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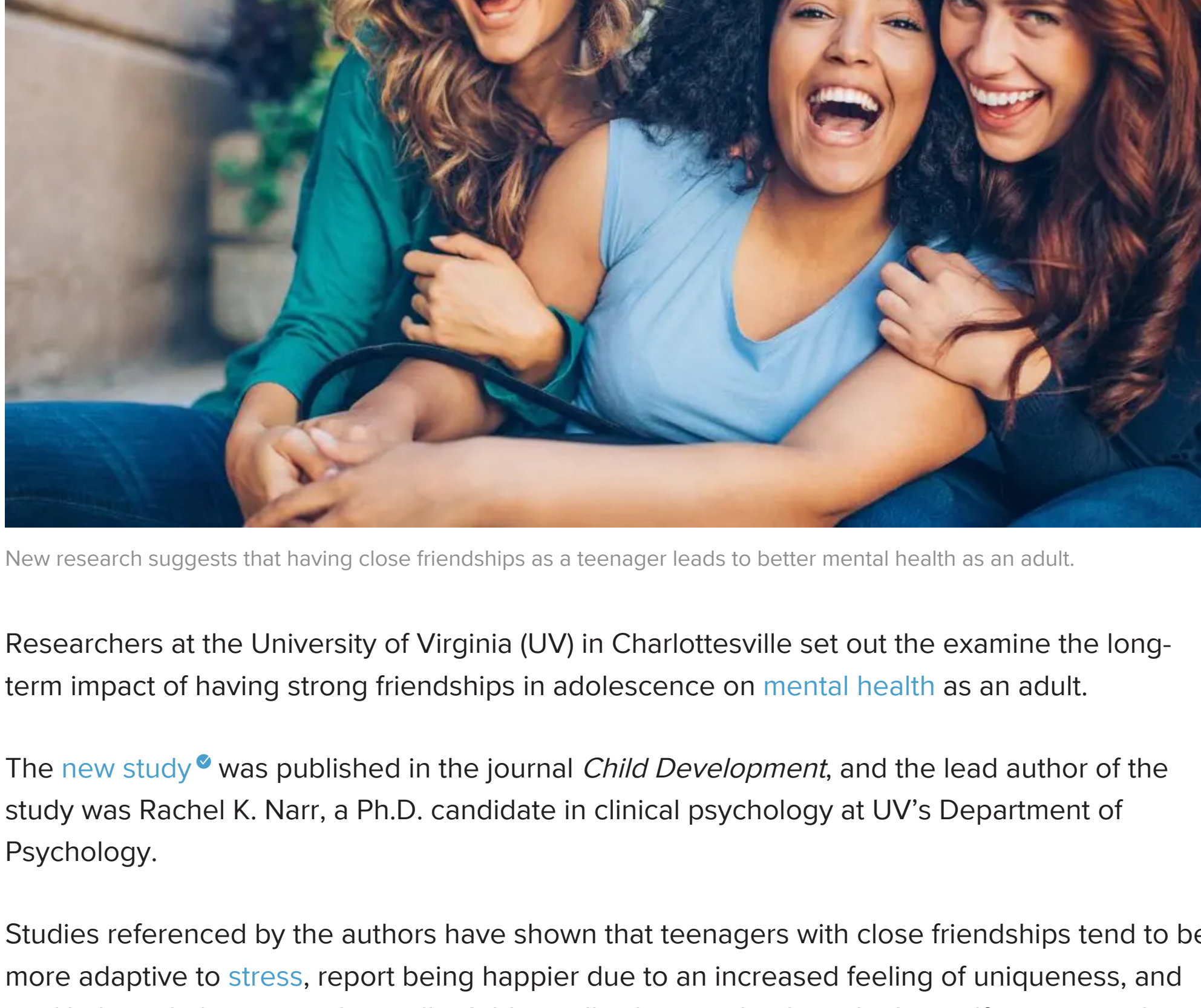
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# Strong friendships in adolescence may benefit mental health in the long run

As a teenager, few things are as important as having close friends with whom to share intimate secrets over long phone conversations. But do these friendships also benefit us into adulthood? A new study investigates.



New research suggests that having close friendships as a teenager leads to better mental health as an adult.

Researchers at the University of Virginia (UV) in Charlottesville set out to examine the long-term impact of having strong friendships in adolescence on [mental health](#) as an adult.

