

Present: All the Justices

JEFFREY A. TITTSWORTH

OPINION BY JUSTICE ROSCOE B. STEPHENSON, JR.

v. Record No. 951742

September 13, 1996

STEPHANIE N. ROBINSON

FROM THE CIRCUIT COURT OF STAFFORD COUNTY
Carleton Penn, Judge Designate

The sole issue in this appeal is whether the trial court erred in allowing certain expert testimony.

Jeffrey A. Tittsworth filed a motion for judgment against Stephanie N. Robinson seeking damages for personal injuries he sustained in a motor vehicle collision. The case was tried to a jury which returned a verdict in favor of Robinson. The trial court entered judgment on the verdict, and this appeal ensued.

At the time of the accident, Tittsworth, operating his Mazda van, was leaving a parking lot adjoining Highway Route 610 in Stafford County. While stopped at the lot's exit and waiting for traffic on the highway to clear, a Hyundai automobile operated by Robinson struck the rear of the Mazda.

Rain had been falling that day, and the soles of Robinson's tennis shoes were wet. Robinson's car struck the rear of Tittsworth's van when, as Robinson leaned over to move some curling irons from the front passenger seat to the floor of her car, her foot slipped off the clutch pedal.

At the accident scene, Tittsworth told Robinson that he had not been injured. However, several hours after the collision, Tittsworth began to experience stiffness in his back which became painful and progressively worse, and, two days later, he saw a

physician. After undergoing a Magnetic Resonance Imaging (MRI) scan of the lumbar spine, Tittsworth was referred to Dr. Donald G. Hope, a neurosurgeon.

Dr. Hope found that Tittsworth had a herniated disk at the "L5-S1 level." Based upon Tittsworth's medical history, the doctor concluded that the herniated disk in Tittsworth's lumbar spine resulted from the collision.

Robinson presented two expert witnesses in an effort to prove that the collision could not have caused Tittsworth's disk to rupture. Alfred L. Cipriani was qualified as an expert in the field of mechanical engineering and gravity acceleration impact analysis. Dr. Peter H. Abbrecht was qualified as an expert in biomedical engineering and biomechanics.

Cipriani testified that so-called "G force" is the acceleration of gravity, which, he explained, accelerates at 32.2 feet per second, constituting one G. Cipriani concluded that the force experienced by Tittsworth in the collision was not greater than 1.6 G's and that such force is less than many people experience in daily activities.¹

Cipriani then explained how he reached his conclusion. He first obtained the identification numbers of the two vehicles involved in the collision. From these numbers, he ascertained the make, model, and year of each vehicle. With this

¹Cipriani testified that a person, in hopping off an eight-inch step, would subject his head to as much as 8 G's and, in coughing, would subject his head to three and one-half G's.

information, he had "a data base available which provide[d] vehicle information such as the wheel base, the overall width, the weight of the car, things like that, so [he could] identify the vehicle more specifically." Cipriani then "look[ed] up crash tests data on substantially similar cars." These tests are conducted by organizations such as the National Highway Transportation Safety Administration, the Insurance Institute for Highway Safety, and Transport Canada, and they reveal how "stiff" a vehicle is in the front and rear. According to Cipriani, "[t]he amount of crush that occurs to a vehicle for a given speed is dependent upon how stiff the vehicle is." He stated that, having obtained all this information, he then was "ready to look at the photographs [of the vehicles involved in the collision] and to start to do an analysis."

After looking at the photographs, Cipriani "assume[d] half of an inch of permanent crush [damage] of the whole width and whole height of the back of the [Mazda]." He also "assumed a half of an inch of crush damage over the width of the entire [Hyundai]." These assumptions, he said, gave "the benefit of the doubt" to Tittsworth.

Cipriani, utilizing the crash test information and his assumptions regarding crush damage, and with the assistance of a computer program which he did not develop, then calculated the maximum force that was applied to the rear of Tittsworth's van in the collision. This force, he determined, was 1.6 G's.

Dr. Abbrecht testified that, in his opinion, "the force of this accident [was] not enough to cause any injury, and . . . definitely not enough to cause a specific injury of herniation of the L5 S1 disk." Before reaching this conclusion, Abbrecht had reviewed Tittsworth's medical records, including x-rays and the MRI scan of Tittsworth's lumbar spine, Tittsworth's deposition, photographs of the two vehicles, and Cipriani's analysis. He based his opinion in large measure on experiments, conducted by a concern called Engineering Dynamics Corporation, in which human volunteers were exposed to 2.2 G's of force in rear-end collisions. According to Abbrecht, the volunteers received no injuries in the experiments. These experiments, however, were designed to investigate neck injuries, not lumbar injuries, and Abbrecht conceded that there have been no "low back" studies.

