTree as ET
import codecs
mypath ="/Anaconda/blogs"
import re
import numpy as np
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.cross_validation import train_test_split
from time import time
import sys
import scipy.sparse as sp
import pylab as pl
import cPickle
import sqlite3
%matplotlib inline
```

In [147]:

```
from sklearn.ensemble import RandomForestClassifier
from sklearn.feature_extraction.text import TfidfVectorizer
```

In [148]:

```
with open('MultiNB.pkl', 'rb') as fid:
    NB_loaded = cPickle.load(fid)
```

In [149]:

```
print NB_loaded
```

```
MultinomialNB(alpha=0.01, class_prior=None, fit_prior=True)
```

In [150]:

```
import pandas as pd
import sqlite3

# Read sqlite query results into a pandas DataFrame
con = sqlite3.connect("Scrape-Amazon\\amazon\\Book.db")
df = pd.read_sql_query("SELECT * from Review", con)

# verify that result of SQL query is stored in the dataframe
print(df.head())

con.close()
```

```
   id             rid              rname         pid  \
0   1  R3A9TW37U9J9C3    College Stealth  0385535597   
1   2   REDTPL6B4HNHN      Connor Gibson  0385535597   
2   3   RB04JM6NDDGFL            Panda31  0385535597   
3   4  R37N2QMX2MYD5T  WhatIThinkAboutIt  006219867X   
4   5  R16ENI6A3DH1DN                Dan  0385535597   

                                              review  
0  This book is a hard read; not because of Lexil...  
1  This book is rapidly making waves, after the N...  
2  An enthralling and comprehensive story of the ...  
3  My 3-year-old loves Pete the Cat books and is ...  
4  This is the most exhaustive, best researched, ...  
```

In [151]:

```
df.head()
```

Out[151]:

	id	rid	rname	pid	review
0	1	R3A9TW37U9J9C3	College Stealth	0385535597	This book is a hard read; not because of Lexil...
1	2	REDTPL6B4HNHN	Connor Gibson	0385535597	This book is rapidly making waves, after the N...
2	3	RB04JM6NDDGFL	Panda31	0385535597	An enthralling and comprehensive story of the ...
3	4	R37N2QMX2MYD5T	WhatIThinkAboutIt	006219867X	My 3-year-old loves Pete the Cat books and is ...
4	5	R16ENI6A3DH1DN	Dan	0385535597	This is the most exhaustive, best researched, ...

In [152]:

```
reviews = df['review'].tolist()
```

In [153]:

```
with open('TFIDF_Vectorizer.pkl', 'rb') as fid:
    Vect_loaded = cPickle.load(fid)
```

In [154]:

```
Review_Vectorized = Vect_loaded.transform(reviews)
```

In [155]:

```
print Review_Vectorized.shape
```

```
(10879, 586663)
```

In [156]:

```
print("Predicting the outcomes of the testing set")
t0 = time()
pred = NB_loaded.predict(Review_Vectorized)
print("done in %fs" % (time() - t0))
print pred
```

```
Predicting the outcomes of the testing set
done in 0.029000s
[3 3 2 ..., 2 2 2]
```

In [158]:

```
print "Number of Reviewrs in Age group: 13-17",np.sum(np.array(pred)==1)
print "Number of Reviewrs in Age group: 17-33",np.sum(np.array(pred)==2)
print "Number of Reviewrs in Age group: 33 - ",np.sum(np.array(pred)==3)
pred = np.array(pred)
AgeFrame = pd.DataFrame(data=pred,columns=['Age'])
ages = []
for a in AgeFrame['Age']:
    if a == 1:
        ages.append('13-17')
    elif a==2:
        ages.append('17-33')
    else:
        ages.append('33-90')
AgeFrame['Ages']=ages
AgeFrame.head()
```

