

FOCUS ON FACULTY RESEARCH

Factors That Affect Grade Nine Students in Northern Manitoba, Canada

Amjad Malik and Marion Terry

We initiated the study in response to school counsellors' concerns over the effects of non-educational video gaming and texting on students' school performance. The research purpose was to examine the correlations between various factors and academic performance in grade 9. The factors included social relations (e.g., friends), extra-curricular activities (e.g., work), and leisure-time activities (e.g., playing video games and texting).

Data Collection

Complete data sets were obtained for 21 of the grade 9 students who were invited from six high schools in a Northern Manitoba school division (6 boys and 15 girls). Academic performance data consisted of the students' attendance (number of classes attended) and final marks (percentage grades in English, mathematics, science, and social studies). Survey data consisted of the students' answers to 40 questionnaire items: demographics, parental support, peer relationships, extra-curricular activities, school activities, self-esteem, self-advocacy, video games, and texting.

Data Analysis

Pearson product-moment calculations determined correlations between the school performance scores for attendance and school marks. Spearman rho calculations determined correlations that involved the Likert-scale survey answers. Correlational research requires a minimum of 30 research subjects to produce statistically significant correlations. Separating our 21 grade 9 students by gender further reduced the overall statistical significance of our findings, but was important in order to test the assumption that "boys play video games, but girls text" – as conveyed to us by counsellors, other educational professionals, parents, and other adults in the general community. The following classifications reflect the relative strength of the 165 correlations chosen for this report.

<u>coefficients</u>	<u>strength</u>	<u>predictability</u>
(+ or -) .500 to .599	good	fair
(+ or -) .600 to .699	very good	good
(+ or -) .700 to .799	excellent	very good
(+ or -) .800 to .899	superior	excellent
(+ or -) .900 to .999	almost perfect	superior
(+ or -) 1.00	perfect	absolute

Results

Our results confirm school counsellors' concerns over the relationships between non-educational video gaming and texting, and academic performance and other school experiences. Of the other factors, self-concept, peer relationships, parental support, and other non-academic activities produced the most interesting correlations.

The following tables summarize the gender-separated correlations ranging from good to perfect. Despite the small numbers of male and female research participants, we obtained correlations with statistically significant two-tailed low probability of error: $p < .01$ or $p < .05$. These probabilities of error are indicated where relevant.

Males

Table 1. Time Spent Playing Video Games

The more hours adolescent boys spend playing video games . . .	correlation strength	coefficient
<i>video games</i> ... the more they think they spend too much time playing video games.	very good	+ .657
... the more they are told that they spend too much time playing video games.	good	+ .500
<i>school</i> ... the more they miss school because of playing video games. ... the less they feel good in school.	almost perfect good	+ .920 p<.01 -.575
<i>peers</i> ... the more they fear being rejected by their friends.	superior	+ .826 p<.05
<i>other non-academic activities</i> ... the less they like other activities more than school classes.	superior	-.836 p<.05

Table 2. Positive Video Game Experiences

The more adolescent boys want a video game club in school . . .	correlation strength	coefficient
<i>texting</i> ... the more text messages they send during school classes.	good	+ .566
<i>school</i> ... the more they fall behind in their assignments. ... the higher marks they earn.	excellent almost perfect	+ .767 + .939 p<.01
<i>self-concept</i> ... the more they feel that other people are happier. ... the more they feel hurt when they are criticized.	good superior	+ .567 + .894 p<.05
<i>other non-academic activities</i> ... the less frequently they play sports.	excellent	-.733
The more adolescent boys feel good when they play video games . . .	correlation strength	coefficient
<i>school</i> ... the higher marks they earn.	good	+ .548
<i>self-concept</i> ... the more they feel that other people are happier.	excellent	+ .783
<i>peers</i> ... the less they have friends who quit school.	very good	-.671
<i>other non-academic activities</i> ... the busier their lives are outside of school ... the more they like other activities other than school ... the more hours they work during the week.	superior excellent very good	+ .820 p<.05 + .763 + .657
The more importance adolescent boys attach to playing video games . . .	correlation strength	coefficient
<i>texting</i> ... the fewer text messages they send during school classes.	good	-.566
<i>school</i> ... the fewer school classes they attend. ... the less they feel good in school. ... the more they feel sleepy in school. ... the more they fall behind in their assignments.	good very good excellent good	-.546 -.635 + .750 + .581
<i>peers</i> ... the more they fear being rejected by their friends.	good	+ .508