Tittsworth moved the court to strike the experts' testimony. He asserted, inter alia, that their testimony lacked an adequate foundation and a factual basis to support their opinions and that the experts relied upon experiments conducted under conditions that were not substantially similar to the conditions existing in the present case. The trial court denied the motion.

Generally, expert testimony is admissible in civil cases if it will assist the fact finder in understanding the evidence. Such testimony, however, must meet certain fundamental requirements. See Code §§ 8.01-401.1 and -401.3; Tarmac Mid-Atlantic, Inc. v. Smiley Block Co., 250 Va. 161, 166, 458 S.E.2d

462, 465-66 (1995); Lawson v. John Doe, 239 Va. 477, 482-83, 391 S.E.2d 333, 336 (1990); Clark v. Chapman, 238 Va. 655, 664-65, 385 S.E.2d 885, 891 (1989). Such testimony cannot be speculative or founded upon assumptions that have an insufficient factual basis. Tarmac Mid-Atlantic, Inc., 250 Va. at 166, 458 S.E.2d at 466; see Gilbert v. Summers, 240 Va. 155, 159-60, 393 S.E.2d 213, 215 (1990); Lawson, 239 Va. at 482-83, 391 S.E.2d at 336; Cassady v. Martin, 220 Va. 1093, 1100, 266 S.E.2d 104, 108 (1980). Such testimony also is inadmissible if the expert has failed to consider all the variables that bear upon the inferences to be deduced from the facts observed. Tarmac Mid-Atlantic, Inc., 250 Va. at 166, 458 S.E.2d at 466; see Swiney v. Overby, 237 Va. 231, 233-34, 377 S.E.2d 372, 374 (1989); Grasty v. Tanner, 206 Va. 723, 727, 146 S.E.2d 252, 255 (1966). Further, where tests are involved, such testimony should be excluded unless there is proof that the conditions existing at the time of the tests and at the time relevant to the facts at issue are substantially similar. Tarmac Mid-Atlantic, Inc., 250 Va. at 166, 458 S.E.2d at 466; Runyon v. Geldner, 237 Va. 460, 463-64, 377 S.E.2d 456, 458-59 (1989).

While Code §§ 8.01-401.1 and -401.3 have liberalized the admissibility of expert testimony, we think the experts' testimony here fails to meet the fundamental requirements enumerated above. With respect to Cipriani, there was no showing that the crash tests relied upon were conducted under conditions

similar to those existing at the accident scene. More importantly, Cipriani never examined the vehicles involved in the collision; rather, he relied solely upon the photographs of the vehicles to determine the permanent crush damage thereto. He did not know whether the undercarriages of the vehicles had been damaged, and, if so, the extent thereof. Indeed, Cipriani simply "assumed" that each vehicle sustained a crush damage of one-half an inch.

Abbrecht relied, in part, upon Cipriani's conclusion. He also relied upon the photographs of the vehicles and the rear-end collision experiments. Again, there was no proof that these experiments were conducted under circumstances substantially similar to those existing at the accident scene. Moreover, the tests focused upon neck injuries, not lumbar spine injuries, and Tittsworth sustained an injury to a disk in his lumbar spine.

In sum, the challenged expert testimony is speculative, is founded upon assumptions lacking a sufficient factual basis, relies upon dissimilar tests, and contains too many disregarded variables.² Consequently, we hold that the testimony is unreliable as a matter of law, and, therefore, the trial court

²Robinson contends that Tittsworth "opened the door" to the biomechanical evidence and waived objections to its admissibility" because Tittsworth's expert, Dr. Hope, testified, without objection, that a lumbar disk can rupture as a result of "the normal biomechanical factors that a person goes through . . . with standing, sitting, rotating from side to side without any trauma." We reject this contention. We do not think that such a general statement by a medical expert opened the door to the speculative and unreliable testimony of Robinson's experts.

erred in admitting it.³

Accordingly, we will reverse the trial court's judgment and remand the case for a new trial.

Reversed and remanded.

³On appeal, Robinson advances a harmless-error argument in asserting that the jury "could have rendered its decision without considering the [challenged] expert evidence." Robinson contends that the jury "could easily have found that [her] conduct was not negligent" or "could have reached its verdict based on [other] causation testimony." We reject this argument because we have no way of determining what evidence may have influenced the jury in reaching its verdict. See, e.g., Ring v. Poelman, 240 Va. 323, 328, 397 S.E.2d 824, 827 (1990); Doe v. Thomas, 227 Va. 466, 473, 318 S.E.2d 382, 386 (1984).