```
Number of Reviewrs in Age group: 13-17 250
Number of Reviewrs in Age group: 17-33 8605
Number of Reviewrs in Age group: 33 -  2024
```

Out[158]:

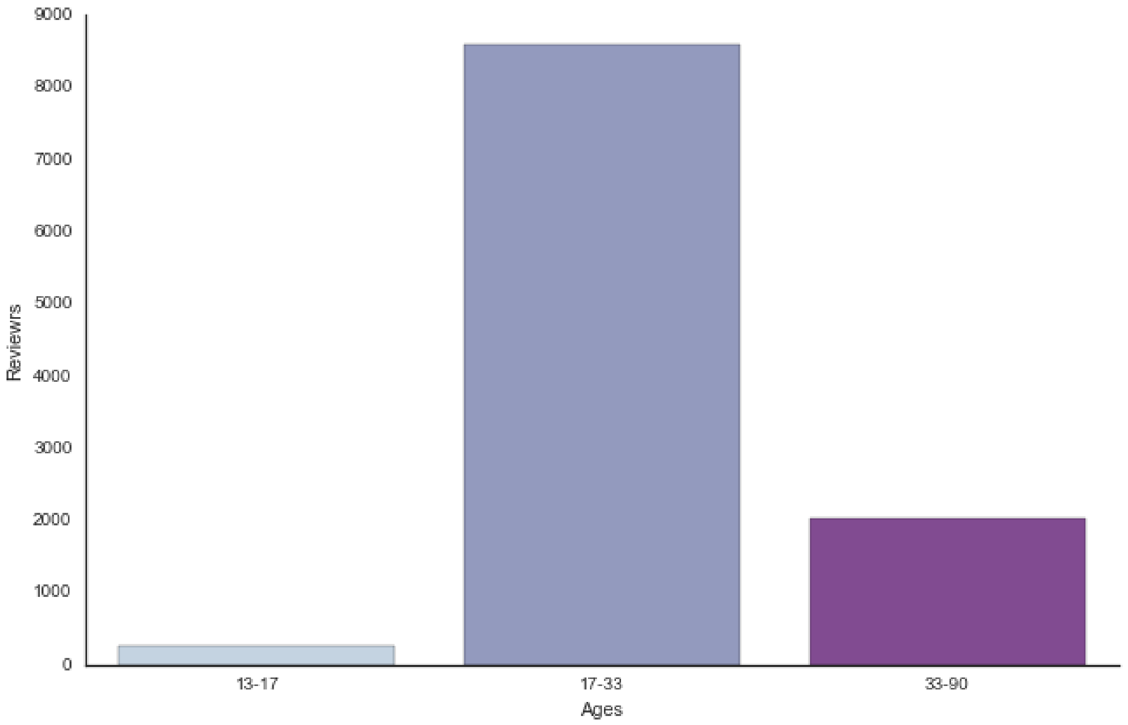
	Age	Ages
0	3	33-90
1	3	33-90
2	2	17-33
3	2	17-33
4	3	33-90

In [159]:

```
import seaborn as sns
sns.set(style="white")
```

In [160]:

```
years = ["13-17","17-33","33-90"]
g = sns.factorplot(x="Ages", data=AgeFrame, kind="count",
                   palette="BuPu", size=6, aspect=1.5, order=years)
g.set_xticklabels(step=1)
g.set_ylabels("Reviewrs")
g.savefig('Reviewrs_Age')
```



In [ ]:

```

```

In [161]:

```
with open('MultinomialNB.pkl', 'rb') as fid:
    NB_loaded = cPickle.load(fid)
```

In [162]:

```
with open('TFIDF_Age_Vectorizer.pkl', 'rb') as fid:
    Vect_loaded = cPickle.load(fid)
```

In [163]:

```
Review_Vectorized = Vect_loaded.transform(reviews)
```

In [164]:

```
print("Predicting the outcomes of the testing set")
t0 = time()
Gender = NB_loaded.predict(Review_Vectorized)
print("done in %fs" % (time() - t0))
print Gender
```

```
Predicting the outcomes of the testing set
done in 0.018000s
['male' 'male' 'male' ..., 'female' 'female' 'male']
```

In [165]:

```
GenderFrame = pd.DataFrame(data=Gender,columns=['Gender'])
```

In [166]:

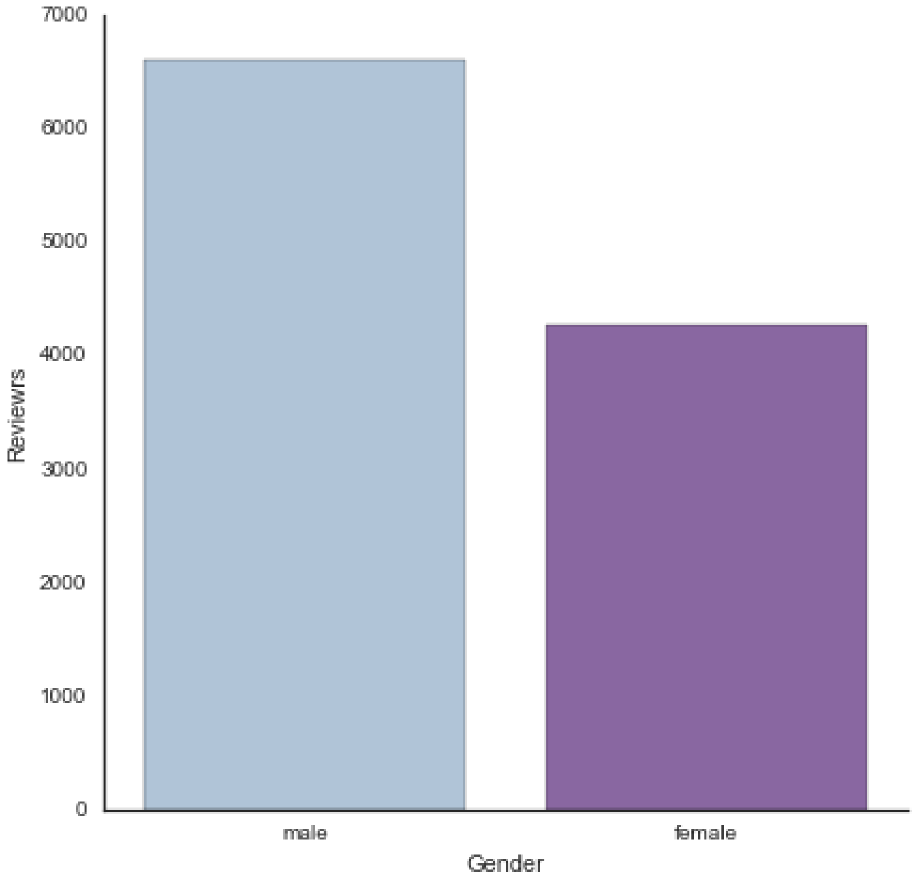
```
GenderFrame.head()
```

Out[166]:

	Gender
0	male
1	male
2	male
3	female
4	male

In [167]:

```
years = ['male','female']
g = sns.factorplot(x="Gender", data=GenderFrame, kind="count",
                   palette="BuPu", size=6, aspect=1, order=years)
g.set_xticklabels(step=1)
g.set_ylabels("Reviewrs")
g.savefig('Reviewrs_Gender')
```



In [168]:

```
Combined_dataFrame = pd.DataFrame(data=AgeFrame.join(GenderFrame))
```

In [169]:

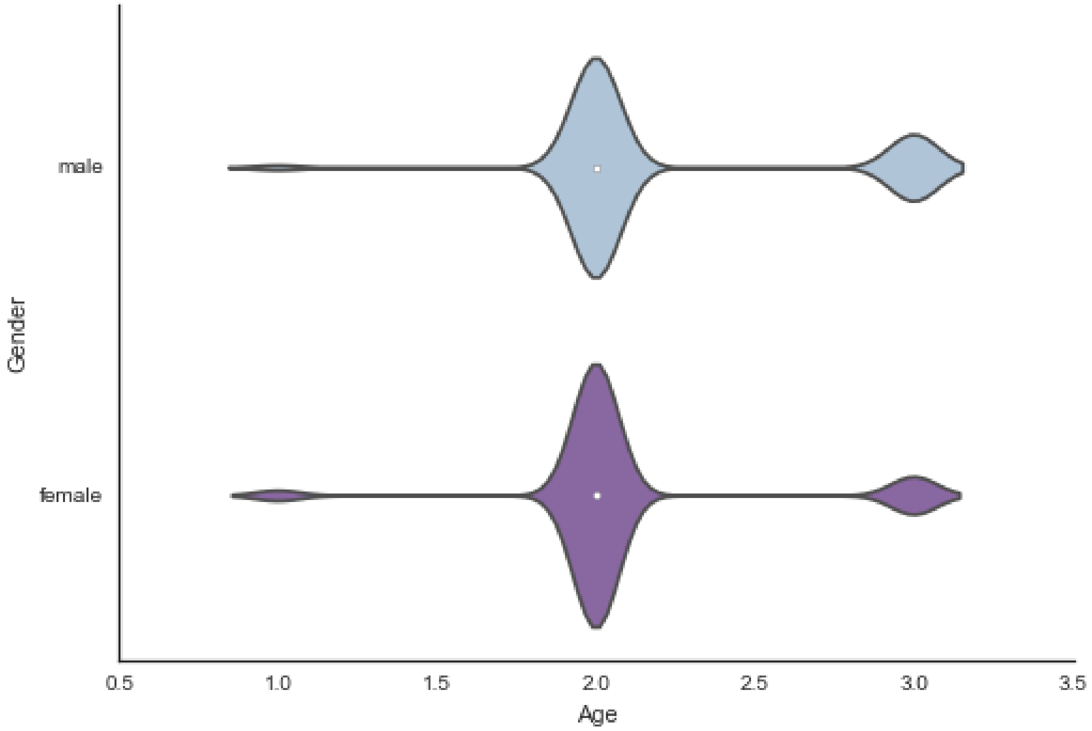
```
Combined_dataFrame.head()
```

Out[169]:

	Age	Ages	Gender
0	3	33-90	male
1	3	33-90	male
2	2	17-33	male
3	2	17-33	female
4	3	33-90	male

In [170]:

```
sns.violinplot(Combined_dataFrame['Age'], Combined_dataFrame['Gender'],palette="Bu
Pu", size=8, aspect=2.0) #Variable Plot
sns.despine()
```



In [ ]:

```
```