Table 3. Negative Video Game Experiences

The more adolescent boys think they play video games too much . . .	correlation strength	coefficient
<i>texting</i> ... the fewer text messages they send during school classes.	good	-.566
<i>school</i> ... the fewer school classes they attend. ... the less they feel good in school. ... the less they like their teachers. ... the less teachers say they have a good attitude in school.	excellent superior very good good	-.751 -.853 -.652 -.567
<i>self-concept</i> ... the more they feel that they “mess up” everything.	good	+.567
<i>peers</i> ... the more they have friends who quit school. ... the more they fear being rejected by their friends.	good excellent	+.559 +.754
<i>parents</i> ... the more their parents encourage them to do well in school.	excellent	+.710
<i>other non-academic activities</i> ... the fewer hours they work during the week.	very good	-.602
The more adolescent boys miss school because of playing video games . . .	correlation strength	coefficient
<i>school</i> ... the fewer school classes they attend. ... the less they feel good in school.	good excellent	-.514 -.718
<i>peers</i> ... the more they fear being rejected by their friends.	superior	+.898 p<.05
The more adolescent boys lie about how much they play video games . . .	correlation strength	coefficient
<i>texting</i> ... the fewer text messages they send during school classes.	very good	-.632
<i>school</i> ... the lower marks they earn. ... the more they fall behind in their assignments.	superior very good	-.840 +.671
<i>self-concept</i> ... the more they feel hurt when they are criticized.	perfect	+1.00 p<.01
<i>other non-academic activities</i> ... the less they like other activities other than school ... the less frequently they play sports	superior superior	-.836 -.894
		p<.05 p<.05
The more adolescent boys are told they play video games too much . . .	correlation strength	coefficient
<i>school</i> ... the lower marks they earn. ... the more they fall behind in their assignments.	excellent good	-.789 +.584
<i>self-concept</i> ... the more they feel hurt when they are criticized.	almost perfect	+.980 p<.01
<i>other non-academic activities</i> ... the less frequently they play sports.	superior	-.876 p<.05

Table 4. Time Spent Texting

The more hours adolescent boys spend sending text messages . . .	correlation strength	coefficient
<i>school</i>		
. . . the more they like their teachers.	good	+ .539
. . . the more teachers say they have a good attitude in school.	good	+ .566
. . . the less they feel sleepy in school.	good	- .548
<i>self-concept</i>		
. . . the more they feel that other people are happier.	excellent	+ .707
. . . the more they feel that they “mess up” everything.	good	+ .566
<i>peers</i>		
. . . the more they feel that they are easy to get along with.	very good	+ .696
<i>parents</i>		
. . . the more their parents encourage them to do well in school.	good	+ .548
<i>other non-academic activities</i>		
. . . the busier their lives are outside of school.	very good	+ .696
. . . the more they like other activities more than school classes.	very good	+ .674
The more text messages adolescent boys send during school classes . . .	correlation strength	coefficient
<i>texting</i>		
. . . the more they enjoy texting with their friends.	good	+ .539
<i>school</i>		
. . . the higher marks they earn.	very good	+ .664
. . . the more they feel good in school.	very good	+ .696
. . . the less they feel sleepy in school.	good	- .548
. . . the less they fall behind in their assignments	excellent	- .707
<i>self-concept</i>		
. . . the less they feel hurt when they are criticized.	very good	- .632
<i>peers</i>		
. . . the more they feel that they are easy to get along with.	very good	+ .696
. . . the less they have friends who quit school.	very good	- .632
<i>other non-academic activities</i>		
. . . the less frequently they play sports.	good	- .566
. . . the more hours they work during the week.	excellent	+ .775