The [new study](#) was published in the journal *Child Development*, and the lead author of the study was Rachel K. Narr, a Ph.D. candidate in clinical psychology at UV's Department of Psychology.

Studies referenced by the authors have shown that teenagers with close friendships tend to be more adaptive to [stress](#), report being happier due to an increased feeling of uniqueness, and are likely to do better academically. Additionally, they tend to have higher self-esteem and are more assertive.

But do some of these benefits last into adulthood? To find out, Narr and colleagues examined a community of 169 teenagers aged 15, and they followed them for a period of 10 years until they turned 25.

Of these, 58 percent were Caucasian, 29 percent were African American, and 8 percent were of mixed race. The median income of their families was between \$40,000 and \$59,999.

Narr and team examined the teenagers every year, asking them to fill in questionnaires reporting on their best friends and the quality of their friendships. The researchers also conducted interviews enquiring about the participants' feelings of [anxiety](#), self-worth, and social acceptance. The team examined the teenagers for symptoms of [depression](#) and interviewed their friends, as well.

## Close friendships predict lower anxiety

High-quality dyadic friendships were described as friendships with a high degree of attachment and support, which allowed them to share intimate feelings.

Additionally, Narr and colleagues examined these teenagers' popularity, which was defined as how many school friends sought their company – that is, how many ranked them at the top of the list of peers they would like to spend time with.

**The scientists found that those adolescents who put close friendships first at the age of 15 tended to have lower social anxiety, a higher sense of self-worth, and fewer depressive symptoms by the age of 25, compared with their counterparts who did not prioritize such friendships.**

Interestingly, those considered highly popular during their teenage years reported greater feelings of social anxiety as adults. "Our research found that the quality of friendships during adolescence may directly predict aspects of long-term mental and emotional health," says Narr.

"High school students with higher-quality best friendships tended to improve in several aspects of mental health over time, while teens who were popular among their peers during high school may be more prone to social anxiety later in life."

– Rachel K. Narr

As this is an observational study, it cannot explain causality. However, the authors venture some possible explanations. One potential reason for these long-term benefits could be that close, positive relations with friends boost self-worth and self-esteem at a time crucial for self-development and identity formation.

It could also be the case, the authors suggest, that starting off with close friendships in life sets the ground for more positive, supportive relationships throughout the rest of one's life.

"Our study affirms that forming strong close friendships is likely one of the most critical pieces of the teenage social experience," says study co-author Joseph Allen, who is the Hugh P. Kelly Professor of Psychology at UV.

**"Being well-liked by a large group of people cannot take the place of forging deep, supportive friendships," Prof. Allen adds. "And these experiences stay with us, over and above what happens later."**

"As technology makes it increasingly easy to build a social network of superficial friends, focusing time and attention on cultivating close connections with a few individuals should be a priority."

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# COVID-19 may affect long-term 'fight or flight' response in young adults

New research suggests that young people may experience changes to the sympathetic nervous system after recovering from COVID-19. Image credit: Mikhail Tereshchenko/TASS via Getty Images

- **The sympathetic nervous system governs the "fight-or-flight" response.**
- **A study suggests that young adults who recently recovered from COVID-19 have increased activity in this branch of their nervous system while at rest.**
- **Compared with controls, they had higher sympathetic nerve activity and a faster heart rate in a test designed to simulate standing up.**
- **If similar disturbances occur in older adults after COVID-19, there may be serious adverse effects on their cardiovascular health.**

Around a [third](#) of otherwise healthy people who have recovered from mild COVID-19 experience the lingering symptoms of [long COVID](#).

The most common symptoms include [fatigue](#) and shortness of breath, but some individuals also report heart palpitations.

**This may be a sign that their "autonomic nervous system" is out of balance.**

The two wings of the autonomic nervous system act together automatically to regulate vital functions such as heart rate and breathing.

Stay informed with [live updates](#) on the current COVID-19 outbreak and visit our [coronavirus hub](#) for more advice on prevention and treatment.

When the body perceives a life threatening situation, the [sympathetic nervous system](#) increases heart rate and breathing rate, a reaction that people call the "fight-or-flight response."

By contrast, the parasympathetic nervous system restores the body to a more stable, restful state, known as "rest and digest."