Table 5. Positive Texting Experiences

The more importance adolescent boys attach to texting . . .	correlation strength	coefficient
<i>self-concept</i>		
. . . the more they feel that other people are happier.	excellent	+ .738
<i>peers</i>		
. . . the less they have friends who quit school.	excellent	- .707
<i>other non-academic activities</i>		
. . . the busier their lives are outside of school.	excellent	+ .726
. . . the more they like other activities more than school.	almost perfect	+ .905 p<.05
. . . the more hours they work during the week.	very good	+ .693
The more adolescent boys enjoy texting with their friends . . .	correlation strength	coefficient
<i>self-concept</i>		
. . . the more they feel that other people are happier.	good	+ .509
<i>peers</i>		
. . . the more they feel they are easy to get along with.	superior	+ .813 p<.05
<i>other non-academic activities</i>		
. . . the more they like other activities more than school.	good	+ .500

Table 6. Negative Texting Experiences

The more adolescent boys think they spend too much time texting . . .	correlation strength	coefficient
<i>school</i> ... the less they like their teachers. ... the less teachers say they have a good attitude in school. ... the more they feel sleepy in school.	very good very good very good	-.606 -.652 +.677
<i>self-concept</i> ... the more they feel that they “mess up” everything.	very good	+.652
<i>peers</i> ... the less they feel they are easy to get along with.	good	-.594
<i>parents</i> ... the more their parents encourage them to do well in school.	good	+.554
The more adolescent boys miss school due to texting . . .	correlation strength	coefficient
<i>school</i> ... the more they feel sleepy in school.	good	+.548
<i>self-concept</i> ... the less they feel hurt when they are criticized.	very good	-.632
<i>other non-academic activities</i> ... the less they like other activities more than school. ... the less frequently they play sports.	good good	-.539 -.566
The more adolescent boys lie about how much time they spend texting . . .	correlation strength	coefficient
<i>peers</i> ... the more they fear being rejected by their friends.	very good	+.696
<i>self-concept</i> ... the more they feel that other people are happier.	good	+.566
<i>parents</i> ... the more their parents encourage them to do well in school.	good	+.548
<i>other non-academic activities</i> ... the less they like other activities more than school.	good	-.539
The more adolescent boys are told they spend too much time texting . . .	correlation strength	coefficient
<i>school</i> ... the fewer school classes they attend. ... the less they feel good in school. ... the more they fall behind in their assignments.	very good good superior	-.669 -.575 +.876

Table 7. School Experiences

The better adolescent boys feel when they are in a classroom. . .	correlation strength	coefficient
<i>school</i> ... the more school classes they attend.	superior	+.893 p<.01
The more adolescent boys fall behind in their assignments. . .	correlation strength	coefficient
<i>school</i> ... the fewer school classes they attend. ... the lower marks they earn.	excellent very good	-.736 -.626

Table 8. Negative Self-Concept

	correlation strength	coefficient
The more adolescent boys feel other people are happier than they are . . .		
<i>school</i> . . . the higher marks they earn.	very good	+.611
The more adolescent boys feel hurt when they are criticized . . .	correlation strength	coefficient
<i>school</i> . . . the higher marks they earn.	superior	+.840 p<.05

Table 9. Negative Peer Relationships

	correlation strength	coefficient
The more adolescent boys have friends who quit school . . .		
<i>school</i> . . . the less they like their teachers. . . . the less teachers say they have a good attitude in school.	good very good	-.533 -.671
<i>self-concept</i> . . . the more they feel that they “mess up” everything.	very good	+.671
The more adolescent boys fear being rejected by their friends . . .	correlation strength	coefficient
<i>school</i> . . . the more school classes they attend. . . . the more they feel good in school. . . . the more they like their teachers.	excellent excellent good	+.708 +.742 +.563
<i>parents</i> . . . the more their parents encourage them to do well in school.	very good	+.635

Table 10. Parental Support

	correlation strength	coefficient
The more adolescent boys’ parents encourage them to do well in school . . .		
<i>school</i> . . . the more school classes they attend. . . . the more they feel good in school. . . . the more they like their teachers. . . . the more teachers say they have a good attitude in school. . . . the less they feel sleepy in school	very good good almost perfect almost perfect good	+.606 +.508 +.985 p<.01 +.904 p<.05 -.500
<i>self-concept</i> . . . the more they feel that they “mess up” everything.	almost perfect	+.904 p<.05

Table 11. Non-Academic Activities Other Than Playing Video Games and Texting

The busier adolescent boys' lives are outside of school . . .	correlation strength	coefficient
<i>school</i> . . . the more school classes they attend. . . . the more they like their teachers. . . . the more they feel sleepy in school.	very good good good	+.647 +.532 +.508
<i>self-concept</i> . . . the less they feel that other people are happier.	very good	-.656
<i>parents</i> . . . the more their parents encourage them to do well in school.	very good	+.635
The more adolescent boys like other activities more than school classes. . .	correlation strength	coefficient
<i>school</i> . . . the more they feel sleepy in school.	good	+.554
<i>self-concept</i> . . . the less they feel that other people are happier.	excellent	-.715
<i>peers</i> . . . the less they fear being rejected by their friends.	good	-.563
The more frequently adolescent boys play sports. . .	correlation strength	coefficient
<i>school</i> . . . the higher marks they earn. . . . the more teachers say they have a good attitude in school.	excellent good	+.751 +.567
<i>self-concept</i> . . . the less they feel that they "mess up" everything. . . . the less they feel hurt when they are criticized.	good superior	-.567 -.894 p<.05
<i>peers</i> . . . the more they have friends who quit school.	good	+.559
The more hours that adolescent boys work during the week . . .	correlation strength	coefficient
<i>school</i> . . . the less they feel good in school. . . . the less teachers say they have a good attitude in school.	good good	-.539 -.584
<i>self-concept</i> . . . the less they feel that they "mess up" everything.	good	-.584
<i>peers</i> . . . the more they feel that they are easy to get along with . . . the more they have friends who quit school.	good almost perfect	+.539 +.980 p<.01

Females

Table 12. Time Spent Playing Video Games

The more hours adolescent girls spend playing video games . . .	correlation strength	coefficient
<i>video games</i>		
. . . the more they feel good when they play video games.	good	+ .534 p<.05
. . . the more importance they attach to playing video games.	good	+ .527 p<.05

Table 13. Positive Video Game Experiences

The more adolescent girls want a video game club in school . . .	correlation strength	coefficient
<i>school</i>		
. . . the less teachers say they have a good attitude in school.	good	- .529 p<.05
<i>other non-academic activities</i>		
. . . the less frequently they play sports.	good	- .512

Table 14. Negative Video Game Experiences

The more adolescent girls think they play video games too much . . .	correlation strength	coefficient
<i>school</i>		
. . . the lower marks they earn.	very good	- .661 p<.01
<i>self-concept</i>		
. . . the more they feel that other people are happier.	good	+ .504
. . . the less they feel hurt when they are criticized.	good	- .517 p<.05
<i>other non-academic activities</i>		
. . . the more they like other activities more than school.	good	+ .550 p<.05
The more adolescent girls miss school because of playing video games . . .	correlation strength	coefficient
<i>school</i>		
. . . the fewer school classes they attend.	excellent	- .719 p<.01
<i>self-concept</i>		
. . . the more they feel that other people are happier.	superior	+ .824 p<.01
The more adolescent girls lie about how much they play video games . . .	correlation strength	coefficient
<i>school</i>		
. . . the lower marks they earn.	superior	- .884 p<.01
<i>self-concept</i>		
. . . the more they feel hurt when they are criticized.	almost perfect	+ .955 p<.01
The more adolescent girls are told they play video games too much . . .	correlation strength	coefficient
<i>school</i>		
. . . the lower marks they earn.	superior	- .884 p<.01
<i>self-concept</i>		
. . . the more they feel hurt when they are criticized.	almost perfect	+ .955 p<.01

Table 15. Time Spent Texting

	correlation strength	coefficient
The more hours adolescent girls spend sending text messages . . .		
<i>texting</i> ... the more they enjoy texting with their friends.	good	+515 p<.05
<i>school</i> ... the more they like their teachers.	good	+503