Individuals with [hypertension](#) (high [blood pressure](#)), diabetes, and [obesity](#) often have increased activity in their sympathetic nervous system, which COVID-19 may exacerbate.

For the first time, researchers have now assessed sympathetic nerve activity in otherwise healthy young people recovering from the infection.

They ran a series of tests on 16 individuals aged approximately 20 years old who had tested positive for SARS-CoV-2, the virus that causes COVID-19, around 35 days previously.

Before the pandemic, the scientists carried out identical tests on an age-matched group of 14 healthy volunteers, who served as controls.

The tests revealed changes in the sympathetic nervous system of people recovering COVID-19, both at rest and in response to a [stress](#) test.

There were also differences in heart rate and sympathetic nerve activity in a test designed to simulate standing up.

The researchers believe that the same changes in older adults could have adverse effects on their cardiovascular health.

"This is because, with aging, we tend to lose some of the compensatory mechanisms in place to offset the blood-pressure-raising effects of high sympathetic activity," said senior author [Dr. Abigail Stickford](#), from the department of health and exercise science at Appalachian State University in Boone, NC.

"Ultimately, this could also place more strain on the heart," she told *Medical News Today*.

The research appears in [The Journal of Physiology](#).

## Bursts of electrical activity

During the tests, the volunteers lay on their backs on a bed in the lab.

To monitor changes in their sympathetic nerve activity, the researchers inserted a tiny needle into a nerve behind their knee.

An electrode at the end of the needle recorded the frequency and intensity of bursts of electrical activity in the nerve.

**At rest, activity was higher in the participants recovering from COVID-19 compared with controls, though their blood pressure and heart rate were the same.**

Next, the scientists asked the volunteers to plunge their hands into icy water for 2 minutes – a painful experience that provokes the fight-or-flight response.

Surprisingly, the individuals recovering from COVID-19 had a much less pronounced increase in their sympathetic nerve activity. They also reported less pain.

However, changes in their heart rate and blood pressure were similar to those in the controls.

Finally, the researchers conducted a standard test designed to simulate the effects on the cardiovascular system of standing up, known as the "head-up tilt."

They tilted the bed to an angle of 30 degrees for 5 minutes, then 60 degrees for a further 5 minutes.

There were larger increases in sympathetic nerve activity and heart rate among participants recovering from COVID-19 compared with controls.

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## Racing hearts

The body normally compensates for the fall in blood pressure when a person sits up or stands up by increasing heart rate.

Doctors use the test to diagnose [orthostasis](#) – a fall in blood pressure that occurs when the body fails to compensate fully, which can cause dizziness, lightheadedness, and fainting.

In a related condition that doctors call [postural orthostatic tachycardia syndrome](#) (POTS), individuals experience a racing heart or palpitations when they sit up or stand up.

**POTS is among the autonomic disturbances or "dysautonomia" that people with long COVID experience.**

"We have been seeing patients with lingering symptoms of fatigue, palpitations, brain fog and exercise intolerance for months after resolution of acute COVID infection," said Dr. Svetlana Blitshteyn, a neurologist at the State University of New York at Buffalo, NY, who also runs a [clinic for patients with dysautonomia](#).

She recently published [case studies](#) of 20 patients who developed dysautonomia – mostly POTS – following COVID-19.

Dr. Blitshteyn told *MNT* that there was a sufficient heart rate increase in some of the recovering COVID-19 patients in the study's head-up tilt test for a diagnosis of POTS.

She said the duration of POTS and other symptoms of long COVID remains unclear, but her clinic continues to monitor patients.

"In my published case series, most patients had lingering symptoms, with 60% unable to return to work 8 months after acute [SARS-CoV-2] infection," she added.

## Limitations of the study

A possible limitation of the new study is that control subjects received testing before the COVID-19 pandemic.

Research also suggests there were increases in [anxiety](#) and [depression](#) among college-age students during the pandemic, so in theory, this could explain some of the autonomic changes that the scientists observed.

Overall, the "cross-sectional" design of the study meant it could not establish whether COVID-19 actually caused changes in participants' sympathetic nervous systems.

In addition, the relatively small numbers of participants limit the statistical reliability of the findings.

**For live updates on the latest developments regarding the novel coronavirus and COVID-19, click [here](#).**

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