Table 16. Positive Texting Experiences

	correlation strength	coefficient
The more adolescent girls enjoy texting with their friends . . .		
<i>peers</i> ... the more they feel that they are easy to get along with.	very good	+604 p<.05

Table 17. Negative Texting Experiences

	correlation strength	coefficient
The more adolescent girls think they spend too much time texting . . .		
<i>peers</i> ... the less they feel that they are easy to get along with.	good	-.572 p<.05
The more adolescent girls miss school due to texting . . .		
<i>other non-academic activities</i> ... the less they like other activities more than school.	good	-.522 p<.05
The more adolescent girls lie about how much time they spend texting . . .		
<i>school</i> ... the more they feel sleepy in school.	good	+524 p<.05

Table 18. Negative Self-Concept

	correlation strength	coefficient
The more adolescent girls feel other people are happier than they are . . .		
<i>school</i> ... the fewer school classes they attend.	superior	-.835 p<.01
The more adolescent girls feel hurt when they are criticized . . .		
<i>school</i> ... the lower marks they earn.	superior	-.885 p<.01

Table 19. Positive Peer Relationships

	correlation strength	coefficient
The more adolescent girls think they are easy to get along with . . .		
<i>school</i> ... the more they feel good in school.	very good	+699 p<.01

Table 20. Non-Academic Activities Other Than Playing Video Games and Texting

	correlation strength	coefficient
The more adolescent girls like other activities more than school classes . . .		
<i>school</i> ... the lower marks they earn.	good	-.574 p<.05

Discussion

Males

The more grade 9 boys play video games, whether the experiences are positive or negative –

- the less likely they are to have positive school experiences such as earning higher marks and feeling good in school classes
- the more likely they are to have negative school experiences such as feeling sleepy in class and falling behind in their assignments.
- the more likely they are to have negative self-concept attributes such as feeling that other people are happier than they are, feeling that they “mess up” everything, and feeling really hurt when they are criticized.
- the more likely they are to have negative peer relationship attributes such as fearing rejection by their friends.
- the less likely they are to engage in other non-academic activities such as playing sports and working during the week.

The more grade 9 boys send text messages and have positive texting experiences –

- the more likely they are to have positive school experiences such as earning higher marks and feeling good in school classes.
- the less likely they are to have negative school experiences such as feeling sleepy in class and falling behind in their assignments.

The more grade 9 boys think, or are told, that they text too much –

- the less likely they are to attend school classes and to have positive school experiences such as feeling good in school, liking their teachers, and having teachers say that they have a good attitude toward school.
- the more likely they are to have negative school experiences such as feeling sleepy in class and falling behind in their assignments.

Females

The more grade 9 girls think they play video games too much or miss school because of playing video games –

- the less likely they are to attend school classes and have positive school experiences such as earning higher marks.
- the more likely they are to have negative self-concept attributes such as feeling that other people are happier than they are.

The more grade 9 girls lie about how much time they play video games or are told that they play too much –

- the less likely they are to earn higher school marks
- the more likely they are to have negative self-concept attributes such as feeling really hurt when they are criticized.

The more grade 9 girls send text messages and have positive texting experiences –

- the more likely they are to have positive school experiences such as liking their teachers.
- the more likely they are to have positive peer relationship attributes such as being easy to get along with.

The more grade 9 girls think they text too much –

- the less likely they are to have positive peer relationship attributes such as being easy to get along with.

The more grade 9 girls lie about how much time they spend texting –

- the more likely they are to have negative school experiences such as feeling sleepy in class.

Closing Comment

Our findings are remarkable in that such a small research sample yielded notable correlations, many of which are statistically significant. Replicating the study in other similar communities would ascertain whether our results are generalizable to other grade 9 students in this geographic and socio-cultural region of Canada.

About the Researchers

Dr. Marion Terry is a Professor in Brandon University, Brandon, Manitoba. She is also the founding editor of the BU Journal of Graduate Studies in Education.

Dr. Amjad Malik is a Professor in University College of the North in Thompson, Manitoba. He graduated from BU with an M.Ed. in curriculum and instruction in 2007.